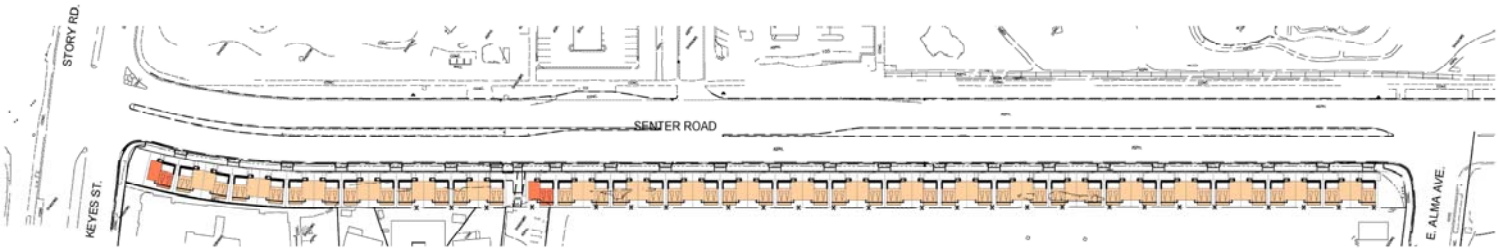
Appendix TIS

Traffic Impact Study

SENTER ROAD RESIDENTIAL PROJECT
TRAFFIC IMPACT STUDY
City of San Jose, California



RK engineering group, inc.

SENTER ROAD RESIDENTIAL PROJECT
TRAFFIC IMPACT STUDY
City of San Jose, California

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February 24, 2022

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1.0 Introduction

1.1 Purpose of Report & Study Objectives

The purpose of this traffic impact analysis is to evaluate the Senter Road Residential Project (hereinafter referred to as project) from a traffic and circulation standpoint and determine whether the project will have a significant traffic impact.

This traffic study has been conducted pursuant to the *City of San Jose Transportation Analysis Handbook* (April 2020) and the California Environmental Quality Act (CEQA) requirements, and evaluated the potential traffic impacts associated with the proposed project in accordance with the thresholds of significance.

The study has been prepared per the scope of work approved by the City of San Jose staff, Ms. Christy Cheung, and is provided in Appendix A.

RK has previously prepared a site access review for the proposed project (November 16, 2021) which includes a qualitative level of service analysis and other items as requested by the City of San Jose staff. The site access review is provided in Appendix B.

1.2 Site Location

The currently vacant project site is located along the west side of Senter Road, between Keyes Street/Story Road and Alma Avenue, in the City of San Jose.

Senter Road is one of the 17 priority safety corridors — corridors that account for a high proportion of fatalities and severe injuries on San Jose Streets — that the City of San Jose has identified as part of their Vision Zero initiative to reduce and eliminate traffic deaths and severe injuries so that the streets are safer for pedestrians, rollers, and bicyclists.

The project site location map is shown on Exhibit 1-1.

1.3 Project Description

The proposed project is planned to consist of the following land uses:

- 42 dwelling units of three-story multi-family residential use (mid-rise); and

- 2 dwelling units of single family detached residential use.

Eleven (11) of the 44 dwelling units are planned to be affordable housing units.

The project is planned to open in 2023 and will be evaluated in one (1) single phase.

Access for the proposed project is planned via a total of twenty-four (24) right-in/right-out unsignalized driveways along Senter Road.

The project site plan is shown on Exhibit 1-2.

The proposed cross-section for Senter Road is provided on Exhibit 1-3.

1.4 Traffic Study Area & Analysis Scenarios

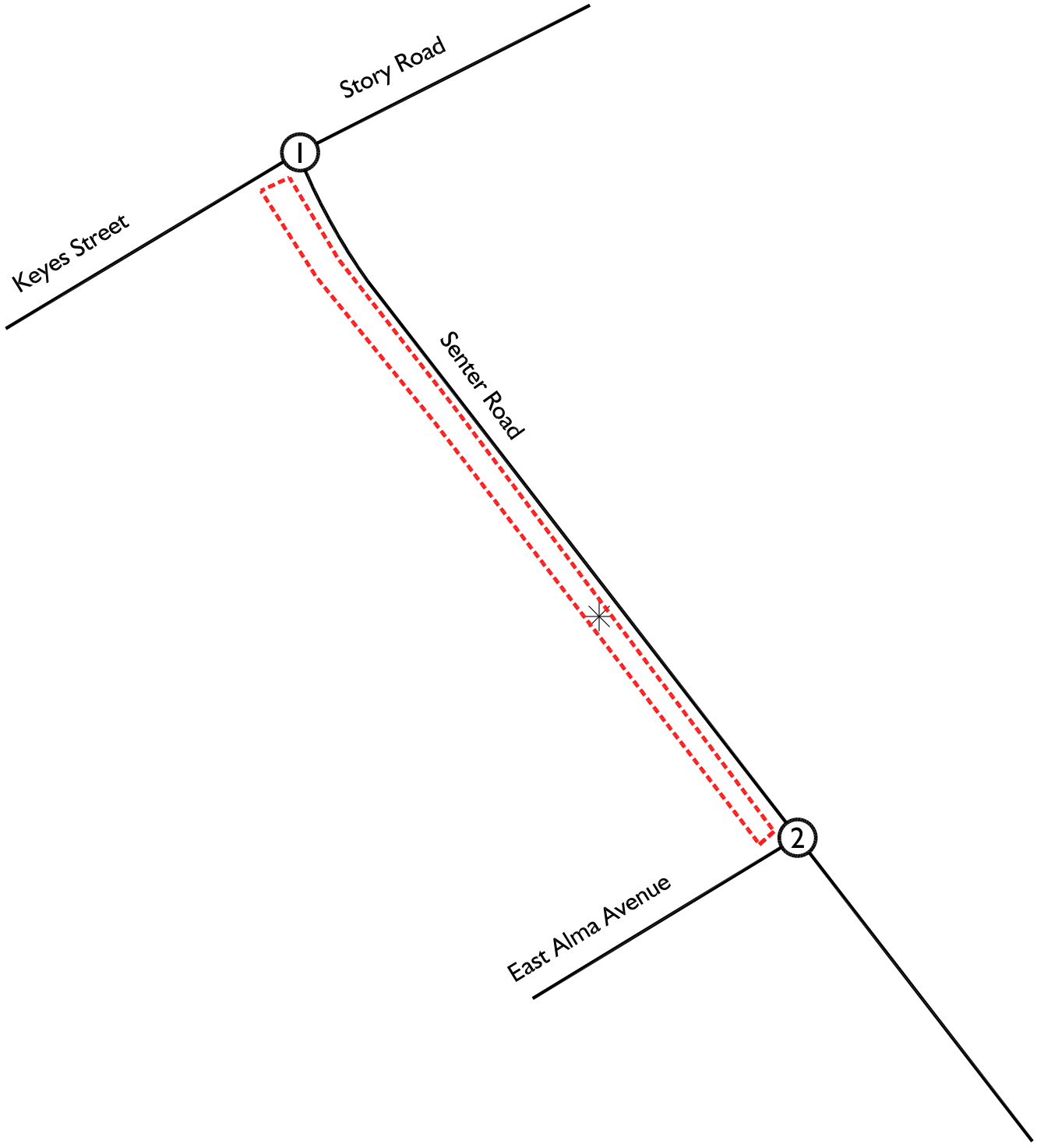
Per the *City of San Jose Transportation Analysis Handbook* (April 2020), the included study area of this analysis was determined to have fulfilled the required parameters for intersection analysis as they are within a half-mile buffer from the project (for any signalized intersections that are expected to add 10 vehicle-trips per hour per lane). The traffic analysis evaluates the following study intersections, which are both located within the City of San Jose:

1. Senter Road / Keyes Street – Story Road (signalized); and
2. Senter Road / Alma Avenue (signalized).

The analysis evaluates traffic conditions for the following study scenarios during the weekday AM (7:00 AM to 9:00 AM) and weekday PM (4:00 PM to 6:00 PM) peak periods:

- Existing Conditions;
- Background Conditions *(Existing Plus Approved Projects)*;
- Project Conditions *(Existing Plus Approved Projects Plus Project)*; and
- Cumulative Conditions *(Existing Plus Approved Projects Plus Pending Projects Plus Project)*.

Exhibit 1-1
Location Map



Legend:

1 = Study Area Intersection

= Project Site

= Project Site Boundary

N

Exhibit 1-2
Site Plan

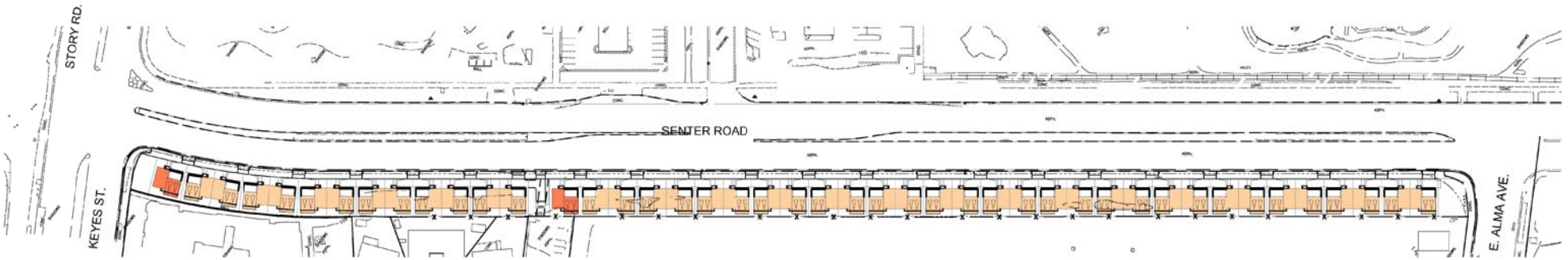
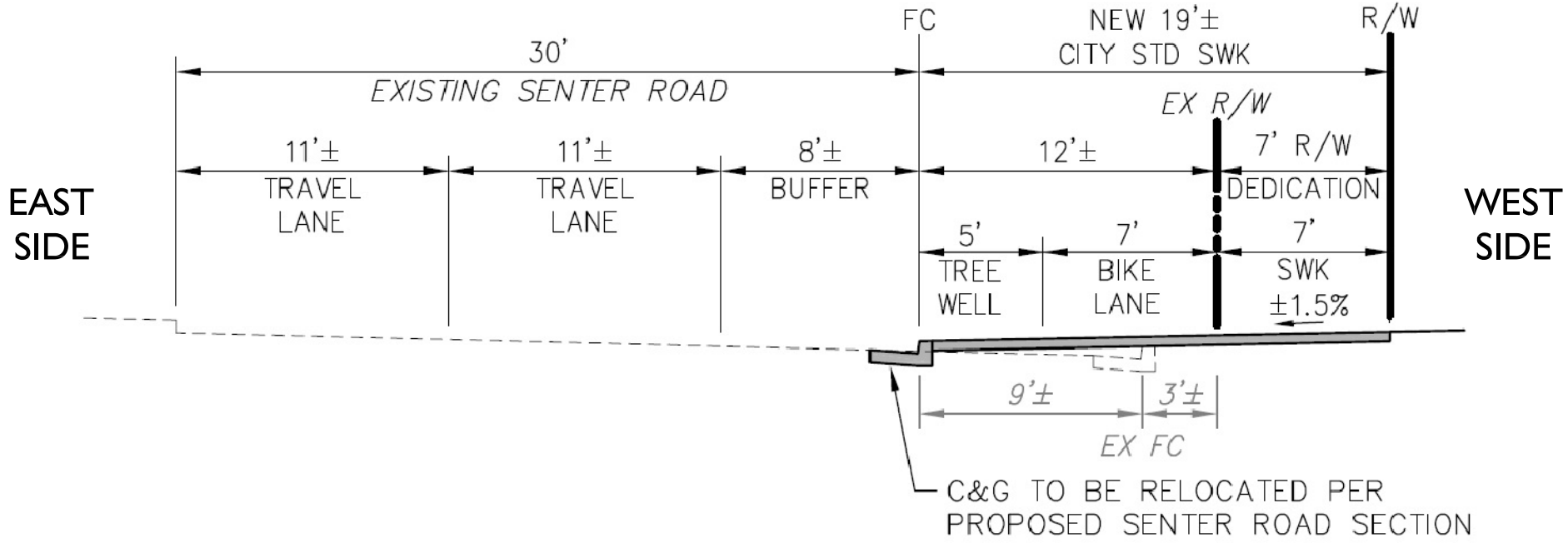


Exhibit 1-3

Senter Road Cross-Section



2.0 Analysis Methodologies, Performance Criteria & Thresholds of Improvement Requirement

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report in accordance with the City of San Jose requirements and CEQA. This section also discusses the agency-established applicable performance criteria and thresholds of improvement requirement for the study facilities.

2.1 Intersection Peak Hour Level of Service Analysis Methodology

The Highway Capacity Manual 6th Edition (HCM 6) defines level of service (LOS) as a qualitative measure which describes operational conditions within a traffic stream, generally in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The criteria used to evaluate LOS conditions vary based on the type of roadway and whether the traffic flow is considered interrupted or uninterrupted.

For signalized intersections, average control delay per vehicle is used to determine the LOS. For all-way stop controlled intersections, the LOS is also determined based on the average control delay per vehicle. For intersections with stop control on the minor street only, the calculation of LOS is dependent on the occurrence of gaps in the traffic flow of the main street, and the LOS is determined based on the worst individual movement or movements sharing a single lane.

The HCM 6 methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding ranges of stopped delay experienced per vehicle for signalized and unsignalized intersections.

Table 2-1 below shows the LOS criteria based on the HCM methodology and the City of San Jose Transportation Analysis Handbook.

Table 2-1
HCM LOS - Vehicle Delay

Level of Service (LOS)	Average Control Delay Per Vehicle (Seconds)	
	Signalized	Unsignalized
A	0.00 - 10.00	0.00 - 10.00
B	10.01 - 20.00	10.01 - 15.00
C	20.01 - 35.00	15.01 - 25.00
D	35.01 - 55.00	25.01 - 35.00
E	55.01 - 80.00	35.01 - 50.00
F	> 80.00	> 50.00

For this study, the HCM LOS grades will be determined utilizing the HCM 6 methodology and the Synchro analysis software.

All analysis parameters utilized in this analysis are in accordance with the City of San Jose requirements.

2.2 Roadway Segment Level of Service Analysis Methodology

Level of service (LOS) is commonly used as a qualitative description of roadway segment operation and is based on the daily capacity of the roadway segment and the daily volume of traffic experienced by the roadway segment.

Roadway segment LOS and operation is evaluated utilizing the volume to capacity (V/C) ratio methodology. The LOS is determined based on the numerical ratio obtained by dividing the daily traffic volume of the roadway segment by its daily capacity identified by the City's General Plan Circulation Element for the corresponding roadway classification.

The V/C ratio methodology describes the operation of a roadway segment using a range of LOS from LOS A to LOS F, based on the corresponding ranges as shown in the table below.

Table 2-2
LOS – Volume to Capacity Ratio

LOS	V/C Ratio
A	0.00 – 0.60
B	0.61 – 0.70
C	0.71 – 0.80
D	0.81 – 0.90
E	0.91 – 1.00
F	> 1.00

2.3 City of San Jose Performance Criteria

The following is a summary of the performance standards adopted by the City of San Jose.

Performance Criteria:

Per the *City of San Jose Transportation Analysis Handbook* (April 2020), the acceptable LOS for intersections and roadway segments in the City of San Jose is LOS D or better, unless superseded by an Area Development Policy.

Adverse Intersection Operations:

An adverse effect on intersection operations occurs when the analysis demonstrates that a project would cause the operations standard at a study intersection to fall below D with the addition of project vehicle trips to baseline conditions. For intersections already operating at E or F under the baseline conditions, an adverse effect is defined as:

- An increase in average critical delay by 4.0 seconds or more AND an increase in the critical volume-to-capacity (V/C) ratio of 0.010 or more; OR

- A decrease in average critical delay AND an increase in the critical V/C ratio of 0.010 or more.

3.0 Existing Traffic Volumes & Circulation System

This section provides a discussion of existing study area conditions and traffic volumes.

3.1 Existing Traffic Controls and Intersection Geometrics

Exhibit 3-1 identifies the existing roadway conditions within the study area. The number of through traffic lanes for existing roadways and the existing intersection controls are identified. The type of traffic control and number of lanes at an intersection are key inputs for the calculation of LOS.

3.2 Existing Traffic Volumes

Existing traffic volumes at the study intersections are based upon manual AM and PM peak hour turning movement counts compiled for RK in October 2021.

The AM peak period of traffic was counted from 7:00 AM to 9:00 AM and the PM peak period of traffic was counted from 4:00 PM to 6:00 PM.

Existing traffic volumes within the study area are shown on Exhibit 3-2.

Additionally, pedestrian and bicycle counts were collected at the study intersections during the AM and PM peak periods. Existing pedestrian and bicycle volumes within the study area are shown on Exhibit 3-3 and Exhibit 3-4, respectively.

The traffic count worksheets are contained in Appendix C.

3.3 Site Circulation and Existing Roadway Conditions

Based on the General Plan Circulation Element, Senter Road is classified as a City Connector Street. A City Connector Street generally has two to three lanes in each direction of travel, on-street bike lanes and parallel on-street parking. Per the *Envision San Jose 2040 General Plan* (Adopted November 1, 2011), "Automobiles, bicycles, pedestrians, transit, and trucks are prioritized equally in this roadway type. These streets typically accommodate moderate to high volumes of through traffic within and beyond the City. Pedestrians are accommodated with sidewalks."

Currently, Senter Road is a six-lane divided roadway with a landscaped raised center median and a posted speed limit of 40 miles per hour in the project site vicinity. An existing median break located approximately 720 feet south of Keyes Street/Story Road facilitates southbound left-turn and southbound U-turn movements for traffic traveling southbound on Senter Road.

On-street bike lanes are currently provided on both directions of travel along Senter Road in the project site vicinity.

Pedestrian sidewalks are present on the northbound direction of travel. However, the southbound direction does not provide any pedestrian sidewalks.

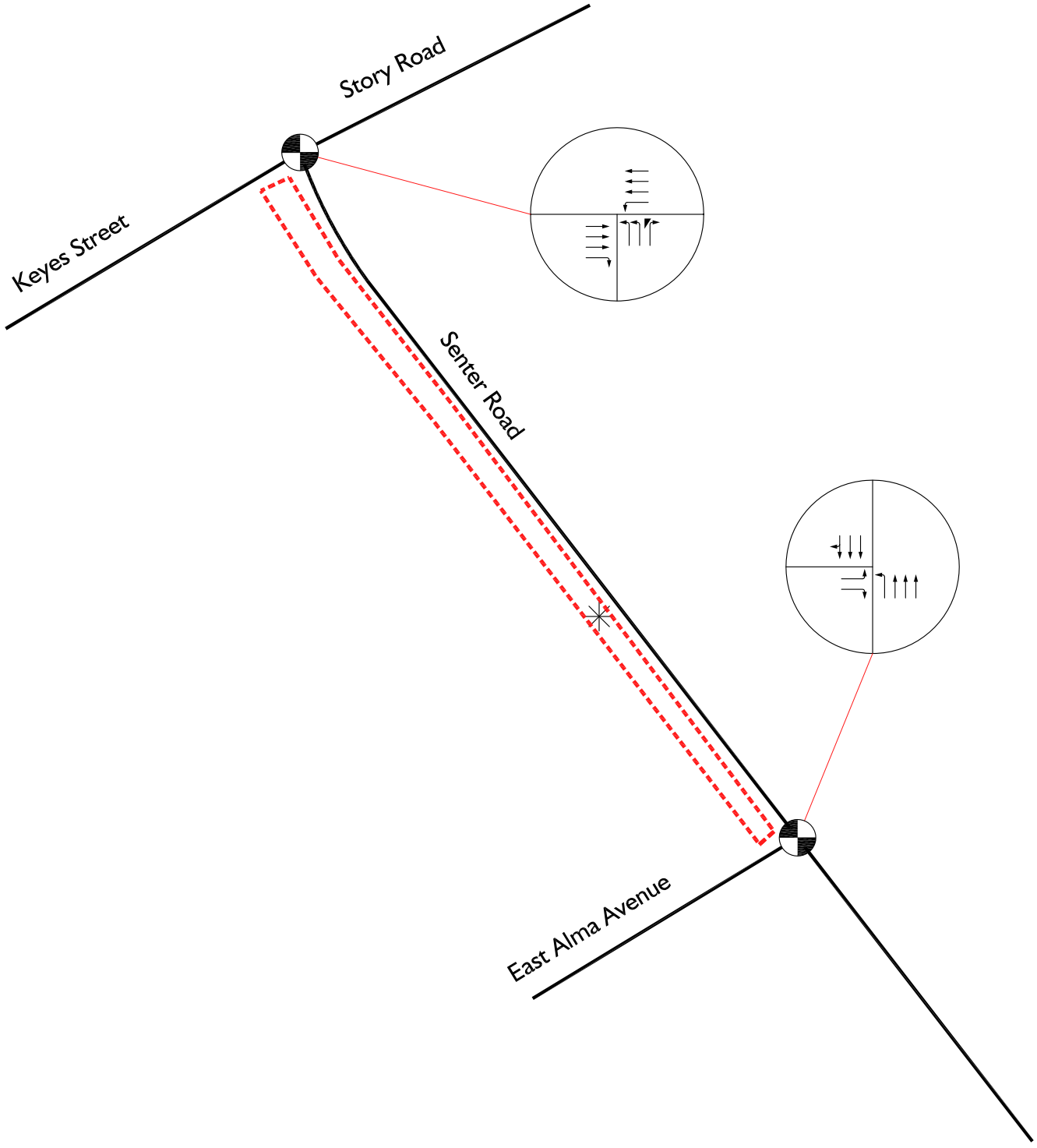
The identified parcel has the future Three Creeks Trail/Five Wounds Trail Alignment through the site and a Class IV protected bikeway along the Senter Road frontage per the 2025 San Jose Better Bike Plan. Per internal City coordination with PRNS, the future trail will be built on the east side of Senter Road along the public park frontages for the segment between Keyes Street/Story Road and Alma Avenue.

Based on traffic volume data collected by RK in October 2021 during typical weekday conditions, Senter Road has an existing two-way average daily traffic (ADT) volume of approximately 19,588 vehicles per day from Keyes Street/Story Road to Alma Avenue.

The existing ADT counts along Senter Road are included along with the traffic count worksheets in Appendix C.

Exhibit 3-1

Existing Lane Geometry and Traffic Controls



Legend:

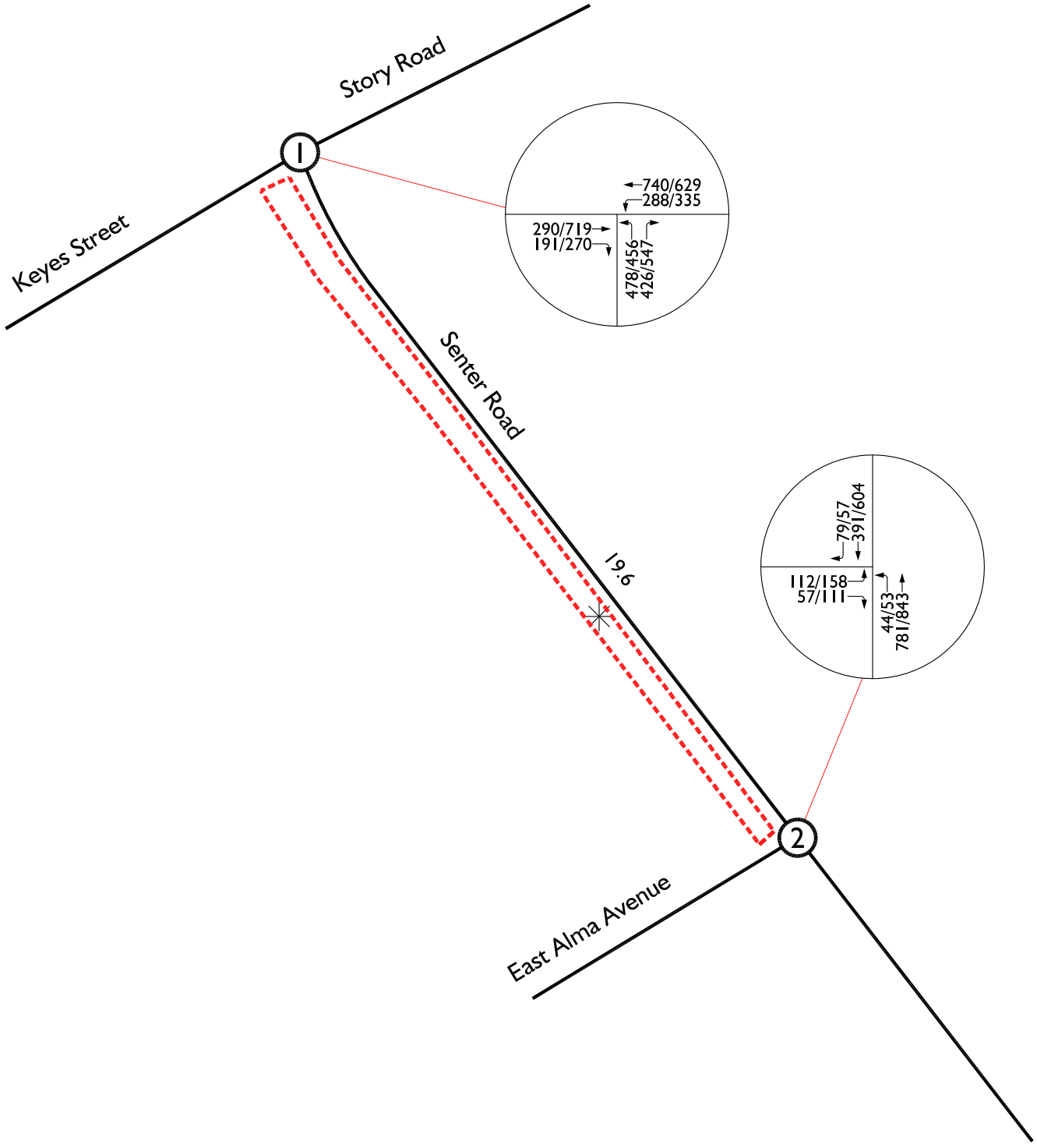
= Traffic Signal

= Channelized Right Turn

N

Exhibit 3-2

Existing Traffic Volumes



Legend:

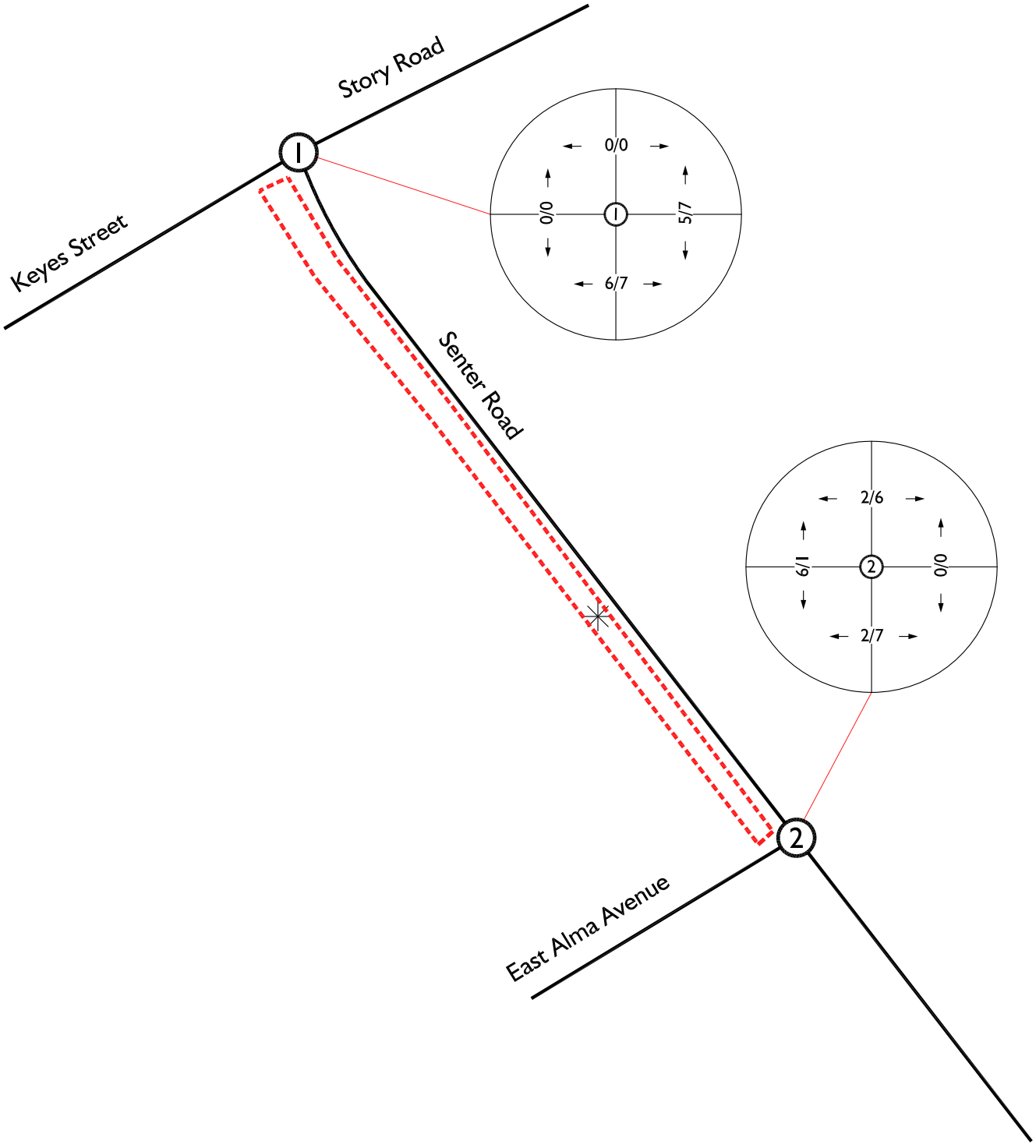
10/20 = AM/PM Peak Hour Volumes

10.0 = Two-Way Average Daily Traffic (1,000's)

N

Exhibit 3-3

Existing Pedestrian Volumes



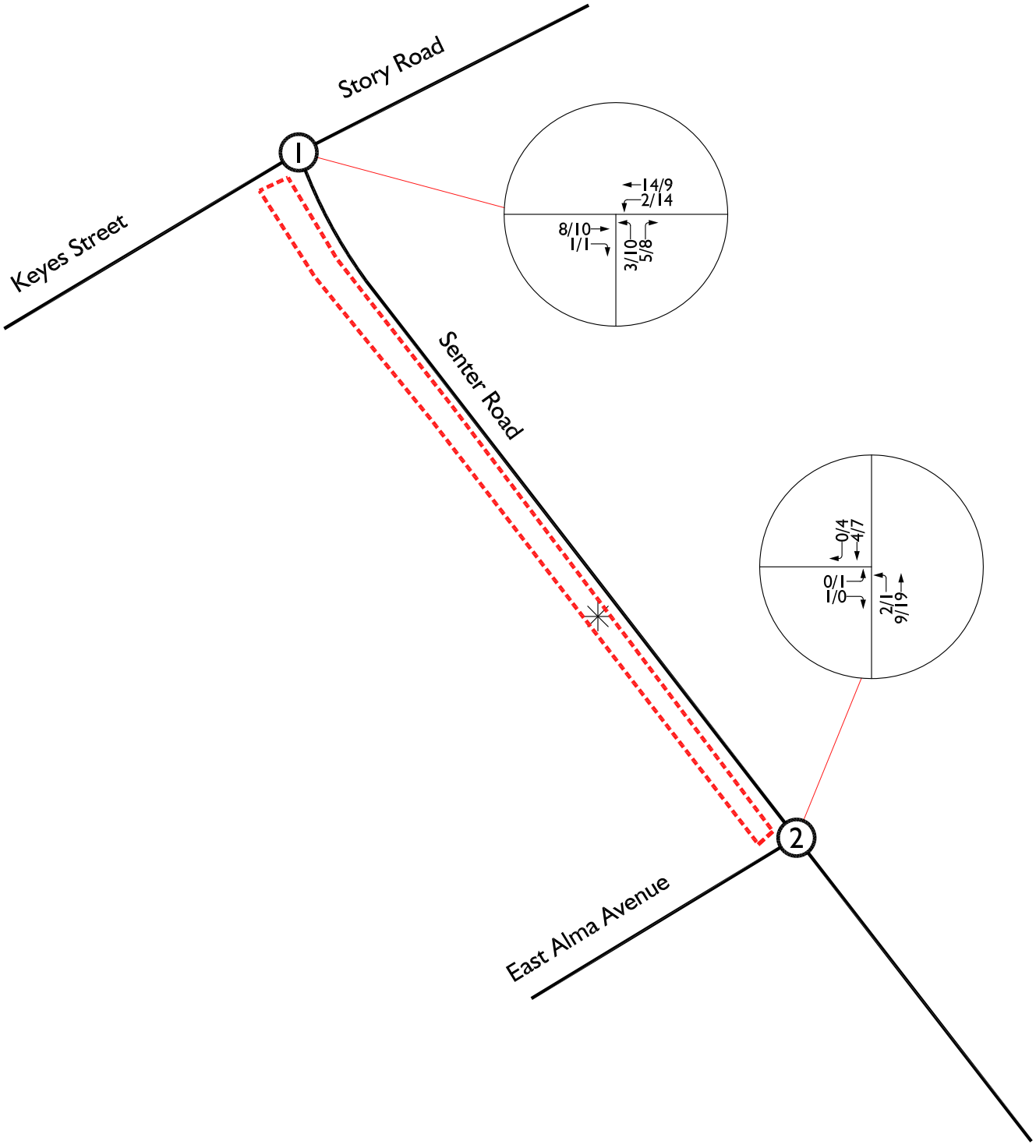
Legend:

10/20 = AM/PM Pedestrian Volumes

N

Exhibit 3-4

Existing Bicycle Volumes



Legend:

10/20 = AM/PM Bicycle Volumes

N

4.0 Projected Traffic Volumes

This section of the report provides a discussion on methodologies utilized to derive projected traffic volumes for the study area.

4.1 Project Traffic Conditions

As further discussed in Section 5.0 of this report, the proposed project is expected to implement a road diet lane reduction along the southbound direction of travel on Senter Road between Keyes Street/Story Road and Alma Avenue. The southbound direction of travel along this segment will be reduced from the existing three (3) lanes to two (2) lanes. As a result, the lane geometry for the Senter Road / Alma Avenue intersection will change for the analysis scenarios which include the proposed project. Exhibit 4-1 identifies the proposed road diet roadway conditions within the study area.

4.1.1 Trip Generation

Trip generation represents the amount of traffic that is attracted and produced by a development. The trip generation for the proposed project is based upon the specific land uses that have been planned for this development.

Trip generation is typically estimated based on the trip generation rates from the latest *Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017)*. This publication provides a comprehensive evaluation of trip generation rates for a variety of land uses.

Table 4-1 shows the ITE trip generation rates utilized for the trip generation analysis of the project land uses.

Utilizing the trip generation rates from Table 4-1, Table 4-2 summarizes the daily and peak hour trip generation for the proposed project.

As shown in Table 4-2, based on the ITE trip generation rates and modal adjustment factors per the *City of San Jose Transportation Analysis Handbook* (April 2020) for uses located within Urban Low-Transit areas, the proposed project is forecast to generate approximately 215 daily trips which include approximately 14 AM peak hour trips (3 inbound and 11 outbound) and approximately 17 PM peak hour trips (10 inbound and 7 outbound).

As also shown in Table 4-2, assuming a total of twenty-four (24) project driveways, the above trip generation is equivalent to an average of approximately 8.96 daily trips per driveway which include approximately 0.59 AM peak hour trips per driveway (0.13 inbound and 0.46 outbound) and approximately 0.71 PM peak hour trips per driveway (0.42 inbound and 0.29 outbound). This driveway level trip generation can be considered minimal.

4.1.2 Trip Distribution

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the location of retail, employment and recreational opportunities, and the proximity to the regional freeway system. The directional orientation of traffic was determined by evaluating existing and proposed land uses and highways within the study area.

The forecast trip distribution patterns for the project are developed based on the following assumptions, circulation system and roadway network conditions:

- Regional and freeway access for the site to and from US-101 is provided via Story Road and Tully Road; and

- Regional and freeway access for the site to and from Interstate 280 (I-280) and I-680 is provided via Keyes Street to the ramps along 10th Street and 11th Street.

The project trip distribution assumptions have been reviewed and approved by City staff during the scoping phase of the traffic analysis.

Exhibit 4-2 shows the outbound trip distribution for the proposed project.

As shown on Exhibit 4-2, since the proposed access driveways are restricted to right-in/right-out movements:

- For the units that are located north of the existing median break on Senter Road, outbound vehicles planning to travel northbound on Senter Road will perform a southbound U-turn maneuver at the median break; and

- For the units that are located south of the existing median break on Senter Road, outbound vehicles planning to travel northbound on Senter Road will perform a southbound U-turn maneuver at Phelan Avenue.

Exhibit 4-3 shows the inbound trip distribution for the proposed project.

As shown in Exhibit 4-3, since the proposed access driveways are restricted to right-in/right-out movements:

- For the units that are located north of the existing median break on Senter Road, inbound vehicles traveling northbound on Senter Road will perform a northbound U-turn maneuver at Keyes Street-Story Road; and

- For the units that are located south of the existing median break on Senter Road, inbound vehicles traveling northbound on Senter Road will perform a northbound U-turn maneuver at the existing median break, after the project implements striping for this northbound left-turn pocket which is currently chevroned off.

4.1.3 Project Access

Since all project driveways will be restricted to right-in/right-out movements only, they can be expected to experience minimum delays and acceptable level of service operations.

Generally, right-in/right-out driveways operate at a much better LOS since vehicle delays and deficient LOS operations are mainly associated with left-turn movements at intersections. Right-in/right-out only driveways generally result in less vehicular traffic conflicts when compared to full-access driveways.

With the right-in/right-out driveway configuration, the traffic on public roadway (Senter Road) can remain uncontrolled and vehicles traveling on Senter Road can be expected to not experience delays associated with stop signs or traffic signals.

Also, as previously mentioned and shown in Table 4-2, assuming a total of twenty-four (24) project driveways, the project is forecast to generate an average of approximately 0.59 AM peak hour trips per driveway (0.13 inbound and 0.46

outbound) and approximately 0.71 PM peak hour trips per driveway (0.42 inbound and 0.29 outbound) which can be considered nominal.

Hence, with regards to LOS operations and delays, the twenty-four (24) proposed right-in/right-out driveways are expected to be minimally affected and operate at acceptable levels of service. As such, project access will be adequate and vehicles entering and exiting the project site will be able to do so without undue congestion.

4.1.4 Modal Split

Modal split denotes the proportion of traffic generated by a project that would use any of the transportation modes, namely buses, cars, bicycles, motorcycles, trains, carpools, etc. The traffic-reducing potential of public transit and other modes is significant. With the implementation of transit service and provision of alternative transportation ideas and incentives, the automobile traffic demand can be reduced significantly.

As previously mentioned, modal adjustment factors per the *City of San Jose Transportation Analysis Handbook* (April 2020) for uses located within Urban Low-Transit areas were applied to the proposed project trip generation.

4.1.5 Project Traffic Volumes

The assignment of project traffic to the adjoining roadway system is based upon the project's trip generation, trip distribution, and arterial highway and local street systems that would be in place by the time of initial occupancy of the site.

Project traffic volumes are shown on Exhibit 4-4.

As shown in Exhibit 4-4, the proposed project is expected to generally contribute a nominal number of peak hour trips to the roadway network and nearby intersections.

4.2 Cumulative Projects Traffic

4.2.1 Approved Cumulative Projects Traffic

Information on approved cumulative projects in the vicinity of the study area has been provided by City of San Jose staff for inclusion in this analysis.

The approved cumulative projects derive from the San Jose Approved Trip Inventory (ATI), which provides vehicle trips by projects for which an entitlement to build has been granted but have yet to be built or occupied. The ATI provides intersection turning movement volumes for the study intersections to be used in the analysis, and is contained in Appendix D.

The approved cumulative projects include the following:

- Downtown San Jose Legacy Strategy Plan 2000;
- 1402 Monterey Road DCP;
- River Corporate Center Building 3;
- North San Jose Legacy;
- Vietnamtown; and
- Goble Lane Residential.

The location of the approved cumulative projects is shown on Exhibit 4-5.

Approved cumulative projects traffic volumes are shown on Exhibit 4-6.

4.2.2 Pending Cumulative Projects Traffic

Information on pending cumulative projects in the vicinity of the study area has been provided by City of San Jose staff for inclusion in this analysis.

The list of pending cumulative projects provided are for projects that have been officially submitted for land use review and are waiting public hearing approval.

The pending cumulative projects include the following:

- 551 Keyes Street Residential;
- Fire Department Training Center; and
- Sharks Ice Expansion.

Table 4-3 shows the land uses, and daily and peak hour trip generation for the pending cumulative projects provided by City of San Jose staff.

The location of the pending cumulative projects is shown on Exhibit 4-5.

Approved cumulative projects traffic volumes are shown on Exhibit 4-7.

Approved and pending cumulative projects calculations are contained in Appendix E.

4.3 Background Conditions Traffic Volumes

Background Conditions traffic volumes consist of the summation of the existing traffic volumes shown on Exhibit 3-2 and the approved cumulative projects traffic volumes shown on Exhibit 4-6.

Background Conditions traffic volumes are shown on Exhibit 4-8.

4.4 Project Conditions Traffic Volumes

Project Conditions traffic volumes consists of the summation of the existing traffic volumes shown on Exhibit 3-2, the approved cumulative projects traffic volumes shown on Exhibit 4-6, and the project traffic volumes shown on Exhibit 4-4.

Project Conditions traffic volumes are shown on Exhibit 4-9.

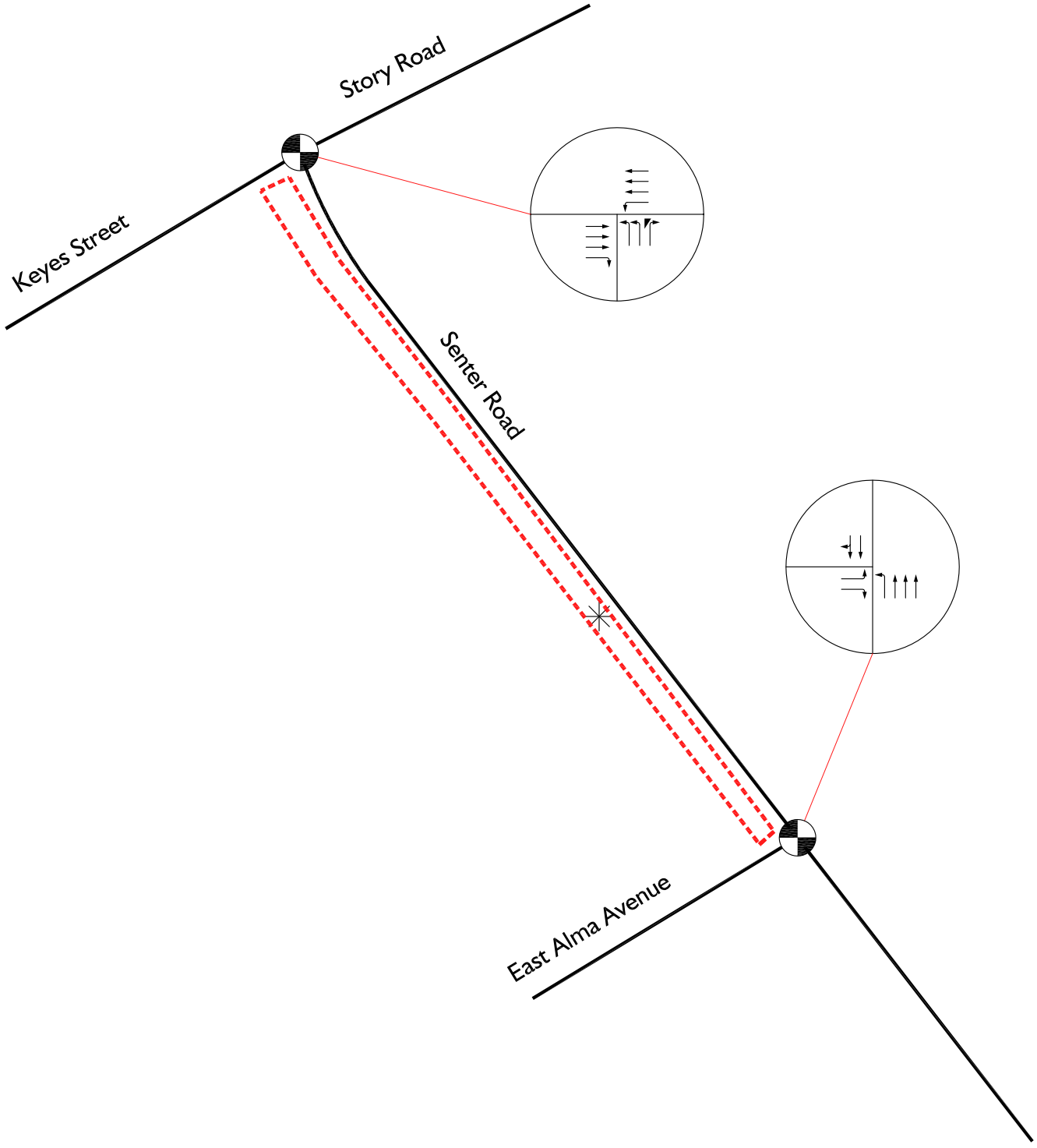
4.5 Cumulative Conditions Traffic Volumes

Cumulative Conditions traffic volumes consists of the summation of the existing traffic volumes shown on Exhibit 3-2, the approved cumulative projects traffic volumes shown on Exhibit 4-6, the pending cumulative projects traffic volumes shown on Exhibit 4-7, and the project traffic volumes shown on Exhibit 4-4.

Cumulative Conditions traffic volumes are shown on Exhibit 4-10.

Exhibit 4-1

Proposed Road Diet Lane Geometry and Traffic Controls



Legend:

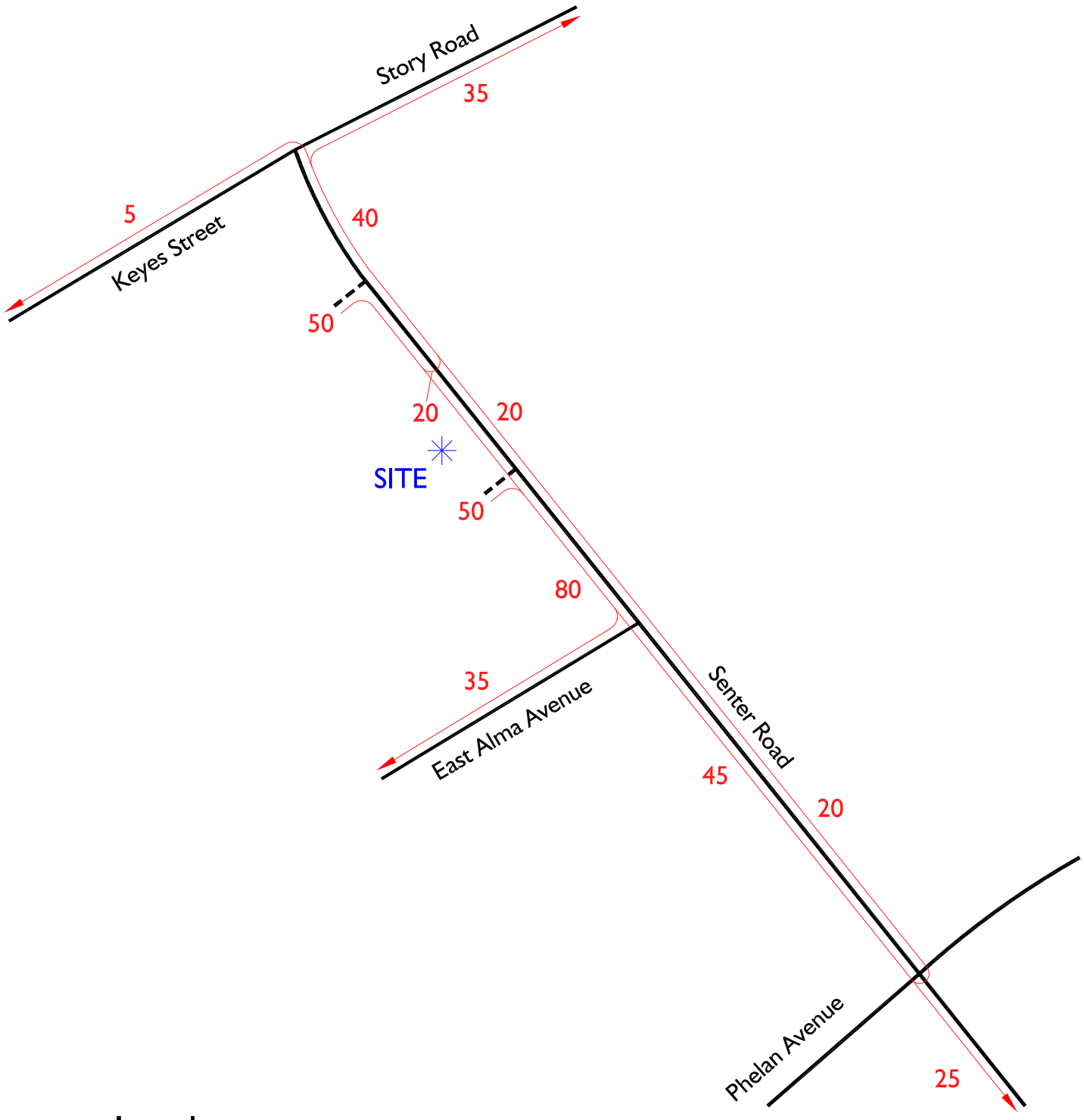
= Traffic Signal

= Channelized Right Turn

N

Exhibit 4-2

Outbound Project Trip Distribution



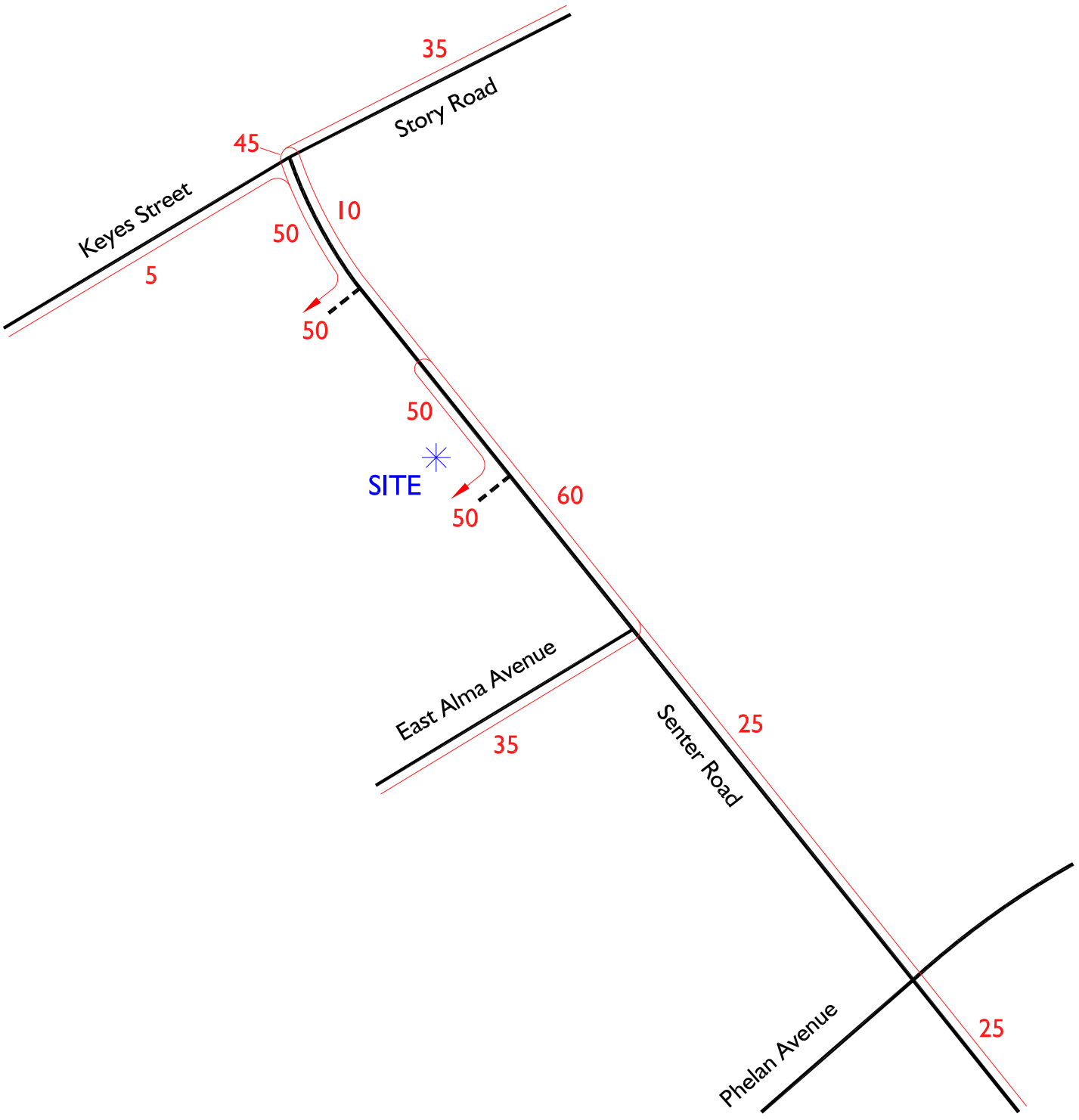
Legend:

25 = Percent from Project

N

Exhibit 4-3

Inbound Project Trip Distribution



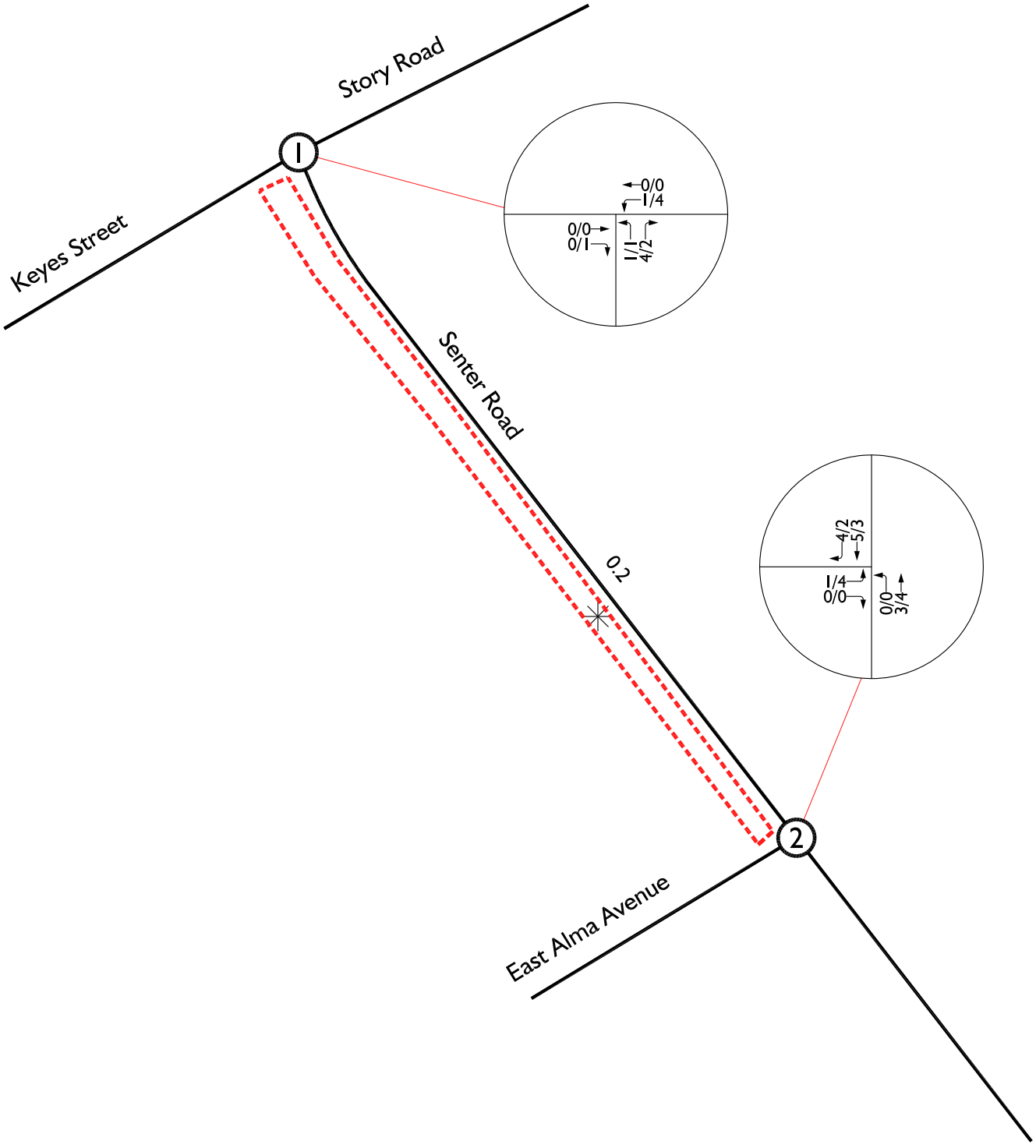
Legend:

25 = Percent to Project

N

Exhibit 4-4

Project Traffic Volumes



Legend:

10/20 = AM/PM Peak Hour Volumes
10.0 = Two-Way Average Daily Traffic (1,000's)

N

Exhibit 4-5

Cumulative Projects Location Map

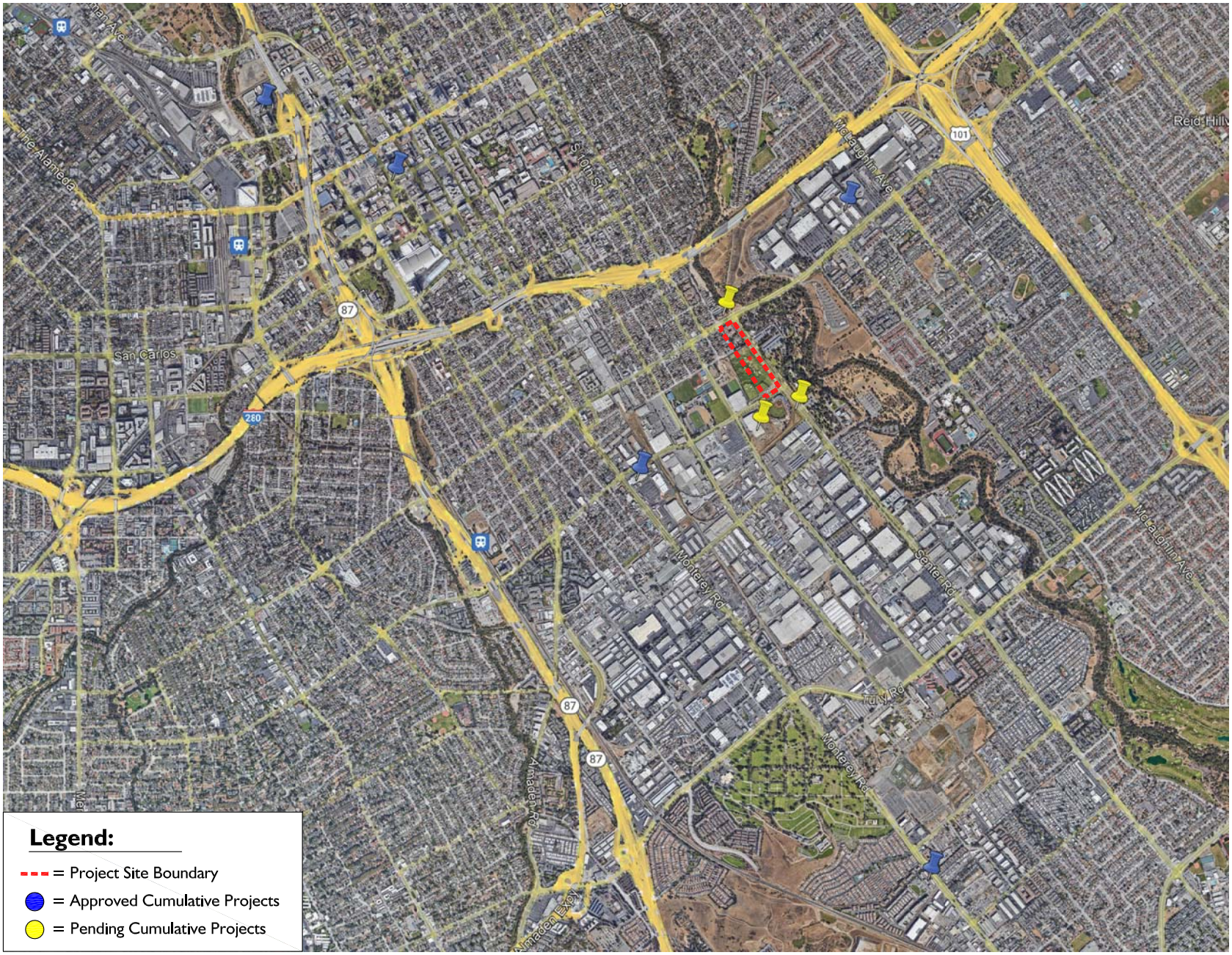
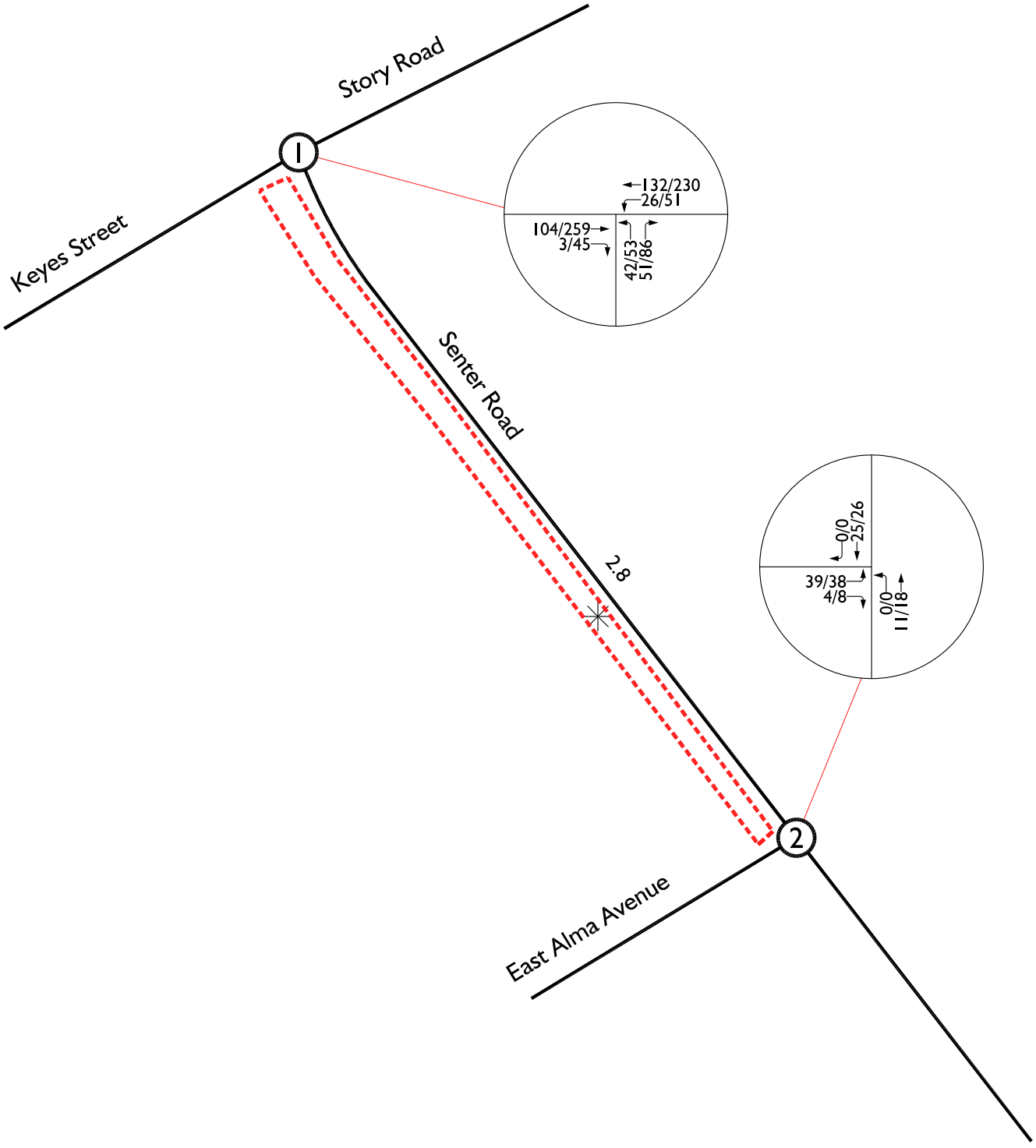


Exhibit 4-6

Approved Cumulative Projects Traffic Volumes



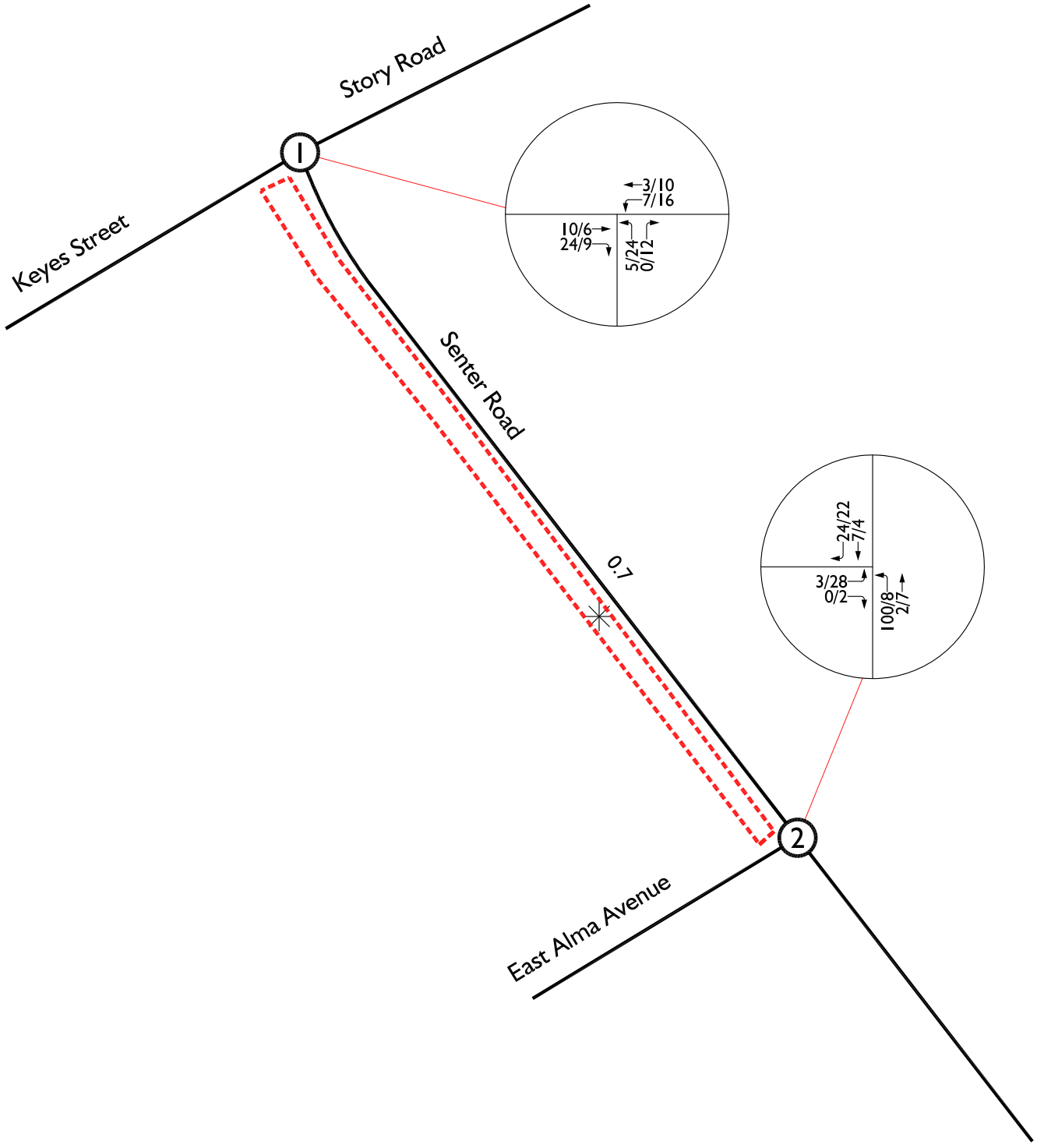
Legend:

10/20 = AM/PM Peak Hour Volumes
10.0 = Two-Way Average Daily Traffic (1,000's)

N

Exhibit 4-7

Pending Cumulative Projects Traffic Volumes



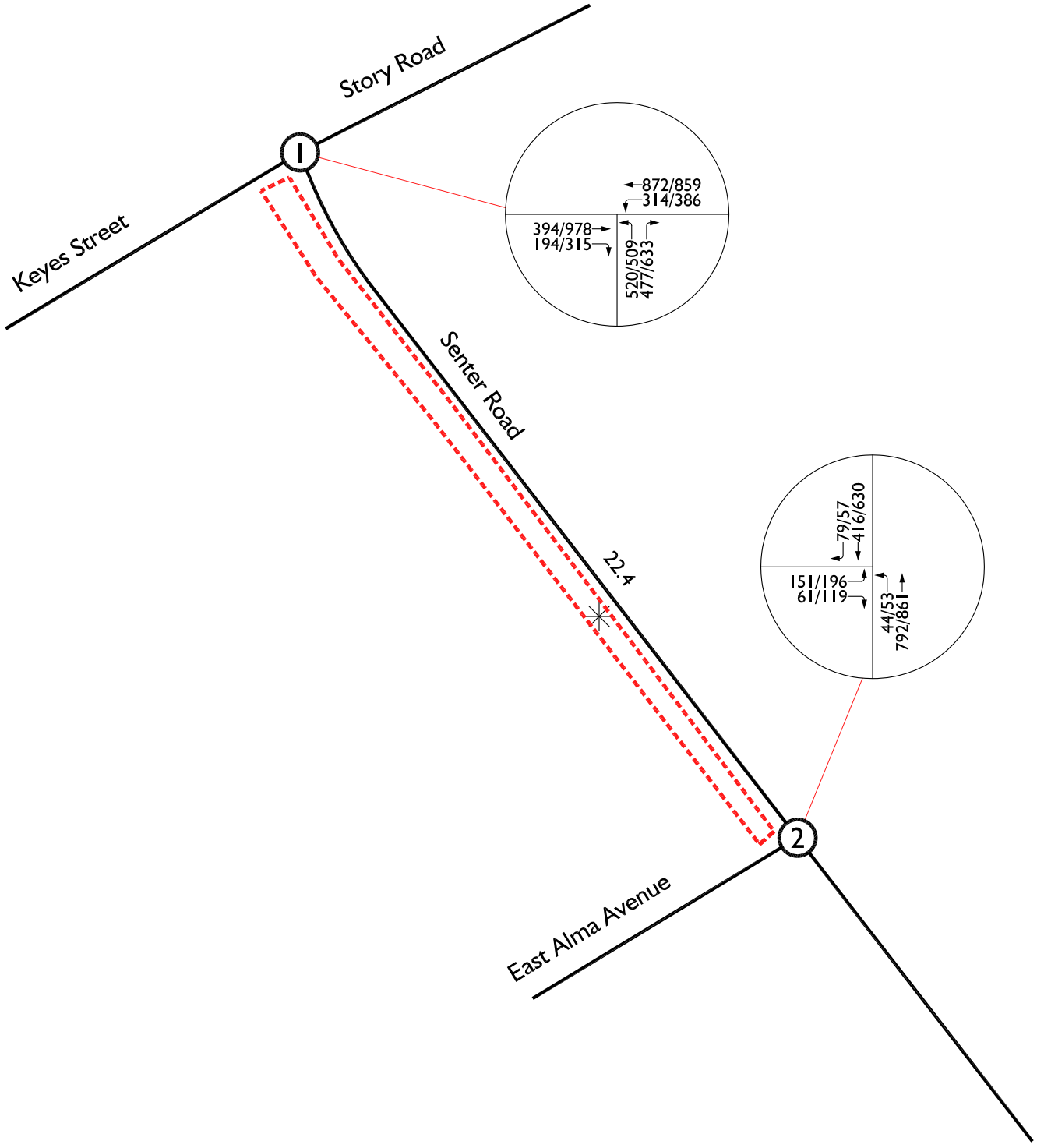
Legend:

10/20 = AM/PM Peak Hour Volumes
10.0 = Two-Way Average Daily Traffic (1,000's)

N

Exhibit 4-8

Background Conditions Traffic Volumes



Legend:

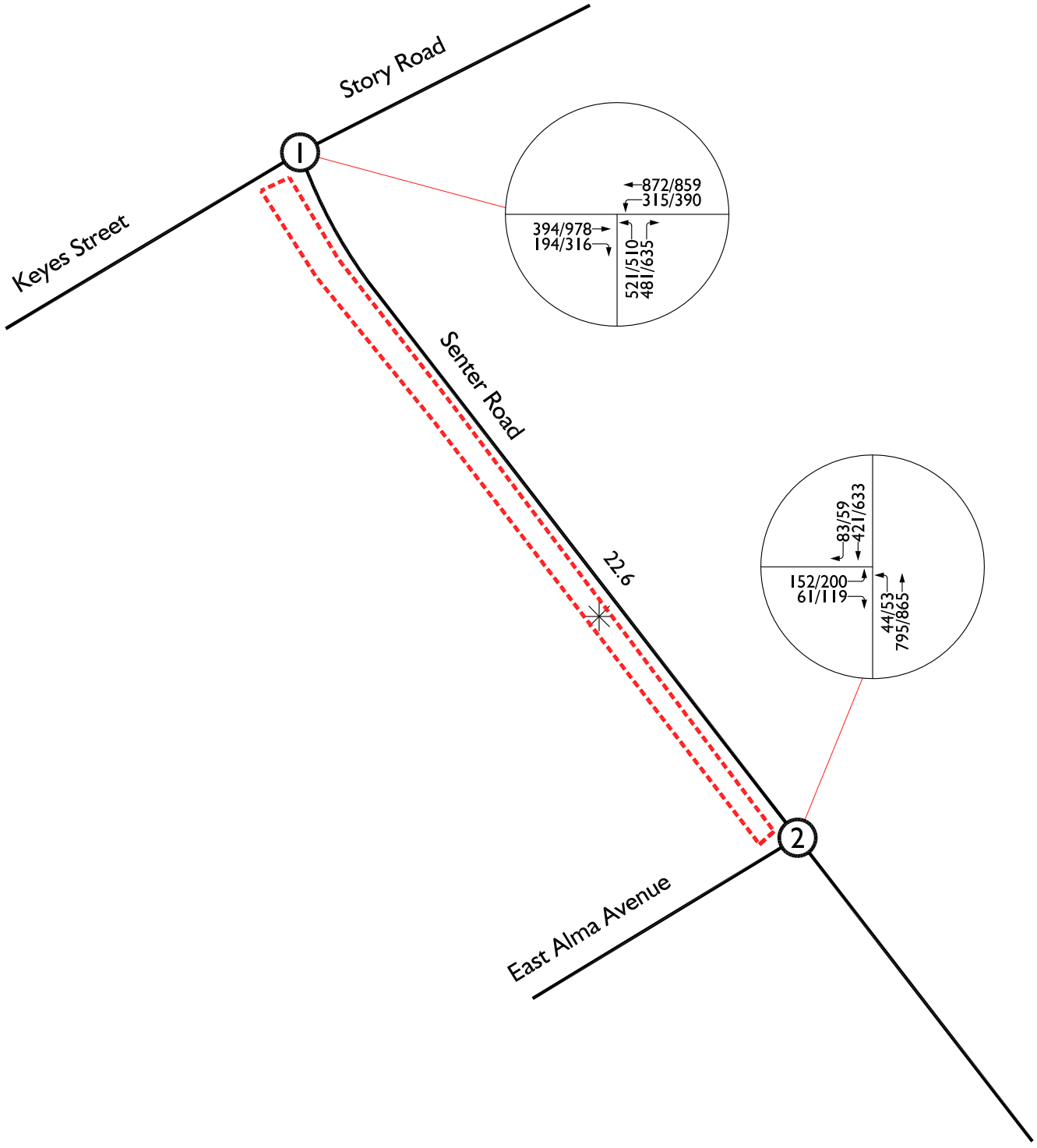
10/20 = AM/PM Peak Hour Volumes

10.0 = Two-Way Average Daily Traffic (1,000's)

N

Exhibit 4-9

Project Conditions Traffic Volumes



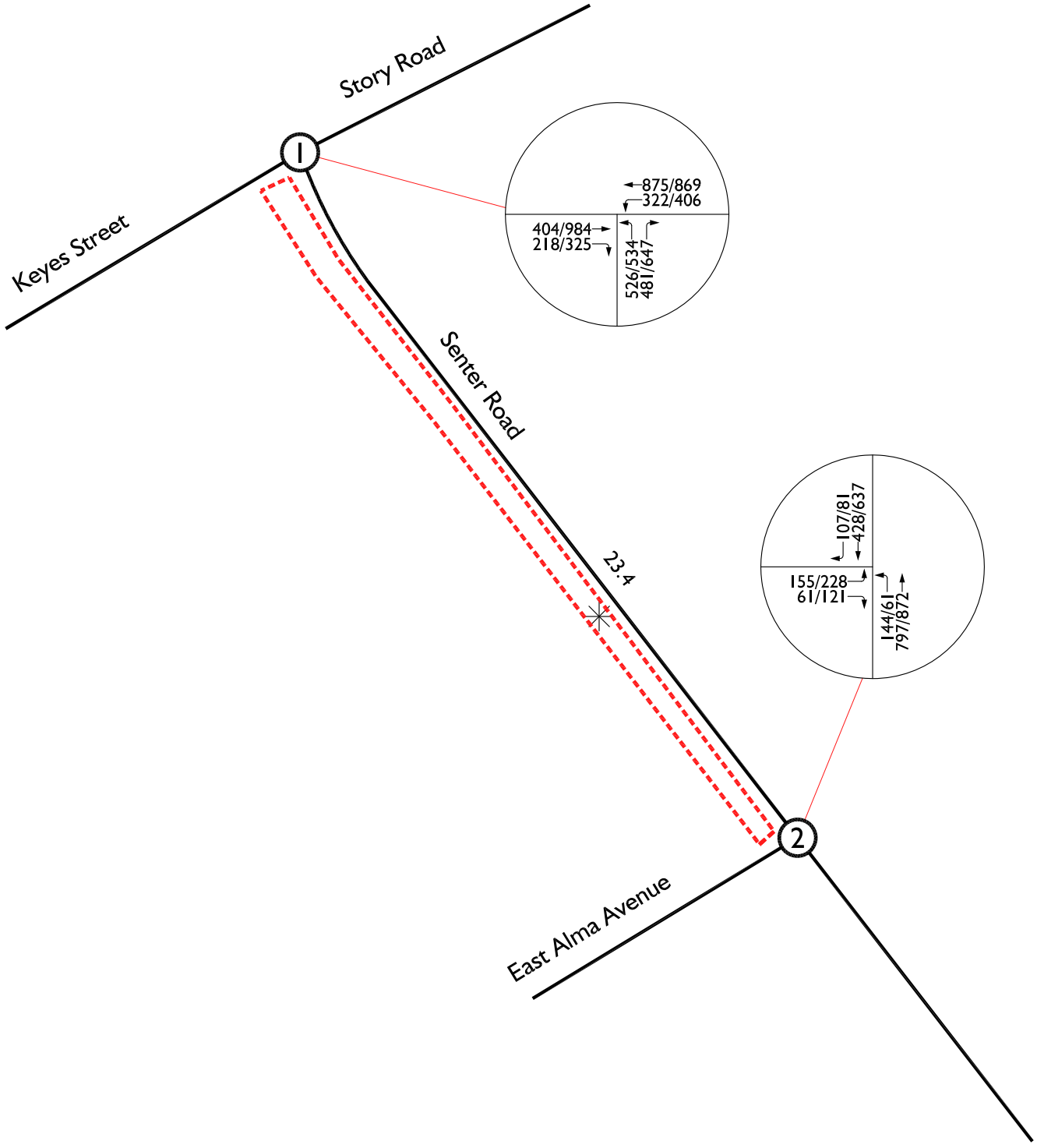
Legend:

10/20 = AM/PM Peak Hour Volumes
10.0 = Two-Way Average Daily Traffic (1,000's)

N

Exhibit 4-10

Cumulative Conditions Traffic Volumes



Legend:

10/20 = AM/PM Peak Hour Volumes

10.0 = Two-Way Average Daily Traffic (1,000's)

N

Table 4-1
ITE Trip Generation Rates[1]

Land Use	ITE Code	Units[2]	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Single Family Residential	210	DU	0.19	0.56	0.74	0.62	0.37	0.99	9.44
Multi-family Residential (Mid-Rise)	221	DU	0.09	0.27	0.36	0.27	0.17	0.44	5.44

[1] Source: *2017 ITE Trip Generation Manual (10th Edition)*

[2] DU = Dwelling Units

Table 4-2
Project Trip Generation[1]

Land Use (ITE Code)	Units[2]	Quantity	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Single Family Residential (210)	DU	2	0	1	1	1	1	2	19
Multi-family Residential (Mid-Rise) (221)	DU	42	4	11	15	11	7	18	228
Total			**4**	**12**	**16**	**12**	**8**	**20**	**247**
Modal Adjustment (87% Vehicular Traffic)[3]			*-1*	*-1*	*-2*	*-2*	*-1*	*-3*	*-32*
Total After Modal Adjustment			**3**	**11**	**14**	**10**	**7**	**17**	**215**
Average Trips Per Driveway[4]			**0.13**	**0.46**	**0.59**	**0.42**	**0.29**	**0.71**	**8.96**

[1] Source: *2017 ITE Trip Generation Manual (10th Edition)*

[2] DU = Dwelling Units

[3] Based on recommended adjustment factors contained in *City of San Jose Transportation Analysis Handbook (April 2020)* for uses located within Urban Low-Transit areas

[4] Assumes a total of 24 driveways

Table 4-3
Pending Cumulative Projects Trip Generation[1]

ID No.	Jurisdiction	Project Name / Case Number	Land Use	ITE Code	Quantity	Units[2]	Peak Hour						Daily
							AM			PM			
							In	Out	Total	In	Out	Total	
1	**City of San Jose**	H21-002, 3-25821	Multi-family Residential (Low-Rise)	220	78	DU	8	28	36	28	16	44	571
2	**City of San Jose**	3-07516	Fire Department Training Center[3]	--	--	--	140	0	140	0	140	140	280
3	**City of San Jose**	3-04344, CP19-024	Ice Skating Rink[4]	--	--	--	N/A	N/A	N/A	322	91	413	3,783
Total Pending Cumulative Projects Trip Generation							**148**	**28**	**176**	**350**	**247**	**597**	**4,634**

[1] Cumulative Projects information provided by the City of San Jose

[2] DU = Dwelling Units

[3] Source: *City of San Jose Fire Training and Emergency Operation Center Relocation Project Local Transportation Analysis (LSA) (September 2020)*

[4] Source: *Solar4America Ice Expansion Traffic Impact Analysis (Hexagon Transportation Consultants, Inc.) (November 12, 2029)*

5.0 Senter Road Proposed Road Diet

This section of the report provides a discussion on the proposed road diet lane reduction on Senter Road.

The proposed project is expected to implement a road diet lane reduction along the southbound direction of travel on Senter Road between Keyes Street/Story Road and Alma Avenue. The southbound direction of travel along this segment will be reduced from the existing three (3) lanes to two (2) lanes.

It should be noted that the northbound direction of travel on Senter Road will not change. Hence, Senter Road between Keyes Street/Story Road and Alma Avenue will be reduced from a total of six (6) lanes to five (5) lanes for both approaches combined.

Exhibit 5-1 shows the proposed road diet provided by City of San Jose staff for the lane reduction along the southbound direction of travel on Senter Road.

Benefits of Road Diet

The proposed road diet on Senter Road may result in the following benefits for the proposed project driveway operations:

- The on-street buffer lane may facilitate vehicle backing maneuvers at the residential project driveways.

- Reduction in traffic collisions near the project driveways due to the proposed buffer/parking lane.

- Lane weaving and speeding reductions for vehicles traveling southbound on Senter Road will allow vehicles to make a right-turn out of the project driveway onto Senter Road more easily and safely.

Conflicts of Road Diet

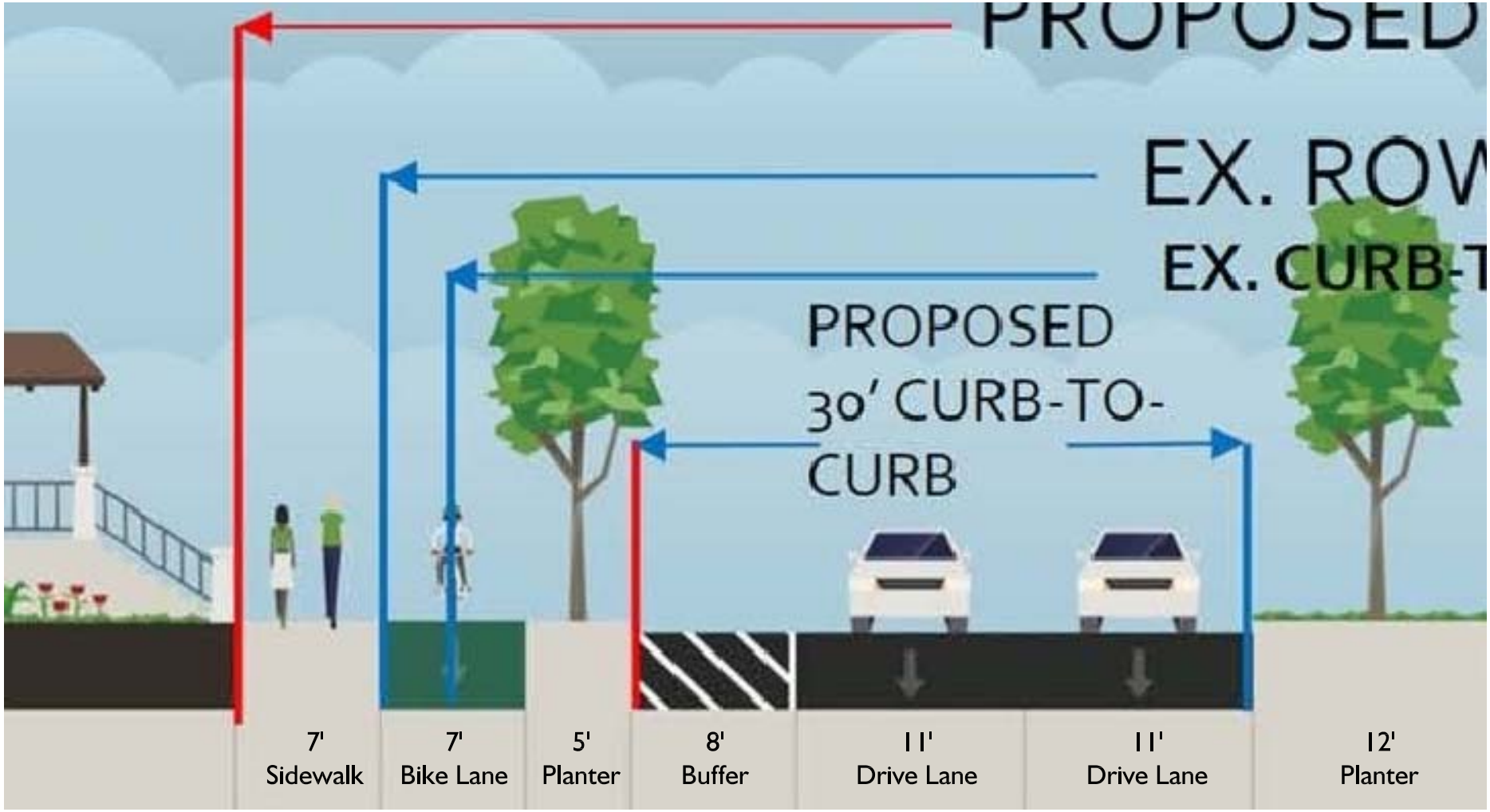
The proposed road diet on Senter Road may result in the following conflicts for the proposed project driveway operations:

- Greater vehicle delay for outbound vehicles making a right-turn out of the project driveway onto Senter Road due to the southbound roadway capacity reduction.

- Sight distance issue due to the nearest travel lane being farther away from the project frontage, and the extra buffer created by the proposed sidewalk, bike lane, planter, and buffer lane.

Exhibit 5-1

Senter Road Proposed Road Diet



6.0 Study Intersection Peak Hour LOS Analysis

This section of the report provides a discussion on the study intersection peak hour level of service (LOS) analysis and findings.

6.1 Existing Conditions LOS

Existing Conditions LOS calculations for the study intersections are shown in Table 6-1 and are based upon the existing traffic volumes shown on Exhibit 3-2, and the existing geometry shown on Exhibit 3-1.

As shown in Table 6-1, all study intersections are currently operating at an acceptable LOS (LOS D or better) during the peak hours for Existing Conditions.

Detailed LOS analysis worksheets for Existing Conditions are contained in Appendix F.

6.2 Background Conditions LOS

Background Conditions LOS calculations for the study intersections are shown in Table 6-2 and are based upon the Background Conditions traffic volumes shown on Exhibit 4-8, and the existing geometry shown on Exhibit 3-1.

As shown in Table 6-2, all study intersections are forecast to continue to operate at an acceptable LOS (LOS D or better) during the peak hours for Background Conditions.

Detailed LOS analysis worksheets for Background Conditions are contained in Appendix G.

6.3 Project Conditions LOS

Project Conditions LOS calculations for the study intersections are shown in Table 6-3 and are based upon the Project Conditions traffic volumes shown on Exhibit 4-9, and the proposed geometry shown on Exhibit 4-1 (i.e. with the Senter Road proposed road diet).

As shown in Table 6-3, all study intersections are forecast to continue to operate at an acceptable LOS (LOS D or better) during the peak hours for Project Conditions.

As also shown in Table 6-3, based on the agency-established LOS performance thresholds, the proposed project is forecast to not be required to contribute to LOS improvements at the study intersections for Project Conditions.

Detailed LOS analysis worksheets for Project Conditions are contained in Appendix H.

6.4 Cumulative Conditions LOS

Cumulative Conditions LOS calculations for the study intersections are shown in Table 6-4 and are based upon the Cumulative Conditions traffic volumes shown on Exhibit 4-10, and the proposed geometry shown on Exhibit 4-1 (i.e. with the Senter Road proposed road diet).

As shown in Table 6-4, all study intersections are forecast to continue to operate at an acceptable LOS (LOS D or better) during the peak hours for Cumulative Conditions.

Detailed LOS analysis worksheets for Cumulative Conditions are contained in Appendix I.

Table 6-1
Study Intersection LOS Analysis Summary
Existing Conditions

Intersection	Traffic Control[3]	Methodolgy	Delay (Secs)[1,2]		Level of Service	
			AM	PM	AM	PM
1. Senter Road (NS) / Keyes Street - Story Road (EW)	TS	HCM	15.9	24.4	B	C
2. Senter Road (NS) / Alma Avenue (EW)	TS	HCM	7.1	8.4	A	A

[1] Deficient operation shown in **Bold**.

[2] HCM Analysis Software: Synchro, Version 10.0. Per the Highway Capacity Manual 6th Edition (HCM 6), overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal

Table 6-2
Study Intersection LOS Analysis Summary
Background Conditions

Intersection	Traffic Control[3]	Methodolgy	Delay (Secs)[1,2]		Level of Service	
			AM	PM	AM	PM
1. Senter Road (NS) / Keyes Street - Story Road (EW)	TS	HCM	16.8	25.7	B	C
2. Senter Road (NS) / Alma Avenue (EW)	TS	HCM	7.7	8.9	A	A

[1] Deficient operation shown in **Bold**.

[2] HCM Analysis Software: Synchro, Version 10.0. Per the Highway Capacity Manual 6th Edition (HCM 6), overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal

Table 6-3
Study Intersection LOS Analysis Summary
Project Conditions

Intersection	Traffic Control[3]	Methodology	Background Conditions				Project Conditions							
			Delay (Secs)[1,2]		Level of Service		Delay (Secs)[1,2]		Increase in Delay (Secs)		Level of Service		Requires Improvement?	
			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1. Senter Road (NS) / Keyes Street - Story Road (EW)	TS	HCM	16.8	25.7	B	C	16.8	26.0	0.0	0.3	B	C	No	No
2. Senter Road (NS) / Alma Avenue (EW)	TS	HCM	7.7	8.9	A	A	7.9	9.5	0.2	0.6	A	A	No	No

[1] Deficient operation shown in **Bold**.

[2] HCM Analysis Software: Synchro, Version 10.0. Per the Highway Capacity Manual 6th Edition (HCM 6), overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal

Table 6-4
Study Intersection LOS Analysis Summary
Cumulative Conditions

Intersection	Traffic Control[3]	Methodolgy	Delay (Secs)[1,2]		Level of Service	
			AM	PM	AM	PM
1. Senter Road (NS) / Keyes Street - Story Road (EW)	TS	HCM	17.4	27.3	B	C
2. Senter Road (NS) / Alma Avenue (EW)	TS	HCM	9.8	10.3	A	B

[1] Deficient operation shown in **Bold**.

[2] HCM Analysis Software: Synchro, Version 10.0. Per the Highway Capacity Manual 6th Edition (HCM 6), overall average intersection delay and level of service are shown for intersections with traffic signal or all-way stop control. For intersections with cross-street stop control, the delay and level of service for the worst movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal

7.0 Study Roadway Segment LOS Analysis

This section of the report provides a discussion on the study roadway segment level of service (LOS) analysis and findings.

Table 7-1 summarizes the study roadway segment LOS analysis results for the following study roadway segment:

- Senter Road – Keyes Street/Story Road to Alma Avenue.

As shown in Table 7-1, the study roadway segment is currently operating at an acceptable LOS (LOS D or better) and is forecast to continue to operate at an acceptable LOS for all analysis scenarios evaluated.

It should be noted that due to the proposed road diet lane reduction along the southbound direction of travel on Senter Road to be implemented by the proposed project, the roadway segment LOS analysis for the following analysis scenarios assumes a total of five (5) lanes on Senter Road for both approaches combined (i.e. 2 southbound lanes, 3 northbound lanes):

- Project Conditions (*Existing Plus Approved Projects Plus Project*); and

- Cumulative Conditions (*Existing Plus Approved Projects Plus Pending Project Plus Project*).

Table 7-1
Study Roadway Segment LOS Analysis Summary

Existing Conditions & Background Conditions

Roadway Segment	General Plan		No. of Lanes		Daily Capacity		Daily Traffic Volume[3]			V/C Ratio[1]		Level of Service	
	Classification	LOS E Capacity[2]	Existing Conditions	Background Conditions	Existing Conditions	Background Conditions	Existing Conditions	Approved Cumulative Projects ADT Assignment	Background Conditions	Existing Conditions	Background Conditions	Existing Conditions	Background Conditions
1. **Senter Road** Keyes Street - Story Road to Alma Avenue	City Connector Street (6 Lanes)	50,700	6	6	50,700	50,700	19,588	2,820	22,408	0.39	0.44	A	A

Project Conditions & Cumulative Conditions

Roadway Segment	General Plan		No. of Lanes[4]		Daily Capacity		Daily Traffic Volume[3]			V/C Ratio[1]		Level of Service	
	Classification	LOS E Capacity[2]	Project Conditions	Cumulative Conditions	Project Conditions	Cumulative Conditions	Project Conditions	Pending Cumulative Projects ADT Assignment	Cumulative Conditions	Project Conditions	Cumulative Conditions	Project Conditions	Cumulative Conditions
1. **Senter Road** Keyes Street - Story Road to Alma Avenue	City Connector Street (6 Lanes)	50,700	5	5	42,250	42,250	22,623	732	23,355	0.54	0.55	A	A

[1] Deficient operation shown in **Bold**.

[2] Based on the *Highway Capacity Manual, 6th Edition* (HCM 6) Exhibit 16-16, the LOS E capacity threshold for maximum two-way average daily traffic (ADT) on a 6-lane roadway is 50,700 vehicles.

[3] Approved and Pending Cumulative Projects ADT assignment is based on the corresponding cumulative projects peak hour intersection volumes multiplied by a factor of 12.

[4] Assumes the implementation of the proposed road diet lane reduction along the southbound direction of travel on Senter Road from three (3) lanes to two (2) lanes (Total of five (5) lanes for both approaches combined).

8.0 Left-Turn Pocket Queue Analysis

An analysis of the lane storage capacity has been performed to determine if adequate queue storage is currently provided to accommodate the left-turn vehicular queues for the following movements during the peak hours for all analysis scenarios evaluated as part of this study:

- Int 1: Senter Road / Keyes Street-Story Road
    - Northbound Left-Turn
    - Westbound Left-Turn
- Int 2: Senter Road / Alma Avenue
    - Northbound Left-Turn
    - Eastbound Left-Turn

The analysis utilizes the Highway Capacity Manual 6th Edition (HCM 6) 95th percentile vehicular queue methodology and the Synchro analysis software.

Table 8-1 shows the results of the left-turn queue analysis.

As shown in Table 8-1, the Senter Road / Keyes Street-Story Road intersection does not currently provide adequate queue storage for the westbound left-turn movement in all analysis scenarios for the PM peak hour. As such, the deficient queueing is not a result of the implementation of the project as it is already deficient in the Existing Conditions scenario. Furthermore, the increase in the forecasted vehicular queue for the westbound left-turn movement as a direct result from the project can be considered nominal.

Table 8-1
HCM 95th Percentile Vehicular Queue Analysis Summary

Intersection	Movement[1]	No. of Lanes	Storage Capacity per Lane (ft)[2]	Existing Conditions				Background Conditions				Project Conditions				Cumulative Conditions			
				Vehicular Queue (ft)[3]		Adequate Queue Storage Available?		Vehicular Queue (ft)[3]		Adequate Queue Storage Available?		Vehicular Queue (ft)[3]		Adequate Queue Storage Available?		Vehicular Queue (ft)[3]		Adequate Queue Storage Available?	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1. Senter Road (NS) / Keyes Street - Story Road (EW)	NB Left-Turn	2	720	102	122	YES	YES	118	160	YES	YES	118	161	YES	YES	120	169	YES	YES
	WB Left-Turn	1	290	207	**313**	YES	**NO**	246	**345**	YES	**NO**	247	**349**	YES	**NO**	255	**368**	YES	**NO**
2. Senter Road (NS) / Alma Avenue (EW)	NB Left-Turn	1	155	38	47	YES	YES	40	49	YES	YES	40	49	YES	YES	95	55	YES	YES
	EB Left-Turn	1	1,140	73	101	YES	YES	94	122	YES	YES	94	125	YES	YES	95	141	YES	YES

[1] NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound.
[2] Through lane storage capacity is measured as distance to the next intersection.
[3] Queue reported is the 95th percentile queue per lane.

9.0 CEQA Vehicle Miles Traveled (VMT) Analysis

In response to Senate Bill (SB) 743, the California Natural Resource Agency certified and adopted new CEQA Guidelines in December 2018 which now identify Vehicle Miles Traveled (VMT) as the most appropriate metric to evaluate a project's transportation impact under CEQA (§ 15064.3).

Effective July 1, 2020, the previous CEQA metric of LOS, typically measured in terms of automobile delay, roadway capacity and congestion, generally will no longer constitute a significant environmental impact. However, SB 743 does not prevent a city or county from continuing to analyze delay or LOS as part of other plans (i.e. general plans), studies, or ongoing network monitoring.

The *City of San Jose's Transportation Analysis Policy, Council Policy 5-1*, was established to align with the SB 743 to create a threshold for transportation impacts under CEQA based on Vehicle Miles Traveled. However, screening thresholds may quickly identify whether or not a project should be expected to have a less-than-significant VMT impact based on project description, characteristics, and/or location.

The following six (6) types of projects are projects that the City of San Jose City Council have found that would further City goals and policies and would not result in significant transportation impacts:

- Small Infill Projects of 25 Multi-Family Residential Housing Units or Less;
- Local-Serving Retail;
- Local-Serving Public Facilities;
- Transit Supportive Projects in Planned Growth Areas with Low VMT and High-Quality Transit;
- Restricted Affordable, Transit Supportive Residential Projects in Planned Growth Areas with High Quality Transit; and
- Transportation Projects that reduce or do not increase VMT.

This project does not meet the project type screening criteria of any of the six (6) types of projects. Thus, per the *Council Policy 5-1*, the project is required to determine whether the VMT produced by the project meets or exceeds the thresholds of significance, which vary based on project type.

This project is characterized as a residential use type project and therefore would require mitigation measures if the VMT per resident is greater than the more stringent of the following thresholds:

- 15% below the Citywide VMT per resident; or
- 15% below regional VMT per resident.

For the City of San Jose, the threshold of significance for a residential use type project is 10.12 VMT per capita. Based on the City of San Jose's VMT Evaluation Tool, the project was determined to have an existing residential area VMT per capita of 7.84, which is more than 15% below the Citywide VMT per resident.

As a result, the project may be presumed to have a less-than significant VMT impact under CEQA.

The City of San Jose VMT Evaluation Tool Summary Report is contained in Appendix J.

10.0 Qualitative Analysis

This section provides a qualitative analysis and discussion of other related aspects of the project as requested by the City of San Jose.

10.1 Neighborhood Interface

The Senter Road at Keyes Street/Story Road intersection provides pedestrian crosswalks on the east leg of Story Road and the south leg of Senter Road. The northbound Senter Road approach also features a channelized right-turn island which enhances pedestrian safety while crossing. Striped bike lanes are present along both sides of Senter Road and both sides of Keyes Street/Story Road. The bike lanes stop prior to the dedicated right-turn lanes on the northbound and eastbound approaches; however, bike lanes continue along the south side of Story Road east of the intersection.

The Senter Road at Alma Avenue intersection provides crosswalks on all three (3) legs. Striped bike lanes are present along both sides of Senter Road, but there are no existing bike lanes on Alma Avenue.

The street segment between the two (2) study intersections includes an existing sidewalk on the east side of Senter Road, but no sidewalk is present on the west side of the street. There are Class II bike lanes along both sides of Senter Road for the entirety of the segment.

10.1.1 Speed Survey Observations

The posted speed limit on Senter Road in the project site vicinity is 40 miles per hour.

Based on speed survey observations conducted in November 2021 during typical weekday off-peak (free-flow) conditions, the 85th percentile speeds along Senter Road in the project vicinity are as follows:

- Northbound Senter Road: 44 miles per hour
- Southbound Senter Road: 44 miles per hour

- Both Approaches Combined: 44 miles per hour

The 10-mile per hour pace speeds along Senter Road are as follows:

- Northbound Senter Road: 33-42 miles per hour
- Southbound Senter Road: 33-42 miles per hour
- Both Approaches Combined: 33-42 miles per hour

The travel speeds range from 29 to 49 miles per hour.

The existing speed survey data along Senter Road is included along with the traffic count worksheets in Appendix C.

Based on the speed survey results, speeding is not expected to be a concern for neighborhood residents as a majority of drivers are not driving significantly above the speed limit.

10.2 Pedestrian and Bicycle Facilities

Sidewalks are present on the east side of Senter Road. However, the west side of the street does not include any sidewalks, which limits pedestrian access.

The proposed project will implement a sidewalk along the project site frontage (west side of Senter Road). The proposed sidewalk will allow pedestrians safe access along the west side of Senter Road. Furthermore, the proposed sidewalk conforms to *San Jose's Vision Zero Initiative* because the buffer and tree planter would create a physical barrier with a safe distance from traveling vehicles.

There are no missing ADA ramps within 0.5 mile radius of the project. Thus, the project is not required to install or modify ADA ramps within the project's sphere.

There are existing striped Class II Bike Lanes on both sides of Senter Road which include buffer striping. There are also physical delineators on the outside of the bike lanes along the entire west side and partially on the east side of the segment, which enhance bicycle safety.

Under improvements of the proposed project, the Class II Bike Lane at the project site frontage (west side of Senter Road) will become a Class IV Bike Lane. The proposed improvements feature a raised off-street bike path, pedestrian sidewalk, tree planter, and on-street buffer lane for residential driveway and vehicle backing maneuvers. These proposed changes are in conformance with the *San Jose Better Bike Plan 2025*, which has a major goal of implementing Class IV Bike Lanes throughout San Jose.

The raised off-street bike path enhances the safety of bicyclists since there is more separation between the nearest vehicular travel lane and bike lane. This feature prevents drivers from intruding into the bike lane, which also makes the bicyclists feel safer as they ride along a major street. Additionally, the tree planter also serves as a physical barrier between bicyclist and vehicle, allowing some extra buffer space. These improvements will greatly enhance bicycle safety, which in effect will further encourage and incentivize bike use over other modes of transportation.

10.2.1 Bike Share and Bike Parking Facilities

According to *the San Jose Better Bike Plan 2025*, 3,450 bicycle parking spaces and 20 bicycle lockets have been installed in San Jose as of 2020.

Furthermore, 82 bike-share stations, 1,000 bike-share bikes, 750 dock-less e-bikes, and 5 scooter companies with 5,600 total bicycles are currently available for San Jose residents to use. Bay Wheels is the Bay Area's bike share system with thousands of public bikes for use across San Jose, East Bay, and San Francisco.

10.3 Local Transit and Access

Three (3) bus stops for the Valley Transportation Authority (VTA)'s Bus Route 73, which serves Downtown San Jose, are located in the project site vicinity. Two (2) of the bus stops are located on the east side of Senter Road across from the project site while the third bus stop is located on the west side of Senter Road just south of Alma Avenue. Bus Route 73 would allow residents of the project access to two (2) light rail stations since Route 73 has an existing stop located between the Saint James Light Rail Station and Santa Clara Light Rail Station.

Saint James Light Rail Station is located on North First Street between East St. James Street and East St. John Street, and the Santa Clara Light Rail Station is located on the southeast corner of the Santa Clara Street / First Street intersection. The Saint James Station and

Santa Clara Station are connected via a pedestrian paseo called Fountain Alley and are of walkable distance from each other. The Paseo de San Antonio Light Rail Station is another station located approximately 1.3 miles from the project site. The Paseo de San Antonio station has incoming bus arrivals at approximately every five (5) minutes, allowing users consistent ease of access throughout the day. All light rail stations are served by the VTA and are served by the Blue Line and Green Line. The Blue Line connects Baypointe and Santa Teresa while the Green Line connects Old Ironsides to Winchester.

One of the notable stops on the Green Line is at Diridon Station (65 Cahill Street), a major transportation hub that is served by Amtrak and commuter trains, local and regional bus lines, and light rail. The location of the project is ideal for the utilization of local transit due to its proximity to the Route 73 bus stops allowing more people access to public transit.

10.4 Sight Distance

An evaluation of the project access sight distance has been conducted for proposed conditions utilizing the *Caltrans Highway Design Manual* (HDM) sight distance requirements. Sight distance is the continuous length of highway ahead, visible to the highway user. Four types of sight distance are considered herein: passing, stopping, decision, and corner.

As previously stated, the posted speed limit on Senter Road in the project site vicinity is 40 miles per hour.

As mentioned in Section 10.1.1 of this report, the speed survey observations conclude that the 85th percentile speed along Senter Road is 44 miles per hour for the northbound approach, southbound approach, and the combination of both approaches.

The travel speeds range from 29 to 49 miles per hour.

Hence, this analysis assumes a roadway design speed of 50 miles per hour for Senter Road.

Based on the HDM:

- For the intersection of private roadways (such as the project driveway) and public roadways (Senter Road), stopping sight distance should be provided (Source: HDM Table 405.1B). Stopping sight distance is the minimum sight distance for a given design speed to be provided on multilane highways and on 2-lane roads when

passing sight distance is not obtainable. Stopping sight distance is also to be provided for all users, including motorists and bicyclists, at all elements of interchanges and intersections at grade, including private road connections.

- For roadways with the design speed of 50 miles per hour, the minimum required stopping sight distance is 430 feet (Source: HDM Table 201.1).

Senter Road in the project site vicinity generally follows a straight horizontal alignment with no significant vertical curves. Based on RK's field review of the existing sight distance in October 2021, a clear line of sight is currently provided along the southbound approach of Senter Road at the project site frontage.

Exhibits 10-1, 10-2 and 10-3 show the sight distance evaluation at three (3) different project driveway locations allowing for the required 430 feet of sight distance. The sight distance analysis was conducted for the units located on the north end of the project site (Exhibit 10-1), near the middle area of the project site (Exhibit 10-2), and on the south end of the project site (Exhibit 10-3).

The hatched areas shown on Exhibits 10-1, 10-2 and 10-3 must be kept clear of visual obstructions such as monuments, heavy landscaping, large tree trunks, and any element that would create a visual obstruction.

Based on the exhibits, adequate sight distance of at least 430 feet can be accommodated.

10.5 Vehicle Turning Movements at Project Driveways

A vehicle turning movement evaluation has been performed for vehicles entering and exiting the proposed project driveways to ensure vehicles can enter Senter Road without having to backup or reverse into oncoming traffic on Senter Road from the residential driveways.

Exhibit 10-4 shows the turning maneuvers for vehicles entering and exiting a typical driveway designed for the project site based on information and a tuning movement analysis prepared by RJA (project engineer).

As shown on Exhibit 10-4, the vehicle turning movements allow outbound vehicles to turn around in order to enter the Senter Road headfirst, instead of backing into the public

roadway which can present operational issues and a higher probability of traffic collisions near the project driveways.

The vehicle movements described above can be accommodated in the project site.

The landscaping, sidewalk and off-street bike lane layout as proposed and shown on Exhibit 1-3 is considered a typical design and layout for a cross-section. Since the bike lanes are planned to be located off-street, adequate visibility should be provided so that vehicles entering and exiting the driveways and making turning maneuvers do not conflict with bicyclists and pedestrians on the project site frontage.

10.6 Truck Turning Movements

Typically, trash trucks and delivery/service vehicles would need to enter a residential or commercial site and be able to make the on-site turning maneuvers. In the case of the proposed project, due to the shape of the parcel and layout of the site, trash vehicles and delivery/service vehicles would not need to enter and maneuver within the site. Instead, such vehicles are planned to provide service to the residents of the project site via curb side along the west side of Senter Road.

10.7 Construction Operations

Since there are no existing sidewalks present along the project site frontage (west side of Senter Road), no sidewalks will be closed as a result of construction operations.

Construction operations may require closure of vehicular lanes and bike lanes on the west side of Senter Road.

It is recommended the project applicant prepare a Traffic Control Plan (TCP) for lane closures prior to initiating the project construction phase.

10.8 Other Field Observations

The following additional field observations were conducted during the field review performed by RK in October 2021.

10.8.1 Uneven Lane Usage

As observed during the field review, most vehicles attempting to make a northbound left-turn at the Senter Road at Keyes Street/Story Road intersection currently utilize the No. 2 (right-most) dedicated left-turn lane. During the peak hours, the No. 2 left-turn lane experiences approximately five (5) times, if not more than, the number of vehicles of the No. 1 (left-most) dedicated left-turn lane. This phenomenon is likely caused by the location of the I-280 Freeway ramps on 11th Street. It may be presumed that most vehicles attempting to make the above-mentioned northbound left-turn maneuver from the No. 2 left-turn lane will make a right-turn on 11th Street to connect to the I-280 Freeway.

10.8.2 Freeway Ramp Meter Queues

As part of the field review, RK observed the I-280 Freeway ramp meter queues at three (3) locations.

The first ramp meter serves the I-280 Freeway westbound on-ramp from 10th Street. During the peak hours, the vehicle queue at this location extends east past 10th Street and spills on the south leg of 11th Street with approximately four (4) vehicles queued on the south leg of 11th Street.

The second ramp meter serves the I-280 Freeway eastbound on-ramp from 7th Street. This eastbound on-ramp serves as the east leg of the 7th Street / Virginia St intersection. During the peak hours, this location does not experience a vehicular queue. It should be noted that this ramp meter was turned off during the peak hours during the time of the field observations. This may likely be due to the close proximity of the third ramp location on 11th Street.

The third ramp meter serves the I-280 Freeway eastbound on-ramp from 11th Street. During the peak hours, the vehicle queue at this location spills on the south leg of 11th Street with approximately six (6) vehicles.

Exhibit 10-1

Sight Distance Evaluation - Location 1

Legend:

= Limited Use Area

N

Exhibit 10-2

Sight Distance Evaluation - Location 2

Legend:

= Limited Use Area

N

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SAN JOSE SENTER ROAD RESIDENTIAL PROJECT, City of San Jose, CA

RK engineering group, inc.

Exhibit 10-3

Sight Distance Evaluation - Location 3

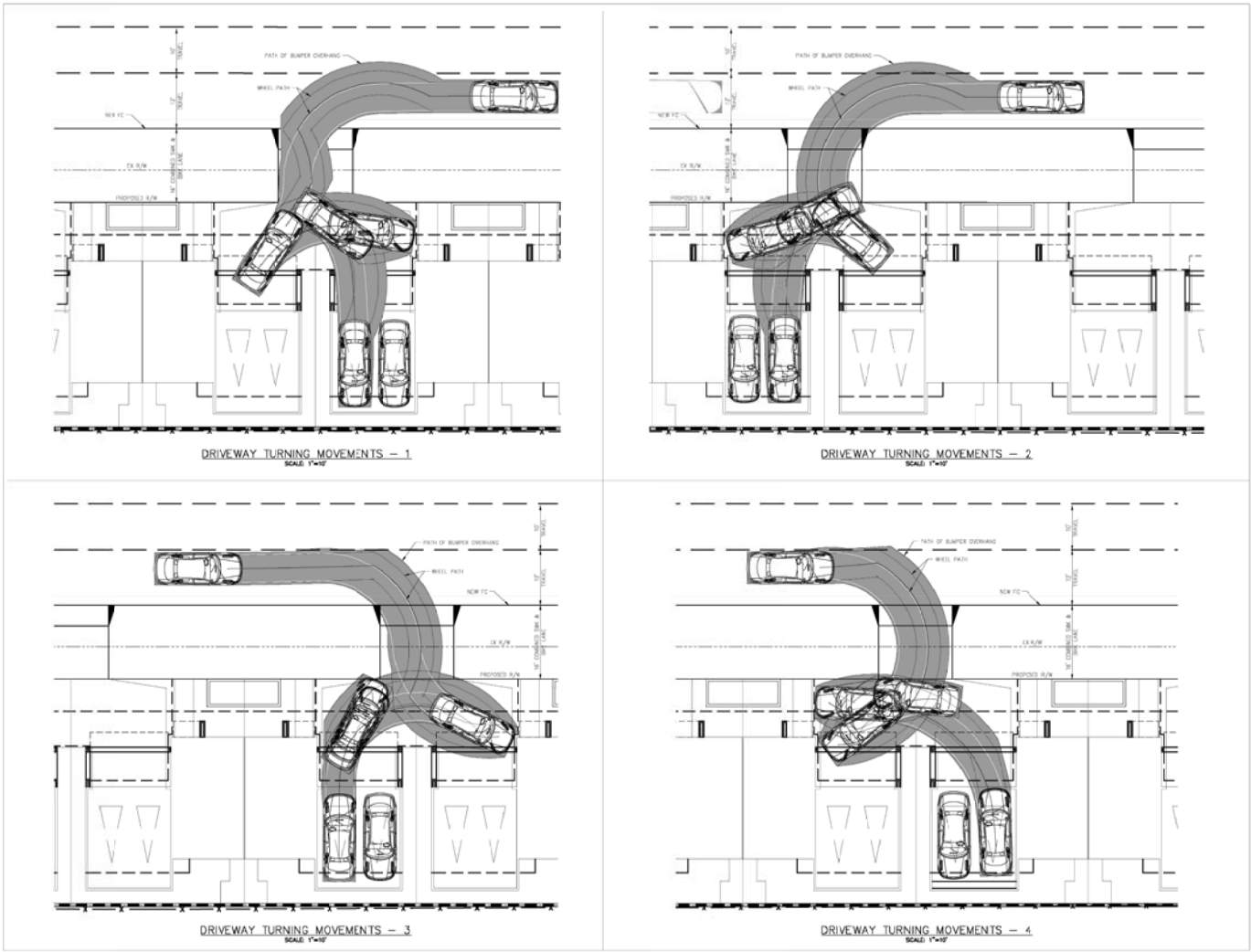
Legend:

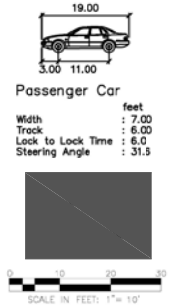
= Limited Use Area

N

Exhibit 10-4

Driveway Turning Template





AMG ASSOCIATES | SENTER ROAD, SAN JOSE, CA | SITE DEVELOPMENT PERMIT, OCTOBER 14, 2021 | Driveway Turning Movements | A8.0.0 | H21-014

Source: KTGY Architecture & Planning

11.0 Findings, Conclusions & Recommendations

The purpose of this traffic impact analysis is to evaluate the Senter Road Residential Project (herein referred to as project) from a traffic and circulation standpoint and determine whether the project will have a significant traffic impact.

This traffic study has been conducted pursuant to the *City of San Jose Transportation Analysis Handbook* (April 2020) and the California Environmental Quality Act (CEQA) requirements, and evaluated the potential traffic impacts associated with the proposed project in accordance with the thresholds of significance.

The study has been prepared per the scope of work approved by the City of San Jose staff, Ms. Christy Cheung.

RK has previously prepared a site access review for the proposed project (November 16, 2021) which includes a qualitative level of service analysis and other items as requested by the City of San Jose staff.

The currently vacant project site is located along the west side of Senter Road, between Keyes Street and Alma Avenue, in the City of San Jose.

The proposed project is planned to consist of the following land uses:

- 42 dwelling units of three-story multi-family residential use (mid-rise); and
- 2 dwelling units of single family detached residential use.

Eleven (11) of the 44 dwelling units are planned to be affordable housing units.

The project is planned to open in 2023 and will be evaluated in one (1) single phase.

Access for the proposed project is planned via a total of twenty-four (24) right-in/right-out unsignalized driveways along Senter Road.

Study Area & Analysis Scenarios:

Per the City of San Jose Transportation Analysis Handbook, the included study area of this analysis was determined to have fulfilled the required parameters for intersection analysis as they are within a 0.5 miles buffer from the project. The traffic analysis evaluates the following study intersections:

3. Senter Road / Keyes Street – Story Road (signalized); and

4. Senter Road / Alma Avenue (signalized).

The analysis evaluates traffic conditions for the following study scenarios during the weekday AM (7:00 AM to 9:00 AM) and weekday PM (4:00 PM to 6:00 PM) peak periods:

- Existing Conditions;
- Background Conditions *(Existing Plus Approved Projects)*;
- Project Conditions *(Existing Plus Approved Projects Plus Project)*; and
- Cumulative Conditions *(Existing Plus Approved Projects Plus Pending Projects Plus Project)*.

Project Trip Generation Summary:

Based on the ITE trip generation rates and modal adjustment factors from the City's Transportation Analysis Handbook for uses located within Urban Low-Transit areas, the proposed project is forecast to generate approximately 215 daily trips which include approximately 14 AM peak hour trips (3 inbound and 11 outbound) and approximately 17 PM peak hour trips (10 inbound and 7 outbound).

Assuming a total of twenty-four (24) project driveways, the above trip generation is equivalent to an average of approximately 8.96 daily trips per driveway which include approximately 0.59 AM peak hour trips per driveway (0.13 inbound and 0.46 outbound) and approximately 0.71 PM peak hour trips per driveway (0.42 inbound and 0.29 outbound). This driveway level trip generation can be considered nominal.

Qualitative Project Access and Driveway Analysis Summary:

Since all project driveways will be restricted to right-in/right-out movements only, they can be expected to experience minimum delays and acceptable level of service operations.

With the right-in/right-out driveway configuration, the traffic on public roadway (Senter Road) can remain uncontrolled and vehicles traveling on Senter Road can be expected to not experience delays associated with stop signs or traffic signals.

Hence, with regards to LOS operations and delays, the twenty-four (24) proposed right-in/right-out driveways are expected to be minimally affected and operate at acceptable levels of service. As such, project access will be adequate and vehicles entering and exiting the project site will be able to do so without undue congestion.

Intersection Peak Hour LOS Analysis Summary:

All study intersections are currently operating, and are forecast to continue to operate, at an acceptable LOS (LOS D or better) during the peak hours for all analysis scenarios evaluated as part of this study.

Based on the agency-established LOS performance thresholds, the project is forecast to not be required to contribute to LOS improvements at the study intersections for the analysis scenarios evaluated as part of this study.

Roadway Segment LOS Analysis Summary:

All study roadway segments are currently operating, and are forecast to continue to operate, at an acceptable LOS (LOS D or better) for all analysis scenarios evaluated as part of this study.

Left-Turn Pocket Queue Analysis Summary:

The Senter Road / Keyes Street-Story Road intersection does not currently provide adequate queue storage for the westbound left-turn movement in all analysis scenarios for the PM peak hour. As such, the deficient queueing is not a result of the implementation of the project as it is already deficient in the Existing Conditions scenario.

CEQA Vehicle Miles Traveled (VMT) Analysis Summary:

Based on the City of San Jose's VMT Evaluation Tool, the project was determined to have an existing residential area VMT per capita of 7.84, which is more than 15% below the Citywide VMT per resident. As a result, the project may be presumed to have a less-than significant VMT impact under CEQA.

Appendices

Appendix A

Approved Scope of Work

Senter Road Residential Project
Traffic Impact Study
Scoping Agreement

August 20, 2021

The following provides information on the proposed project, summarizes the analysis scope, parameters, and assumptions for review and approval, and also includes request for information on items related to the study.

A. Project Description: The project site is located along the west side of Senter Road between Keyes Street and Ease Alma Avenue.

The proposed project consists construction of 44 dwelling units if multi-family residential use on the currently vacant project site.

The project is planned to open in 2023 and will be evaluated in one single phase.

Exhibit A shows the location map of the proposed project. Exhibit B shows the proposed site plan.

B. Project Trip Generation: Trip generation represents the amount of traffic that is attracted and produced by a development.

Trip generation is typically estimated based on the trip generation rates from the latest *Institute of Transportation Engineers (ITE) Trip Generation Manual.* The latest and most recent version (10th Edition, 2017) ITE Manual has been utilized for this scoping agreement. This publication provides a comprehensive evaluation of trip generation rates for a variety of land uses.

Table 1 shows the ITE trip generation rates utilized for the trip generation analysis of the proposed project land use.

Table 2 shows the trip generation for the proposed project utilizing the trip generation rates shown in Table 1.

As shown in Table 2, based on the preliminary evaluation of the project trip generation utilizing the Institute of Transportation Engineers (ITE) trip generation rates, the proposed

project is forecast to generate approximately 322 daily trips which include approximately 21 AM peak hour trips and approximately 25 PM peak hour trips.

C. Project Trip Distribution: Exhibit C shows the project trip distribution for the proposed project.

D. Study Intersections: The analysis will evaluate the following four (4) study intersections:

1. Senter Road / Keyes Street; and

2. Senter Road / East Alma Avenue.

E. Analysis Scenarios: The analysis will evaluate traffic conditions for the following scenarios during the weekday AM (7:00 AM to 9:00 AM) and weekday PM (4:00 PM to 6:00 PM) peak hour conditions:

- Existing Conditions;
- Existing Plus Project Conditions;
- Project Opening Year With Background Projects Without Project Conditions; and
- Project Opening Year With Background Projects With Project Conditions.

F. Traffic Analysis Parameters: The analysis will utilize the following parameters:

- Synchro analysis software and the Highway Capacity Manual 6th Editions (HCM 6) methodology.
- Optimized Signal Timing.

G. Existing Traffic Counts: The analysis will utilize new traffic counts. The counts will ***not*** be collected by vehicle classification.

- AM peak period counts will be collected during one typical weekday from 7:00 AM to 9:00 AM.

- PM peak period counts will be collected during one typical weekday from 4:00 PM to 6:00 PM.

H. Forecast Opening Year (2023) Conditions Traffic Volumes: Opening year (2023) background traffic volumes will be derived by applying an annual growth rate of two percent (2%) per year to existing traffic volumes and addition of traffic associated with specific cumulative projects in the area provided by the City.

I. VMT Analysis:

Effective July 1st, 2020, the longstanding metric of roadway level of service (LOS), which is typically measured in terms of vehicle delay, roadway capacity and congestion, will no longer be considered a significant impact under the California Environmental Quality Act (CEQA). Pursuant to CEQA Guidelines, Section 15064.3, VMT is now the most appropriate measure of transportation impacts.

RK will prepare a VMT analysis utilizing the city's VMT tool.

J. Performance Criteria:

Acceptable LOS of D or better.

K. Significant Impact Criteria:

An adverse effect on intersection operations occurs when the analysis demonstrates that a project would cause the operations standard at a study intersection to fall below D with the addition of project vehicle-trips to baseline conditions. For intersections already operating at E or F under the baseline conditions, an adverse effect is defined as:

- An increase in average critical delay by 4.0 seconds or more AND an increase in the critical volume-to-capacity (V/C) ratio of 0.010 or more; OR

- A decrease in average critical delay AND an increase in the critical V/C ratio of 0.010 or more.

L. Request for Information: Please provide information on the following for use in the traffic study:

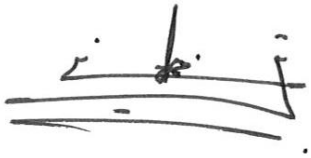
- Information on cumulative projects that need to be included in the traffic analysis (location, land use type(s), and land use quantities); and

- Information on future roadway and circulation system modifications/improvements that are planned within the study area and would potentially affect the analysis.

If you have any questions, or would like further review, please call us at (949) 474-0809.

Sincerely,

RK ENGINEERING GROUP, INC.



Alex Tabrizi, PE, TE
Principal

Attachments

Approved by:

_____

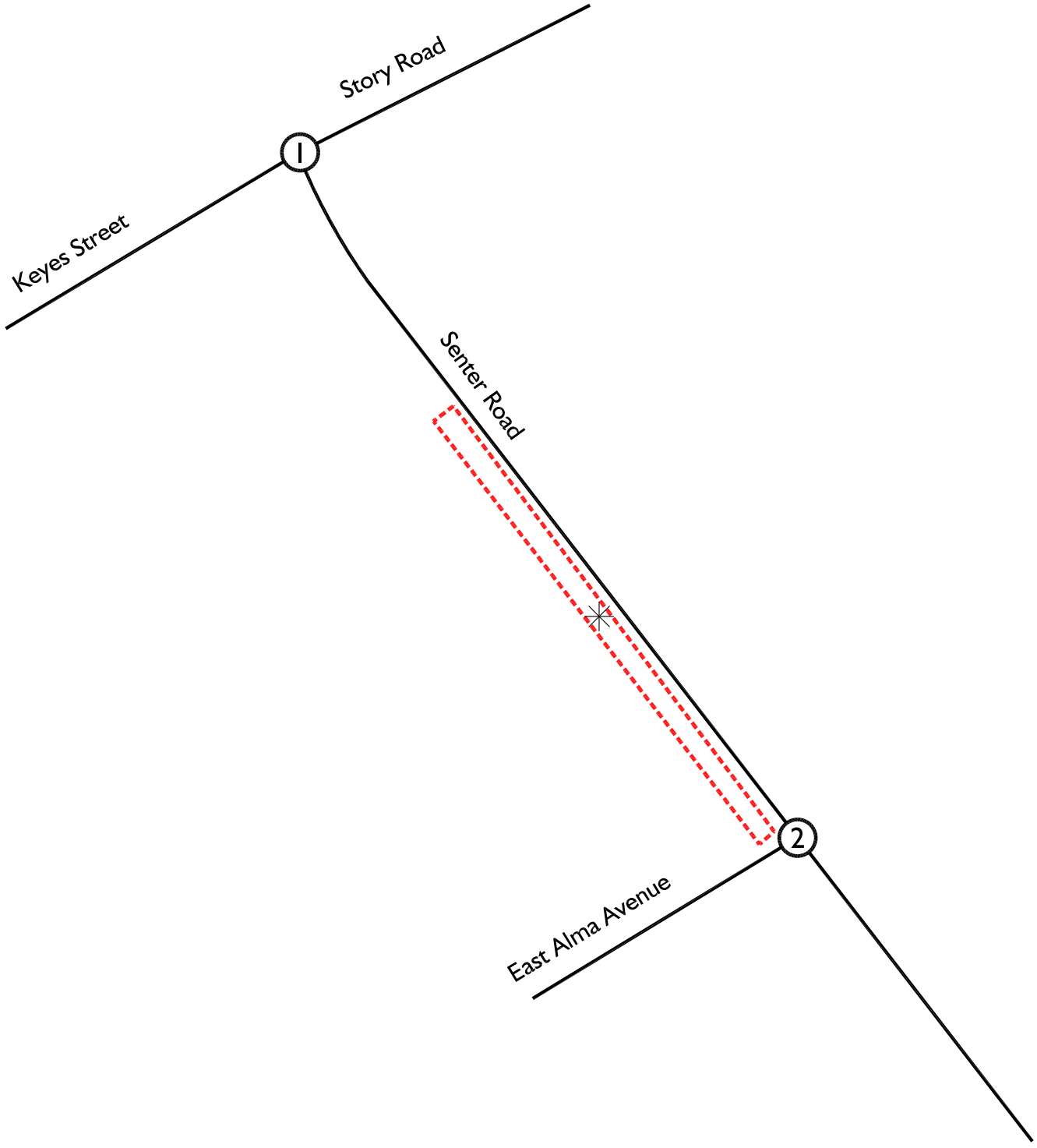
City of San Jose

_____

Date

Attachments

Exhibit A
Location Map



Legend:

1 = Study Area Intersection

= Project Site

= Project Site Boundary

N

Exhibit B

Site Plan

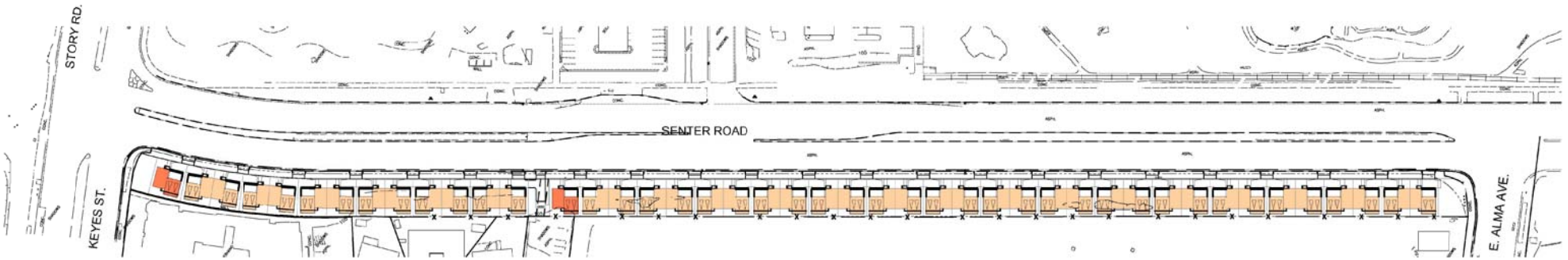
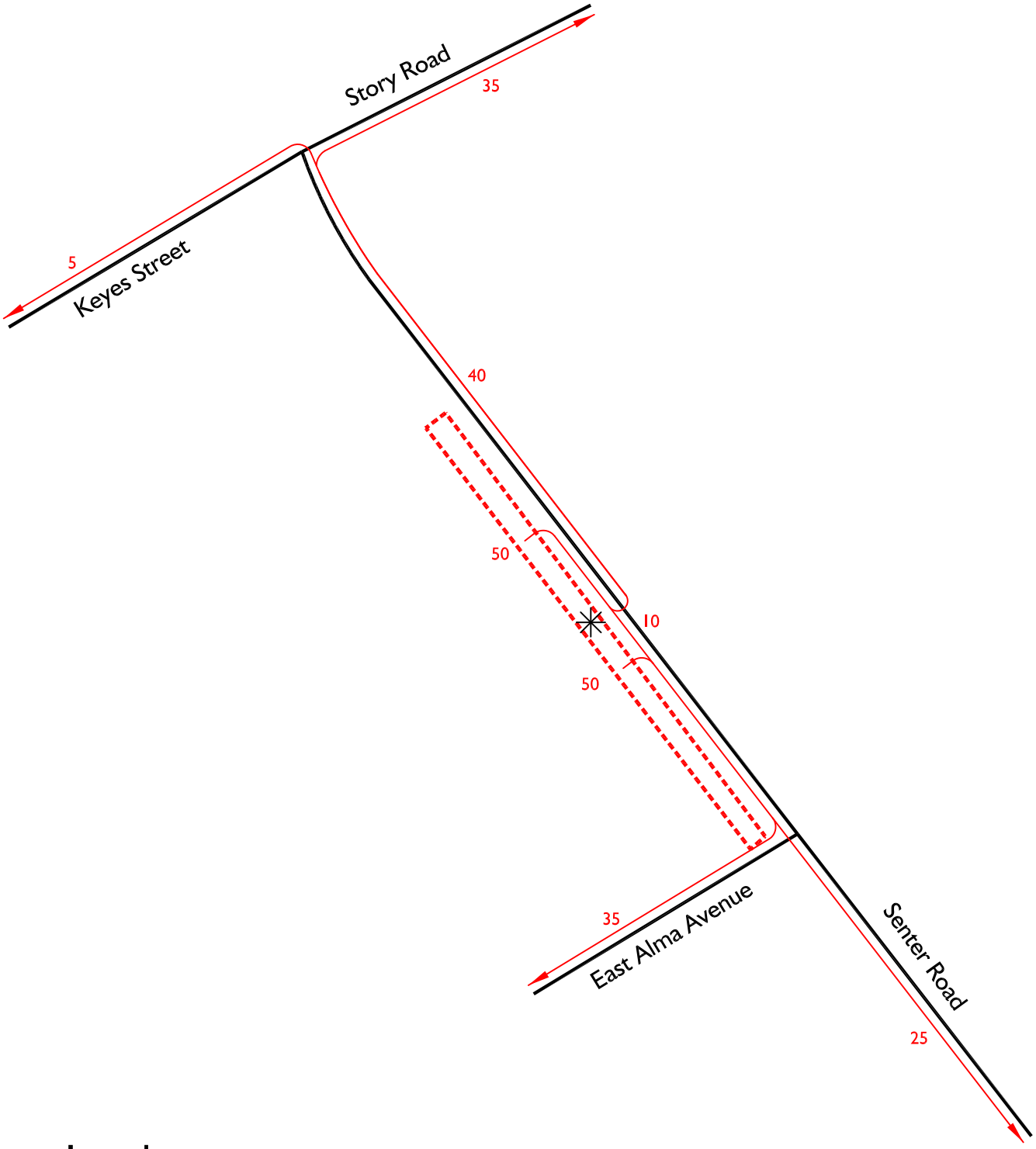


Exhibit C

Trip Distribution



Legend:

① = Study Area Intersection

✳ = Project Site

- - - = Project Site Boundary

20 = Project Trip Distribution

N

RK engineering group, inc.

Table 1
ITE Trip Generation Rates[1]

Land Use	Units	ITE Code	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Multi-Family Residential - Low Rise	DU	220	0.11	0.35	0.46	0.35	0.21	0.56	7.32

[1] Source: *2017 ITE Trip Generation Manual (10th Edition).*

[2] DU = Dwelling Units

Table 2
Proposed Project Trip Generation[1]

Land Use (ITE Code)	Quantity	Units	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Multi-Family Residential - Low Rise (220)	44	DU	5	16	21	16	9	25	322

[1] Source: *2017 ITE Trip Generation Manual (10th Edition).*

[2] DU = Dwelling Units

Appendix B

Site Access Review

November 16, 2021

Ms. Christy Cheung
CITY OF SAN JOSE
200 East Santa Clara Street, 3rd Floor, Tower
San Jose, CA 95113-1905

Subject: Alma & Senter Residential Project Site Access Review, City of San Jose, CA

Dear Ms. Cheung:

RK ENGINEERING GROUP, INC. (RK) is pleased to provide this site access review for the proposed Alma & Senter residential project.

This access analysis is being provided in advance of the formal traffic study which will evaluate the project for level of service and Vehicle Miles Traveled (VMT) analysis as required by the California Environmental Quality Act (CEQA). This access analysis will also be included as part of the formal traffic study which is currently being prepared.

The currently vacant project site is located along the west side of Senter Road between Keyes Street and Ease Alma Avenue.

The proposed project is planned to consist of the following land uses:

- 42 dwelling units of three-story multi-family residential use (mid-rise); and
- 2 dwelling units of single family detached residential use.

Eleven (11) of the 44 units are planned to be affordable housing units. The project is planned to open in 2023.

Access for the proposed project is planned via a total of twenty-four (24) right-in/right-out unsignalized driveway along Senter Road.

RK has been requested to provide an evaluation of the site access for the proposed project.

The project site location is shown in Exhibit A. The proposed site plan is shown in Exhibit B.

This access analysis evaluates the proposed project access driveway for the following criteria:

1. Qualitative Level of Service (LOS) evaluation of the driveway;

2. Movement and distribution of project vehicular trips within the circulation system and project site vicinity;

3. Trash truck movements and access;

4. Sight distance and visibility; and

5. Vehicle turning maneuvers at the project site driveways.

A. Senter Road Existing Conditions

As previously noted, access for the proposed project is planned via a total of twenty-four (24) right-in/right-out unsignalized driveway along Senter Road.

Based on the General Plan Circulation Element, Senter Road is classified as a City Connector Street. A City Connector Street generally has two to three lanes in each direction of travel, on-street bike lanes and parallel in-street parking.

Currently, Senter Road is a six-lane divided roadway with a landscaped raised center median. On-street bike lanes are currently provided on both directions of travel along Senter Road in the project site vicinity.

The northbound direction also currently includes an off-street trail under existing conditions.

Sidewalks are present on the northbound direction of travel. However, the southbound direction does not include any sidewalks.

An existing median break located approximately 720 feet south of Keyes Street facilitates U-turn movements for traffic traveling southbound on Senter Road.

Based on traffic volume data collected by RK in October 2021 during typical weekday conditions, Senter Road currently has an average daily traffic (ADT) volume of approximately 19,588 vehicles per day (combined on both directions of travel).

The posted speed limit on Senter Road in the project site vicinity is 45 miles per hour.

Based on speed survey observations conducted in November 2021 during typical weekday off-peak (free-flow) conditions, the 85th percentile speeds along Senter Road in the project vicinity is as follows:

- Northbound Senter Road: 44 miles per hour
- Southbound Senter Road: 44 miles per hour
- Combined:44 miles per hour
- The travel speeds ranged from 29 to 50 miles per hour (MPH).

Detailed traffic and speed count data is contained in Attachment A.

B. Senter Road Proposed Conditions

The proposed project is planned to modify Senter Road along the project frontage to consist of the following roadway geometry and cross-section as shown in Exhibit C:

- *Southbound* Senter Road along project frontage: three (3) travel lanes with one off-street bike lane.

As previously stated, an existing median break located approximately 720 feet south of Keyes Street facilitates U-turn movements for traffic traveling southbound on Senter Road.

With the proposed project, a similar U-turn pocket will be provided at this location for the northbound Senter Road traffic. Currently, this left-turn pocket exists but is chevroned off.

C. Project Trip Generation

Trip generation represents the amount of traffic that is attracted and produced by a development. The trip generation for the project is based upon the specific land uses that have been planned for this development.

Trip generation is typically estimated based on the trip generation rates from the latest *Institute of Transportation Engineers (ITE) Trip Generation Manual*. This publication provides a comprehensive evaluation of trip generation rates for a variety of land uses.

Table 1 shows the ITE (10th Edition, 2017) trip generation rates utilized for the proposed land uses.

Table 1
ITE Trip Generation Rates

Land Use	ITE Code	Units	AM			PM			Daily
			In	Out	Total	In	Out	Total	
Single Family Residential	210	DU	0.19	0.56	0.74	0.62	0.37	0.99	9.44
Multi-family Residential (Mid-Rise)	221	DU	0.09	0.27	0.36	0.27	0.17	0.44	5.44

Source: 2017 ITE Trip Generation Manual (10th Edition)
DU = Dwelling Units

Utilizing the trip generation rates from Table 1, Table 2 summarizes the daily and peak hour trip generation for the proposed project.

Table 2
Project Trip Generation

Land Use	ITE Code	Units	Quantity	AM			PM			Daily
				In	Out	Total	In	Out	Total	
Single Family Residential	210	DU	2	0	1	1	1	1	2	19
Multi-family Residential (Mid-Rise)	221	DU	42	4	11	15	11	7	18	228
Total			**44**	**4**	**12**	**16**	**12**	**8**	**20**	**247**
*Modal Adjustment (87% Vehicular Traffic) **				*-1*	*-1*	*-2*	*-2*	*-1*	*-3*	*-32*
Total After Adjustment				**3**	**11**	**14**	**10**	**7**	**17**	**215**
Average Trips Per Driveway **				**0.13**	**0.46**	**0.59**	**0.42**	**0.29**	**0.71**	**8.96**

Source: 2017 ITE Trip Generation Manual (10th Edition).

DU = Dwelling Units

* Based on recommended adjustment factors contained in *City of San Jose Transportation Analysis Handbook (April 2020)* for uses located within Urban Low-Transit area

** Assumes a total of 24 driveways

As shown in Table 2, based on the ITE trip generation rates and mode adjustment factors from the *City of San Jose Transportation Analysis Handbook (April 2020)* for uses located within Urban Low-Transit area, the proposed project is forecast to generate approximately 215 daily trips which include approximately 14 AM peak hour trips (3 inbound and 11 outbound trips) and approximately 17 PM peak hour trips (10 inbound and 7 outbound trips).

Since the project has a total of twenty-four (24) driveways, this is equivalent to an average of approximately 0.59 AM peak hour trips per driveway (0.13 inbound and 0.46 outbound trips) and approximately 0.71 PM peak hour trips per driveway (0.42 inbound and 0.29 outbound trips).

D. Project Trip Distribution

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the location of retail, employment, and recreational opportunities, and the proximity to the regional freeway system. The directional orientation of traffic was determined by evaluating existing land uses and highways within the study area.

The forecast trip distribution patterns for the project are developed based on the following assumptions, circulation system and roadway network conditions:

- Regional and freeway access for the site to and from US-101 is provided via Story Road and the US-101 ramps on McLaughlin Avenue and Story Road; and

- Regional and freeway access for the site to and from Interstate 280 (I-280) and I-680 is provided via Keyes Street and Alma Avenue and I-280 and I-680 ramps on 7th Street, 10th Street, and 11th Street.

The project trip distribution assumptions have been reviewed and approved by City staff during the scoping phase of the traffic analysis.

Exhibit D-1 shows the outbound trip distribution for the proposed project.

As shown in Exhibit D-1, since the proposed access driveways are restricted to right-in/right-out movements:

- For the units that are located north of the existing median break on Senter Road, outbound vehicles planning to travel northbound on Senter Road will have to perform a U-turn maneuver at the median break; and

- For the units that are located south of the existing median break on Senter Road, outbound vehicles planning to travel northbound on Senter Road will have to perform a U-turn maneuver at Phelan Avenue.

Exhibit D-2 shows the inbound trip distribution for the proposed project.

As shown in Exhibit D-2, since the proposed access driveways are restricted to right-in/right-out movements:

- For the units that are located north of the existing median break on Senter Road, inbound vehicles will have to perform a U-turn maneuver at the intersection of Senter Road / Keyes Street; and

- For the units that are located south of the existing median break on Senter Road, inbound vehicles will have to perform a U-turn maneuver at the existing median break after the project stripes this northbound left-turn pocket which is currently chevroned off.

Exhibit E shows the trip assignment of the project trips on the surrounding circulation system.

As shown in Exhibit E, the proposed project is expected to generally contribute a nominal number of peak hour trips to the roadway network and nearby intersections.

E.1. Project Access Qualitative Level of Service Evaluation

Based on review of the proposed access, since all of the driveways will be restricted to right-in/right-out movements only, they can be expected to experience minimum delays and acceptable level of service operations.

Generally, right-in/right-out driveways operate at a much better LOS since vehicle delays and deficient LOS operations are mainly associated with left-turn movements at intersections. Right-in/right-out driveways generally result in the least level of vehicular traffic conflicts when compared to full access driveways.

With the right-in/right-out driveway configuration, the traffic on public roadway (Senter Road) can remain uncontrolled and vehicles traveling on Senter Road can be expected to not experience delays associated with stop signs or traffic signals.

Also, as previously shown in Table 2, since the project has a total of twenty-four (24) driveways, this is equivalent to an average of approximately 0.59 AM peak hour trips per driveway (0.13 inbound and 0.46 outbound trips) and approximately 0.71 PM peak hour

trips per driveway (0.42 inbound and 0.29 outbound trips) which can be considered nominal.

Hence, with regards to LOS operations and delays, the proposed right-in/right-out access is expected to result in minimal effect on increasing delays or resulting in poor level of service operation for traffic on the public roadways.

E.2. Project Contribution of Trips to the Circulation System

Exhibit E, previously shown, illustrates the trip assignment of the project trips on the surrounding circulation system.

As shown in Exhibit E, the proposed project is expected to generally contribute a nominal number of peak hour trips to the roadway network and nearby intersections.

The addition of the project trips is not expected to result in a significant adverse effect on the level of service operations of the surrounding intersections.

A level of service (LOS) analysis will be prepared as part of the project's detailed transportation analysis to confirm this finding.

E.3. Trash Truck Movements & Access

Typically, trash trucks and delivery/service vehicles would need to enter a residential or commercial site and be able to make the on-site turning maneuvers.

In the case of the proposed project, due to the shape of the parcel and layout of the site, trash vehicles and delivery vehicles would not need to enter and maneuver the site.

Trash trucks and delivery vehicles are planned to provide service to the residents via curb side along Senter Road.

E.4. Project Access Sight Distance Evaluation

An evaluation of the project access sight distance has been evaluated for proposed conditions utilizing the Caltrans Highway Design Manual (HDM) sight distance

requirements. Sight distance is the continuous length of highway ahead, visible to the highway user. Four types of sight distance are considered herein: passing, stopping, decision, and corner.

The posted speed limit on Senter Road in the project site vicinity is 45 miles per hour.

Based on speed survey observations conducted in November 2021 during typical weekday off-peak (free-flow) conditions, the 85th percentile speeds along Senter Road in the project vicinity is as follows:

- Northbound Senter Road: 44 miles per hour
- Southbound Senter Road: 44 miles per hour
- Combined:44 miles per hour
- The travel speeds ranged from 29 to 50 miles per hour (MPH).

Hence, this analysis assumes a roadway design speed of 50 MPH for Senter Road.

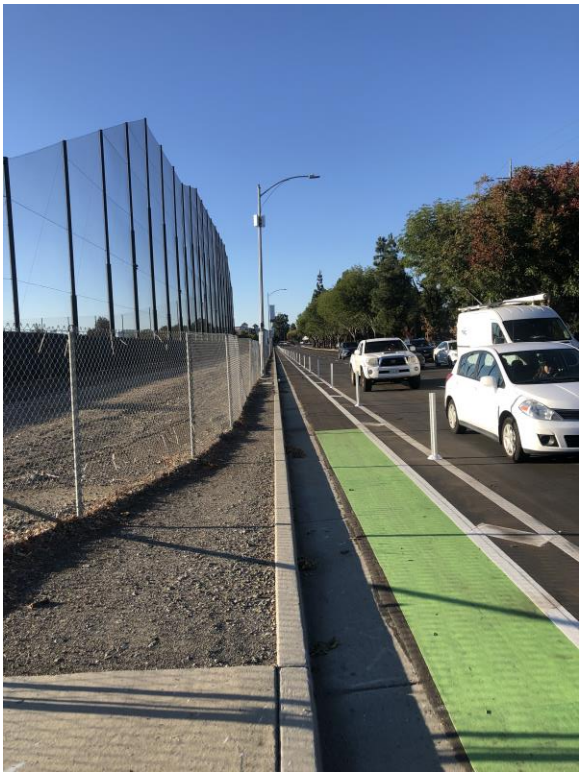
Based on the HDM:

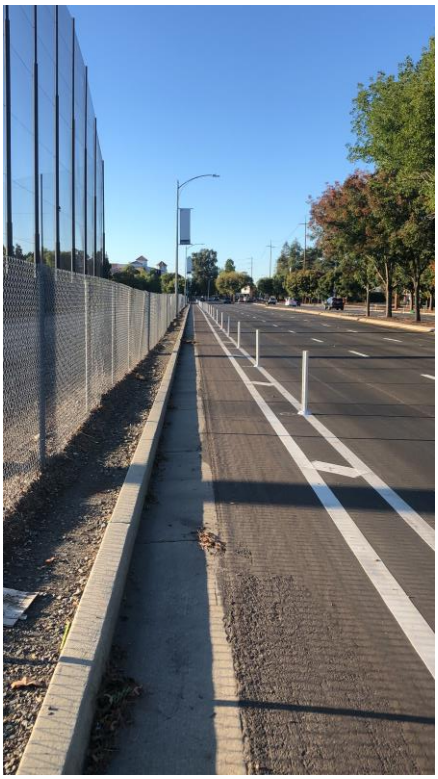
- For the intersection of private roadways (such as the project driveway) and public roadways (Senter Road), stopping sight distance should be provided (*Source: HDM Table 405.1B*). Stopping sight distance is the minimum sight distance for a given design speed to be provided on multilane highways and on 2-lane roads when passing sight distance is not obtainable. Stopping sight distance also is to be provided for all users, including motorists and bicyclists, at all elements of interchanges and intersections at grade, including private road connections

- For roadways with the design speed of 50 MPH, the minimum required stopping sight distance is 430 feet (*Source: HDM Table 201.1*).

Senter Road in the project site vicinity generally follows a straight horizontal alignment with no significant vertical curves. Based on RK's field review of the existing sight distance in October 2021, clear line of sight is currently provided along southbound Senter Road

along the project site frontage. Below are filed photos showing southbound Senter Road along the project site frontage.






Senter Rd


Senter Rd


Senter Rd

Exhibits F-1 through F-3 show the 430 feet required line of sight analysis with the project site plan added. The Exhibits show the line of sight for the units located on the north end of the project site, on the south end and in the middle.

Based on the exhibits, adequate sight distance of 430 feet can be accommodated.

The hatched areas shown within the sight analysis exhibits F-1 through F-3 need to be kept clear of visual obstructions such as monuments, heavy landscaping, large tree trunks, and any element that would create a visual obstruction.

E.5. Vehicle Turning Movements at Project Driveways

An evaluation has been made for vehicles entering and exiting the site driveways to ensure vehicles can enter Senter Road without having to backup or reverse into oncoming traffic on Senter Road from the driveways.

Exhibit F shows the turning maneuvers for vehicles entering and exiting a typical driveway designed for the site based on information and tuning movement analysis prepared by RJA (project engineer).

As shown in Exhibit G, the vehicle turning movements to allow outbound vehicles to turn around and enter the roadway head first, instead of backing into the roadway, are forecast to be accommodated with the proposed driveway design.

The landscaping, sidewalk and off-street bike lane layout as proposed and shown in Exhibit C is also considered a typical design and layout screen sections. Since the bike lanes are planned to be located off-street, adequate visibility should be provided so that vehicles entering and exiting the driveways and making turning maneuvers do not conflict with bicyclists and pedestrians on the project site frontage.

F. Findings & Conclusions

This access analysis evaluates the proposed project access driveway for the following criteria:

1. Qualitative Level of Service (LOS) evaluation of the driveway: based on the evaluation prepared as part of this report, this performance criteria is expected to have satisfactory operations;

2. Movement and distribution of project vehicular trips within the circulation system and project site vicinity: the proposed project is expected to generally contribute a nominal number of peak hour trips to the roadway network and nearby intersections. The addition of the project trips is not expected to result in a significant adverse effect on the level of service operations of the surrounding intersections.

3. Trash truck movements and access: Trash trucks and delivery vehicles are planned to provide service to the residents via curb side along Senter Road.

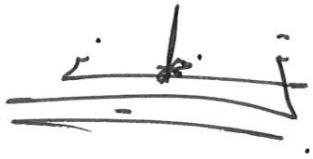
4. Sight distance and visibility: Exhibits F-1 through F-3 show the 430 feet required line of sight analysis with the project site plan added. The Exhibits show the line of sight for the units located on the north end of the project site, on the south end and in the middle. Based on the exhibits, adequate sight distance of 430 feet can be accommodated.

5. Vehicle turning maneuvers at the project site driveways: As shown in Exhibit G, the vehicle turning movements to allow outbound vehicles to turn around and enter the roadway head first, instead of backing into the roadway, are forecast to be accommodated with the proposed driveway design. The landscaping, sidewalk and off-street bike lane layout as proposed and shown in Exhibit C is also considered a typical design and layout screen sections. Since the bike lanes are planned to be located off-street, adequate visibility should be provided so that vehicles entering and exiting the driveways and making turning maneuvers do not conflict with bicyclists and pedestrians on the project site frontage.

Based on RK's review of the various elements related to the project site access design evaluated as part of this report, the project is forecast to have an acceptable site access operation.

If you have any questions regarding this report and analysis, please call me at (949) 474-0809.

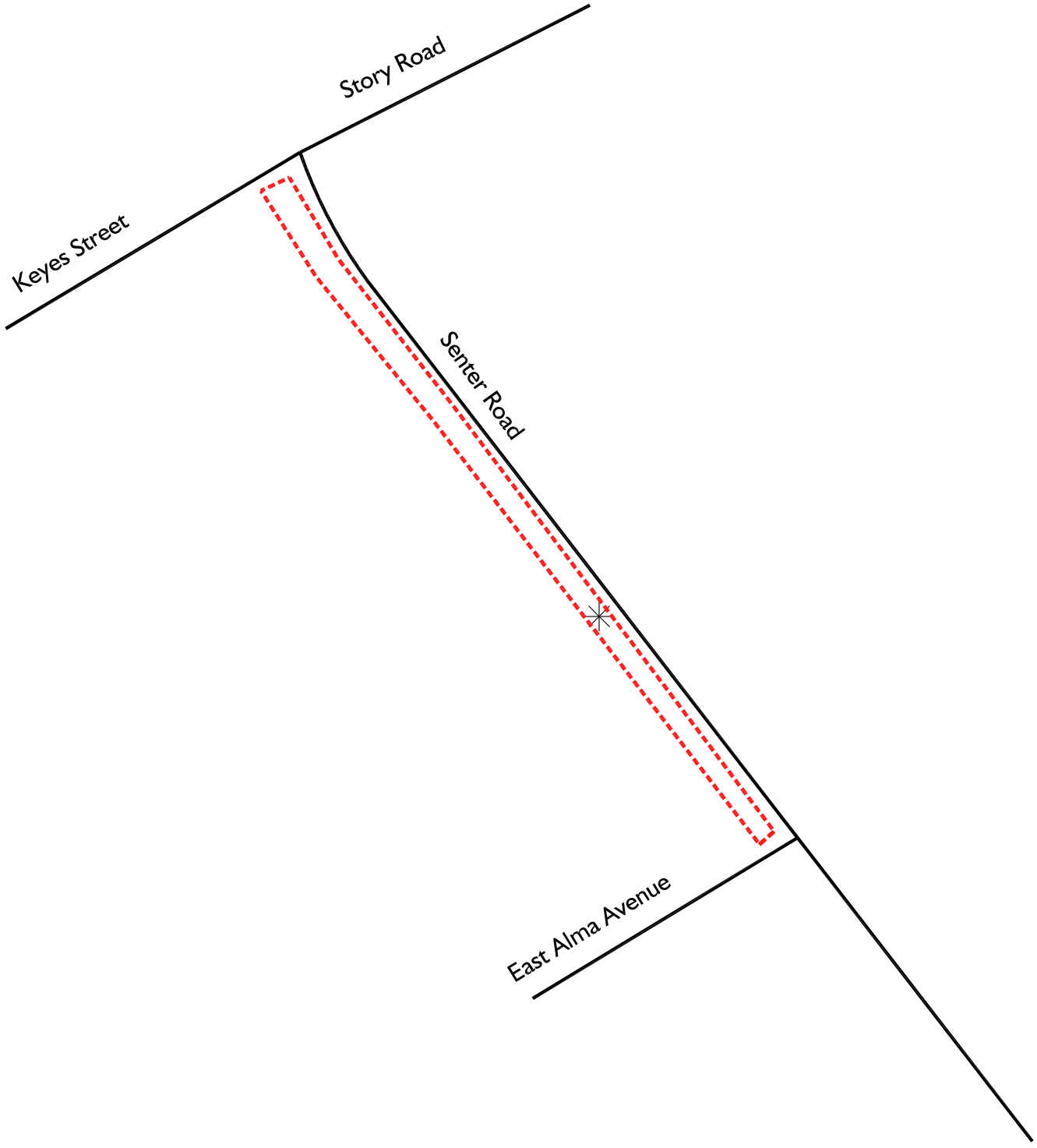
Respectfully submitted,
RK ENGINEERING GROUP, INC.



Alex Tabrizi, PE, TE
Principal

Attachments

Exhibit A
Location Map



Legend:

✳ = Project Site

- - - = Project Site Boundary

N

Exhibit B

Site Plan

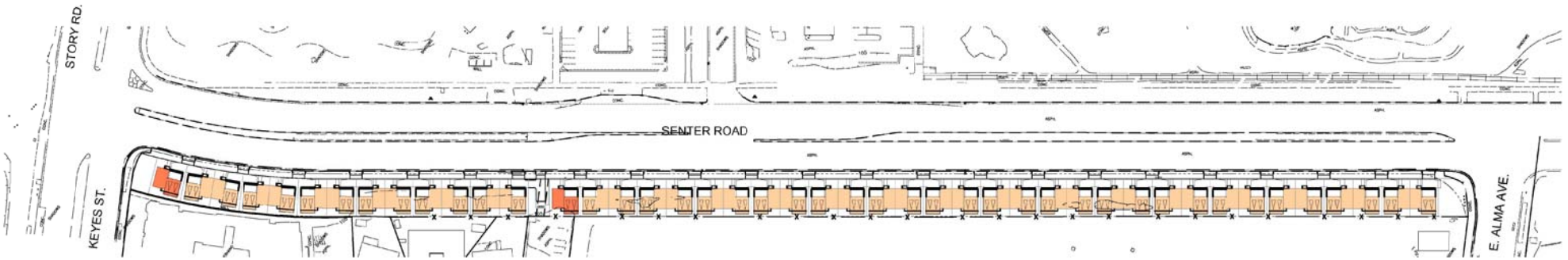
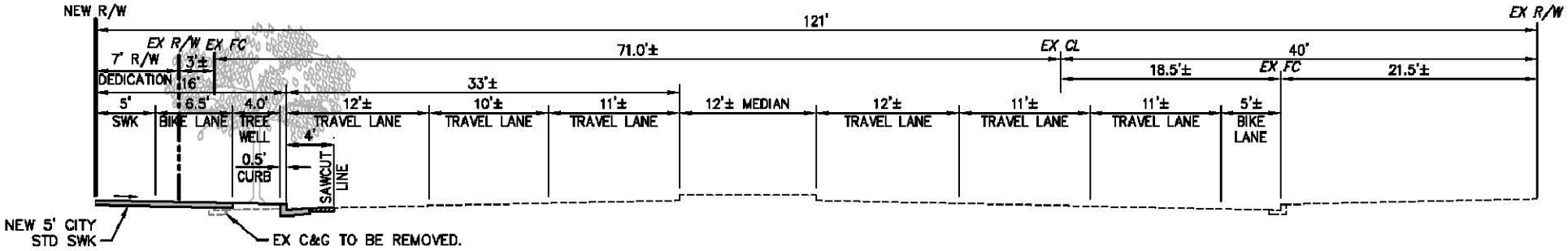


Exhibit C

Senter Road Cross-Section

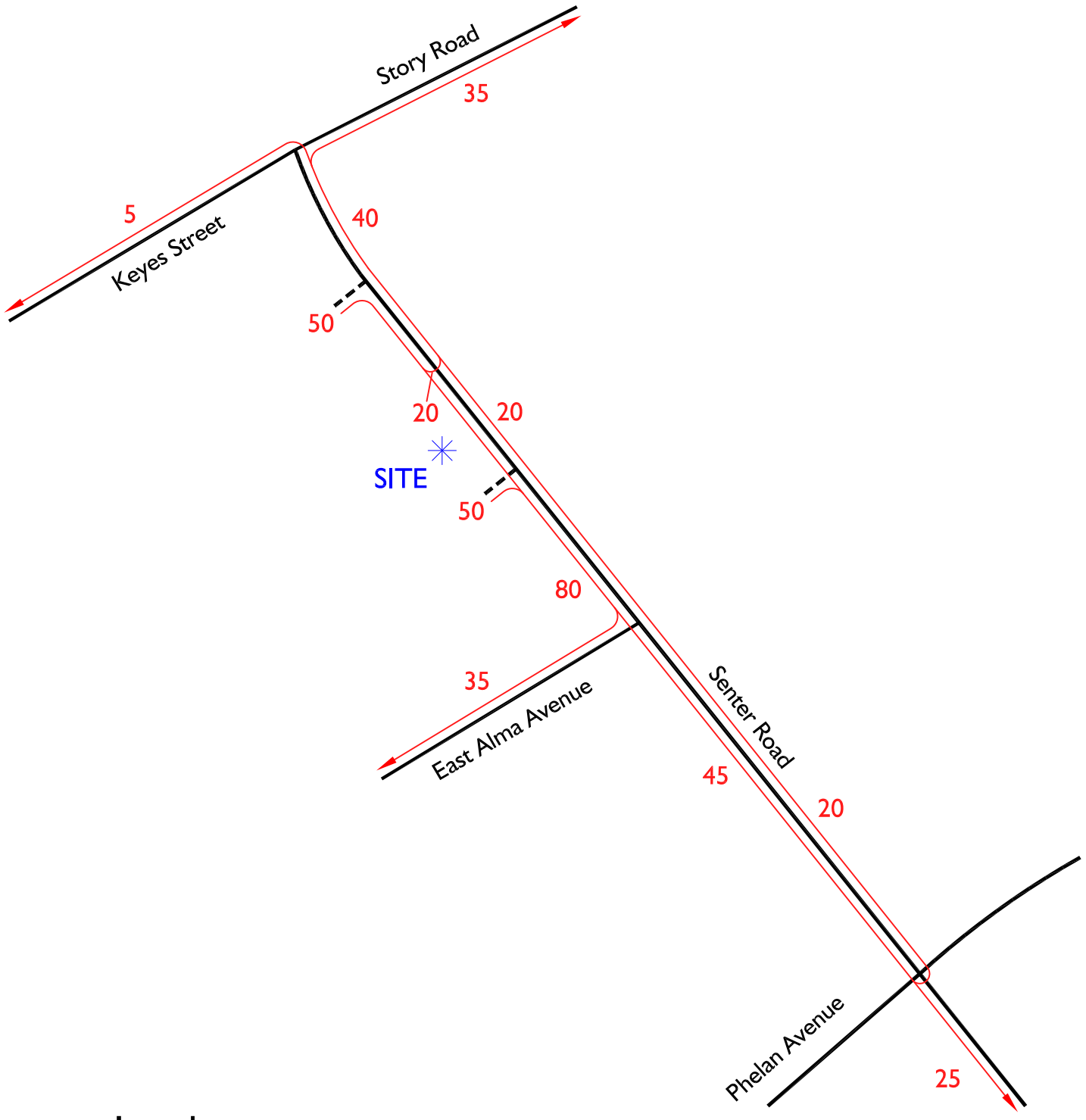


SENTER ROAD (PUBLIC STREET)

NO SCALE

Exhibit D-1

Outbound Project Trip Distribution



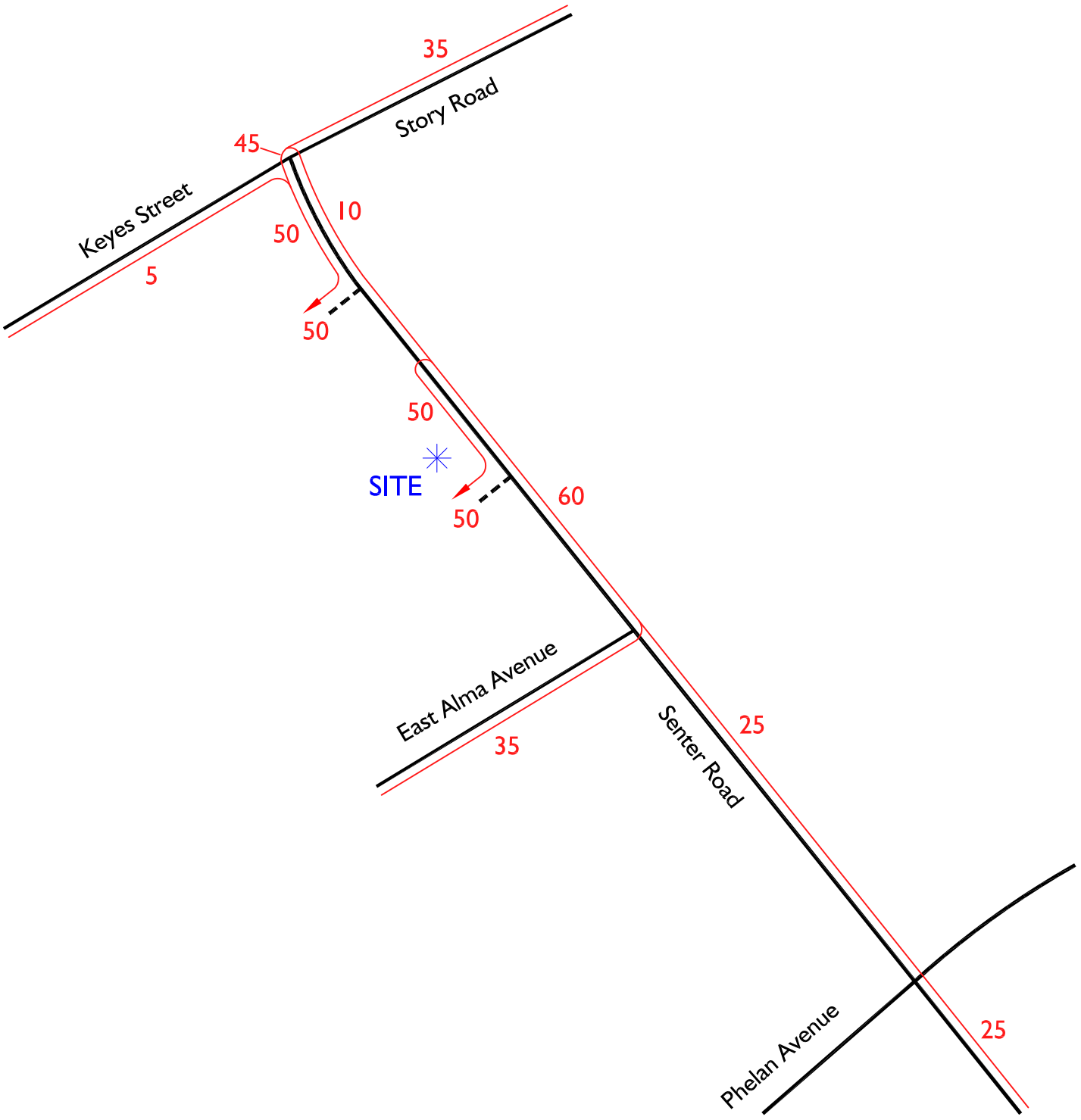
Legend:

25 = Percent from Project

N

Exhibit D-2

Inbound Project Trip Distribution



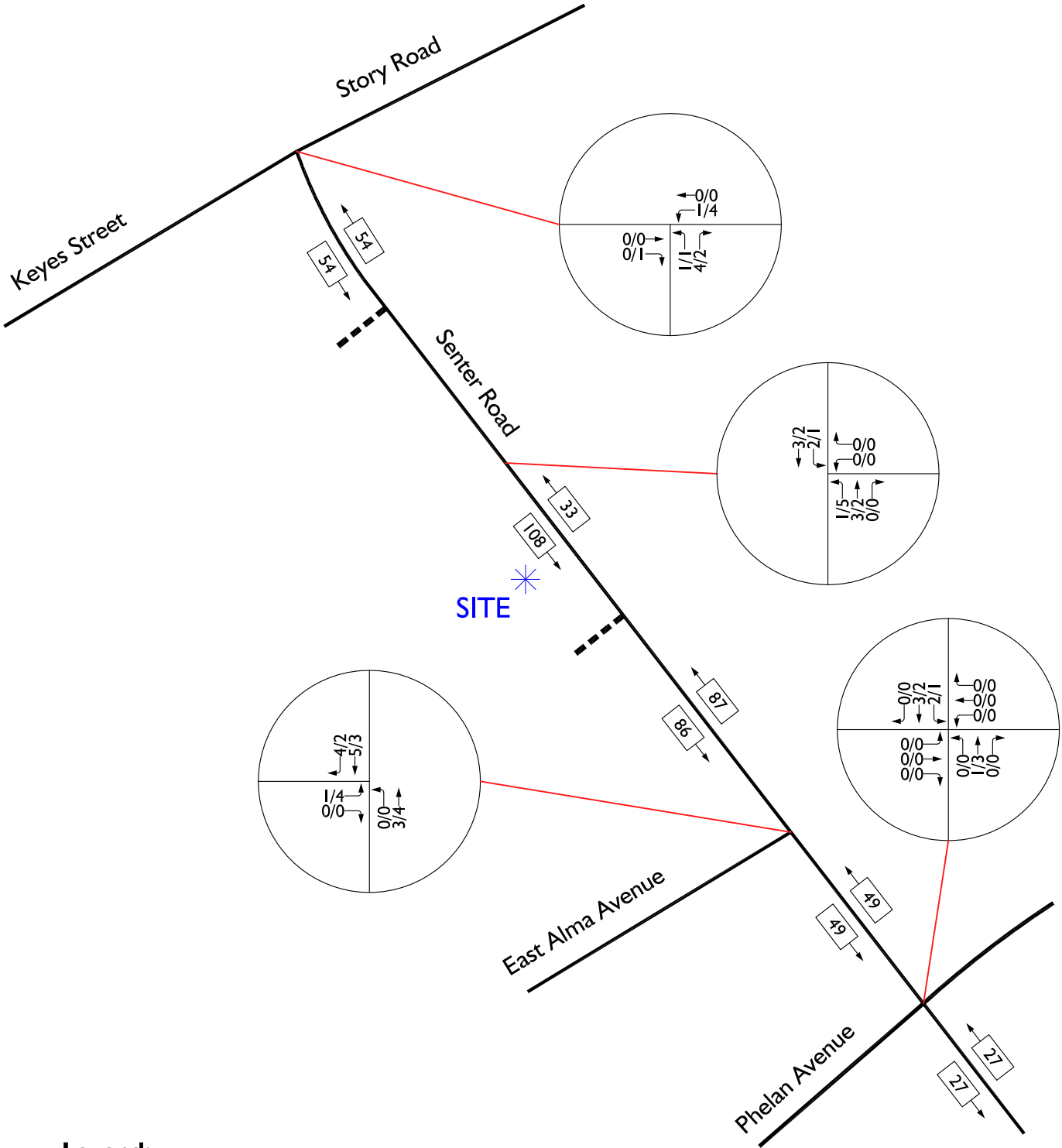
Legend:

25 = Percent to Project

N

Exhibit E

Project Trip Assignment



Legend:

10/20 = AM/PM Peak Hour Volumes

108 = Average Daily Traffic (ADT)

N

Exhibit F-1

Sight Distance Evaluation - Location 1

Legend:

= Limited Use Area

N

2962-2021-04

SAN JOSE SENTER ROAD RESIDENTIAL PROJECT, City of San Jose, CA

RK engineering group, inc.

Exhibit F-2

Sight Distance Evaluation - Location 2

Legend:

= Limited Use Area

N

2962-2021-04

SAN JOSE SENTER ROAD RESIDENTIAL PROJECT, City of San Jose, CA

RK engineering group, inc.

Exhibit F-3

Sight Distance Evaluation - Location 3

Legend:

= Limited Use Area

N

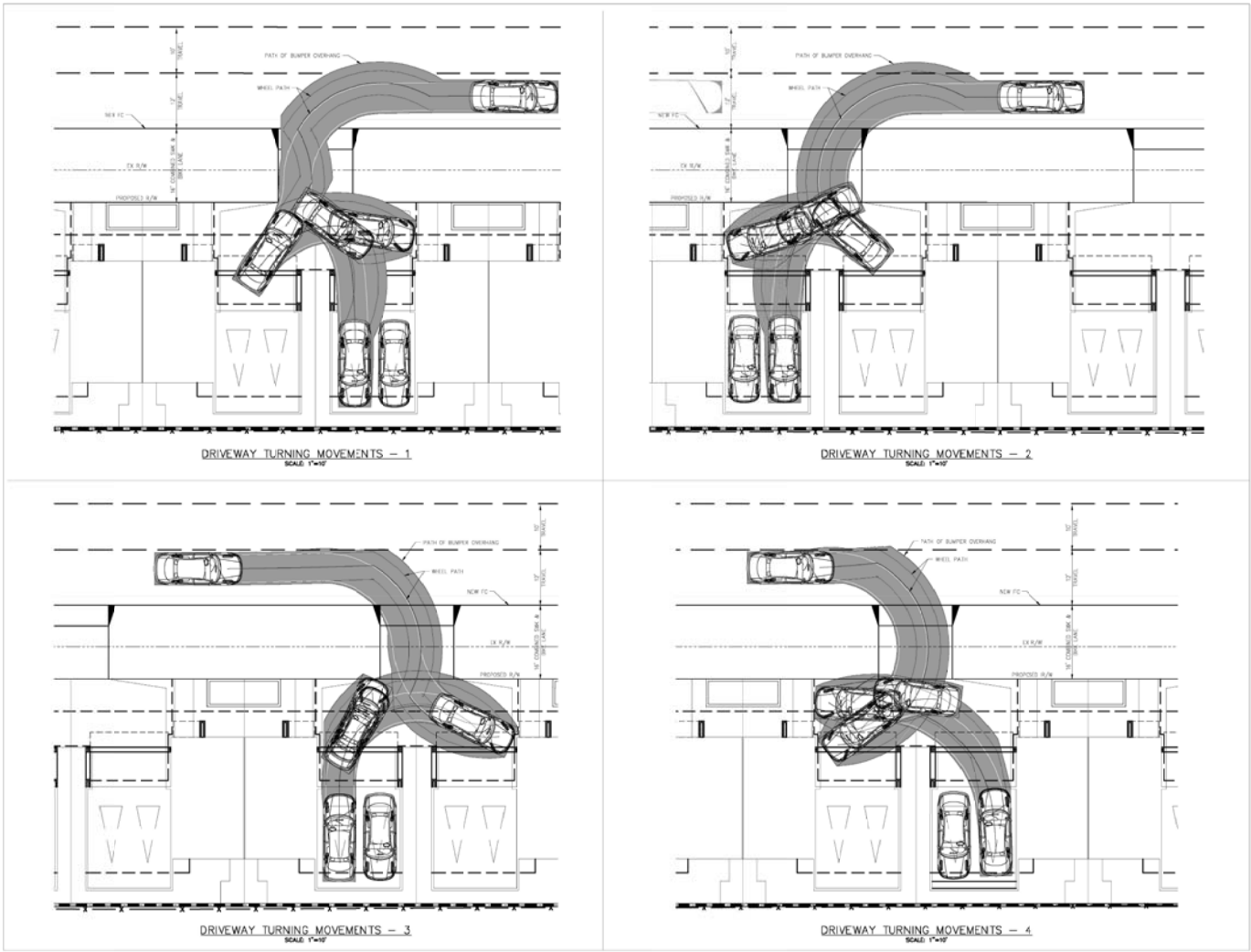
2962-2021-04

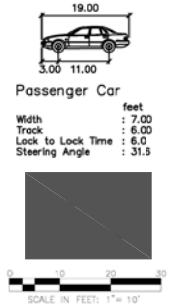
SAN JOSE SENTER ROAD RESIDENTIAL PROJECT, City of San Jose, CA

RK engineering group, inc.

Exhibit G

Driveway Turning Template





AMG ASSOCIATES | SENTER ROAD, SAN JOSE, CA | SITE DEVELOPMENT PERMIT, OCTOBER 14, 2021 | Driveway Turning Movements | A8.0.0 | H21-014

Source: KTGY Architecture & Planning

Attachments

Counts Unlimited, Inc.

PO Box 1178
Corona, CA 92878
Phone: (951) 268-6268
email: counts@countsunlimited.com

City of San Jose
Senter Road
B/ Keyes Street - Story Road
24 Hour Directional Volume Count

SEKEEST
Site Code: 105-21580

Start Time	10/12/2021 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		9	184			4	125				
12:15		10	196			4	132				
12:30		9	205			2	164				
12:45		6	206	34	791	3	161	13	582	47	1373
01:00		8	194			4	151				
01:15		4	189			0	146				
01:30		8	160			6	162				
01:45		7	204	27	747	2	145	12	604	39	1351
02:00		10	222			2	121				
02:15		5	218			3	167				
02:30		6	249			2	131				
02:45		11	214	32	903	8	164	15	583	47	1486
03:00		5	230			5	170				
03:15		4	226			7	**170**				
03:30		13	278			1	**194**				
03:45		8	236	30	970	10	**179**	23	713	53	1683
04:00		12	256			4	**173**				
04:15		24	**236**			10	166				
04:30		19	**259**			10	160				
04:45		22	**224**	77	975	19	152	43	651	120	1626
05:00		36	**295**			18	190				
05:15		48	226			24	162				
05:30		84	182			39	145				
05:45		86	165	254	868	62	146	143	643	397	1511
06:00		68	182			64	155				
06:15		92	172			52	118				
06:30		118	168			59	112				
06:45		133	155	411	677	66	111	241	496	652	1173
07:00		166	148			74	96				
07:15		180	146			66	88				
07:30		212	116			108	82				
07:45		**238**	94	796	504	154	71	402	337	1198	841
08:00		**214**	88			97	60				
08:15		**239**	94			120	52				
08:30		**218**	80			124	46				
08:45		181	60	852	322	102	54	443	212	1295	534
09:00		176	60			96	31				
09:15		158	44			98	27				
09:30		191	49			120	26				
09:45		150	43	675	196	124	23	438	107	1113	303
10:00		182	42			124	18				
10:15		182	28			108	17				
10:30		187	23			**122**	15				
10:45		150	26	701	119	**156**	13	510	63	1211	182
11:00		158	25			**136**	10				
11:15		183	14			**134**	10				
11:30		198	15			120	10				
11:45		185	14	724	68	134	7	524	37	1248	105
Total		4613	7140	4613	7140	2807	5028	2807	5028	7420	12168
Combined Total		11753		11753		7835		7835		19588	
AM Peak	-	07:45	-	-	-	10:30	-	-	-	-	-
Vol.	-	909	-	-	-	548	-	-	-	-	-
P.H.F.		0.951				0.878					
PM Peak	-	-	04:15	-	-	-	03:15	-	-	-	-
Vol.	-	-	1014	-	-	-	716	-	-	-	-
P.H.F.			0.859				0.923				
Percentage		39.2%	60.8%			35.8%	64.2%				

ADT/AADT	ADT 19,588	AADT 19,588

City of San Jose

Radar Speed Survey

Speed	NB	SB	MPH	Vehicles Surveyed	TOT.
				Northbound / Southbound	VEH.
65	0	0	65		0
64	0	0	64		0
63	0	0	63		0
62	0	0	62		0
61	0	0	61		0
60	0	0	60		0
59	0	0	59		0
58	0	0	58		0
57	0	0	57		0
56	0	0	56		0
55	0	0	55		0
54	0	0	54		0
53	0	0	53		0
52	0	0	52		0
51	0	0	51		0
50	0	0	50		0
49	1	2	49	X / X X	3
48	1	1	48	X / X	2
47	1	2	47	X / X X	3
46	1	1	46	X / X	2
45	3	1	45	X X X / X	4
44	2	1	44	X X / X	3
43	2	1	43	X X / X	3
42	1	1	42	X / X	2
41	7	6	41	X X X X X X X / X X X X X	13
40	5	2	40	X X X X X / X X	7
39	7	8	39	X X X X X X X / X X X X X X X	15
38	2	3	38	X X / X X X	5
37	2	4	37	X X / X X X X	6
36	3	2	36	X X X / X X	5
35	5	6	35	X X X X X / X X X X X X	11
34	0	2	34	/ X X	2
33	5	4	33	X X X X X / X X X X	9
32	1	1	32	X / X	2
31	1	1	31	X / X	2
30	0	0	30		0
29	0	1	29	/ X	1
28	0	0	28		0
27	0	0	27		0
26	0	0	26		0
25	0	0	25		0
24	0	0	24		0
23	0	0	23		0
22	0	0	22		0
21	0	0	21		0
20	0	0	20		0
19	0	0	19		0
18	0	0	18		0
17	0	0	17		0
16	0	0	16		0
15	0	0	15		0
Total	50	50		GRAND TOTALS	100

Location: Senter Road

Between: Alma Avenue - Keyes Street

Weather: Clear

Date: 11/3/21

Time From: 2:45

Time To: 3:05

Existing Speed Limit: 40 MPH

PACE

	Northbound	Southbound	Combined Statistics
% Over Pace:	22%	18%	20%
% In Pace:	74%	76%	75%
% Under Pace:	4%	6%	5%
Average Speed:	39 MPH	39 MPH	39 MPH
Pace Speed:	33 - 42 MPH	33 - 42 MPH	33 - 42 MPH
15th Percentile / Critical Speed:	35 MPH	34 MPH	34 MPH
50th Percentile / Critical Speed:	39 MPH	39 MPH	39 MPH
85th Percentile / Critical Speed:	44 MPH	44 MPH	44 MPH

Radar Survey Conducted By:

Counts Unlimited, Inc.

PO Box 1178

Corona, CA 92880

T 951-268-6268 F 951-268-6267

Appendix C

Existing Traffic Count Worksheets

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

City of San Jose
N/S: Senter Road
E/W: Keyes Street/Story Road
Weather: Clear

File Name : 01_SJO_Senter_Keyes AM
Site Code : 10521580
Start Date : 10/12/2021
Page No : 1

Groups Printed- Total Volume

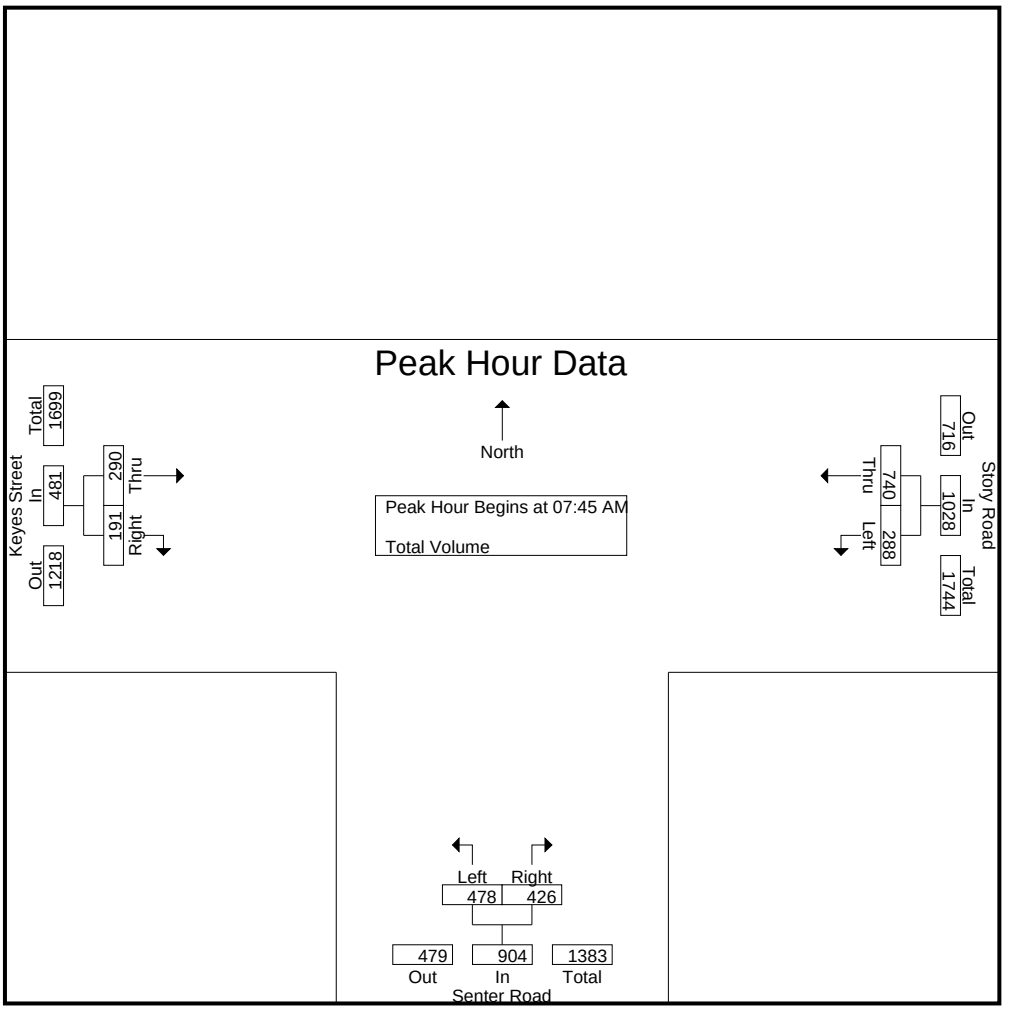
	Story Road Westbound			Senter Road Northbound			Keyes Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	49	71	120	101	44	145	37	28	65	330
07:15 AM	39	124	163	128	40	168	40	28	68	399
07:30 AM	63	174	237	152	63	215	73	36	109	561
07:45 AM	90	177	267	158	82	240	71	43	114	621
Total	241	546	787	539	229	768	221	135	356	1911
08:00 AM	58	181	239	110	103	213	74	42	116	568
08:15 AM	63	182	245	91	122	213	72	56	128	586
08:30 AM	77	200	277	119	119	238	73	50	123	638
08:45 AM	65	118	183	114	77	191	80	44	124	498
Total	263	681	944	434	421	855	299	192	491	2290
Grand Total	504	1227	1731	973	650	1623	520	327	847	4201
Apprch %	29.1	70.9		60	40		61.4	38.6		
Total %	12	29.2	41.2	23.2	15.5	38.6	12.4	7.8	20.2	

	Story Road Westbound			Senter Road Northbound			Keyes Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	**90**	177	267	**158**	82	**240**	71	43	114	621
08:00 AM	58	181	239	110	103	213	**74**	42	116	568
08:15 AM	63	182	245	91	**122**	213	72	**56**	**128**	586
08:30 AM	77	**200**	**277**	119	119	238	73	50	123	**638**
Total Volume	288	740	1028	478	426	904	290	191	481	2413
% App. Total	28	72		52.9	47.1		60.3	39.7		
PHF	.800	.925	.928	.756	.873	.942	.980	.853	.939	.946

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

City of San Jose
N/S: Senter Road
E/W: Keyes Street/Story Road
Weather: Clear

File Name : 01_SJO_Senter_Keyes AM
Site Code : 10521580
Start Date : 10/12/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			07:45 AM			08:00 AM		
+0 mins.	**90**	177	267	**158**	82	**240**	74	42	116
+15 mins.	58	181	239	110	103	213	72	**56**	**128**
+30 mins.	63	182	245	91	**122**	213	73	50	123
+45 mins.	77	**200**	**277**	119	119	238	**80**	44	124
Total Volume	288	740	1028	478	426	904	299	192	491
% App. Total	28	72		52.9	47.1		60.9	39.1	
PHF	.800	.925	.928	.756	.873	.942	.934	.857	.959

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

City of San Jose
N/S: Senter Road
E/W: Keyes Street/Story Road
Weather: Clear

File Name : 01_SJO_Senter_Keyes PM
Site Code : 10521580
Start Date : 10/12/2021
Page No : 1

Groups Printed- Total Volume

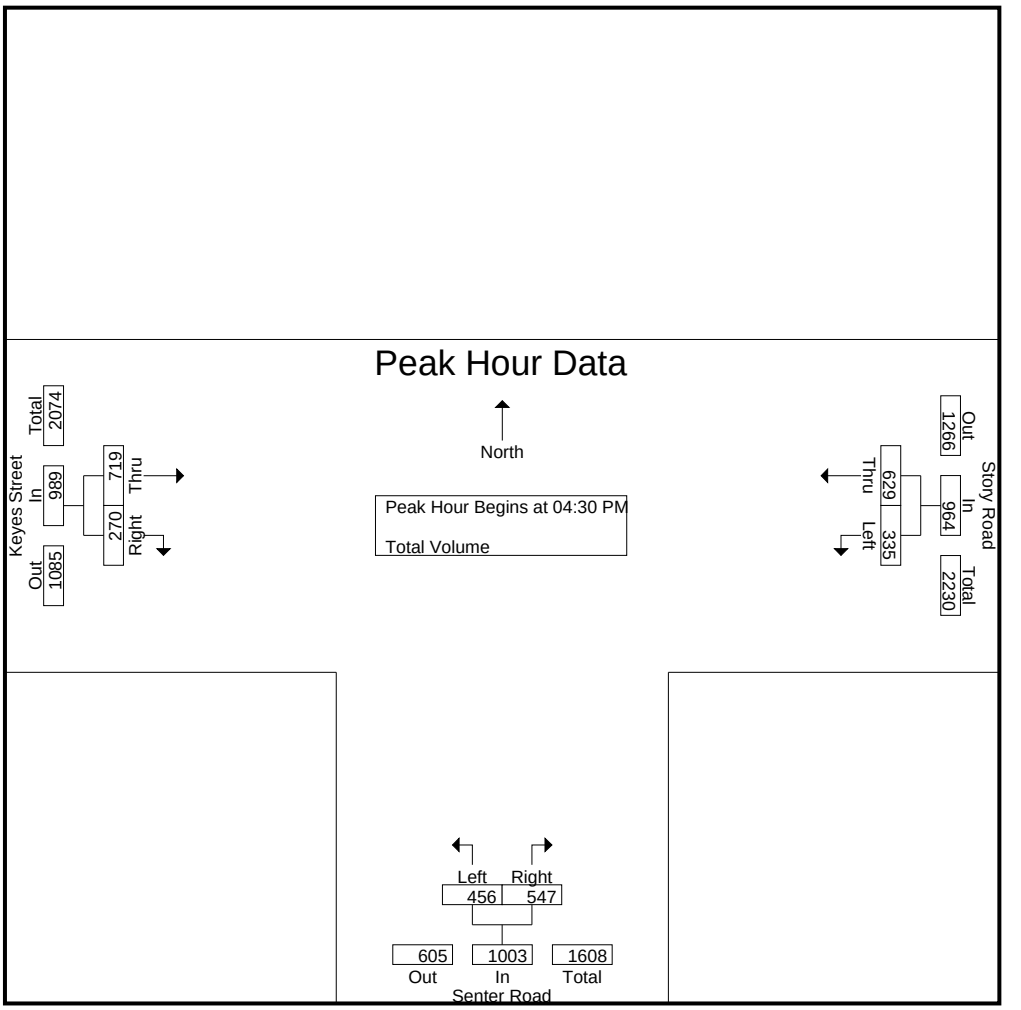
	Story Road Westbound			Senter Road Northbound			Keyes Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	90	155	245	117	123	240	174	62	236	721
04:15 PM	87	141	228	122	122	244	143	64	207	679
04:30 PM	82	151	233	116	141	257	163	58	221	711
04:45 PM	93	181	274	97	128	225	164	56	220	719
Total	352	628	980	452	514	966	644	240	884	2830
05:00 PM	85	163	248	142	152	294	212	83	295	837
05:15 PM	75	134	209	101	126	227	180	73	253	689
05:30 PM	84	174	258	87	109	196	181	49	230	684
05:45 PM	74	160	234	60	119	179	166	63	229	642
Total	318	631	949	390	506	896	739	268	1007	2852
Grand Total	670	1259	1929	842	1020	1862	1383	508	1891	5682
Apprch %	34.7	65.3		45.2	54.8		73.1	26.9		
Total %	11.8	22.2	33.9	14.8	18	32.8	24.3	8.9	33.3	

	Story Road Westbound			Senter Road Northbound			Keyes Street Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	82	151	233	116	141	257	163	58	221	711
04:45 PM	**93**	**181**	**274**	97	128	225	164	56	220	719
05:00 PM	85	163	248	**142**	**152**	**294**	**212**	**83**	**295**	**837**
05:15 PM	75	134	209	101	126	227	180	73	253	689
Total Volume	335	629	964	456	547	1003	719	270	989	2956
% App. Total	34.8	65.2		45.5	54.5		72.7	27.3		
PHF	.901	.869	.880	.803	.900	.853	.848	.813	.838	.883

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
(951)268-6268

City of San Jose
N/S: Senter Road
E/W: Keyes Street/Story Road
Weather: Clear

File Name : 01_SJO_Senter_Keyes PM
Site Code : 10521580
Start Date : 10/12/2021



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:15 PM			05:00 PM		
+0 mins.	**93**	**181**	**274**	122	122	244	**212**	**83**	**295**
+15 mins.	85	163	248	116	141	257	180	73	253
+30 mins.	75	134	209	97	128	225	181	49	230
+45 mins.	84	174	258	**142**	**152**	**294**	166	63	229
Total Volume	337	652	989	477	543	1020	739	268	1007
% App. Total	34.1	65.9		46.8	53.2		73.4	26.6	
PHF	.906	.901	.902	.840	.893	.867	.871	.807	.853

Location: San Jose
N/S: Senter Road
E/W: Keyes St/Story Rd

Date: 10/12/2021
Day: Tuesday

PEDESTRIANS

	North Leg Five Wounds Trail	East Leg Story Road	South Leg Senter Road	West Leg Keyes Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	1	0	1
7:15 AM	0	0	0	0	0
7:30 AM	0	1	0	0	1
7:45 AM	0	4	2	0	6
8:00 AM	0	0	1	0	1
8:15 AM	0	0	2	0	2
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	0	5	6	0	11

	North Leg Five Wounds Trail	East Leg Story Road	South Leg Senter Road	West Leg Keyes Street	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	3	1	0	4
4:15 PM	0	0	1	0	1
4:30 PM	0	1	2	0	3
4:45 PM	0	2	1	0	3
5:00 PM	0	0	0	0	0
5:15 PM	0	0	0	0	0
5:30 PM	0	1	1	0	2
5:45 PM	0	0	1	0	1
TOTAL VOLUMES:	0	7	7	0	14

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

Location: San Jose
N/S: Senter Road
E/W: Keyes St/Story Rd

Date: 10/12/2021
Day: Tuesday

BICYCLES

	Southbound Five Wounds Trail			Westbound Story Road			Northbound Senter Road			Eastbound Keyes Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	3	0	2	0	0	0	0	0	5
7:15 AM	0	0	0	0	1	0	0	0	0	0	1	0	2
7:30 AM	0	0	0	0	1	0	0	0	1	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	3	0	2	0	5
8:00 AM	0	0	0	1	2	0	0	0	0	0	1	0	4
8:15 AM	0	0	0	0	2	0	1	0	1	0	0	0	4
8:30 AM	0	0	0	0	3	0	0	0	0	0	3	0	6
8:45 AM	0	0	0	1	2	0	0	0	0	0	1	1	5
TOTAL VOLUMES:	0	0	0	2	14	0	3	0	5	0	8	1	33

	Southbound Five Wounds Trail			Westbound Story Road			Northbound Senter Road			Eastbound Keyes Street			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	3	1	0	0	0	0	0	2	0	6
4:15 PM	0	0	0	2	1	0	1	0	2	0	3	0	9
4:30 PM	0	0	0	2	2	0	1	0	2	0	1	1	9
4:45 PM	0	0	0	2	0	0	2	0	0	0	1	0	5
5:00 PM	0	0	0	1	2	0	2	0	2	0	2	0	9
5:15 PM	0	0	0	0	1	0	2	0	1	0	0	0	4
5:30 PM	0	0	0	2	2	0	0	0	0	0	0	0	4
5:45 PM	0	0	0	2	0	0	2	0	1	0	1	0	6
TOTAL VOLUMES:	0	0	0	14	9	0	10	0	8	0	10	1	52

Counts Unlimited, Inc.
PO Box 1178
Corona, CA 92878
951-268-6268

Counts Unlimited, Inc.
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(951)268-6268

City of San Jose
N/S: Senter Road
E/W: E Alma Avenue
Weather: Clear

File Name : 02_SJO_Senter_Alma AM
Site Code : 10521580
Start Date : 10/12/2021
Page No : 1

Groups Printed- Total Volume

	Senter Road Southbound			Senter Road Northbound			E Alma Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
07:00 AM	63	6	69	7	133	140	16	8	24	233
07:15 AM	61	11	72	7	168	175	14	6	20	267
07:30 AM	99	26	125	8	204	212	17	7	24	361
07:45 AM	108	15	123	16	195	211	31	22	53	387
Total	331	58	389	38	700	738	78	43	121	1248
08:00 AM	81	23	104	10	186	196	27	15	42	342
08:15 AM	103	15	118	10	196	206	37	13	50	374
08:30 AM	104	16	120	4	187	191	22	12	34	345
08:45 AM	89	11	100	10	148	158	23	11	34	292
Total	377	65	442	34	717	751	109	51	160	1353
Grand Total	708	123	831	72	1417	1489	187	94	281	2601
Apprch %	85.2	14.8		4.8	95.2		66.5	33.5		
Total %	27.2	4.7	31.9	2.8	54.5	57.2	7.2	3.6	10.8	

	Senter Road Southbound			Senter Road Northbound			E Alma Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	99	**26**	**125**	8	**204**	**212**	17	7	24	361
07:45 AM	**108**	15	123	**16**	195	211	31	**22**	**53**	**387**
08:00 AM	81	23	104	10	186	196	27	15	42	342
08:15 AM	103	15	118	10	196	206	**37**	13	50	374
Total Volume	391	79	470	44	781	825	112	57	169	1464
% App. Total	83.2	16.8		5.3	94.7		66.3	33.7		
PHF	.905	.760	.940	.688	.957	.973	.757	.648	.797	.946

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Corona, CA 92878
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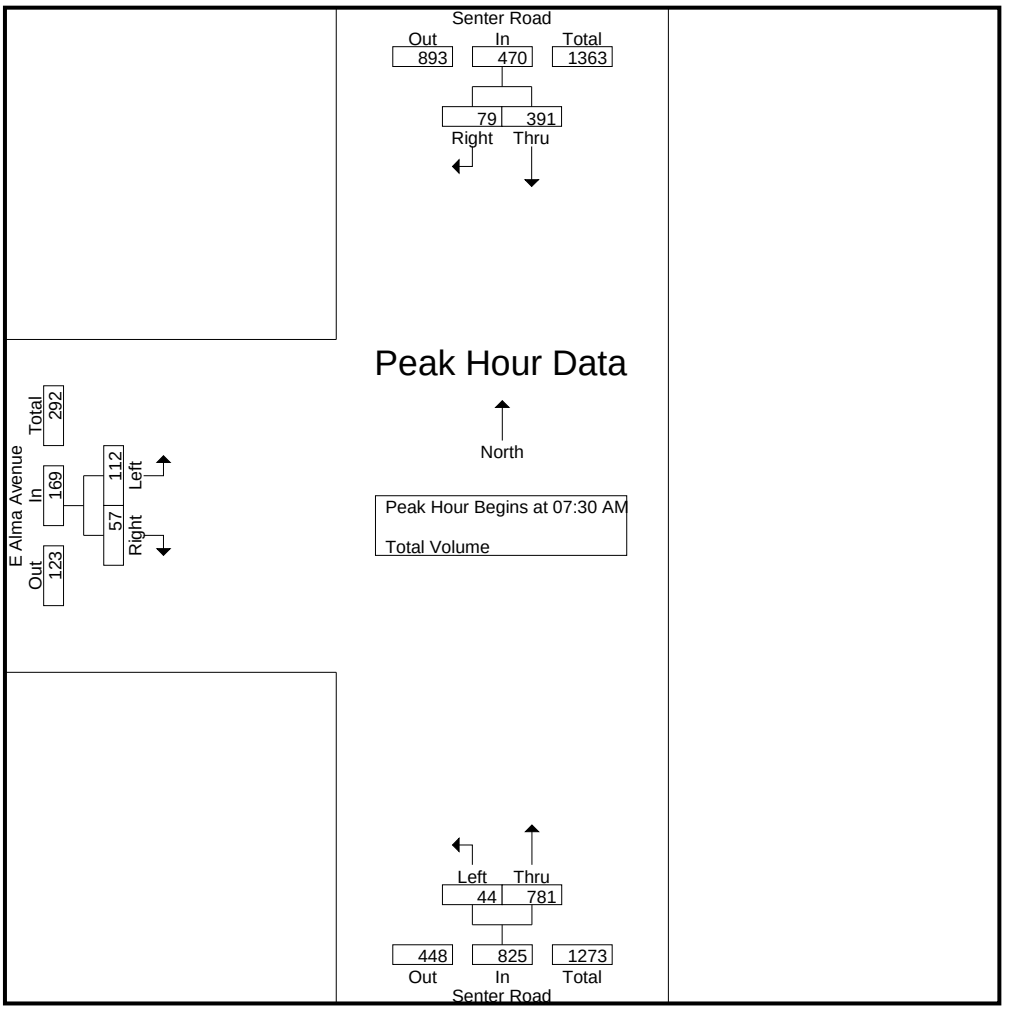
City of San Jose
N/S: Senter Road
E/W: E Alma Avenue
Weather: Clear

File Name : 02_SJO_Senter_Alma AM
Site Code : 10521580
Start Date : 10/12/2021
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:45 AM		
+0 mins.	99	**26**	**125**	8	**204**	**212**	31	**22**	**53**
+15 mins.	**108**	15	123	**16**	195	211	27	15	42
+30 mins.	81	23	104	10	186	196	**37**	13	50
+45 mins.	103	15	118	10	196	206	22	12	34
Total Volume	391	79	470	44	781	825	117	62	179
% App. Total	83.2	16.8		5.3	94.7		65.4	34.6	
PHF	.905	.760	.940	.688	.957	.973	.791	.705	.844

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City of San Jose
N/S: Senter Road
E/W: E Alma Avenue
Weather: Clear

File Name : 02_SJO_Senter_Alma PM
Site Code : 10521580
Start Date : 10/12/2021
Page No : 1

Groups Printed- Total Volume

	Senter Road Southbound			Senter Road Northbound			E Alma Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
04:00 PM	158	11	169	14	183	197	37	35	72	438
04:15 PM	156	14	170	12	196	208	32	21	53	431
04:30 PM	150	13	163	13	209	222	50	29	79	464
04:45 PM	140	16	156	11	205	216	28	27	55	427
Total	604	54	658	50	793	843	147	112	259	1760
05:00 PM	158	14	172	17	233	250	48	34	82	504
05:15 PM	135	12	147	4	185	189	37	20	57	393
05:30 PM	136	15	151	9	150	159	25	26	51	361
05:45 PM	140	15	155	9	139	148	30	25	55	358
Total	569	56	625	39	707	746	140	105	245	1616
Grand Total	1173	110	1283	89	1500	1589	287	217	504	3376
Apprch %	91.4	8.6		5.6	94.4		56.9	43.1		
Total %	34.7	3.3	38	2.6	44.4	47.1	8.5	6.4	14.9	

	Senter Road Southbound			Senter Road Northbound			E Alma Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	156	14	170	12	196	208	32	21	53	431
04:30 PM	150	13	163	13	209	222	**50**	29	79	464
04:45 PM	140	**16**	156	11	205	216	28	27	55	427
05:00 PM	**158**	14	**172**	**17**	**233**	**250**	48	**34**	**82**	**504**
Total Volume	604	57	661	53	843	896	158	111	269	1826
% App. Total	91.4	8.6		5.9	94.1		58.7	41.3		
PHF	.956	.891	.961	.779	.905	.896	.790	.816	.820	.906

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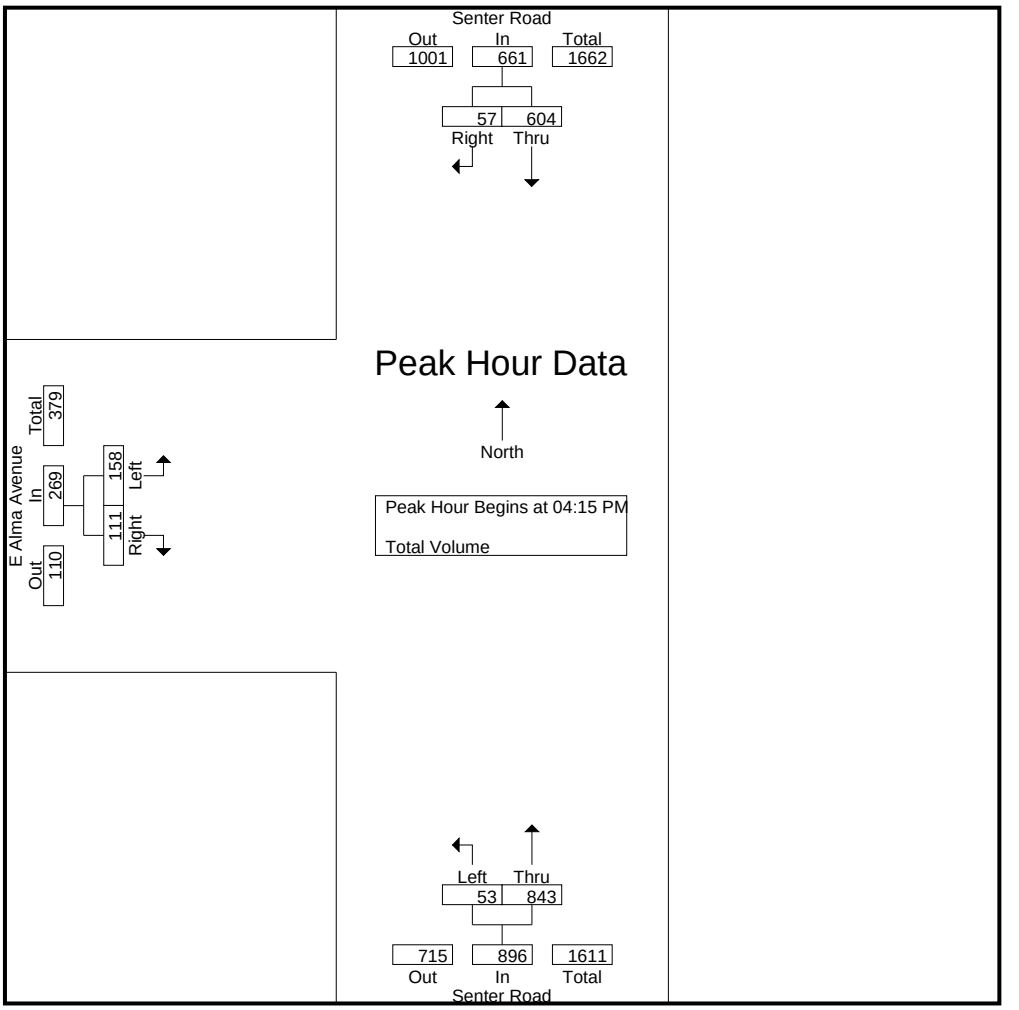
City of San Jose
N/S: Senter Road
E/W: E Alma Avenue
Weather: Clear

File Name : 02_SJO_Senter_Alma PM
Site Code : 10521580
Start Date : 10/12/2021
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			04:15 PM			04:30 PM		
+0 mins.	156	14	170	12	196	208	**50**	29	79
+15 mins.	150	13	163	13	209	222	28	27	55
+30 mins.	140	**16**	156	11	205	216	48	**34**	**82**
+45 mins.	**158**	14	**172**	**17**	**233**	**250**	37	20	57
Total Volume	604	57	661	53	843	896	163	110	273
% App. Total	91.4	8.6		5.9	94.1		59.7	40.3	
PHF	.956	.891	.961	.779	.905	.896	.815	.809	.832

Location: San Jose
N/S: Senter Road
E/W: E Alma Avenue

Date: 10/12/2021
Day: Tuesday

PEDESTRIANS

	North Leg Senter Road	East Leg E Alma Avenue	South Leg Senter Road	West Leg E Alma Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0
7:30 AM	1	0	1	1	3
7:45 AM	1	0	0	4	5
8:00 AM	0	0	1	0	1
8:15 AM	0	0	0	0	0
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	1	1
TOTAL VOLUMES:	2	0	2	6	10

	North Leg Senter Road	East Leg E Alma Avenue	South Leg Senter Road	West Leg E Alma Avenue	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	0	0	2	0	2
4:15 PM	0	0	0	0	0
4:30 PM	1	0	3	1	5
4:45 PM	0	0	0	0	0
5:00 PM	0	0	0	0	0
5:15 PM	2	0	0	0	2
5:30 PM	1	0	0	0	1
5:45 PM	2	0	2	0	4
TOTAL VOLUMES:	6	0	7	1	14

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951-268-6268

Location: San Jose
N/S: Senter Road
E/W: E Alma Avenue

Date: 10/12/2021
Day: Tuesday

BICYCLES

	Southbound Senter Road			Westbound E Alma Avenue			Northbound Senter Road			Eastbound E Alma Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	1	2	0	0	0	0	3
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	0	0	0	2	0	0	0	0	3
7:45 AM	0	0	0	0	0	0	1	2	0	0	0	0	3
8:00 AM	0	1	0	0	0	0	0	1	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	1	0	0	0	1	2
8:30 AM	0	1	0	0	0	0	0	1	0	0	0	0	2
8:45 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
TOTAL VOLUMES:	0	4	0	0	0	0	2	9	0	0	0	1	16

	Southbound Senter Road			Westbound E Alma Avenue			Northbound Senter Road			Eastbound E Alma Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	1	0	1	0	0	2
4:15 PM	0	0	1	0	0	0	0	3	0	0	0	0	4
4:30 PM	0	3	1	0	0	0	0	3	0	0	0	0	7
4:45 PM	0	0	0	0	0	0	0	2	0	0	0	0	2
5:00 PM	0	0	0	0	0	0	0	4	0	0	0	0	4
5:15 PM	0	0	1	0	0	0	0	1	0	0	0	0	2
5:30 PM	0	1	0	0	0	0	0	2	0	0	0	0	3
5:45 PM	0	3	1	0	0	0	1	3	0	0	0	0	8
TOTAL VOLUMES:	0	7	4	0	0	0	1	19	0	1	0	0	32

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Counts Unlimited, Inc.

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Phone: (951) 268-6268
email: counts@countsunlimited.com

City of San Jose
Senter Road
B/ Keyes Street - Story Road
24 Hour Directional Volume Count

SEKEEST
Site Code: 105-21580

Start Time	10/12/2021 Tue	Northbound Morning	Northbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Southbound Morning	Southbound Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		9	184			4	125				
12:15		10	196			4	132				
12:30		9	205			2	164				
12:45		6	206	34	791	3	161	13	582	47	1373
01:00		8	194			4	151				
01:15		4	189			0	146				
01:30		8	160			6	162				
01:45		7	204	27	747	2	145	12	604	39	1351
02:00		10	222			2	121				
02:15		5	218			3	167				
02:30		6	249			2	131				
02:45		11	214	32	903	8	164	15	583	47	1486
03:00		5	230			5	170				
03:15		4	226			7	**170**				
03:30		13	278			1	**194**				
03:45		8	236	30	970	10	**179**	23	713	53	1683
04:00		12	256			4	**173**				
04:15		24	**236**			10	166				
04:30		19	**259**			10	160				
04:45		22	**224**	77	975	19	152	43	651	120	1626
05:00		36	**295**			18	190				
05:15		48	226			24	162				
05:30		84	182			39	145				
05:45		86	165	254	868	62	146	143	643	397	1511
06:00		68	182			64	155				
06:15		92	172			52	118				
06:30		118	168			59	112				
06:45		133	155	411	677	66	111	241	496	652	1173
07:00		166	148			74	96				
07:15		180	146			66	88				
07:30		212	116			108	82				
07:45		**238**	94	796	504	154	71	402	337	1198	841
08:00		**214**	88			97	60				
08:15		**239**	94			120	52				
08:30		**218**	80			124	46				
08:45		181	60	852	322	102	54	443	212	1295	534
09:00		176	60			96	31				
09:15		158	44			98	27				
09:30		191	49			120	26				
09:45		150	43	675	196	124	23	438	107	1113	303
10:00		182	42			124	18				
10:15		182	28			108	17				
10:30		187	23			**122**	15				
10:45		150	26	701	119	**156**	13	510	63	1211	182
11:00		158	25			**136**	10				
11:15		183	14			**134**	10				
11:30		198	15			120	10				
11:45		185	14	724	68	134	7	524	37	1248	105
Total		4613	7140	4613	7140	2807	5028	2807	5028	7420	12168
Combined Total		11753		11753		7835		7835		19588	
AM Peak	-	07:45	-	-	-	10:30	-	-	-	-	-
Vol.	-	909	-	-	-	548	-	-	-	-	-
P.H.F.		0.951				0.878					
PM Peak	-	-	04:15	-	-	-	03:15	-	-	-	-
Vol.	-	-	1014	-	-	-	716	-	-	-	-
P.H.F.			0.859				0.923				
Percentage		39.2%	60.8%			35.8%	64.2%				

ADT/AADT	ADT 19,588	AADT 19,588

City of San Jose

Radar Speed Survey

Speed	NB	SB	MPH	Vehicles Surveyed	TOT.
				Northbound / Southbound	VEH.
65	0	0	65		0
64	0	0	64		0
63	0	0	63		0
62	0	0	62		0
61	0	0	61		0
60	0	0	60		0
59	0	0	59		0
58	0	0	58		0
57	0	0	57		0
56	0	0	56		0
55	0	0	55		0
54	0	0	54		0
53	0	0	53		0
52	0	0	52		0
51	0	0	51		0
50	0	0	50		0
49	1	2	49	X / X X	3
48	1	1	48	X / X	2
47	1	2	47	X / X X	3
46	1	1	46	X / X	2
45	3	1	45	X X X / X	4
44	2	1	44	X X / X	3
43	2	1	43	X X / X	3
42	1	1	42	X / X	2
41	7	6	41	X X X X X X X / X X X X X	13
40	5	2	40	X X X X X / X X	7
39	7	8	39	X X X X X X X / X X X X X X X	15
38	2	3	38	X X / X X X	5
37	2	4	37	X X / X X X X	6
36	3	2	36	X X X / X X	5
35	5	6	35	X X X X X / X X X X X X	11
34	0	2	34	/ X X	2
33	5	4	33	X X X X X / X X X X	9
32	1	1	32	X / X	2
31	1	1	31	X / X	2
30	0	0	30		0
29	0	1	29	/ X	1
28	0	0	28		0
27	0	0	27		0
26	0	0	26		0
25	0	0	25		0
24	0	0	24		0
23	0	0	23		0
22	0	0	22		0
21	0	0	21		0
20	0	0	20		0
19	0	0	19		0
18	0	0	18		0
17	0	0	17		0
16	0	0	16		0
15	0	0	15		0
Total	50	50		GRAND TOTALS	100

Location: Senter Road

Between: Alma Avenue - Keyes Street

Weather: Clear

Date: 11/3/21

Time From: 2:45

Time To: 3:05

Existing Speed Limit: 40 MPH

PACE

	Northbound	Southbound	Combined Statistics
% Over Pace:	22%	18%	20%
% In Pace:	74%	76%	75%
% Under Pace:	4%	6%	5%
Average Speed:	39 MPH	39 MPH	39 MPH
Pace Speed:	33 - 42 MPH	33 - 42 MPH	33 - 42 MPH
15th Percentile / Critical Speed:	35 MPH	34 MPH	34 MPH
50th Percentile / Critical Speed:	39 MPH	39 MPH	39 MPH
85th Percentile / Critical Speed:	44 MPH	44 MPH	44 MPH

Radar Survey Conducted By:

Counts Unlimited, Inc.

PO Box 1178

Corona, CA 92880

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Appendix D

Approved Cumulative Projects
Intersection Volumes

AM PROJECT TRIPS

09/29/2021

Intersection of : E Alma Av & Senter Rd

Traffix Node Number : 3237

Permit No./Proposed Land Use/Description/Location	M09 NBL	M08 NBT	M07 NBR	M03 SBL	M02 SBT	M01 SBR	M12 EBL	M11 EBT	M10 EBR	M06 WBL	M05 WBT	M04 WBR
H15-039 Retail/Commercial 1402 MONTEREY ROAD DCP	0	0	0	0	9	0	16	0	2	0	0	0
H16-013 (3-10278) Retail/Commercial 353 W JULIAN ST RIVER CORPORATE CENTER BLDG 3	0	0	0	0	9	0	16	0	2	0	0	0
PDC02-066 (3-16147) Residential GOBLE LN & MONTEREY RD (SW/C) GOBLE LANE	0	4	0	0	2	0	0	0	0	0	0	0
PDC04-045 (3-14400) Retail/Commercial N/S STORY ROAD, 720' SW OF MCLAUGHLIN VIETNAMTOWN	0	7	0	0	5	0	7	0	0	0	0	0
TOTAL:	**0**	**11**	**0**	**0**	**25**	**0**	**39**	**0**	**4**	**0**	**0**	**0**

	LEFT	THRU	RIGHT
NORTH	0	25	0
EAST	0	0	0
SOUTH	0	11	0
WEST	39	0	4

PM PROJECT TRIPS

09/29/2021

Intersection of : E Alma Av & Senter Rd

Traffix Node Number : 3237

Permit No./Proposed Land Use/Description/Location	M09 NBL	M08 NBT	M07 NBR	M03 SBL	M02 SBT	M01 SBR	M12 EBL	M11 EBT	M10 EBR	M06 WBL	M05 WBT	M04 WBR
H15-039 Retail/Commercial 1402 MONTEREY ROAD DCP	0	0	0	0	3	0	11	0	4	0	0	0
H16-013 (3-10278) Retail/Commercial 353 W JULIAN ST RIVER CORPORATE CENTER BLDG 3	0	0	0	0	3	0	11	0	4	0	0	0
PDC02-066 (3-16147) Residential GOBLE LN & MONTEREY RD (SW/C) GOBLE LANE	0	2	0	0	5	0	0	0	0	0	0	0
PDC04-045 (3-14400) Retail/Commercial N/S STORY ROAD, 720' SW OF MCLAUGHLIN VIETNAMTOWN	0	16	0	0	15	0	16	0	0	0	0	0
TOTAL:	**0**	**18**	**0**	**0**	**26**	**0**	**38**	**0**	**8**	**0**	**0**	**0**

	LEFT	THRU	RIGHT
NORTH	0	26	0
EAST	0	0	0
SOUTH	0	18	0
WEST	38	0	8

AM PROJECT TRIPS

09/29/2021

Intersection of : Keyes St & Senter Rd & Story Rd

Traffix Node Number : 3617

Permit No./Proposed Land Use/Description/Location	M09 NBL	M08 NBT	M07 NBR	M03 SBL	M02 SBT	M01 SBR	M12 EBL	M11 EBT	M10 EBR	M06 WBL	M05 WBT	M04 WBR
DOWNTOWN LEGACY DOWNTOWN CORE DOWNTOWN STRATEGY PLAN 2000	18	0	5	0	0	0	0	4	3	3	13	0
H15-039 Retail/Commercial 1402 MONTEREY ROAD DCP	0	0	16	0	0	0	0	15	0	9	33	0
H16-013 (3-10278) Retail/Commercial 353 W JULIAN ST RIVER CORPORATE CENTER BLDG 3	0	0	16	0	0	0	0	15	0	9	33	0
NSJ LEGACY NORTH SAN JOSE	24	0	7	0	0	0	0	1	0	0	1	0
PDC04-045 (3-14400) Retail/Commercial N/S STORY ROAD, 720' SW OF MCLAUGHLIN VIETNAMTOWN	0	0	7	0	0	0	0	69	0	5	52	0
TOTAL:	**42**	**0**	**51**	**0**	**0**	**0**	**0**	**104**	**3**	**26**	**132**	**0**

	LEFT	THRU	RIGHT
NORTH	0	0	0
EAST	26	132	0
SOUTH	42	0	51
WEST	0	104	3

PM PROJECT TRIPS

09/29/2021

Intersection of : Keyes St & Senter Rd & Story Rd

Traffix Node Number : 3617

Permit No./Proposed Land Use/Description/Location	M09 NBL	M08 NBT	M07 NBR	M03 SBL	M02 SBT	M01 SBR	M12 EBL	M11 EBT	M10 EBR	M06 WBL	M05 WBT	M04 WBR
DOWNTOWN LEGACY DOWNTOWN CORE DOWNTOWN STRATEGY PLAN 2000	50	0	34	0	0	0	0	73	36	28	41	0
H15-039 Retail/Commercial 1402 MONTEREY ROAD DCP	0	0	11	0	0	0	0	11	0	3	12	0
H16-013 (3-10278) Retail/Commercial 353 W JULIAN ST RIVER CORPORATE CENTER BLDG 3	0	0	11	0	0	0	0	11	0	3	12	0
NSJ LEGACY NORTH SAN JOSE	3	0	2	0	0	0	0	19	9	2	4	0
PDC04-045 (3-14400) Retail/Commercial N/S STORY ROAD, 720' SW OF MCLAUGHLIN VIETNAMTOWN	0	0	28	0	0	0	0	145	0	15	161	0
TOTAL:	**53**	**0**	**86**	**0**	**0**	**0**	**0**	**259**	**45**	**51**	**230**	**0**

	LEFT	THRU	RIGHT
NORTH	0	0	0
EAST	51	230	0
SOUTH	53	0	86
WEST	0	259	45

Appendix E

Pending Cumulative Projects Calculations

KEYES AND SENTER

AM

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
APPROVED												
DOWNTOWN LEGACY	18	0	5	0	0	0	0	4	3	3	13	0
1402 MONTEREY ROAD	0	0	16	0	0	0	0	15	0	9	33	0
353 W JULIAN ST	0	0	16	0	0	0	0	15	0	9	33	0
LEGACY	24	0	7	0	0	0	0	1	0	0	1	0
VIETNAMTOWN	0	0	7	0	0	0	0	69	0	5	52	0
SUBTOTAL	42	0	51	0	0	0	0	104	3	26	132	0
PENDING												
551 KEYES STREET	5	0	0	0	0	0	0	10	17	0	3	0
FIRE TRAINING CENTER	0	0	0	0	0	0	0	0	7	7	0	0
ICE RINK EXPANSION	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	5	0	0	0	0	0	0	10	24	7	3	0
TOTAL	47	0	51	0	0	0	0	114	27	33	135	0

PM

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
APPROVED												
DOWNTOWN LEGACY	50	0	34	0	0	0	0	73	36	28	41	0
1402 MONTEREY ROAD	0	0	11	0	0	0	0	11	0	3	12	0
353 W JULIAN ST	0	0	11	0	0	0	0	11	0	3	12	0
LEGACY	3	0	2	0	0	0	0	19	9	2	4	0
VIETNAMTOWN	0	0	28	0	0	0	0	145	0	15	161	0
SUBTOTAL	53	0	86	0	0	0	0	259	45	51	230	0
PENDING												
551 KEYES STREET	17	0	0	0	0	0	0	6	9	0	10	0
FIRE TRAINING CENTER	7	0	7	0	0	0	0	0	0	0	0	0
ICE RINK EXPANSION	0	0	5	0	0	0	0	0	0	16	0	0
SUBTOTAL	24	0	12	0	0	0	0	6	9	16	10	0
TOTAL	77	0	98	0	0	0	0	265	54	67	240	0

ALMA & SENTER

AM

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
APPROVED												
1402 MONTEREY ROAD	0	0	0	0	9	0	16	0	2	0	0	0
353 W JULIAN ST	0	0	0	0	9	0	16	0	2	0	0	0
GOBLE LANE	0	4	0	0	2	0	0	0	0	0	0	0
VIETNAMTOWN	0	7	0	0	5	0	7	0	0	0	0	0
SUBTOTAL	0	11	0	0	25	0	39	0	4	0	0	0
PENDING												
551 KEYES STREET	100	2	0	0	7	10	3	0	0	0	0	0
FIRE TRAINING CENTER	0	0	0	0	0	14	0	0	0	0	0	0
ICE RINK EXPANSION	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	100	2	0	0	7	24	3	0	0	0	0	0
TOTAL	100	13	0	0	32	24	42	0	4	0	0	0

PM

	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
APPROVED												
1402 MONTEREY ROAD	0	0	0	0	3	0	11	0	4	0	0	0
353 W JULIAN ST	0	0	0	0	3	0	11	0	4	0	0	0
GOBLE LANE	0	2	0	0	5	0	0	0	0	0	0	0
VIETNAMTOWN	0	16	0	0	15	0	16	0	0	0	0	0
SUBTOTAL	0	18	0	0	26	0	38	0	8	0	0	0
PENDING												
551 KEYES STREET	0	7	0	0	4	6	9	0	0	0	0	0
FIRE TRAINING CENTER	0	0	0	0	0	0	14	0	0	0	0	0
ICE RINK EXPANSION	8			0		16	5		2			
SUBTOTAL	8	7	0	0	4	22	28	0	2	0	0	0
TOTAL	8	25	0	0	30	22	66	0	10	0	0	0

Cumulative Projects ADT Calculations

APPROVED CUMULATIVES

	INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	totals
AM	1	42	0	51	0	0	0	0	104	3	26	132	0	358
	2	0	11	0	0	25	0	39	0	4	0	0	0	79
PM	INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
	1	53	0	86	0	0	0	0	259	45	51	230	0	724
	2	0	18	0	0	26	0	38	0	8	0	0	0	90

PENDING CUMULATIVES

	INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	1	5	0	0	0	0	0	0	10	24	7	3	0	49
	2	100	2	0	0	7	24	3	0	0	0	0	0	136
PM	INTID	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
	1	24	0	12	0	0	0	0	6	9	16	10	0	77
	2	8	7	0	0	4	22	28	0	2	0	0	0	71

APPR ADT 1	122	PEND ADT 1	36
APPR ADT 2	75	PEND ADT 2	36
APPR ADT 3	235	PEND ADT 3	61
APPR ADT 4	82	PEND ADT 4	61
MAX	235		61
Factor	2820		732
12			

APPROVED CUMULATIVES ADT	**2820**
PENDING CUMULATIVES ADT	**732**

Appendix F

Existing Conditions
LOS Analysis Worksheets

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		120	290		0	0
Storage Lanes		1	1		2	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	5085	1583	1770	5085	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		201				448
Link Speed (mph)	40			40	40	
Link Distance (ft)	1078			2132	1134	
Travel Time (s)	18.4			36.3	19.3	

Intersection Summary	
Area Type:	Other

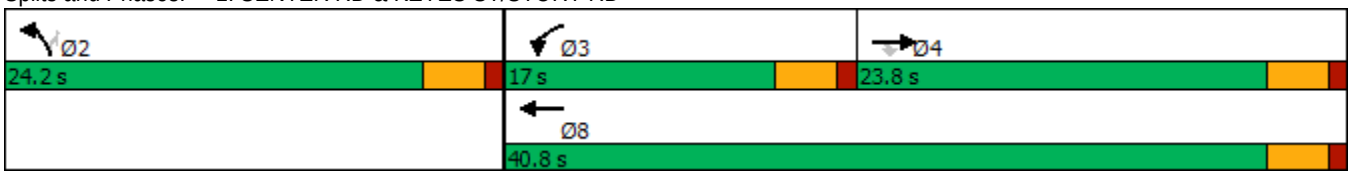
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	290	191	288	740	478	426
Future Volume (vph)	290	191	288	740	478	426
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	305	201	303	779	503	448
Shared Lane Traffic (%)						
Lane Group Flow (vph)	305	201	303	779	503	448

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	290	191	288	740	478	426
Future Volume (vph)	290	191	288	740	478	426
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	10.0
Minimum Split (s)	23.8	23.8	15.0	23.8	23.8	23.8
Total Split (s)	23.8	23.8	17.0	40.8	24.2	24.2
Total Split (%)	36.6%	36.6%	26.2%	62.8%	37.2%	37.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	10.6	10.6	12.6	27.2	20.2	20.2
Actuated g/C Ratio	0.19	0.19	0.23	0.49	0.36	0.36
v/c Ratio	0.32	0.43	0.75	0.31	0.40	0.52
Control Delay	20.3	6.9	34.8	8.9	14.5	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	6.9	34.8	8.9	14.5	4.2
LOS	C	A	C	A	B	A
Approach Delay	15.0			16.1	9.7	
Approach LOS	B			B	A	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 55.4	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 13.5	Intersection LOS: B
Intersection Capacity Utilization 47.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: SENTER RD & KEYES ST/STORY RD



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	305	201	303	779	503	448
v/c Ratio	0.32	0.43	0.75	0.31	0.40	0.52
Control Delay	20.3	6.9	34.8	8.9	14.5	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.3	6.9	34.8	8.9	14.5	4.2
Queue Length 50th (ft)	32	0	92	52	61	0
Queue Length 95th (ft)	52	44	#207	72	102	51
Internal Link Dist (ft)	998			2052	1054	
Turn Bay Length (ft)		120	290			
Base Capacity (vph)	1819	695	415	3382	1253	862
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.29	0.73	0.23	0.40	0.52

Intersection Summary

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

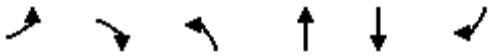
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	290	191	288	740	478	426
Future Volume (veh/h)	290	191	288	740	478	426
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	305	201	303	779	503	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	981	305	361	2400	1312	
Arrive On Green	0.19	0.19	0.20	0.47	0.38	0.00
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	305	201	303	779	503	0
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	2.7	6.2	8.7	5.1	5.6	0.0
Cycle Q Clear(g_c), s	2.7	6.2	8.7	5.1	5.6	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	981	305	361	2400	1312	
V/C Ratio(X)	0.31	0.66	0.84	0.32	0.38	
Avail Cap(c_a), veh/h	1900	590	435	3531	1312	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.5	19.9	20.4	8.8	12.0	0.0
Incr Delay (d2), s/veh	0.2	2.4	11.7	0.1	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	2.2	4.3	1.4	1.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.6	22.3	32.1	8.9	12.8	0.0
LnGrp LOS	B	C	C	A	B	
Approach Vol, veh/h	506			1082	503	A
Approach Delay, s/veh	20.1			15.4	12.8	
Approach LOS	C			B	B	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		24.2	14.8	14.2		29.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		20.2	13.0	19.8		36.8
Max Q Clear Time (g_c+I1), s		7.6	10.7	8.2		7.1
Green Ext Time (p_c), s		1.5	0.2	2.0		5.6

Intersection Summary	
HCM 6th Ctrl Delay	15.9
HCM 6th LOS	B

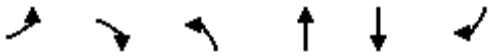
Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	155			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91
Ped Bike Factor						
Frt		0.850			0.975	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	4958	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	5085	4958	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		60			71	
Link Speed (mph)	40			40	40	
Link Distance (ft)	1294			1556	709	
Travel Time (s)	22.1			26.5	12.1	

Intersection Summary	
Area Type:	Other



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	112	57	44	781	391	79
Future Volume (vph)	112	57	44	781	391	79
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	118	60	46	822	412	83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	118	60	46	822	495	0

Intersection Summary

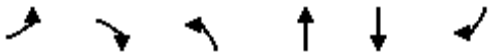
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	112	57	44	781	391
Future Volume (vph)	112	57	44	781	391
Turn Type	Prot	Perm	Prot	NA	NA
Protected Phases	4		5	2	6
Permitted Phases		4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	23.8	23.8	14.5	23.8	23.8
Total Split (s)	24.0	24.0	15.0	41.0	26.0
Total Split (%)	36.9%	36.9%	23.1%	63.1%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)	10.5	10.5	7.5	42.8	37.8
Actuated g/C Ratio	0.18	0.18	0.13	0.74	0.66
v/c Ratio	0.37	0.18	0.20	0.22	0.15
Control Delay	23.8	7.6	24.0	3.4	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	7.6	24.0	3.4	5.8
LOS	C	A	C	A	A
Approach Delay	18.3			4.5	5.8
Approach LOS	B			A	A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 57.6	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.37	
Intersection Signal Delay: 6.5	Intersection LOS: A
Intersection Capacity Utilization 33.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: SENTER RD & ALMA AVE

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	118	60	46	822	495
v/c Ratio	0.37	0.18	0.20	0.22	0.15
Control Delay	23.8	7.6	24.0	3.4	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	23.8	7.6	24.0	3.4	5.8
Queue Length 50th (ft)	35	0	14	30	14
Queue Length 95th (ft)	73	24	38	49	50
Internal Link Dist (ft)	1214			1476	629
Turn Bay Length (ft)			155		
Base Capacity (vph)	616	589	338	3774	3274
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.19	0.10	0.14	0.22	0.15

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	112	57	44	781	391	79
Future Volume (veh/h)	112	57	44	781	391	79
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	118	60	46	822	412	83
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	306	272	115	3478	2327	456
Arrive On Green	0.17	0.17	0.06	0.68	0.54	0.54
Sat Flow, veh/h	1781	1585	1781	5274	4453	839
Grp Volume(v), veh/h	118	60	46	822	325	170
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1719
Q Serve(g_s), s	3.2	1.8	1.3	3.3	2.6	2.7
Cycle Q Clear(g_c), s	3.2	1.8	1.3	3.3	2.6	2.7
Prop In Lane	1.00	1.00	1.00			0.49
Lane Grp Cap(c), veh/h	306	272	115	3478	1849	934
V/C Ratio(X)	0.39	0.22	0.40	0.24	0.18	0.18
Avail Cap(c_a), veh/h	656	584	361	3478	1849	934
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.0	19.4	24.4	3.3	6.3	6.3
Incr Delay (d2), s/veh	0.8	0.4	2.2	0.2	0.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.6	0.5	0.7	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.8	19.8	26.6	3.5	6.5	6.7
LnGrp LOS	C	B	C	A	A	A
Approach Vol, veh/h	178			868	495	
Approach Delay, s/veh	20.4			4.7	6.6	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		41.0		13.3	7.5	33.5
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		37.0		20.0	11.0	22.0
Max Q Clear Time (g_c+I1), s		5.3		6.2	3.3	4.7
Green Ext Time (p_c), s		6.1		0.4	0.0	2.7

Intersection Summary	
HCM 6th Ctrl Delay	7.1
HCM 6th LOS	A

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		120	290		0	0
Storage Lanes		1	1		2	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	5085	1583	1770	5085	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		307				450
Link Speed (mph)	40			40	40	
Link Distance (ft)	1078			2132	1134	
Travel Time (s)	18.4			36.3	19.3	

Intersection Summary	
Area Type:	Other

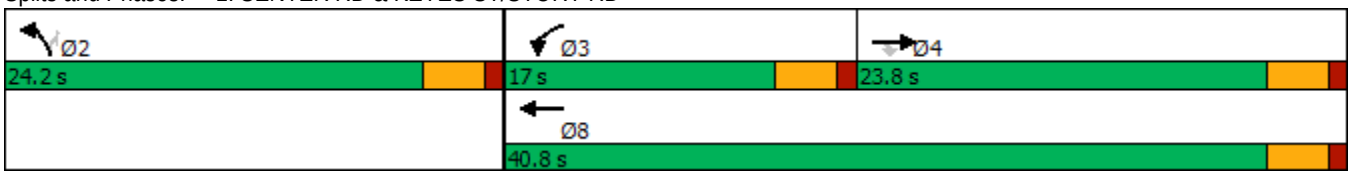
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	719	270	335	629	456	547
Future Volume (vph)	719	270	335	629	456	547
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	817	307	381	715	518	622
Shared Lane Traffic (%)						
Lane Group Flow (vph)	817	307	381	715	518	622

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	719	270	335	629	456	547
Future Volume (vph)	719	270	335	629	456	547
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	10.0
Minimum Split (s)	23.8	23.8	15.0	23.8	23.8	23.8
Total Split (s)	23.8	23.8	17.0	40.8	24.2	24.2
Total Split (%)	36.6%	36.6%	26.2%	62.8%	37.2%	37.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	17.2	17.2	13.0	34.2	20.2	20.2
Actuated g/C Ratio	0.28	0.28	0.21	0.55	0.32	0.32
v/c Ratio	0.58	0.47	1.03	0.26	0.47	0.76
Control Delay	21.3	5.1	85.6	7.6	19.0	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.3	5.1	85.6	7.6	19.0	13.4
LOS	C	A	F	A	B	B
Approach Delay	16.9			34.7	16.0	
Approach LOS	B			C	B	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 62.5	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.03	
Intersection Signal Delay: 22.4	Intersection LOS: C
Intersection Capacity Utilization 55.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: SENTER RD & KEYES ST/STORY RD



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	817	307	381	715	518	622
v/c Ratio	0.58	0.47	1.03	0.26	0.47	0.76
Control Delay	21.3	5.1	85.6	7.6	19.0	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.3	5.1	85.6	7.6	19.0	13.4
Queue Length 50th (ft)	97	0	~167	46	82	50
Queue Length 95th (ft)	128	46	#313	63	122	#179
Internal Link Dist (ft)	998			2052	1054	
Turn Bay Length (ft)		120	290			
Base Capacity (vph)	1614	712	369	3000	1111	817
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.43	1.03	0.24	0.47	0.76

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

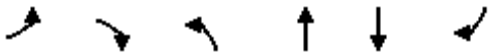
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	719	270	335	629	456	547
Future Volume (veh/h)	719	270	335	629	456	547
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	817	307	381	715	518	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1357	421	376	2767	1134	
Arrive On Green	0.27	0.27	0.21	0.54	0.33	0.00
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	817	307	381	715	518	0
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	8.6	10.9	13.0	4.6	7.3	0.0
Cycle Q Clear(g_c), s	8.6	10.9	13.0	4.6	7.3	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1357	421	376	2767	1134	
V/C Ratio(X)	0.60	0.73	1.01	0.26	0.46	
Avail Cap(c_a), veh/h	1642	510	376	3052	1134	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.8	20.6	24.3	7.5	16.3	0.0
Incr Delay (d2), s/veh	0.4	4.2	49.7	0.0	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	4.0	10.0	1.3	2.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.2	24.8	74.0	7.6	17.7	0.0
LnGrp LOS	C	C	F	A	B	
Approach Vol, veh/h	1124			1096	518	A
Approach Delay, s/veh	21.4			30.6	17.7	
Approach LOS	C			C	B	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		24.2	17.0	20.4		37.4
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		20.2	13.0	19.8		36.8
Max Q Clear Time (g_c+I1), s		9.3	15.0	12.9		6.6
Green Ext Time (p_c), s		1.5	0.0	3.5		5.1

Intersection Summary	
HCM 6th Ctrl Delay	24.4
HCM 6th LOS	C

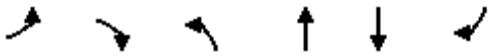
Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	155			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91
Ped Bike Factor						
Frt		0.850			0.987	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	5019	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	5085	5019	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		122			26	
Link Speed (mph)	40			40	40	
Link Distance (ft)	1294			1556	709	
Travel Time (s)	22.1			26.5	12.1	

Intersection Summary	
Area Type:	Other



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	158	111	53	843	604	57
Future Volume (vph)	158	111	53	843	604	57
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	174	122	58	926	664	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	174	122	58	926	727	0

Intersection Summary

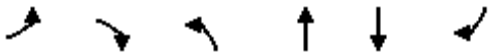
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	158	111	53	843	604
Future Volume (vph)	158	111	53	843	604
Turn Type	Prot	Perm	Prot	NA	NA
Protected Phases	4		5	2	6
Permitted Phases		4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	23.8	23.8	14.5	23.8	23.8
Total Split (s)	24.0	24.0	15.0	41.0	26.0
Total Split (%)	36.9%	36.9%	23.1%	63.1%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)	11.7	11.7	7.9	39.8	32.2
Actuated g/C Ratio	0.20	0.20	0.13	0.67	0.54
v/c Ratio	0.50	0.30	0.25	0.27	0.27
Control Delay	25.7	6.5	24.9	4.5	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	6.5	24.9	4.5	9.0
LOS	C	A	C	A	A
Approach Delay	17.7			5.7	9.0
Approach LOS	B			A	A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 59.6	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 37.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: SENTER RD & ALMA AVE

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	174	122	58	926	727
v/c Ratio	0.50	0.30	0.25	0.27	0.27
Control Delay	25.7	6.5	24.9	4.5	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	25.7	6.5	24.9	4.5	9.0
Queue Length 50th (ft)	52	0	18	36	49
Queue Length 95th (ft)	101	34	47	67	90
Internal Link Dist (ft)	1214			1476	629
Turn Bay Length (ft)			155		
Base Capacity (vph)	598	616	329	3397	2723
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.29	0.20	0.18	0.27	0.27

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	158	111	53	843	604	57
Future Volume (veh/h)	158	111	53	843	604	57
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	174	122	58	926	664	63
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	321	286	133	3442	2499	235
Arrive On Green	0.18	0.18	0.07	0.67	0.53	0.53
Sat Flow, veh/h	1781	1585	1781	5274	4915	447
Grp Volume(v), veh/h	174	122	58	926	475	252
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1790
Q Serve(g_s), s	4.9	3.8	1.7	4.0	4.2	4.3
Cycle Q Clear(g_c), s	4.9	3.8	1.7	4.0	4.2	4.3
Prop In Lane	1.00	1.00	1.00			0.25
Lane Grp Cap(c), veh/h	321	286	133	3442	1792	942
V/C Ratio(X)	0.54	0.43	0.43	0.27	0.26	0.27
Avail Cap(c_a), veh/h	649	578	357	3442	1792	942
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	20.0	24.3	3.6	7.2	7.2
Incr Delay (d2), s/veh	1.4	1.0	2.2	0.2	0.4	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	3.5	0.7	0.7	1.2	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.9	21.0	26.5	3.8	7.5	7.9
LnGrp LOS	C	C	C	A	A	A
Approach Vol, veh/h	296			984	727	
Approach Delay, s/veh	21.5			5.1	7.6	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		41.0		13.9	8.1	32.9
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		37.0		20.0	11.0	22.0
Max Q Clear Time (g_c+I1), s		6.0		7.9	3.7	6.3
Green Ext Time (p_c), s		7.0		0.7	0.0	4.0

Intersection Summary	
HCM 6th Ctrl Delay	8.4
HCM 6th LOS	A

Appendix G

Background Conditions
LOS Analysis Worksheets

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		120	290		0	0
Storage Lanes		1	1		2	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	5085	1583	1770	5085	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		204				502
Link Speed (mph)	40			40	40	
Link Distance (ft)	1078			2132	1134	
Travel Time (s)	18.4			36.3	19.3	

Intersection Summary	
Area Type:	Other

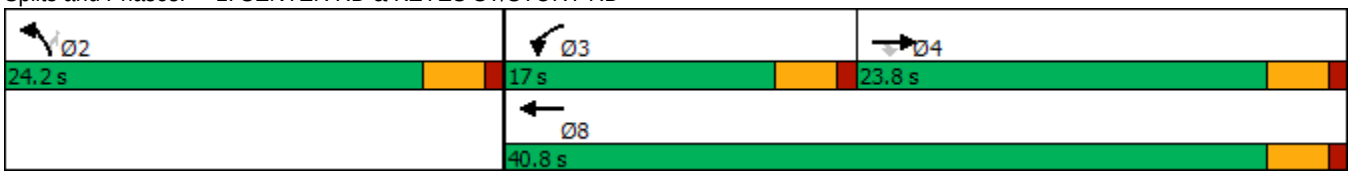
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	394	194	314	872	520	477
Future Volume (vph)	394	194	314	872	520	477
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	415	204	331	918	547	502
Shared Lane Traffic (%)						
Lane Group Flow (vph)	415	204	331	918	547	502

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	394	194	314	872	520	477
Future Volume (vph)	394	194	314	872	520	477
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	10.0
Minimum Split (s)	23.8	23.8	15.0	23.8	23.8	23.8
Total Split (s)	23.8	23.8	17.0	40.8	24.2	24.2
Total Split (%)	36.6%	36.6%	26.2%	62.8%	37.2%	37.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	11.6	11.6	13.0	28.6	20.2	20.2
Actuated g/C Ratio	0.20	0.20	0.23	0.50	0.36	0.36
v/c Ratio	0.40	0.42	0.82	0.36	0.45	0.57
Control Delay	20.7	6.4	41.0	9.0	15.8	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	6.4	41.0	9.0	15.8	4.6
LOS	C	A	D	A	B	A
Approach Delay	16.0			17.5	10.5	
Approach LOS	B			B	B	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 56.8	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 50.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: SENTER RD & KEYES ST/STORY RD



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	415	204	331	918	547	502
v/c Ratio	0.40	0.42	0.82	0.36	0.45	0.57
Control Delay	20.7	6.4	41.0	9.0	15.8	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	6.4	41.0	9.0	15.8	4.6
Queue Length 50th (ft)	45	0	105	63	69	0
Queue Length 95th (ft)	68	43	#246	86	118	56
Internal Link Dist (ft)	998			2052	1054	
Turn Bay Length (ft)		120	290			
Base Capacity (vph)	1773	684	405	3295	1221	886
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.30	0.82	0.28	0.45	0.57

Intersection Summary

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

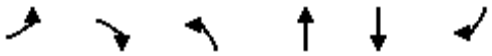
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	394	194	314	872	520	477
Future Volume (veh/h)	394	194	314	872	520	477
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	415	204	331	918	547	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1023	317	385	2496	1265	
Arrive On Green	0.20	0.20	0.22	0.49	0.37	0.00
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	415	204	331	918	547	0
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	3.9	6.5	9.9	6.2	6.6	0.0
Cycle Q Clear(g_c), s	3.9	6.5	9.9	6.2	6.6	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1023	317	385	2496	1265	
V/C Ratio(X)	0.41	0.64	0.86	0.37	0.43	
Avail Cap(c_a), veh/h	1832	569	420	3405	1265	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.2	20.3	20.8	8.8	13.2	0.0
Incr Delay (d2), s/veh	0.3	2.2	15.4	0.1	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.3	5.2	1.7	2.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.5	22.4	36.2	8.9	14.3	0.0
LnGrp LOS	B	C	D	A	B	
Approach Vol, veh/h	619			1249	547	A
Approach Delay, s/veh	20.4			16.1	14.3	
Approach LOS	C			B	B	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		24.2	15.9	15.1		31.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		20.2	13.0	19.8		36.8
Max Q Clear Time (g_c+I1), s		8.6	11.9	8.5		8.2
Green Ext Time (p_c), s		1.6	0.1	2.5		6.8

Intersection Summary	
HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

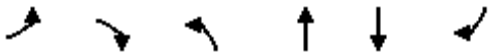
Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	155			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91
Ped Bike Factor						
Frt		0.850			0.976	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	4963	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	5085	4963	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		64			64	
Link Speed (mph)	40			40	40	
Link Distance (ft)	1294			1556	709	
Travel Time (s)	22.1			26.5	12.1	

Intersection Summary	
Area Type:	Other



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	151	61	44	792	416	79
Future Volume (vph)	151	61	44	792	416	79
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	159	64	46	834	438	83
Shared Lane Traffic (%)						
Lane Group Flow (vph)	159	64	46	834	521	0

Intersection Summary

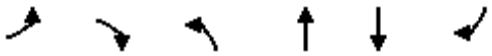
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	151	61	44	792	416
Future Volume (vph)	151	61	44	792	416
Turn Type	Prot	Perm	Prot	NA	NA
Protected Phases	4		5	2	6
Permitted Phases		4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	23.8	23.8	14.5	23.8	23.8
Total Split (s)	24.0	24.0	15.0	41.0	26.0
Total Split (%)	36.9%	36.9%	23.1%	63.1%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)	11.2	11.2	7.5	41.8	36.9
Actuated g/C Ratio	0.20	0.20	0.13	0.73	0.64
v/c Ratio	0.46	0.18	0.20	0.23	0.16
Control Delay	24.8	7.1	24.3	3.8	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	7.1	24.3	3.8	6.4
LOS	C	A	C	A	A
Approach Delay	19.7			4.9	6.4
Approach LOS	B			A	A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 57.3	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.46	
Intersection Signal Delay: 7.4	Intersection LOS: A
Intersection Capacity Utilization 34.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: SENTER RD & ALMA AVE

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	159	64	46	834	521
v/c Ratio	0.46	0.18	0.20	0.23	0.16
Control Delay	24.8	7.1	24.3	3.8	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	7.1	24.3	3.8	6.4
Queue Length 50th (ft)	47	0	14	30	15
Queue Length 95th (ft)	94	25	40	57	57
Internal Link Dist (ft)	1214			1476	629
Turn Bay Length (ft)			155		
Base Capacity (vph)	618	594	339	3705	3219
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.26	0.11	0.14	0.23	0.16

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	151	61	44	792	416	79
Future Volume (veh/h)	151	61	44	792	416	79
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	159	64	46	834	438	83
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	315	280	115	3456	2336	432
Arrive On Green	0.18	0.18	0.06	0.68	0.54	0.54
Sat Flow, veh/h	1781	1585	1781	5274	4499	800
Grp Volume(v), veh/h	159	64	46	834	342	179
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1726
Q Serve(g_s), s	4.4	1.9	1.4	3.4	2.8	2.9
Cycle Q Clear(g_c), s	4.4	1.9	1.4	3.4	2.8	2.9
Prop In Lane	1.00	1.00	1.00			0.46
Lane Grp Cap(c), veh/h	315	280	115	3456	1836	931
V/C Ratio(X)	0.51	0.23	0.40	0.24	0.19	0.19
Avail Cap(c_a), veh/h	652	580	358	3456	1836	931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.3	19.3	24.6	3.4	6.4	6.5
Incr Delay (d2), s/veh	1.3	0.4	2.3	0.2	0.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.8	0.6	0.6	0.7	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.6	19.7	26.8	3.6	6.7	6.9
LnGrp LOS	C	B	C	A	A	A
Approach Vol, veh/h	223			880	521	
Approach Delay, s/veh	21.1			4.8	6.8	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		41.0		13.7	7.5	33.5
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		37.0		20.0	11.0	22.0
Max Q Clear Time (g_c+I1), s		5.4		7.4	3.4	4.9
Green Ext Time (p_c), s		6.2		0.5	0.0	2.8

Intersection Summary	
HCM 6th Ctrl Delay	7.7
HCM 6th LOS	A

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		120	290		0	0
Storage Lanes		1	1		2	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	5085	1583	1770	5085	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		333				563
Link Speed (mph)	40			40	40	
Link Distance (ft)	1078			2132	1134	
Travel Time (s)	18.4			36.3	19.3	

Intersection Summary	
Area Type:	Other

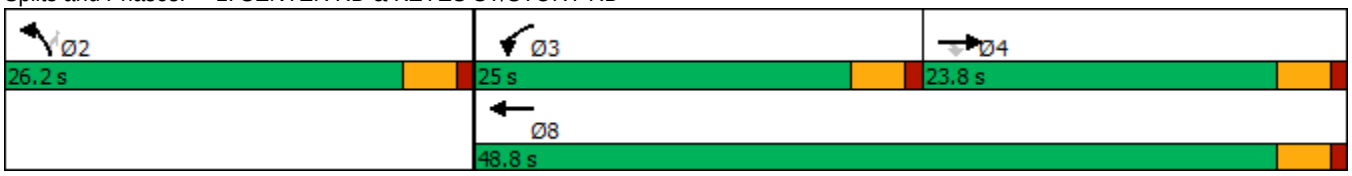
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	978	315	386	859	509	633
Future Volume (vph)	978	315	386	859	509	633
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1111	358	439	976	578	719
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1111	358	439	976	578	719

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	978	315	386	859	509	633
Future Volume (vph)	978	315	386	859	509	633
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	10.0
Minimum Split (s)	23.8	23.8	15.0	23.8	23.8	23.8
Total Split (s)	23.8	23.8	25.0	48.8	26.2	26.2
Total Split (%)	31.7%	31.7%	33.3%	65.1%	34.9%	34.9%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	19.6	19.6	20.2	43.9	22.2	22.2
Actuated g/C Ratio	0.26	0.26	0.27	0.59	0.30	0.30
v/c Ratio	0.82	0.54	0.91	0.32	0.56	0.83
Control Delay	32.1	7.2	51.8	7.9	24.6	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.1	7.2	51.8	7.9	24.6	15.8
LOS	C	A	D	A	C	B
Approach Delay	26.0			21.6	19.7	
Approach LOS	C			C	B	

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 74.1	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 22.6	Intersection LOS: C
Intersection Capacity Utilization 64.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: SENTER RD & KEYES ST/STORY RD



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1111	358	439	976	578	719
v/c Ratio	0.82	0.54	0.91	0.32	0.56	0.83
Control Delay	32.1	7.2	51.8	7.9	24.6	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.1	7.2	51.8	7.9	24.6	15.8
Queue Length 50th (ft)	178	9	195	74	116	56
Queue Length 95th (ft)	221	66	#345	93	160	#258
Internal Link Dist (ft)	998			2052	1054	
Turn Bay Length (ft)		120	290			
Base Capacity (vph)	1359	667	501	3076	1029	868
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.54	0.88	0.32	0.56	0.83

Intersection Summary

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

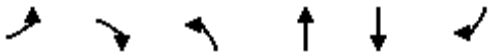
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	978	315	386	859	509	633
Future Volume (veh/h)	978	315	386	859	509	633
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1111	358	439	976	578	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1344	417	480	2999	1048	
Arrive On Green	0.26	0.26	0.27	0.59	0.30	0.00
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	1111	358	439	976	578	0
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	15.0	15.7	17.5	7.1	10.2	0.0
Cycle Q Clear(g_c), s	15.0	15.7	17.5	7.1	10.2	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1344	417	480	2999	1048	
V/C Ratio(X)	0.83	0.86	0.91	0.33	0.55	
Avail Cap(c_a), veh/h	1381	429	511	3125	1048	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.4	25.7	25.9	7.7	21.3	0.0
Incr Delay (d2), s/veh	4.2	15.6	20.3	0.1	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	7.2	9.4	2.1	4.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	29.6	41.2	46.3	7.8	23.4	0.0
LnGrp LOS	C	D	D	A	C	
Approach Vol, veh/h	1469			1415	578	A
Approach Delay, s/veh	32.4			19.7	23.4	
Approach LOS	C			B	C	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		26.2	23.7	23.3		47.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		22.2	21.0	19.8		44.8
Max Q Clear Time (g_c+I1), s		12.2	19.5	17.7		9.1
Green Ext Time (p_c), s		1.6	0.3	1.5		7.7

Intersection Summary	
HCM 6th Ctrl Delay	25.7
HCM 6th LOS	C

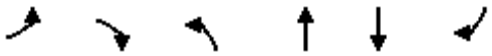
Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	155			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.91	0.91
Ped Bike Factor						
Frt		0.850			0.987	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	5019	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	5085	5019	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		131			25	
Link Speed (mph)	40			40	40	
Link Distance (ft)	1294			1556	709	
Travel Time (s)	22.1			26.5	12.1	

Intersection Summary	
Area Type:	Other



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	196	119	53	861	630	57
Future Volume (vph)	196	119	53	861	630	57
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	215	131	58	946	692	63
Shared Lane Traffic (%)						
Lane Group Flow (vph)	215	131	58	946	755	0

Intersection Summary

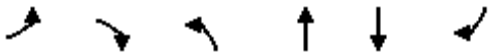
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	196	119	53	861	630
Future Volume (vph)	196	119	53	861	630
Turn Type	Prot	Perm	Prot	NA	NA
Protected Phases	4		5	2	6
Permitted Phases		4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	23.8	23.8	14.5	23.8	23.8
Total Split (s)	24.0	24.0	15.0	41.0	26.0
Total Split (%)	36.9%	36.9%	23.1%	63.1%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)	12.8	12.8	7.9	39.8	32.2
Actuated g/C Ratio	0.21	0.21	0.13	0.66	0.53
v/c Ratio	0.58	0.30	0.25	0.28	0.28
Control Delay	27.1	6.0	25.8	5.0	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	6.0	25.8	5.0	9.8
LOS	C	A	C	A	A
Approach Delay	19.1			6.2	9.8
Approach LOS	B			A	A

Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 60.6			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 9.6		Intersection LOS: A	
Intersection Capacity Utilization 40.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: SENTER RD & ALMA AVE

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	215	131	58	946	755
v/c Ratio	0.58	0.30	0.25	0.28	0.28
Control Delay	27.1	6.0	25.8	5.0	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	6.0	25.8	5.0	9.8
Queue Length 50th (ft)	66	0	18	41	54
Queue Length 95th (ft)	122	34	49	77	101
Internal Link Dist (ft)	1214			1476	629
Turn Bay Length (ft)			155		
Base Capacity (vph)	588	613	323	3335	2677
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.37	0.21	0.18	0.28	0.28

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	196	119	53	861	630	57
Future Volume (veh/h)	196	119	53	861	630	57
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	215	131	58	946	692	63
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	323	287	133	3438	2506	227
Arrive On Green	0.18	0.18	0.07	0.67	0.53	0.53
Sat Flow, veh/h	1781	1585	1781	5274	4934	431
Grp Volume(v), veh/h	215	131	58	946	493	262
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1702	1793
Q Serve(g_s), s	6.2	4.1	1.7	4.1	4.4	4.5
Cycle Q Clear(g_c), s	6.2	4.1	1.7	4.1	4.4	4.5
Prop In Lane	1.00	1.00	1.00			0.24
Lane Grp Cap(c), veh/h	323	287	133	3438	1790	943
V/C Ratio(X)	0.67	0.46	0.44	0.28	0.28	0.28
Avail Cap(c_a), veh/h	648	577	357	3438	1790	943
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	20.1	24.3	3.6	7.2	7.2
Incr Delay (d2), s/veh	2.4	1.1	2.2	0.2	0.4	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.1	0.7	0.7	1.2	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.3	21.2	26.5	3.8	7.6	8.0
LnGrp LOS	C	C	C	A	A	A
Approach Vol, veh/h	346			1004	755	
Approach Delay, s/veh	22.5			5.1	7.7	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		41.0		13.9	8.1	32.9
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		37.0		20.0	11.0	22.0
Max Q Clear Time (g_c+I1), s		6.1		9.2	3.7	6.5
Green Ext Time (p_c), s		7.2		0.8	0.0	4.1

Intersection Summary	
HCM 6th Ctrl Delay	8.9
HCM 6th LOS	A

Appendix H

Project Conditions
LOS Analysis Worksheets

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		120	290		0	0
Storage Lanes		1	1		2	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	5085	1583	1770	5085	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		204				506
Link Speed (mph)	40			40	40	
Link Distance (ft)	1078			2132	1134	
Travel Time (s)	18.4			36.3	19.3	

Intersection Summary	
Area Type:	Other

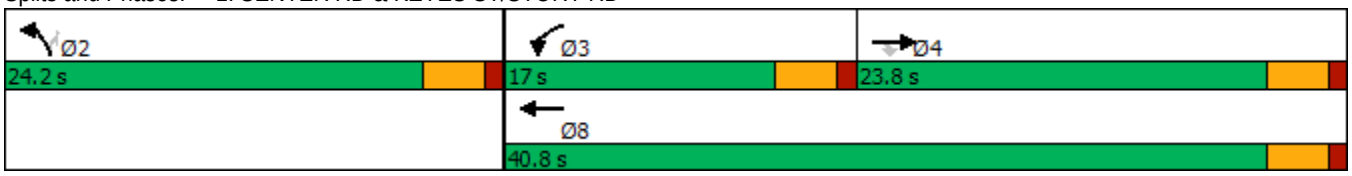
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	394	194	315	872	521	481
Future Volume (vph)	394	194	315	872	521	481
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	415	204	332	918	548	506
Shared Lane Traffic (%)						
Lane Group Flow (vph)	415	204	332	918	548	506

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	394	194	315	872	521	481
Future Volume (vph)	394	194	315	872	521	481
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	10.0
Minimum Split (s)	23.8	23.8	15.0	23.8	23.8	23.8
Total Split (s)	23.8	23.8	17.0	40.8	24.2	24.2
Total Split (%)	36.6%	36.6%	26.2%	62.8%	37.2%	37.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	11.6	11.6	13.0	28.6	20.2	20.2
Actuated g/C Ratio	0.20	0.20	0.23	0.50	0.36	0.36
v/c Ratio	0.40	0.42	0.82	0.36	0.45	0.57
Control Delay	20.7	6.4	41.3	9.0	15.8	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	6.4	41.3	9.0	15.8	4.6
LOS	C	A	D	A	B	A
Approach Delay	16.0			17.5	10.4	
Approach LOS	B			B	B	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 56.8	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 50.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: SENTER RD & KEYES ST/STORY RD



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	415	204	332	918	548	506
v/c Ratio	0.40	0.42	0.82	0.36	0.45	0.57
Control Delay	20.7	6.4	41.3	9.0	15.8	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	6.4	41.3	9.0	15.8	4.6
Queue Length 50th (ft)	45	0	105	63	69	0
Queue Length 95th (ft)	68	43	#247	86	118	56
Internal Link Dist (ft)	998			2052	1054	
Turn Bay Length (ft)		120	290			
Base Capacity (vph)	1773	684	405	3295	1221	889
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.30	0.82	0.28	0.45	0.57

Intersection Summary

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

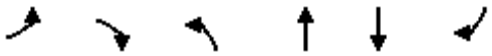
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	394	194	315	872	521	481
Future Volume (veh/h)	394	194	315	872	521	481
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	415	204	332	918	548	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1022	317	386	2498	1264	
Arrive On Green	0.20	0.20	0.22	0.49	0.37	0.00
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	415	204	332	918	548	0
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	3.9	6.5	9.9	6.2	6.6	0.0
Cycle Q Clear(g_c), s	3.9	6.5	9.9	6.2	6.6	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1022	317	386	2498	1264	
V/C Ratio(X)	0.41	0.64	0.86	0.37	0.43	
Avail Cap(c_a), veh/h	1831	568	419	3403	1264	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.2	20.3	20.8	8.8	13.2	0.0
Incr Delay (d2), s/veh	0.3	2.2	15.5	0.1	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.3	5.2	1.7	2.3	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.5	22.4	36.3	8.9	14.3	0.0
LnGrp LOS	B	C	D	A	B	
Approach Vol, veh/h	619			1250	548	A
Approach Delay, s/veh	20.5			16.2	14.3	
Approach LOS	C			B	B	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		24.2	16.0	15.1		31.0
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		20.2	13.0	19.8		36.8
Max Q Clear Time (g_c+I1), s		8.6	11.9	8.5		8.2
Green Ext Time (p_c), s		1.6	0.1	2.5		6.8

Intersection Summary	
HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

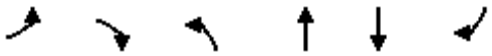
Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	155			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	0.95
Ped Bike Factor						
Frt		0.850			0.975	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	3451	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	5085	3451	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		64			38	
Link Speed (mph)	40			40	40	
Link Distance (ft)	1294			1556	709	
Travel Time (s)	22.1			26.5	12.1	

Intersection Summary	
Area Type:	Other



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	152	61	44	795	421	83
Future Volume (vph)	152	61	44	795	421	83
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	160	64	46	837	443	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	160	64	46	837	530	0

Intersection Summary

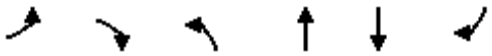
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	152	61	44	795	421
Future Volume (vph)	152	61	44	795	421
Turn Type	Prot	Perm	Prot	NA	NA
Protected Phases	4		5	2	6
Permitted Phases		4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	23.8	23.8	14.5	23.8	23.8
Total Split (s)	24.0	24.0	15.0	41.0	26.0
Total Split (%)	36.9%	36.9%	23.1%	63.1%	40.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)	11.3	11.3	7.5	41.7	36.9
Actuated g/C Ratio	0.20	0.20	0.13	0.73	0.64
v/c Ratio	0.46	0.18	0.20	0.23	0.24
Control Delay	24.8	7.1	24.4	3.8	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	7.1	24.4	3.8	7.3
LOS	C	A	C	A	A
Approach Delay	19.7			4.9	7.3
Approach LOS	B			A	A

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 57.3	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.46	
Intersection Signal Delay: 7.7	Intersection LOS: A
Intersection Capacity Utilization 38.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: SENTER RD & ALMA AVE

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	160	64	46	837	530
v/c Ratio	0.46	0.18	0.20	0.23	0.24
Control Delay	24.8	7.1	24.4	3.8	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.8	7.1	24.4	3.8	7.3
Queue Length 50th (ft)	48	0	14	31	25
Queue Length 95th (ft)	94	24	40	57	95
Internal Link Dist (ft)	1214			1476	629
Turn Bay Length (ft)			155		
Base Capacity (vph)	617	594	339	3703	2234
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.26	0.11	0.14	0.23	0.24

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	152	61	44	795	421	83
Future Volume (veh/h)	152	61	44	795	421	83
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	160	64	46	837	443	87
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	315	280	115	3456	1599	312
Arrive On Green	0.18	0.18	0.06	0.68	0.54	0.54
Sat Flow, veh/h	1781	1585	1781	5274	3058	578
Grp Volume(v), veh/h	160	64	46	837	264	266
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1777	1766
Q Serve(g_s), s	4.4	1.9	1.4	3.5	4.4	4.5
Cycle Q Clear(g_c), s	4.4	1.9	1.4	3.5	4.4	4.5
Prop In Lane	1.00	1.00	1.00			0.33
Lane Grp Cap(c), veh/h	315	280	115	3456	958	953
V/C Ratio(X)	0.51	0.23	0.40	0.24	0.28	0.28
Avail Cap(c_a), veh/h	652	580	358	3456	958	953
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.3	19.3	24.6	3.4	6.8	6.8
Incr Delay (d2), s/veh	1.3	0.4	2.3	0.2	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.8	0.6	0.6	1.3	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.6	19.7	26.8	3.6	7.5	7.6
LnGrp LOS	C	B	C	A	A	A
Approach Vol, veh/h	224			883	530	
Approach Delay, s/veh	21.1			4.8	7.5	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		41.0		13.7	7.5	33.5
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		37.0		20.0	11.0	22.0
Max Q Clear Time (g_c+I1), s		5.5		7.4	3.4	6.5
Green Ext Time (p_c), s		6.2		0.5	0.0	2.6

Intersection Summary	
HCM 6th Ctrl Delay	7.9
HCM 6th LOS	A

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		120	290		0	0
Storage Lanes		1	1		2	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	5085	1583	1770	5085	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		334				563
Link Speed (mph)	40			40	40	
Link Distance (ft)	1078			2132	1134	
Travel Time (s)	18.4			36.3	19.3	

Intersection Summary	
Area Type:	Other

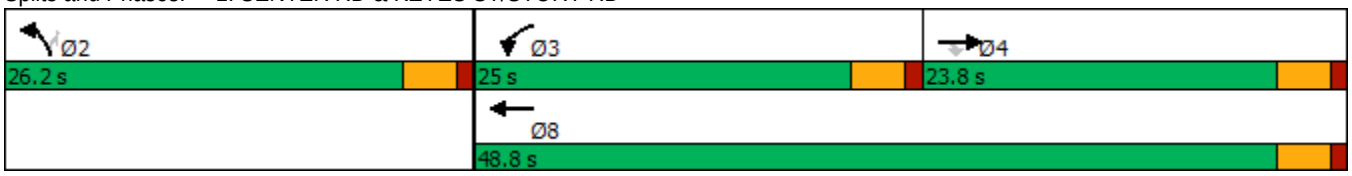
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	978	316	390	859	510	635
Future Volume (vph)	978	316	390	859	510	635
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1111	359	443	976	580	722
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1111	359	443	976	580	722

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	978	316	390	859	510	635
Future Volume (vph)	978	316	390	859	510	635
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	10.0
Minimum Split (s)	23.8	23.8	15.0	23.8	23.8	23.8
Total Split (s)	23.8	23.8	25.0	48.8	26.2	26.2
Total Split (%)	31.7%	31.7%	33.3%	65.1%	34.9%	34.9%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	19.7	19.7	20.3	44.0	22.2	22.2
Actuated g/C Ratio	0.27	0.27	0.27	0.59	0.30	0.30
v/c Ratio	0.82	0.54	0.92	0.32	0.56	0.83
Control Delay	32.2	7.2	52.7	7.9	24.7	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	7.2	52.7	7.9	24.7	16.1
LOS	C	A	D	A	C	B
Approach Delay	26.1			21.9	19.9	
Approach LOS	C			C	B	

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 74.2	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 22.7	Intersection LOS: C
Intersection Capacity Utilization 65.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: SENTER RD & KEYES ST/STORY RD



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1111	359	443	976	580	722
v/c Ratio	0.82	0.54	0.92	0.32	0.56	0.83
Control Delay	32.2	7.2	52.7	7.9	24.7	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	7.2	52.7	7.9	24.7	16.1
Queue Length 50th (ft)	178	9	197	74	117	57
Queue Length 95th (ft)	221	66	#349	93	161	#261
Internal Link Dist (ft)	998			2052	1054	
Turn Bay Length (ft)		120	290			
Base Capacity (vph)	1357	667	501	3071	1027	867
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.54	0.88	0.32	0.56	0.83

Intersection Summary

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

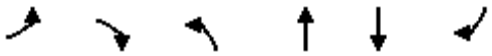
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	978	316	390	859	510	635
Future Volume (veh/h)	978	316	390	859	510	635
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1111	359	443	976	580	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1342	417	483	3006	1045	
Arrive On Green	0.26	0.26	0.27	0.59	0.30	0.00
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	1111	359	443	976	580	0
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	15.1	15.8	17.7	7.1	10.3	0.0
Cycle Q Clear(g_c), s	15.1	15.8	17.7	7.1	10.3	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1342	417	483	3006	1045	
V/C Ratio(X)	0.83	0.86	0.92	0.32	0.56	
Avail Cap(c_a), veh/h	1377	427	509	3115	1045	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	25.5	25.8	25.9	7.7	21.5	0.0
Incr Delay (d2), s/veh	4.3	16.0	20.9	0.1	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	7.3	9.6	2.1	4.1	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	29.8	41.8	46.8	7.7	23.6	0.0
LnGrp LOS	C	D	D	A	C	
Approach Vol, veh/h	1470			1419	580	A
Approach Delay, s/veh	32.7			19.9	23.6	
Approach LOS	C			B	C	

Timer - Assigned Phs	2	3	4	8
Phs Duration (G+Y+Rc), s	26.2	23.9	23.3	47.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	22.2	21.0	19.8	44.8
Max Q Clear Time (g_c+I1), s	12.3	19.7	17.8	9.1
Green Ext Time (p_c), s	1.6	0.2	1.4	7.7

Intersection Summary	
HCM 6th Ctrl Delay	26.0
HCM 6th LOS	C

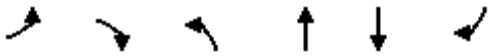
Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	155			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	0.95
Ped Bike Factor						
Frt		0.850			0.987	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	3493	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	5085	3493	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		131			16	
Link Speed (mph)	40			40	40	
Link Distance (ft)	1294			1556	709	
Travel Time (s)	22.1			26.5	12.1	

Intersection Summary	
Area Type:	Other



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	200	119	53	865	633	59
Future Volume (vph)	200	119	53	865	633	59
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	220	131	58	951	696	65
Shared Lane Traffic (%)						
Lane Group Flow (vph)	220	131	58	951	761	0

Intersection Summary

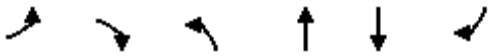
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	200	119	53	865	633
Future Volume (vph)	200	119	53	865	633
Turn Type	Prot	Perm	Prot	NA	NA
Protected Phases	4		5	2	6
Permitted Phases		4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	23.8	23.8	14.5	23.8	23.8
Total Split (s)	24.0	24.0	14.6	41.0	26.4
Total Split (%)	36.9%	36.9%	22.5%	63.1%	40.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)	12.9	12.9	7.9	39.6	32.1
Actuated g/C Ratio	0.21	0.21	0.13	0.65	0.53
v/c Ratio	0.58	0.30	0.25	0.29	0.41
Control Delay	27.1	5.9	25.9	5.1	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	5.9	25.9	5.1	11.4
LOS	C	A	C	A	B
Approach Delay	19.2			6.3	11.4
Approach LOS	B			A	B

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.6	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 10.3	Intersection LOS: B
Intersection Capacity Utilization 46.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: SENTER RD & ALMA AVE

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	220	131	58	951	761
v/c Ratio	0.58	0.30	0.25	0.29	0.41
Control Delay	27.1	5.9	25.9	5.1	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	5.9	25.9	5.1	11.4
Queue Length 50th (ft)	68	0	18	42	87
Queue Length 95th (ft)	125	34	49	79	167
Internal Link Dist (ft)	1214			1476	629
Turn Bay Length (ft)			155		
Base Capacity (vph)	587	613	311	3323	1855
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.37	0.21	0.19	0.29	0.41

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	200	119	53	865	633	59
Future Volume (veh/h)	200	119	53	865	633	59
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	220	131	58	951	696	65
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	326	290	133	3430	1723	161
Arrive On Green	0.18	0.18	0.07	0.67	0.52	0.52
Sat Flow, veh/h	1781	1585	1781	5274	3379	307
Grp Volume(v), veh/h	220	131	58	951	376	385
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1777	1815
Q Serve(g_s), s	6.3	4.1	1.7	4.1	7.0	7.1
Cycle Q Clear(g_c), s	6.3	4.1	1.7	4.1	7.0	7.1
Prop In Lane	1.00	1.00	1.00			0.17
Lane Grp Cap(c), veh/h	326	290	133	3430	932	952
V/C Ratio(X)	0.67	0.45	0.44	0.28	0.40	0.40
Avail Cap(c_a), veh/h	647	575	343	3430	932	952
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	20.0	24.4	3.6	7.9	7.9
Incr Delay (d2), s/veh	2.4	1.1	2.2	0.2	1.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	3.7	0.7	0.7	2.2	2.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.4	21.1	26.6	3.9	9.2	9.2
LnGrp LOS	C	C	C	A	A	A
Approach Vol, veh/h	351			1009	761	
Approach Delay, s/veh	22.6			5.2	9.2	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		41.0		14.1	8.1	32.9
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		37.0		20.0	10.6	22.4
Max Q Clear Time (g_c+I1), s		6.1		9.3	3.7	9.1
Green Ext Time (p_c), s		7.2		0.8	0.0	3.7

Intersection Summary	
HCM 6th Ctrl Delay	9.5
HCM 6th LOS	A

Appendix I

Cumulative Conditions
LOS Analysis Worksheets

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		120	290		0	0
Storage Lanes		1	1		2	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	5085	1583	1770	5085	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		229				506
Link Speed (mph)	40			40	40	
Link Distance (ft)	1078			2132	1134	
Travel Time (s)	18.4			36.3	19.3	

Intersection Summary	
Area Type:	Other

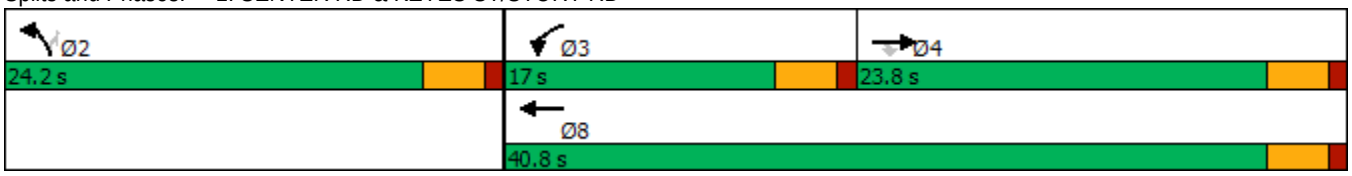
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	404	218	322	875	526	481
Future Volume (vph)	404	218	322	875	526	481
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	425	229	339	921	554	506
Shared Lane Traffic (%)						
Lane Group Flow (vph)	425	229	339	921	554	506

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	404	218	322	875	526	481
Future Volume (vph)	404	218	322	875	526	481
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	10.0
Minimum Split (s)	23.8	23.8	15.0	23.8	23.8	23.8
Total Split (s)	23.8	23.8	17.0	40.8	24.2	24.2
Total Split (%)	36.6%	36.6%	26.2%	62.8%	37.2%	37.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	11.7	11.7	13.0	28.7	20.2	20.2
Actuated g/C Ratio	0.21	0.21	0.23	0.50	0.36	0.36
v/c Ratio	0.41	0.45	0.84	0.36	0.45	0.57
Control Delay	20.8	6.4	43.3	9.0	15.9	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.8	6.4	43.3	9.0	15.9	4.6
LOS	C	A	D	A	B	A
Approach Delay	15.7			18.2	10.5	
Approach LOS	B			B	B	

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 56.9	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 14.9	Intersection LOS: B
Intersection Capacity Utilization 51.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 1: SENTER RD & KEYES ST/STORY RD



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	425	229	339	921	554	506
v/c Ratio	0.41	0.45	0.84	0.36	0.45	0.57
Control Delay	20.8	6.4	43.3	9.0	15.9	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.8	6.4	43.3	9.0	15.9	4.6
Queue Length 50th (ft)	46	0	108	63	70	0
Queue Length 95th (ft)	70	45	#255	86	120	56
Internal Link Dist (ft)	998			2052	1054	
Turn Bay Length (ft)		120	290			
Base Capacity (vph)	1770	700	404	3291	1219	888
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.33	0.84	0.28	0.45	0.57

Intersection Summary

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

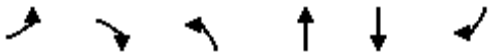
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	404	218	322	875	526	481
Future Volume (veh/h)	404	218	322	875	526	481
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	425	229	339	921	554	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1087	337	390	2566	1231	
Arrive On Green	0.21	0.21	0.22	0.50	0.36	0.00
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	425	229	339	921	554	0
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	4.1	7.5	10.4	6.2	7.0	0.0
Cycle Q Clear(g_c), s	4.1	7.5	10.4	6.2	7.0	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1087	337	390	2566	1231	
V/C Ratio(X)	0.39	0.68	0.87	0.36	0.45	
Avail Cap(c_a), veh/h	1784	554	409	3315	1231	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.2	20.5	21.3	8.6	14.0	0.0
Incr Delay (d2), s/veh	0.2	2.4	17.3	0.1	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.7	5.6	1.7	2.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.4	22.9	38.7	8.6	15.2	0.0
LnGrp LOS	B	C	D	A	B	
Approach Vol, veh/h	654			1260	554	A
Approach Delay, s/veh	20.6			16.7	15.2	
Approach LOS	C			B	B	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		24.2	16.4	16.1		32.5
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		20.2	13.0	19.8		36.8
Max Q Clear Time (g_c+I1), s		9.0	12.4	9.5		8.2
Green Ext Time (p_c), s		1.6	0.1	2.5		6.8

Intersection Summary	
HCM 6th Ctrl Delay	17.4
HCM 6th LOS	B

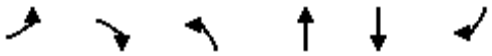
Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	155			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	0.95
Ped Bike Factor						
Frt		0.850			0.970	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	3433	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	5085	3433	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		64			50	
Link Speed (mph)	40			40	40	
Link Distance (ft)	1294			1556	709	
Travel Time (s)	22.1			26.5	12.1	

Intersection Summary	
Area Type:	Other



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	155	61	144	797	428	107
Future Volume (vph)	155	61	144	797	428	107
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	163	64	152	839	451	113
Shared Lane Traffic (%)						
Lane Group Flow (vph)	163	64	152	839	564	0

Intersection Summary

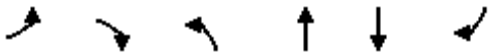
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	155	61	144	797	428
Future Volume (vph)	155	61	144	797	428
Turn Type	Prot	Perm	Prot	NA	NA
Protected Phases	4		5	2	6
Permitted Phases		4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	23.8	23.8	14.5	23.8	23.8
Total Split (s)	24.0	24.0	16.1	41.0	24.9
Total Split (%)	36.9%	36.9%	24.8%	63.1%	38.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)	11.3	11.3	9.8	40.9	29.3
Actuated g/C Ratio	0.20	0.20	0.17	0.72	0.52
v/c Ratio	0.46	0.17	0.50	0.23	0.31
Control Delay	24.4	7.1	26.9	3.9	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	7.1	26.9	3.9	11.1
LOS	C	A	C	A	B
Approach Delay	19.5			7.5	11.1
Approach LOS	B			A	B

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 56.6	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 10.2	Intersection LOS: B
Intersection Capacity Utilization 41.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: SENTER RD & ALMA AVE

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	163	64	152	839	564
v/c Ratio	0.46	0.17	0.50	0.23	0.31
Control Delay	24.4	7.1	26.9	3.9	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	24.4	7.1	26.9	3.9	11.1
Queue Length 50th (ft)	49	0	45	31	57
Queue Length 95th (ft)	95	24	95	58	111
Internal Link Dist (ft)	1214			1476	629
Turn Bay Length (ft)			155		
Base Capacity (vph)	626	601	379	3674	1803
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.26	0.11	0.40	0.23	0.31

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	155	61	144	797	428	107
Future Volume (veh/h)	155	61	144	797	428	107
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	163	64	152	839	451	113
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	315	281	205	3455	1377	342
Arrive On Green	0.18	0.18	0.12	0.68	0.49	0.49
Sat Flow, veh/h	1781	1585	1781	5274	2913	701
Grp Volume(v), veh/h	163	64	152	839	283	281
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1777	1744
Q Serve(g_s), s	4.5	1.9	4.5	3.5	5.3	5.4
Cycle Q Clear(g_c), s	4.5	1.9	4.5	3.5	5.3	5.4
Prop In Lane	1.00	1.00	1.00			0.40
Lane Grp Cap(c), veh/h	315	281	205	3455	867	851
V/C Ratio(X)	0.52	0.23	0.74	0.24	0.33	0.33
Avail Cap(c_a), veh/h	652	580	394	3455	867	851
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	19.3	23.4	3.4	8.5	8.5
Incr Delay (d2), s/veh	1.3	0.4	5.2	0.2	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.8	2.0	0.6	1.7	1.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.7	19.7	28.6	3.6	9.5	9.6
LnGrp LOS	C	B	C	A	A	A
Approach Vol, veh/h	227			991	564	
Approach Delay, s/veh	21.1			7.4	9.5	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		41.0		13.7	10.3	30.7
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		37.0		20.0	12.1	20.9
Max Q Clear Time (g_c+I1), s		5.5		7.5	6.5	7.4
Green Ext Time (p_c), s		6.2		0.5	0.2	2.7

Intersection Summary	
HCM 6th Ctrl Delay	9.8
HCM 6th LOS	A

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)		120	290		0	0
Storage Lanes		1	1		2	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.91	1.00	1.00	0.91	0.97	1.00
Ped Bike Factor						
Frt		0.850				0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	5085	1583	1770	5085	3433	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	5085	1583	1770	5085	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		340				563
Link Speed (mph)	40			40	40	
Link Distance (ft)	1078			2132	1134	
Travel Time (s)	18.4			36.3	19.3	

Intersection Summary	
Area Type:	Other

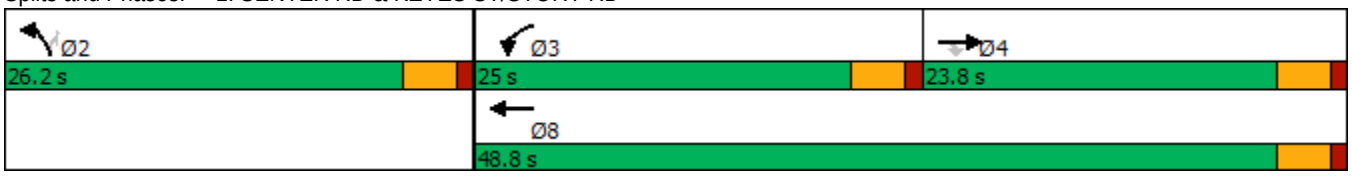
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Volume (vph)	984	325	406	869	534	647
Future Volume (vph)	984	325	406	869	534	647
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1118	369	461	988	607	735
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1118	369	461	988	607	735

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	984	325	406	869	534	647
Future Volume (vph)	984	325	406	869	534	647
Turn Type	NA	Perm	Prot	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Detector Phase	4	4	3	8	2	2
Switch Phase						
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0	10.0
Minimum Split (s)	23.8	23.8	15.0	23.8	23.8	23.8
Total Split (s)	23.8	23.8	25.0	48.8	26.2	26.2
Total Split (%)	31.7%	31.7%	33.3%	65.1%	34.9%	34.9%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	None	None	None	None	Max	Max
Act Effct Green (s)	19.8	19.8	20.8	44.6	22.2	22.2
Actuated g/C Ratio	0.26	0.26	0.28	0.60	0.30	0.30
v/c Ratio	0.83	0.55	0.94	0.33	0.60	0.85
Control Delay	32.6	7.4	56.9	7.9	25.4	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	7.4	56.9	7.9	25.4	17.5
LOS	C	A	E	A	C	B
Approach Delay	26.3			23.5	21.1	
Approach LOS	C			C	C	

Intersection Summary	
Cycle Length: 75	
Actuated Cycle Length: 74.8	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 23.7	Intersection LOS: C
Intersection Capacity Utilization 66.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: SENTER RD & KEYES ST/STORY RD



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1118	369	461	988	607	735
v/c Ratio	0.83	0.55	0.94	0.33	0.60	0.85
Control Delay	32.6	7.4	56.9	7.9	25.4	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	7.4	56.9	7.9	25.4	17.5
Queue Length 50th (ft)	179	10	208	75	123	63
Queue Length 95th (ft)	223	69	#368	94	169	#275
Internal Link Dist (ft)	998			2052	1054	
Turn Bay Length (ft)		120	290			
Base Capacity (vph)	1346	669	497	3047	1019	865
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.55	0.93	0.32	0.60	0.85

Intersection Summary

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

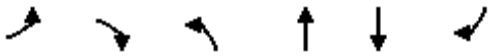
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	984	325	406	869	534	647
Future Volume (veh/h)	984	325	406	869	534	647
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	1118	369	461	988	607	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1338	415	497	3038	1029	
Arrive On Green	0.26	0.26	0.28	0.59	0.30	0.00
Sat Flow, veh/h	5274	1585	1781	5274	3456	1585
Grp Volume(v), veh/h	1118	369	461	988	607	0
Grp Sat Flow(s),veh/h/ln	1702	1585	1781	1702	1728	1585
Q Serve(g_s), s	15.4	16.7	18.8	7.2	11.2	0.0
Cycle Q Clear(g_c), s	15.4	16.7	18.8	7.2	11.2	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1338	415	497	3038	1029	
V/C Ratio(X)	0.84	0.89	0.93	0.33	0.59	
Avail Cap(c_a), veh/h	1356	421	502	3068	1029	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.0	26.5	26.1	7.6	22.3	0.0
Incr Delay (d2), s/veh	4.7	19.9	23.4	0.1	2.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	8.0	10.4	2.1	4.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	30.6	46.3	49.6	7.6	24.8	0.0
LnGrp LOS	C	D	D	A	C	
Approach Vol, veh/h	1487			1449	607	A
Approach Delay, s/veh	34.5			21.0	24.8	
Approach LOS	C			C	C	

Timer - Assigned Phs		2	3	4		8
Phs Duration (G+Y+Rc), s		26.2	24.8	23.5		48.4
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s		22.2	21.0	19.8		44.8
Max Q Clear Time (g_c+I1), s		13.2	20.8	18.7		9.2
Green Ext Time (p_c), s		1.6	0.0	0.8		7.8

Intersection Summary	
HCM 6th Ctrl Delay	27.3
HCM 6th LOS	C

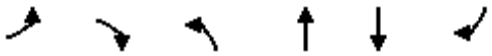
Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	155			0
Storage Lanes	1	1	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	1.00	0.91	0.95	0.95
Ped Bike Factor						
Frt		0.850			0.983	
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1770	1583	1770	5085	3479	0
Flt Permitted	0.950		0.950			
Satd. Flow (perm)	1770	1583	1770	5085	3479	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		133			23	
Link Speed (mph)	40			40	40	
Link Distance (ft)	1294			1556	709	
Travel Time (s)	22.1			26.5	12.1	

Intersection Summary	
Area Type:	Other



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Volume (vph)	228	121	61	872	637	81
Future Volume (vph)	228	121	61	872	637	81
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	251	133	67	958	700	89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	251	133	67	958	789	0

Intersection Summary

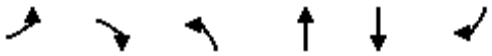
Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	228	121	61	872	637
Future Volume (vph)	228	121	61	872	637
Turn Type	Prot	Perm	Prot	NA	NA
Protected Phases	4		5	2	6
Permitted Phases		4			
Detector Phase	4	4	5	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	23.8	23.8	14.5	23.8	23.8
Total Split (s)	24.0	24.0	14.6	41.0	26.4
Total Split (%)	36.9%	36.9%	22.5%	63.1%	40.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0
Lead/Lag			Lead		Lag
Lead-Lag Optimize?			Yes		Yes
Recall Mode	None	None	None	Max	Max
Act Effct Green (s)	13.9	13.9	8.1	38.8	31.1
Actuated g/C Ratio	0.23	0.23	0.13	0.64	0.51
v/c Ratio	0.62	0.29	0.28	0.29	0.44
Control Delay	27.6	5.6	26.7	5.6	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.6	5.6	26.7	5.6	12.5
LOS	C	A	C	A	B
Approach Delay	20.0			7.0	12.5
Approach LOS	B			A	B

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 60.7	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 11.2	Intersection LOS: B
Intersection Capacity Utilization 48.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2: SENTER RD & ALMA AVE

Lane Group	EBL	EBR	NBL	NBT	SBT
Lane Group Flow (vph)	251	133	67	958	789
v/c Ratio	0.62	0.29	0.28	0.29	0.44
Control Delay	27.6	5.6	26.7	5.6	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.6	5.6	26.7	5.6	12.5
Queue Length 50th (ft)	79	0	22	45	96
Queue Length 95th (ft)	141	34	55	86	184
Internal Link Dist (ft)	1214			1476	629
Turn Bay Length (ft)			155		
Base Capacity (vph)	585	612	310	3250	1795
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.43	0.22	0.22	0.29	0.44

Intersection Summary



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	228	121	61	872	637	81
Future Volume (veh/h)	228	121	61	872	637	81
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	251	133	67	958	700	89
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	355	316	144	3362	1606	204
Arrive On Green	0.20	0.20	0.08	0.66	0.51	0.51
Sat Flow, veh/h	1781	1585	1781	5274	3265	403
Grp Volume(v), veh/h	251	133	67	958	392	397
Grp Sat Flow(s),veh/h/ln	1781	1585	1781	1702	1777	1798
Q Serve(g_s), s	7.4	4.1	2.0	4.4	7.8	7.9
Cycle Q Clear(g_c), s	7.4	4.1	2.0	4.4	7.8	7.9
Prop In Lane	1.00	1.00	1.00			0.22
Lane Grp Cap(c), veh/h	355	316	144	3362	900	911
V/C Ratio(X)	0.71	0.42	0.47	0.28	0.44	0.44
Avail Cap(c_a), veh/h	634	564	336	3362	900	911
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	19.7	24.7	4.0	8.8	8.8
Incr Delay (d2), s/veh	2.6	0.9	2.3	0.2	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	3.8	0.9	0.8	2.6	2.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	23.6	20.6	27.0	4.2	10.3	10.3
LnGrp LOS	C	C	C	A	B	B
Approach Vol, veh/h	384			1025	789	
Approach Delay, s/veh	22.5			5.7	10.3	
Approach LOS	C			A	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		41.0		15.2	8.5	32.5
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s		37.0		20.0	10.6	22.4
Max Q Clear Time (g_c+I1), s		6.4		10.4	4.0	9.9
Green Ext Time (p_c), s		7.3		0.8	0.1	3.8

Intersection Summary	
HCM 6th Ctrl Delay	10.3
HCM 6th LOS	B

Appendix J

VMT Evaluation Tool Summary Report

CITY OF SAN JOSE VEHICLE MILES TRAVELED EVALUATION TOOL SUMMARY REPORT

PROJECT:

Name: San Jose Senter Road Residential Project
Location: West side of Senter Road between Keyes Street a
Parcel: 47705005 Parcel Type: Urban Low Transit

Tool Version: 2/29/2019
Date: 12/9/2021

Proposed Parking Spaces Vehicles: 88 Bicycles: 0

LAND USE:

Residential:		Percent of All Residential Units	
Single Family	0 DU	Extremely Low Income (≤ 30% MFI)	0 % Affordable
Multi Family	44 DU	Very Low Income (> 30% MFI, ≤ 50% MFI)	0 % Affordable
Subtotal	44 DU	Low Income (> 50% MFI, ≤ 80% MFI)	0 % Affordable
Office:	0 KSF		
Retail:	0 KSF		
Industrial:	0 KSF		

VMT REDUCTION STRATEGIES

Tier 1 - Project Characteristics

Increase Residential Density
- Existing Density (DU/Residential Acres in half-mile buffer) 13
- With Project Density (DU/Residential Acres in half-mile buffer) 14

Increase Development Diversity
- Existing Activity Mix Index 0.46
- With Project Activity Mix Index 0.46

Integrate Affordable and Below Market Rate
- Extremely Low Income BMR units . . . . . 0 %
- Very Low Income BMR units . . . . . 0 %
- Low Income BMR units . . . . . 0 %

Increase Employment Density
- Existing Density (Jobs/Commercial Acres in half-mile buffer) 6
- With Project Density (Jobs/Commercial Acres in half-mile buffer) 6

Tier 2 - Multimodal Infrastructure

Tier 3 - Parking

Tier 4 - TDM Programs

CITY OF SAN JOSE VEHICLE MILES TRAVELED EVALUATION TOOL SUMMARY REPORT

RESIDENTIAL ONLY

The tool estimates that the project would generate per capita VMT below the City's threshold.