

Appendix G

## **Transportation Impact Analysis**

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HEXAGON TRANSPORTATION CONSULTANTS, INC.

# 1814-1820 Ogden Drive Residential Development

Draft Transportation Impact Analysis

Prepared for:

Ogden Properties MGMT, LLC

August 4, 2020

DRAFT

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## Executive Summary

This study was conducted for the purpose of identifying the potential transportation impacts related to the proposed residential development at 1814 Ogden Drive in Burlingame, California. The project proposes to demolish the existing adult day care and 10,114 square foot dental office and develop the site with 90 residential units and a parking garage. Vehicle access to the proposed parking garage would be provided via a new full access driveway on Odgen Drive.

The potential impacts of the project were evaluated in accordance with the standards set forth by the City of Burlingame, the City of Millbrae, and the City/County Association of Governments (C/CAG) of San Mateo County Congestion Management Program (CMP). The study includes an analysis of AM and PM peak-hour traffic conditions during weekday commute periods at 7 study intersections in the vicinity of the project site. Potential impacts to pedestrians, bicycles, and transit were also considered.

Based on trip generation rates recommended by the Institute of Transportation Engineers (ITE), it is estimated that the proposed project would generate 56 fewer daily trips, with 41 fewer trips occurring during the AM peak hour and 40 fewer trips occurring during the PM peak hour. The trip estimates account for the trip credits for the existing uses on-site.

The results of the intersection level of service analysis under existing, background, and cumulative conditions, with and without the project, are summarized in Table ES-1. The results determined that under all scenarios with and without the project, most of the study intersections would operate in accordance with local standards during both AM and PM peak hours. The El Camino Real/Millbrae Avenue intersection would operate at a substandard level of service under background and cumulative scenarios. However, the addition of project trips would not create a deficiency in traffic operations at this intersection.

The Project's transportation impact on vehicles miles traveled (VMT) was evaluated based on the CEQA Guidelines published by Governor's Office of Planning and Research (OPR). According to CEQA Guidelines, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. The project is located within a half mile of bus stops for SamTrans Route ECR along El Camino Real, which is considered a high-quality transit corridor. Therefore, the project is expected to have a less-than-significant impact on vehicles miles travelled.

This report also makes the following conclusions and recommendations for the project:

- All parking spaces should be assigned to specific residents to avoid unnecessary three-point turns in the dead-end aisles.
- Transition slopes should be provided at the two ends of the 18 percent ramp to avoid vehicles bottoming out.

- Red curbs should be painted next to the project driveway to avoid having on-street parking blocking the sight distance of exiting drivers.
- Signs prohibiting parking during garbage pickup hours should be placed adjacent to the proposed staging areas on Ogden Drive. The trash bins should be removed from the public right-of-way immediately after garbage pickup as to not impact AM or PM peak-hour traffic conditions.
- A loading space should be provided along the project frontage. Loading areas would allow for residents to be picked up or dropped off. This loading space would also be utilized by moving trucks.
- The project site plan shows two bicycle storage rooms on the ground floor but does not specify the number of bicycles able to be stored. The project should provide 45 long-term bicycle parking spaces and 5 short-term bicycle spaces.

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**Table ES-1**  
**Intersection Level of Service Summary**

# Intersection	Control	LOS	Peak Hour	Existing			Background			Cumulative (2040)			
				No Project		With Project	No Project		With Project	No Project		With Project	
				Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Incr. in Delay (sec)	LOS	Avg. Delay (sec)	LOS	Incr. in Delay (sec)	
1 Ogden Drive & Murchison Drive <sup>1,2</sup>	AWSC	None	AM	13.4	B	13.1	B	-0.3	14.0	B	13.6	C	-0.4
			PM	14.0	B	13.3	B	-0.7	14.8	B	14.0	B	-0.8
2 Ogden Drive & Trousdale Drive <sup>2</sup>	AWSC	None	AM	18.9	C	18.6	C	-0.3	20.5	C	20.1	C	-0.4
			PM	11.5	B	11.4	B	-0.1	12.0	B	11.9	B	-0.1
3 Magnolia Avenue & Murchison Drive <sup>1,2</sup>	AWSC	None	AM	16.1	C	15.5	C	-0.6	17.1	C	16.4	C	-0.7
			PM	17.7	C	16.8	C	-0.9	19.3	C	18.2	C	-1.1
4 Magnolia Avenue & Trousdale Drive <sup>2</sup>	Signal	D	AM	16.6	B	16.8	B	0.2	17.0	B	17.0	B	0.0
			PM	46.6	D	46.2	D	-0.4	48.1	D	47.6	D	-0.5
5 El Camino Real & Millbrae Avenue <sup>2</sup>	Signal	E	AM	75.4	E	75.8	E	0.4	101.8	F	102.5	F	0.7
			PM	74.6	E	75.0	E	0.4	92.6	F	92.5	F	-0.1
6 El Camino Real & Murchison Dr <sup>2</sup>	Signal	D	AM	21.2	C	21.2	C	0.0	25.3	C	25.3	C	0.0
			PM	25.4	C	25.5	C	0.1	32.4	C	32.4	C	0.0
7 El Camino Real & Trousdale Drive	Signal	D	AM	20.4	C	20.2	C	-0.2	21.3	C	21.0	C	-0.3
			PM	23.0	C	22.8	C	-0.2	24.7	C	24.4	C	-0.3

**Notes:**  
AWSC = all-way stop control  
1. Recent counts were not available. Volumes were extrapolated from nearby intersections.  
2. Cumulative traffic volumes were estimated by applying a growth rate to the existing volumes.  
**Bold** indicates a substandard level of service.

## 1. Introduction

This report presents the results of the transportation impact analysis (TIA) conducted for the proposed residential development at 1814 Ogden Drive in Burlingame, California. The project site is located on Ogden Drive, north of Trousdale Drive (see Figure 1) and is located within the North Burlingame Residential (NBMU) Zoning District in Burlingame. The project proposes to develop the site with 90 residential units and a parking garage. The site is currently developed with an adult day care with 50 patients and a 10,114 square foot dental office. The existing buildings would be demolished as part of the project. Vehicle access to the proposed parking garage would be provided via a new full access driveway on Odgen Drive (see Figure 2).

### Scope of Study

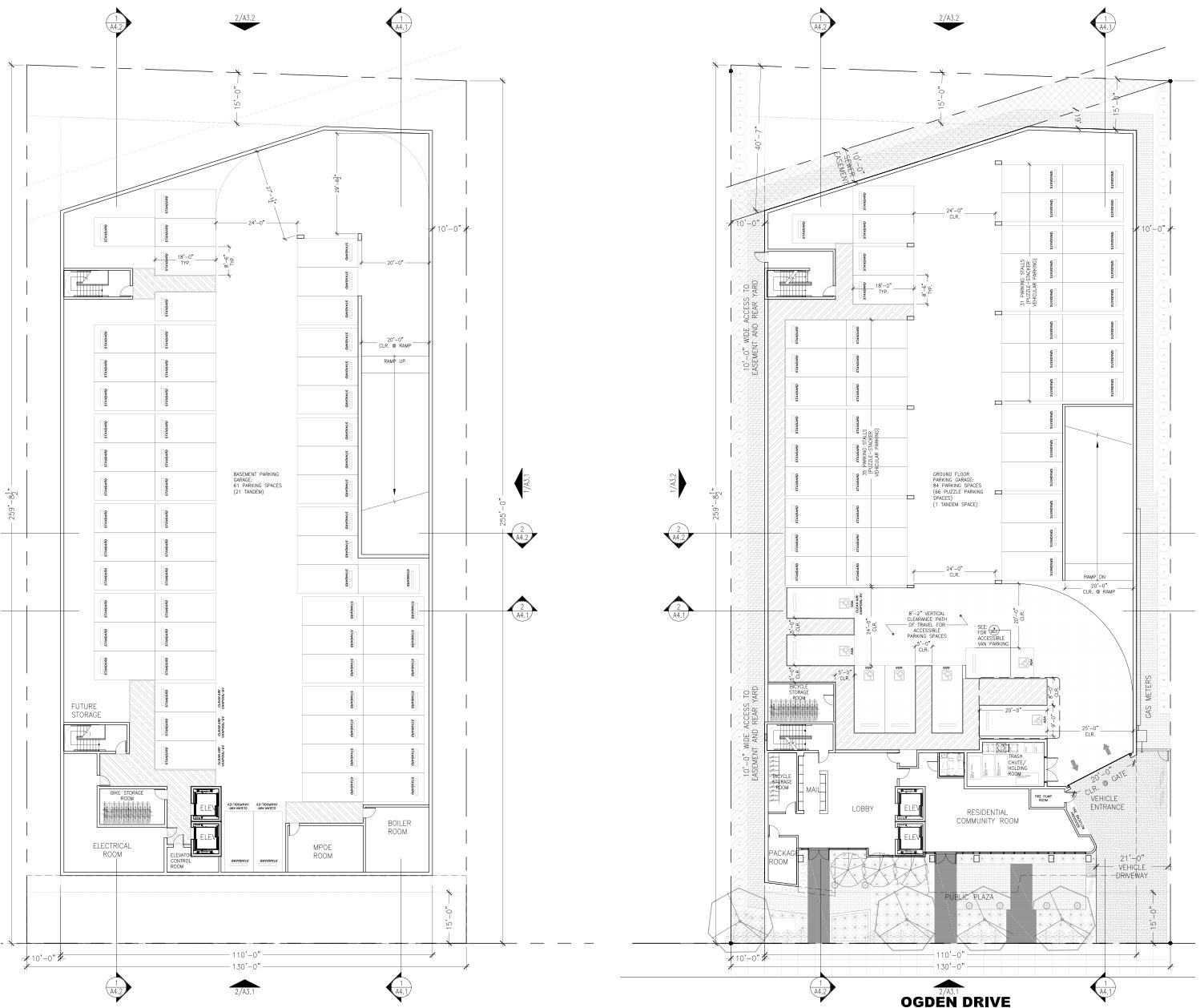
This study was conducted for the purpose of identifying the potential transportation impacts related to the proposed development. The potential impacts of the project were evaluated in accordance with the standards set forth by the City of Burlingame, the City of Millbrae, and the San Mateo City/County Association of Governments (C/CAG) of San Mateo County. C/CAG is a Joint Powers Authority that plans, funds and delivers transportation programs and projects in San Mateo County. C/CAG administers the San Mateo County Congestion Management Program (CMP).

The study analyzes the traffic impacts of the project on the key intersections in the vicinity of the site during the weekday AM and PM peak hours of commute traffic. A signal warrant analysis was prepared to determine the need for signalization at the unsignalized study intersections. An analysis of vehicle queuing, site access and on-site circulation, parking, and transit, bicycle, and pedestrian access is also included. Given that the project is expected to add fewer than 100 peak hour trips, a C/CAG trip reduction analysis was not prepared. Additionally, the study includes a vehicle miles traveled (VMT) analysis.

Traffic conditions were evaluated for the following 7 intersections in the vicinity of the project site (see Figure 1). The study intersections include 4 signalized intersections and 3 unsignalized intersections. The El Camino Real/Millbrae Avenue intersection is designated as a CMP intersection.



**Figure 1**  
**Site Location and Study Intersections**



## **Figure 2 Site Plan**

**City of Burlingame:**

- Ogden Drive and Trousdale Drive (unsignalized)
- Magnolia Avenue and Trousdale Drive
- El Camino Real and Trousdale Drive

**City of Millbrae:**

- El Camino Real and Millbrae Avenue
- Ogden Drive and Murchison Drive (unsignalized)
- Magnolia Avenue and Murchison Drive (unsignalized)
- El Camino Real and Murchison Drive

Traffic conditions at the study intersections were analyzed for the weekday AM and PM peak hours of adjacent street traffic. The AM peak hour typically occurs between 7:00 AM and 9:00 AM and the PM peak hour typically occurs between 4:00 PM and 6:00 PM on a regular weekday. It is during these periods that the most congested traffic conditions occur on the roadways.

Intersection traffic conditions were evaluated for the following scenarios:

- ***Existing Conditions.*** Existing traffic volumes at study intersections were estimated based on available traffic counts conducted for local traffic studies, EIRs, and the 2019 CMP monitoring report. Due to Covid-19 and regional shelter-in-place orders, new traffic counts could not be collected for the study. Therefore, a growth rate of 1% per year was applied to the traffic counts that are more than two years old to estimate the traffic volumes for existing conditions. Traffic volumes for the study intersections without available count data were extrapolated from the traffic volumes of the adjacent study intersections. The study intersections were evaluated with a level of service analysis using Synchro software in accordance with the *2010 Highway Capacity Manual* methodology.
- ***Existing Plus Project Conditions.*** Existing traffic volumes with the project were estimated by adding to existing traffic volumes the additional traffic generated by the project. Existing plus project conditions were evaluated relative to existing conditions in order to determine the effects the project would have on the existing roadway network.
- ***Background Conditions.*** Background traffic volumes reflect traffic added by projected volumes from approved but not yet completed developments in the project area. The approved project trips and/or approved project information were obtained from the Cities of Burlingame and Millbrae.
- ***Background Plus Project Conditions.*** Background plus project traffic volumes were estimated by adding to background traffic volumes the additional traffic generated by the project. Project conditions were evaluated relative to background conditions to determine potential project impacts.
- ***Cumulative Conditions.*** Cumulative traffic volumes represent traffic growth through the year 2040. Cumulative traffic volumes were obtained from the 2040 Burlingame General Plan. Study intersections not included in the general plan were estimated based on the closest nearby intersection. Cumulative plus project conditions were evaluated relative to cumulative conditions to determine potential project impacts.

## Methodology

This section presents the methods used to determine traffic conditions at the study intersections and the traffic impacts of the project. It includes descriptions of the data requirements, the analysis methodologies, and the applicable level of service standards.

### Data Requirements

The data required for the analysis were obtained from local traffic studies and EIRs and the Cities of Burlingame and Millbrae. The following data were collected from these sources.

- Peak-hour intersection turning-movement volumes
- Lane configurations
- Intersection signal timing and phasing
- List of approved projects

### Intersection Level of Service Methodologies and Standards

Traffic conditions at the study intersections were evaluated using level of service (LOS). Level of service is a qualitative description of operating conditions ranging from LOS A, or free-flow conditions with little or no delay, to LOS F, or jammed conditions with excessive delays.

#### Signalized Intersections

The Cities of Burlingame and Millbrae evaluate level of service at signalized intersections based on the *Highway Capacity Manual (HCM) 2010* level of service methodology. The 2010 HCM method evaluates signalized intersection operations on the basis of average control delay time for all vehicles at the intersection. This average delay can then be correlated to a level of service. Table 1 presents the level of service definitions and the correlation between delay and level of service for signalized intersections. This study utilizes Synchro software to determine intersection levels of service based on the HCM method.

Traffic operations at the study intersections were evaluated against the standards of the applicable municipality, while the CMP intersection was evaluated against the standards of the C/CAG CMP. While the City of Burlingame does not have a Council-adopted level of service threshold, a standard of LOS D or better has typically been applied in local traffic studies and EIRs. The City of Millbrae seeks to maintain LOS D for signalized intersections, except for CMP intersections where LOS E is acceptable. The C/CAG has developed a LOS standard of E for CMP intersections on El Camino Real (SR 82). Therefore, for the study, the LOS E standard is applied to the El Camino Real/Millbrae Avenue CMP intersection, while the LOS D standard is applied to the remaining signalized study intersections.

**Table 1**  
**Signalized Intersection Level of Service Definitions Based on Average Control Delay**

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

Source: Transportation Research Board, 2010 Highway Capacity Manual (Washington, D.C., 2010), p.10-16.

### Unsignalized Intersections

The study evaluated four unsignalized study intersections in the City of Burlingame. Level of service analysis at unsignalized intersections is generally used to determine the need for modification in the type of intersection control (i.e., all-way stop or signalization). As part of the evaluation, traffic volumes, delays, and traffic signal warrants are evaluated to determine if the existing intersection control is appropriate.

Levels of service for unsignalized intersections were analyzed using Synchro software based on the 2010 HCM methodology for unsignalized intersection. The 2010 HCM method evaluates unsignalized intersections on the basis of average stopped delay for all-way stop controlled intersections, and for the worst-case approach for two-way stop-controlled intersections. Table 2 shows the correlation between delay and level of service for unsignalized intersections.

The City of Burlingame does not have a formally adopted level of service standard for unsignalized intersections.

**Table 2**  
**Unsignalized Intersection Level of Service Definitions Based on Average Delay**

Level of Service	Description	Average Delay Per Vehicle (Sec.)
A	Little or no traffic delay	10.0 or less
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	Extreme traffic delays	greater than 50.0

Source: Transportation Research Board, 2010 *Highway Capacity Manual* (Washington, D.C., 2010) p17-2.

## Traffic Signal Warrant

The level of service analysis for unsignalized intersections was supplemented with an assessment of the need for installation of a traffic signal, known as a signal warrant analysis. The need for signalization of unsignalized intersections in an urban or suburban context is typically assessed based on the Peak Hour Volume Warrant (Warrant 3) described in the *California Manual on Uniform Traffic Control Devices for Streets and Highways* (CA MUTCD), Part 4, Highway Traffic Signals. This method makes no evaluation of intersection level of service, but simply provides an indication whether vehicular peak-hour volumes are, or would be, sufficiently high to justify installation of a traffic signal.

## Vehicle Miles Traveled (VMT) Analysis

Per California Senate Bill 743, the California Natural Resources Agency, with assistance from the Governor's Office of Planning and Research (OPR), adopted new CEQA guidelines in December 2018. The new guidelines state that automobile delay, as measured by level of service (LOS), will no longer constitute a significant environmental impact under CEQA, and that VMT is considered the most appropriate metric to evaluate a project's transportation impacts. Burlingame has not yet adopted any thresholds or guidelines related to VMT. The VMT evaluation is presented based on the OPR's CEQA Guidelines and Technical Advisory on Evaluating Transportation Impacts in CEQA (December 2018).

## Level of Service Deficiency Criteria

### Intersection Deficiency Criteria

The City of Burlingame does not have any Council-adopted definitions of intersection deficiencies. The following standards typically have been used in traffic studies and EIRs. The project is said to create a deficiency at a signalized intersection in the City of Burlingame if for any peak-hour:

1. The level of service at the intersection degrades from an acceptable LOS D or better to an unacceptable LOS E or F with the addition of project trips; or

2. The level of service at the intersection is an unacceptable LOS E or F under background conditions and the addition of project trips causes the average delay at the intersection to increase by five (5) or more seconds.

The City of Millbrae defines a study intersection as deficient if any of the following happen with the addition of project trips:

1. Cause an intersection degrades from an acceptable LOS D or better to an unacceptable LOS E or F; or
2. Increase the average delay at a signalized intersection operating at an unacceptable level (LOS E or F) by five (5) or more seconds.

A deficiency typically is said to be satisfactorily improved when measures are implemented that would restore intersection level of service to background conditions or better.

### CMP Signalized Intersection Impact Criteria

At a CMP signalized intersection in the County of San Mateo, a project is determined to create a significant adverse impact on traffic conditions if, during either the AM or PM peak hour:

1. The level of service at the intersection degrades from an acceptable LOS E or better to an unacceptable LOS F with the addition of project trips; or
2. The level of service at the intersection is an unacceptable LOS F under cumulative with project conditions and the addition of project trips causes the average delay at the intersection to increase by four (4) or more seconds

A deficiency by CMP standards is said to be satisfactorily mitigated when measures are implemented that would restore intersection conditions to “no project” conditions or better.

## Report Organization

This report has a total of seven chapters. Chapter 2 describes the existing roadway network, transit services, and pedestrian and bicycle facilities. Chapter 3 presents the intersection levels of service under background conditions with the addition of traffic from approved developments in the Cities of Burlingame and Millbrae. Chapter 4 describes the method used to estimate project traffic, the intersection operations under existing plus project conditions and background plus project conditions, and potential project impacts on the roadway network. Chapter 5 presents the intersection levels of service under the cumulative plus project conditions, utilizing estimated traffic volumes from the City of Burlingame 2040 General Plan. Chapter 6 presents the VMT analysis. Chapter 7 presents the analysis of other transportation-related issues, including traffic operations at unsignalized intersections, site access and on-site circulation, parking, and potential impacts on bicycle, pedestrian, and transit facilities.

## 2. Existing Conditions

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

### Existing Roadway Network

Regional access to the project site is provided via US 101. Local access to the site is provided on El Camino Real (SR 82), Millbrae Avenue, Trousdale Drive, Murchison Drive, and Ogden Drive. These roadways are described below. Although all streets in the study area run at a diagonal compared to the ordinal directions, for the purposes of this study, US 101 and all parallel streets are considered to run north-south, and cross streets are considered to run east-west.

**US 101** is a north/south, eight-lane freeway in the vicinity of the site. US 101 extends northward through San Francisco and southward through San Jose. Access to and from the project study area is provided via a full interchange at Millbrae Avenue.

**El Camino Real (SR 82)** is a north/south arterial that extends northward to San Francisco, and southward to San Jose. In the project vicinity, El Camino Real has six lanes north of Dufferin Avenue, with left turn lanes at signalized intersections. South of Dufferin Avenue, El Camino Real is narrowed to four lanes. The posted speed limit in the project area is 35 mph. In the project area, El Camino Real provides frontage roads between Murchison Drive and Dufferin Avenue. A continuous northbound frontage road extends between Murchison Drive and Dufferin Avenue. A southbound frontage road extends between Murchison Drive and Trousdale Drive. Sidewalks are present along the east side of the northbound frontage road, the west side of the southbound frontage road, and at the signalized intersections in the project area. Sidewalks also exist on both sides of El Camino Real, north of Murchison Drive. On-street parking is prohibited on both sides of El Camino Real, but permitted on both sides of the southern frontage road and along the east side of the northern frontage road. El Camino Real provides access to the project via its intersections with Murchison Drive and Trousdale Drive.

**Millbrae Avenue** is an east/west arterial that extends westward from Old Bayshore Highway to Vallejo Drive and I-280, where it terminates. Millbrae Avenue connects the western residential areas of the City of Millbrae to the regional roadways, El Camino Real and US 101. Millbrae has six lanes between El Camino Real and US 101, with a median that provides left-turn pockets at the major intersections. The posted speed limit in the project area is 35 mph. Although there are sidewalks on both sides of Millbrae Avenue, the sidewalk on the north side terminates at the Chevron gas station, located just east of Millbrae Station. Access to the project site from Millbrae Avenue is provided via El Camino Real.

**Trousdale Drive** an east/west arterial that extends westward from California Drive to I-280. Trousdale Drive has four lanes west of El Camino Real and two lanes east of El Camino Real. The posted speed limit on Trousdale Drive west of El Camino Real is 35 mph. There are sidewalks on both sides of the street and on-street parking is permitted on both sides of the street between El Camino Real and California Drive. Trousdale Drive provides access to the project via its intersection with Ogden Drive.

**Murchison Drive** an east/west collector street that extends from California Drive to Vallejo Drive near Mills Estates, where it transitions into Hunt Drive. Murchison Drive has two lanes west of El Camino Real and four lanes east of El Camino Real. There are sidewalks on both sides of the street and on-street parking is permitted on both sides of the street. Murchison Drive provides access to the project via its intersection with Ogden Drive.

**Ogden Drive** is a north/south local road between Murchison Drive and Trousdale Drive. Ogden Drive has two lanes. There are sidewalks along both sides of the street. Parking is permitted along both sides of the street. Ogden Drive provides direct access to the site via a new full-access driveway.

## Existing Pedestrian Facilities

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. In the vicinity of the project site, sidewalks exist along both sides of Ogden Drive, Murchison Drive, Trousdale Drive, and El Camino Real north of Murchison Drive, along the west side of the southern El Camino Real frontage road, and along the east side of the northern El Camino Real frontage road. Crosswalks with pedestrian signal heads and push buttons are provided on the east, south, and west legs of the El Camino Real/Trousdale Drive intersection and all approaches of the El Camino Real/Murchison Drive and El Camino Real/Millbrae Avenue intersections within walking distance of the site. Within a typical walking distance (a half mile or 10 minutes), continuous pedestrian facilities are present between the site and the surrounding land uses, including the Millbrae Station and bus stops in the area.

## Existing Bicycle Facilities

Bicycle facilities in the vicinity of the project site include bike/pedestrian paths, bike lanes, and bike routes. Bike/pedestrian paths (Class I facilities) are off-street paths with exclusive right-of-way for non-motorized transportation used for commuting as well as recreation. Bike lanes (Class II facilities) are lanes on roadways designated for use by bicycles with special lane markings, pavement legends, and signage. Bike routes (Class III) are existing rights-of-way that accommodate bicycles but are not separate from the existing travel lanes. The existing bicycle facilities within the study area are described below and are shown on Figure 3.

**North-South bicycle connections** consist of a bike lane/bike route along California Drive, from Broadway to Linden Avenue (north of Millbrae Avenue) where bicycle riders can access the Millbrae Station. Closer to the project site, there are bike lanes on both sides of California Drive between Broadway and Murchison Drive, which transitions into bike routes between Murchison Drive and Linden Avenue. A bike route also exists on El Camino Real, north of Millbrae Avenue.

**East-West bicycle connections** in the study area consist of designated bike routes on Trousdale Drive between Magnolia Avenue and Ashton Avenue and Rosedale Avenue/Ray Drive between California Drive and Devereux Drive. The Spur Trail bike path exists between South Ashton Avenue (at Mosta Grove Park) and Magnolia Avenue (behind Mills High School).



**Figure 3**  
**Existing Bicycle Facilities**

## Existing Transit Services

Existing public transit services in the study area are provided by the San Mateo County Transit District (SamTrans), San Mateo County's Transportation Demand Management Agency (commute.org), Caltrain, and Bay Area Rapid Transit (BART). SamTrans operates bus services in San Mateo County; commute.org provides free fixed-route shuttle services between the Caltrain/BART stations and corporate campuses or major employment areas during weekday commute hours; Caltrain provides commuter rail service along the San Francisco Peninsula, through the South Bay to San Jose and Gilroy; BART provides commuter rail service between the San Francisco Peninsula, Berkeley, Oakland, Fremont, Walnut Creek, Dublin/Pleasanton, and other cities in the East Bay.

The nearest bus stop is located on Trousdale Drive at Magnolia Avenue, approximately 1,050 feet from the project site, and is served by SamTrans Route 46 on school days, during school start and end hours. The next closest bus stops are located on El Camino Real at the Trousdale Drive intersection, approximately 1,560feet from the project site, which is served by SamTrans Routes ECR and 397. The project site is also within walking distance (0.8 mile) of the Millbrae multimodal transit station (Millbrae Station). The station is served by Caltrain baby bullet, limited, and local lines, BART Richmond-Millbrae line (Red) and Millbrae-SFO-Antioch line (Purple/Yellow), three SamTrans bus routes (ECR, 38, 397, SFO), three shuttle routes (NB, BAY, NFC) operated by commute.org, and one shuttle route (MB) operated by Caltrain. The transit service routes that run through the study area and the bus/shuttle stops near the project site are summarized in Table 3 and shown on Figure 4.

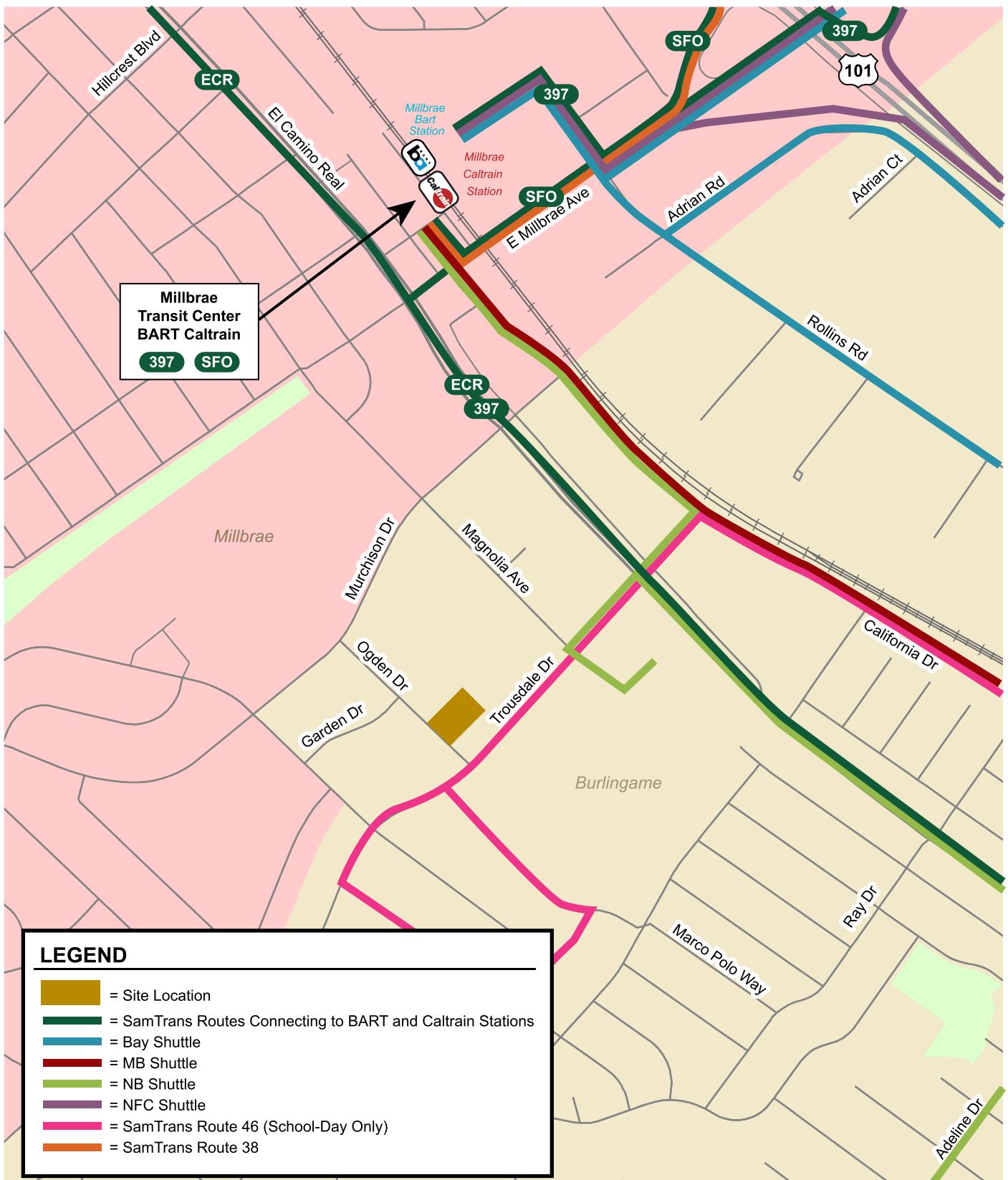
## Existing Lane Configurations and Traffic Volumes

The existing lane configurations at the study intersections were obtained from field observations (see Figure 5).

Existing peak-hour traffic volumes (see Table 6) at study intersections were estimated based on available traffic counts conducted for local traffic studies, EIRs, and the 2019 CMP monitoring report for the CMP intersections. Peak-hour traffic counts for three study intersections were collected within two years, which are typically considered as recent traffic counts that can be used directly for a traffic study. Two of the study intersections do not have recent traffic counts. Due to Covid-19 and regional shelter-in-place orders, new traffic counts could not be collected for these intersections. Therefore, a growth rate of 1% per year was applied to the older traffic counts to estimate the existing traffic volumes. There are no traffic count data available for the Ogden Drive/Murchison Drive and Magnolia Avenue/Murchison Drive intersection. Therefore, the existing traffic volumes at the intersection were estimated based on the traffic volumes of the adjacent study intersections (Ogden Drive/Trousdale Drive, Magnolia Avenue/Trousdale Drive, and El Camino Real/Murchison Drive) and available tube counts on Murchison Drive (between Ogden Drive and Magnolia Avenue). Traffic count dates and sources and the adjustment applied to the study intersections are summarized in Appendix A.

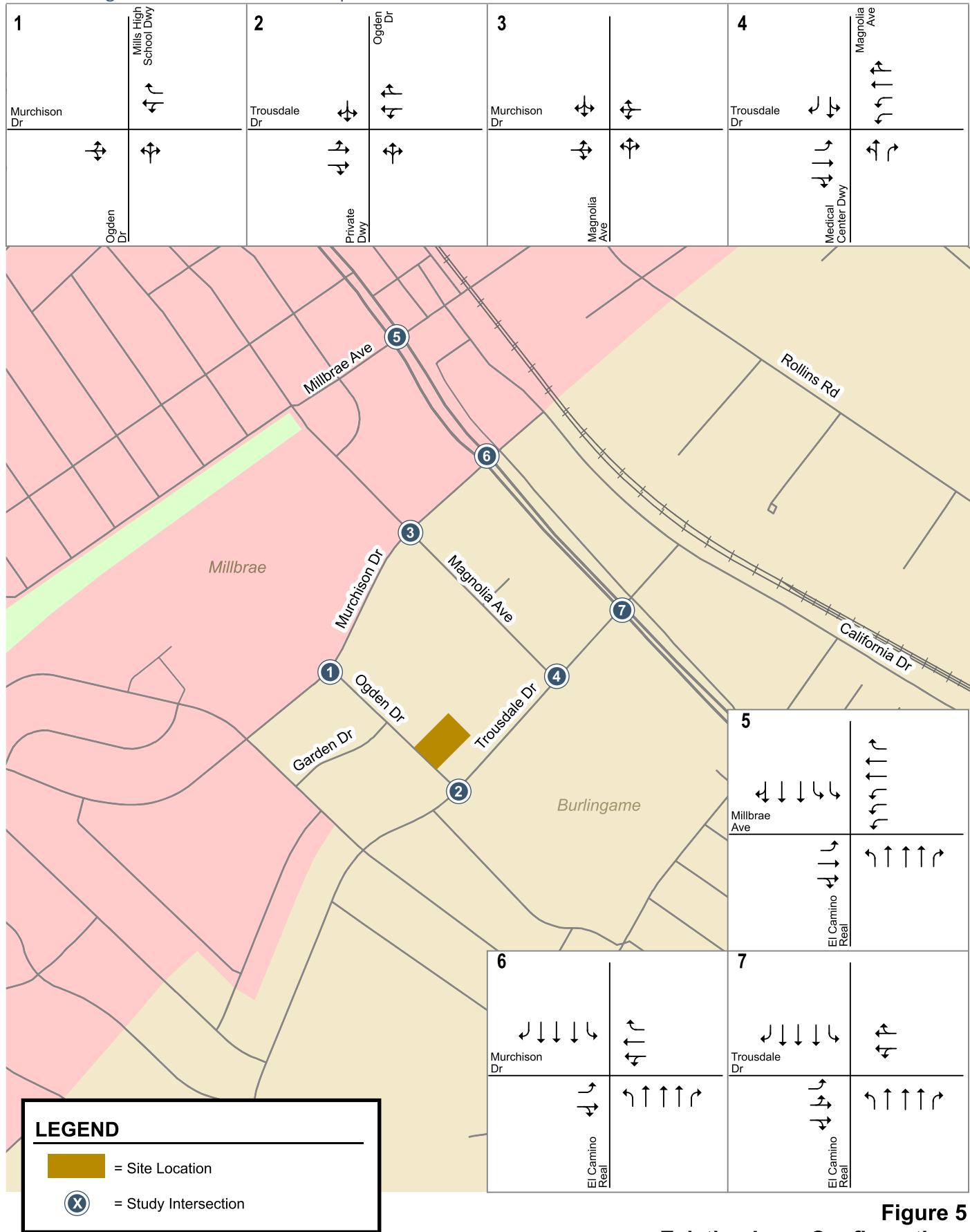
**Table 3**  
**Existing Transit Services**

Transit Route	Route Description	Headway <sup>1</sup>	Nearest Stop and Distance to Project Site
<b>SamTrans Bus Services</b>			
SamTrans ECR	Daly City BART - Palo Alto Transit Center	15 mins	El Camino Real at Trousdale Drive, 1,560 feet
SamTrans Route 38	Safe Harbor - Airport/Linden	N/A <sup>2</sup>	Millbrae Station West Plaza, 3,460 feet
SamTrans 46	Burlingame Intermediate School - Carolan	2-10 mins <sup>3</sup>	Trousdale Drive at Magnolia Avenue, 1,050 feet
SamTrans 397	Palo Alto Transit Center - San Francisco	60 mins <sup>4</sup>	El Camino Real at Trousdale Drive, 1,560 feet
SamTrans SFO	Millbrae Station - San Francisco International Airport (SFO)	30 mins	El Camino Real at Murchison Drive, 2,310 feet
<b>Shuttle Services<sup>5</sup></b>			
Millbrae/Broadway (MB)	Millbrae Station - Broadway Caltrain Station	30 mins	Millbrae Station West Plaza, 3,460 feet
North Burlingame (NB)	Millbrae Station - Burlingame Easton Neighborhood	30 mins	Mills-Peninsula Health Services at 1501 Trousdale Drive, 1,560 feet
Burlingame-Bayside Shuttle (Bay)	Millbrae Station - Airport Boulevard/Bay View Place Intersection	30 mins	Millbrae Station East Plaza, 4,180 feet
North Foster City Shuttle (NFC)	Millbrae Station - North Foster City business parks	30 mins	Millbrae Station East Plaza, 4,180 feet
<b>Commuter Rail Services</b>			
Caltrain	San Francisco - Gilroy	25 mins	Millbrae Station, 3,590 feet
Caltrain "Baby Bullet"	San Francisco - San Jose Tamien	30 mins	Millbrae Station, 3,590 feet
BART (Red )	Richmond - Millbrae	15 mins	Millbrae Station, 3,590 feet
BART (Purple/Yellow)	Millbrae - SFO - Antioch	15 mins	Millbrae Station, 3,590 feet
<b>Notes:</b>			
These were services available before Covid-19 and shelter-in-place orders, unless otherwise stated.			
1. Approximate headways during peak commute periods on weekdays.			
2. Route 38 is a limited service, effective 4/26/2020, with one stop in the morning at 8:18 AM and one stop in the evening at 7:36 PM.			
3. Route 46 is a limited school day only service, operating Monday-Friday from 7:35 - 8:10 AM, Monday, Wednesday, Thursday and Friday from 3:10 - 3:45 PM, and Tuesdays from 2:10 - 2:40 PM.			
4. Route 397 is a limited overnight service, operating from 12:30 AM - 6:30 AM.			
5. Shuttles run during weekday commute hours and is open to the general public and free to riders.			



**Figure 4**  
Existing Transit Services

1814-1820 Ogden Drive Residential Development TIA



**Figure 5**  
Existing Lane Configurations

1814-1820 Ogden Drive Residential Development TIA

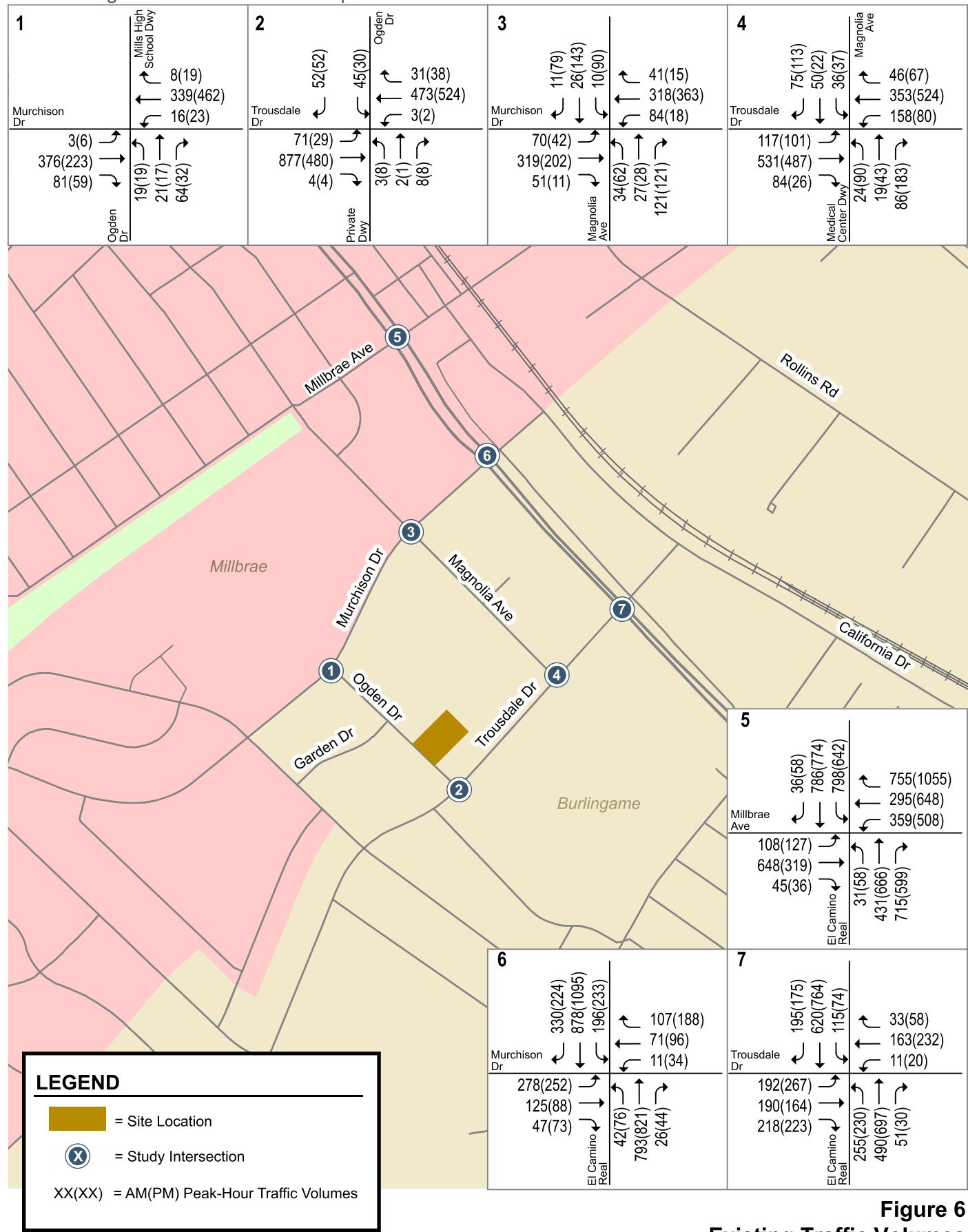


Figure 6  
Existing Traffic Volumes

## Existing Intersection Levels of Service

The results of the level of service analysis show that all of the study intersections operate at an acceptable level of service during both AM and PM peak hours (see Table 4). The intersection levels of service calculation sheets are included in Appendix B.

**Table 4**  
**Existing Intersection Levels of Service**

#	Intersection	Control	LOS Standard	Peak Hour	Count Date	Avg. Delay (sec)	LOS
1	Ogden Drive & Murchison Drive <sup>1</sup>	AWSC	None	AM	N/A	13.4	B
				PM	N/A	14.0	B
2	Ogden Drive & Trousdale Drive <sup>2</sup>	AWSC	None	AM	09/20/17	18.9	C
				PM	09/20/17	11.5	B
3	Magnolia Avenue & Murchison Drive <sup>1</sup>	AWSC	None	AM	N/A	16.1	C
				PM	N/A	17.7	C
4	Magnolia Avenue & Trousdale Drive	Signal	D	AM	02/27/20	16.6	B
				PM	02/27/20	46.6	D
5	El Camino Real & Millbrae Avenue	Signal	E	AM	04/15/19	75.4	E
				PM	04/15/19	74.6	E
6	El Camino Real & Murchison Dr <sup>2</sup>	Signal	D	AM	04/05/16	21.2	C
				PM	04/05/16	25.4	C
7	El Camino Real & Trousdale Drive	Signal	D	AM	02/27/20	20.4	C
				PM	02/27/20	23.0	C

Notes:  
AWSC = all-way stop control  
1. Recent counts were not available. Volumes were extrapolated from nearby intersections.  
2. Recent counts were not available. Existing volumes were increased by applying a growth rate of 1% per year.

## 3. **Background Conditions**

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This chapter presents background traffic conditions, which are defined as conditions just prior to completion/occupation of the proposed project. Traffic volumes for background conditions comprise volumes from existing traffic volumes plus traffic generated by approved but not yet constructed developments in the vicinity of the site. This chapter describes the procedure used to determine background traffic volumes and the resulting traffic conditions.

### **Roadway Network and Traffic Volumes Under Background Conditions**

The roadway network under project conditions would be the same as the existing roadway network.

Traffic volumes for background conditions include the completion of approved major developments in the vicinity of the project site, such as the 1499 Bayshore Hotel, the Adrian Court Residential Development, the Serra Station Development, and the Gateway at Millbrae Station Development. Trips associated with the approved developments were obtained from the project traffic studies. Since the Serra Station Development and the Gateway at Millbrae Station do not have traffic studies, the estimated number of project trips were assigned to the roadway network based on the trip distribution found in the Millbrae Station Area Specific Plan (MSASP) EIR. Background peak-hour traffic volumes are shown on Figure 7. The approved trips and traffic volumes for all components of traffic are tabulated in Appendix A.

### **Background Intersection Levels of Service**

The results of the intersection level of service analysis (see Table 5) show that the El Camino Real/Millbrae Avenue intersection would operate at an unacceptable LOS F during the AM and PM peak hours as a result of approved projects in the area. All other signalized study intersections would operate at an acceptable level of service during both the AM and PM peak hours of traffic under background conditions. The level of service calculation sheets are included in Appendix B.

1814-1820 Ogden Drive Residential Development TIA

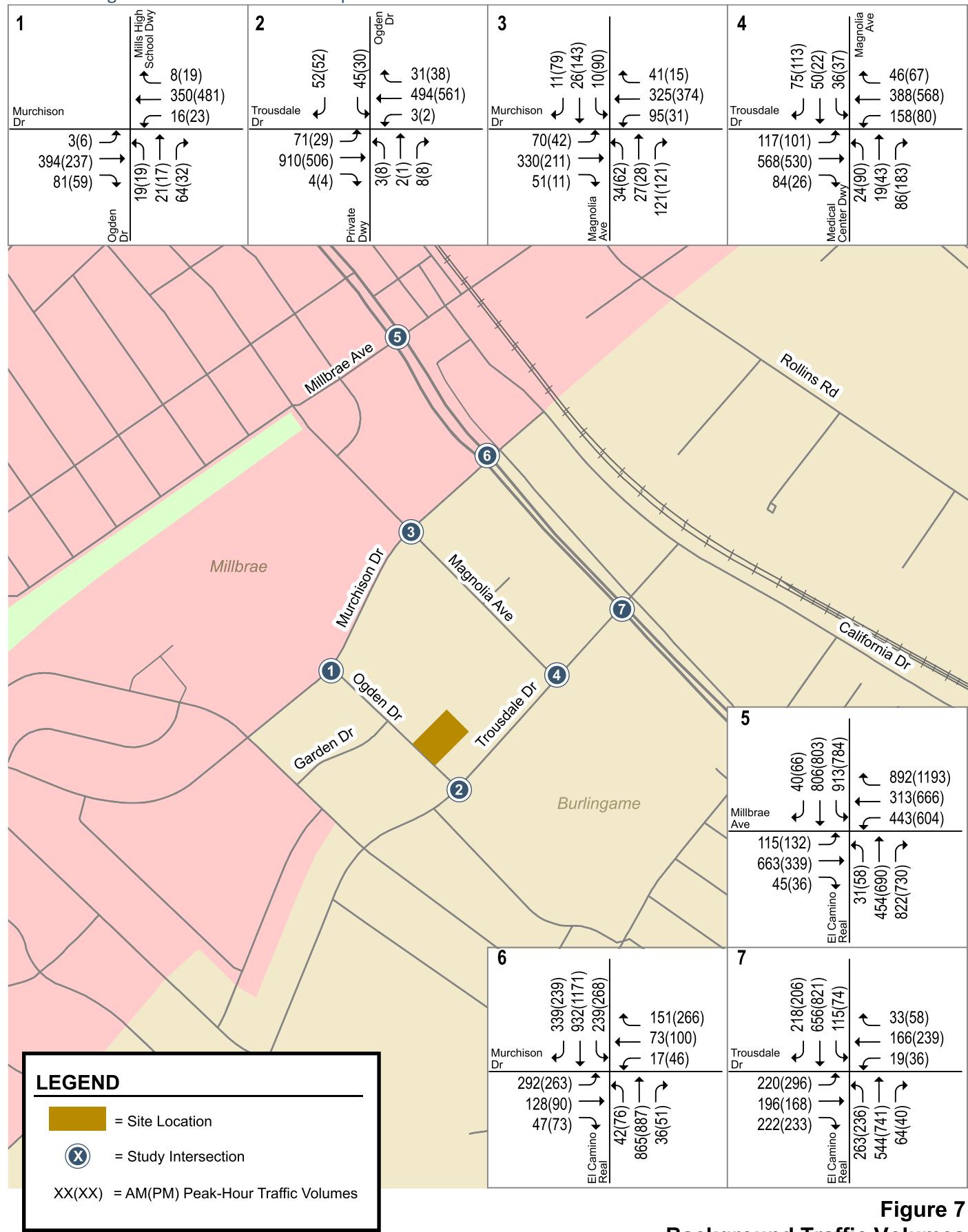


Figure 7  
Background Traffic Volumes

**Table 5**  
**Background Intersection Levels of Service**

#	Intersection	LOS Standard	Peak Hour	Existing		Background	
				Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS
1	Ogden Drive & Murchison Drive <sup>1</sup>	None	AM	13.4	B	14.0	B
			PM	14.0	B	14.8	B
2	Ogden Drive & Trousdale Drive	None	AM	18.9	C	20.5	C
			PM	11.5	B	12.0	B
3	Magnolia Avenue & Murchison Drive <sup>1</sup>	None	AM	16.1	C	17.1	C
			PM	17.7	C	19.3	C
4	Magnolia Avenue & Trousdale Drive	D	AM	16.6	B	17.0	B
			PM	46.6	D	48.1	D
5	El Camino Real & Millbrae Avenue	E	AM	75.4	E	<b>101.8</b>	F
			PM	74.6	E	<b>92.6</b>	F
6	El Camino Real & Murchison Dr	D	AM	21.2	C	25.3	C
			PM	25.4	C	32.4	C
7	El Camino Real & Trousdale Drive	D	AM	20.4	C	21.3	C
			PM	23.0	C	24.7	C

Notes:

1. Recent counts were not available. Counts were extrapolated from nearby intersections.

**Bold** indicates a substandard level of service.

## 4. **Project Conditions**

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This chapter describes traffic conditions with the project and includes: (1) the method by which project traffic is estimated, (2) intersection levels of service under existing plus project conditions and background plus project conditions, and (3) potential impacts of the project traffic on roadway network. Existing plus project traffic conditions could potentially occur if the project were to be occupied prior to the other approved projects in the area. Background plus project conditions predict a realistic traffic condition that would occur as approved developments get built and occupied when the project is complete. Background plus project conditions were evaluated relative to background conditions in order to determine potential project impacts.

### Roadway Network Under Project Conditions

The roadway network under project conditions would be the same as the existing roadway network because the project would not alter the existing intersection lane configurations.

### Project Trip Estimates

The magnitude of traffic produced by a new development and the locations where that traffic would appear were estimated using a three-step process: (1) trip generation, (2) trip distribution, and (3) trip assignment. In determining project trip generation, the magnitude of traffic traveling to and from the project site is estimated for the AM and PM peak hours. As part of the project trip distribution, the directions to and from which the project trips would travel were estimated. In the project trip assignment, the project trips are assigned to specific streets and intersections. These procedures are described below.

#### Trip Generation

Through empirical research, data have been collected that quantify the amount of traffic that can be expected to be generated by many types of land uses. The data are published in *Trip Generation Manual, 10th Edition*, by the Institute of Transportation Engineers (ITE). The magnitude of traffic added to the roadway system by a new development is estimated by multiplying the applicable trip generation rates by the size and use of the development. The rates published for Multifamily Housing (Mid-Rise) (Land Use 221) were used to estimate the trips generated by the proposed project. The “Mid-Rise Multifamily Housing” category refers to apartments, townhouses, and condominiums located within the same building that have between three and 10 levels. Most of the proposed residential units would be located on the second to 6<sup>th</sup> floor. The first floor would have a lobby, trash room, mail room, and community space.

Because the project would replace the existing use on the site, trips associated with the existing use were subtracted from the gross project traffic to derive the net project trips. The existing buildings are a 4,050 s.f. adult day care center and a 10,114 s.f. medical office. The rates published for Day Care Center (Land Use 565) and Medical-Dental Office Building (Land Use 720) were used to estimate the trips that are generated by the existing uses. ITE does not have trip rates for an adult day care center. "Day Care Center" was used because it would be the most similar to adult day-care trips with trips coming from employees, drop-offs, and pick-ups.

After applying the existing trip credits, Table 6 shows that the project would generate 56 fewer daily trips, with 41 fewer trips (-38 in and -3 out) occurring during the AM peak hour and 40 fewer trips (-7 in and -33 out) occurring during the PM peak hour.

**Table 6**  
**Project Trip Generation Estimates**

Land Use	Size	Daily		AM Peak Hour			PM Peak Hour				
		Trip Rate	Trips	Trip Rate	In	Out	Total	Trip Rate	In	Out	
<b>Proposed Land Uses</b>											
Residential <sup>1</sup>	90 du	5.44	490	0.36	8	24	32	0.44	24	16	40
<i>Proposed Sub-Total</i>			<b>490</b>		<b>8</b>	<b>24</b>	<b>32</b>		<b>24</b>	<b>16</b>	<b>40</b>
<b>Existing Land Uses</b>											
Adult Day Care <sup>2</sup>	4,050 s.f.	47.62	193	11.00	24	21	45	11.12	21	24	45
Medical Office <sup>3</sup>	10,114 s.f.	34.80	352	2.78	22	6	28	3.46	10	25	35
<i>Existing Sub-Total</i>			<b>545</b>		<b>46</b>	<b>27</b>	<b>73</b>		<b>31</b>	<b>49</b>	<b>80</b>
<b>Net Project Trips</b>			<b>-55</b>		<b>-38</b>	<b>-3</b>	<b>-41</b>		<b>-7</b>	<b>-33</b>	<b>-40</b>
<b>Notes:</b>											
du = dwelling units											
All trip rates are from ITE Trip Generation Manual, 10th Edition, 2017.											
1. Mid-Rise Multifamily Housing (ITE Land Use 221): average trip rates in trips per dwelling unit were used.											
2. Day Care Center (ITE Land Use 565): average trip rates in trips per 1,000 s.f. were used.											
3. Medical-Dental Offce (ITE Land Use 720): average trip rates in trips per 1,000 s.f. were used.											

## Trip Distribution and Assignment

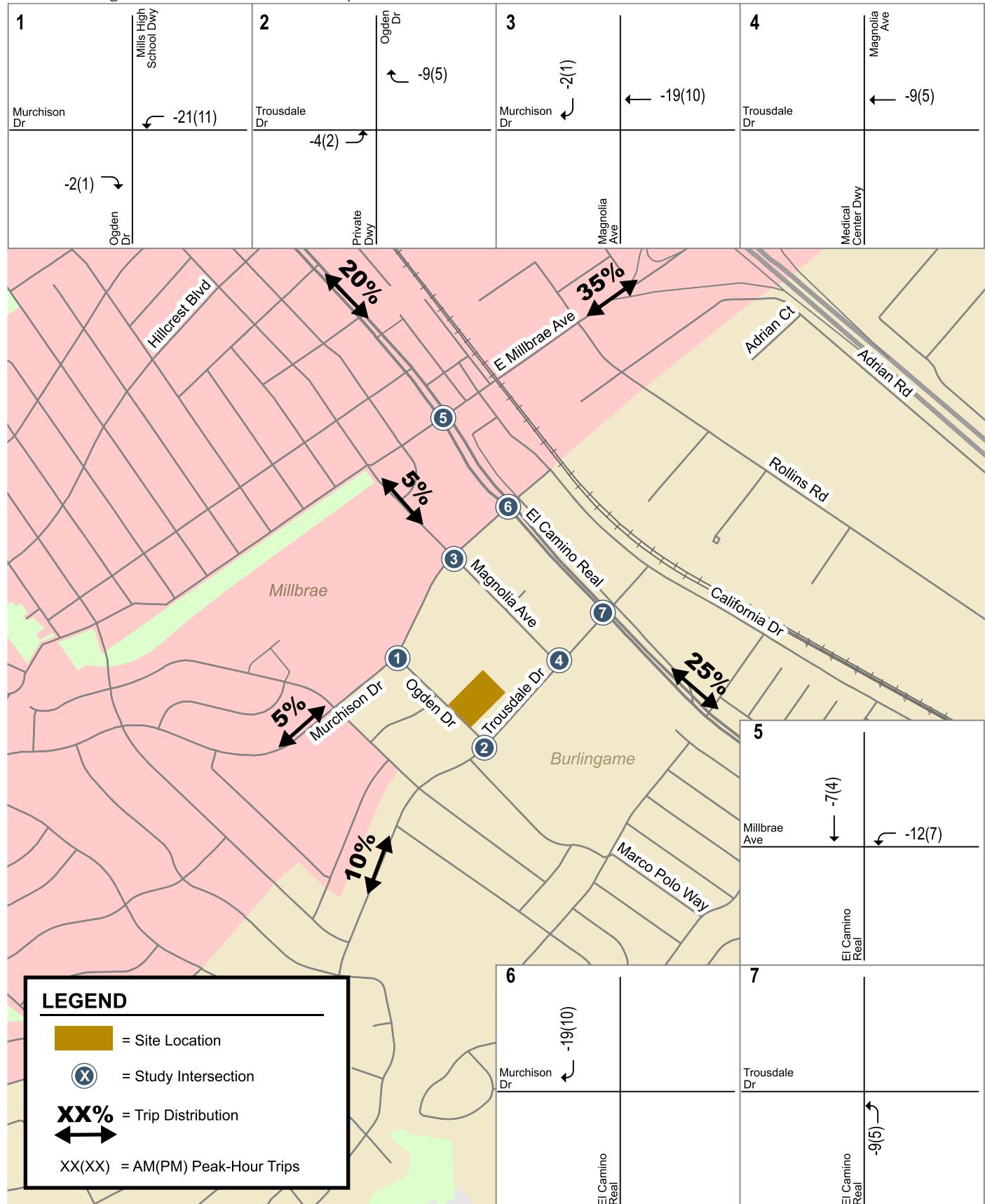
The trip distribution patterns for the proposed residential use were estimated based on existing travel patterns on the surrounding roadway system and the locations of complementary land uses (see Figure 8).

The peak-hour trips generated by the project were assigned to the roadway system based on the directions of approach and departure, the roadway network connections, and the locations of project driveway (see Figure 8).

## Traffic Volumes Under Project Conditions

Project trips, as represented in the above project trip assignment, were added to existing and background traffic volumes to obtain existing plus project traffic volumes (see Figure 9) and background plus project traffic volumes (see Figure 10).

1814-1820 Ogden Drive Residential Development TIA



**Figure 8**  
**Project Trip Distribution Pattern and Trip Assignment**

1814-1820 Ogden Drive Residential Development TIA

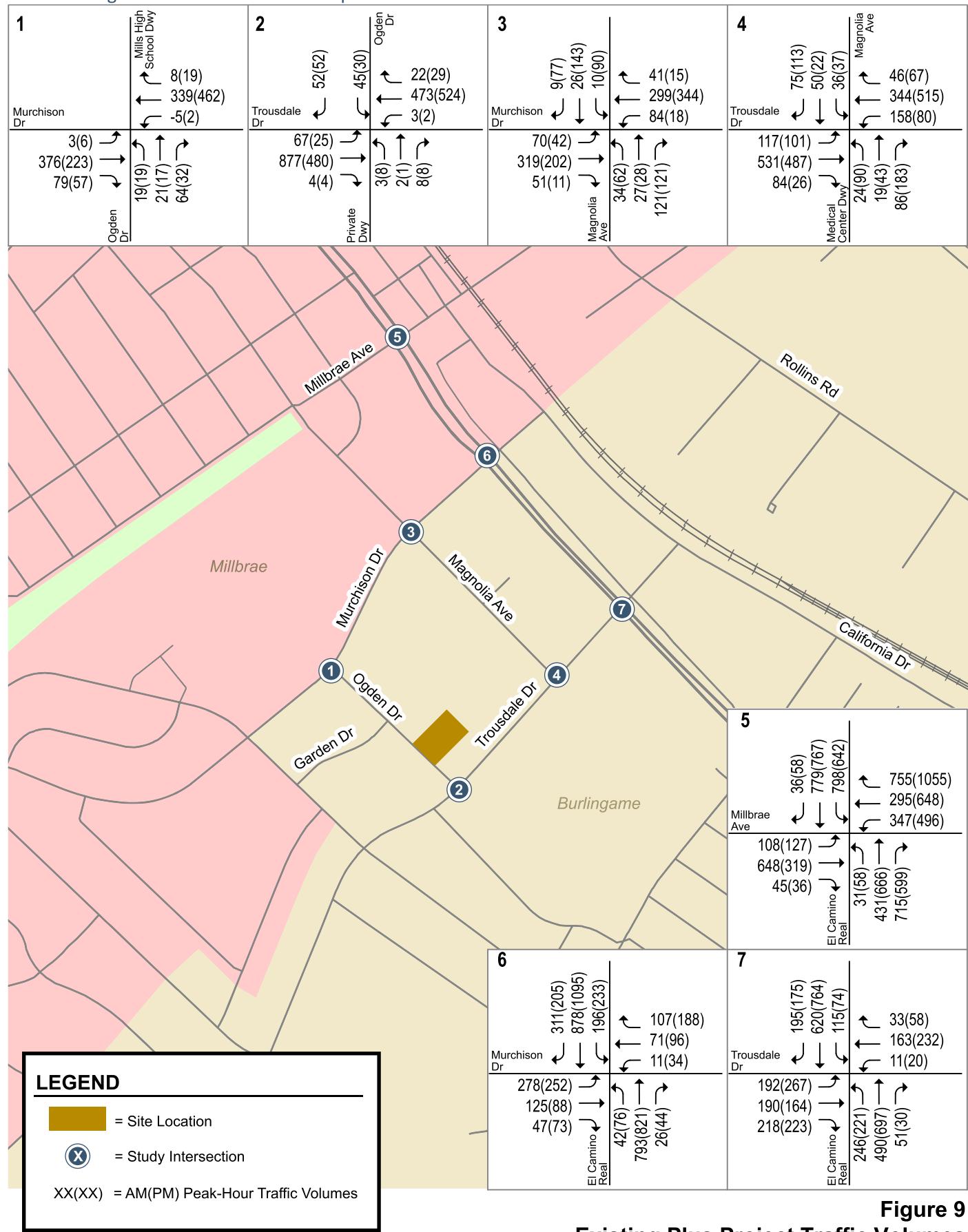
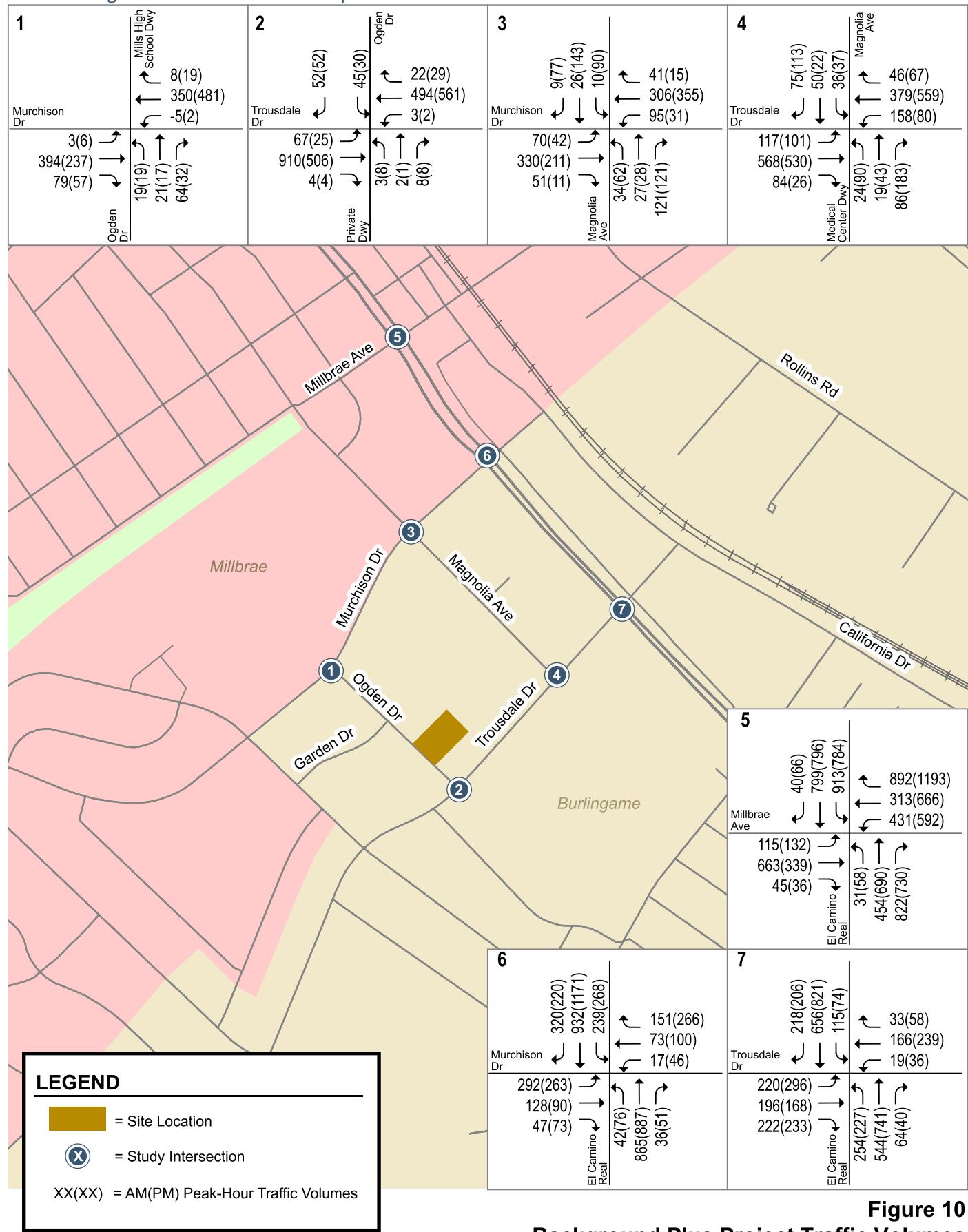


Figure 9  
Existing Plus Project Traffic Volumes

1814-1820 Ogden Drive Residential Development TIA



**Figure 10**  
Background Plus Project Traffic Volumes

## Existing Plus Project Intersection Levels of Service

The results of the intersection level of service analysis (see Table 7) show that all of the study intersections would continue to operate at an acceptable level of service during both the AM and PM peak hours under existing plus project conditions. The intersection level of service calculation sheets are included in Appendix B.

**Table 7**  
**Existing Plus Project Intersection Levels of Service**

# Intersection	LOS Standard	Peak Hour	Existing Conditions				
			No Project		With Project		
			Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Increase in Delay (sec)
1 Ogden Drive & Murchison Drive <sup>1</sup>	None	AM	13.4	B	13.1	B	-0.3
		PM	14.0	B	13.3	B	-0.7
2 Ogden Drive & Trousdale Drive	None	AM	18.9	C	18.6	C	-0.3
		PM	11.5	B	11.4	B	-0.1
3 Magnolia Avenue & Murchison Drive <sup>1</sup>	None	AM	16.1	C	15.5	C	-0.6
		PM	17.7	C	16.8	C	-0.9
4 Magnolia Avenue & Trousdale Drive	D	AM	16.6	B	16.8	B	0.2
		PM	46.6	D	46.2	D	-0.4
5 El Camino Real & Millbrae Avenue	E	AM	75.4	E	75.8	E	0.4
		PM	74.6	E	75.0	E	0.4
6 El Camino Real & Murchison Dr	D	AM	21.2	C	21.2	C	0.0
		PM	25.4	C	25.5	C	0.1
7 El Camino Real & Trousdale Drive	D	AM	20.4	C	20.2	C	-0.2
		PM	23.0	C	22.8	C	-0.2

Notes:  
1. Recent counts were not available. Counts were extrapolated from nearby intersections.

## Background Plus Project Intersection Levels of Service

The results of the intersection level of service analysis (see Table 8) show that the El Camino Real/Millbrae Avenue intersection would operate at an unacceptable LOS F during the AM and PM peak hours with and without the project. However, since the project would not increase the average delay by 4 or more seconds at the El Camino Real/Millbrae Avenue intersection, the project is not considered to create a deficiency at this intersection. All other study intersections would continue to operate at acceptable levels of service.

**Table 8**  
**Background Plus Project Intersection Levels of Service**

#	Intersection	LOS Standard	Peak Hour	Background Conditions				
				No Project		With Project		
				Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	
1	Ogden Drive & Murchison Drive <sup>1</sup>	None	AM	14.0	B	13.6	C	-0.4
			PM	14.8	B	14.0	B	-0.8
2	Ogden Drive & Trousdale Drive	None	AM	20.5	C	20.1	C	-0.4
			PM	12.0	B	11.9	B	-0.1
3	Magnolia Avenue & Murchison Drive <sup>1</sup>	None	AM	17.1	C	16.4	C	-0.7
			PM	19.3	C	18.2	C	-1.1
4	Magnolia Avenue & Trousdale Drive	D	AM	17.0	B	17.0	B	0.0
			PM	48.1	D	47.6	D	-0.5
5	El Camino Real & Millbrae Avenue	E	AM	<b>101.8</b>	F	<b>102.5</b>	F	0.7
			PM	<b>92.6</b>	F	<b>92.5</b>	F	-0.1
6	El Camino Real & Murchison Dr	D	AM	25.3	C	25.3	C	0.0
			PM	32.4	C	32.4	C	0.0
7	El Camino Real & Trousdale Drive	D	AM	21.3	C	21.0	C	-0.3
			PM	24.7	C	24.4	C	-0.3

**Notes:**

1. Recent counts were not available. Counts were extrapolated from nearby intersections.

**Bold** indicates a substandard level of service.

## 5. **Cumulative Conditions**

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This chapter describes the roadway traffic operations under cumulative conditions and cumulative plus project conditions. Cumulative conditions represent future traffic conditions with expected growth in the area. The expected future traffic volumes were obtained from the City of Burlingame 2040 General Plan forecasts.

### **Roadway Network and Traffic Volumes Under Cumulative Conditions**

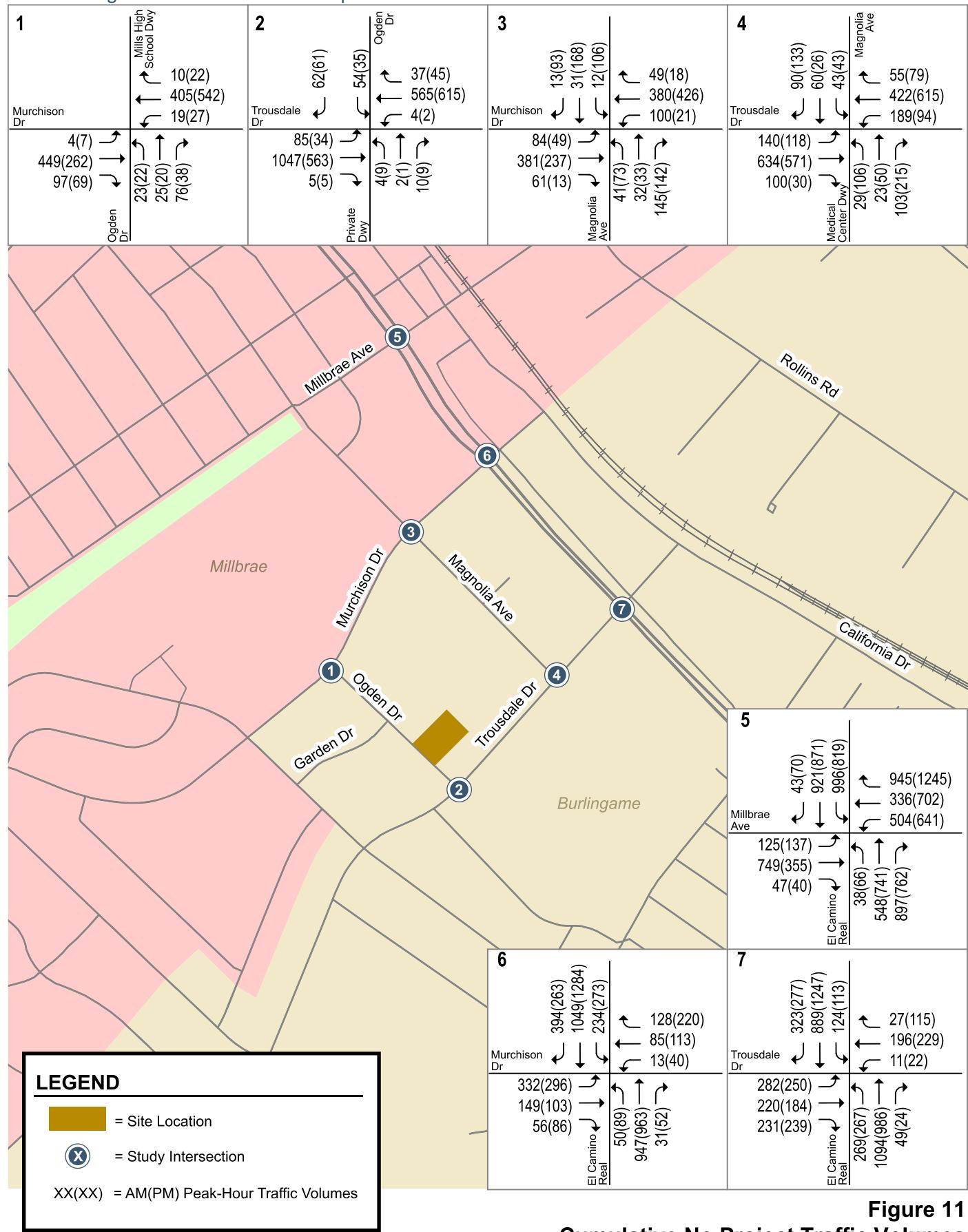
The intersection lane configurations under cumulative conditions were assumed to be the same as described under background conditions.

Cumulative traffic volumes were taken from the 2040 General Plan traffic study and adjusted by comparing to background volumes. For the intersections in which the General Plan 2040 volumes are lower than background volumes, the background volumes were applied to cumulative conditions. For intersections not included in the 2040 General Plan, the cumulative volumes were estimated by using the volumes at the closest intersections. Based on the existing and cumulative volumes at the El Camino Real/Trousdale Drive intersection, the estimation for intersections not included in the 2040 General Plan utilized a growth factor of 1.19 and 1.17 for the AM and PM peak hours, respectively. Figure 11 shows the traffic volumes under cumulative no project conditions. Figure 12 shows the traffic volumes under cumulative plus project conditions.

### **Cumulative Intersection Levels of Service**

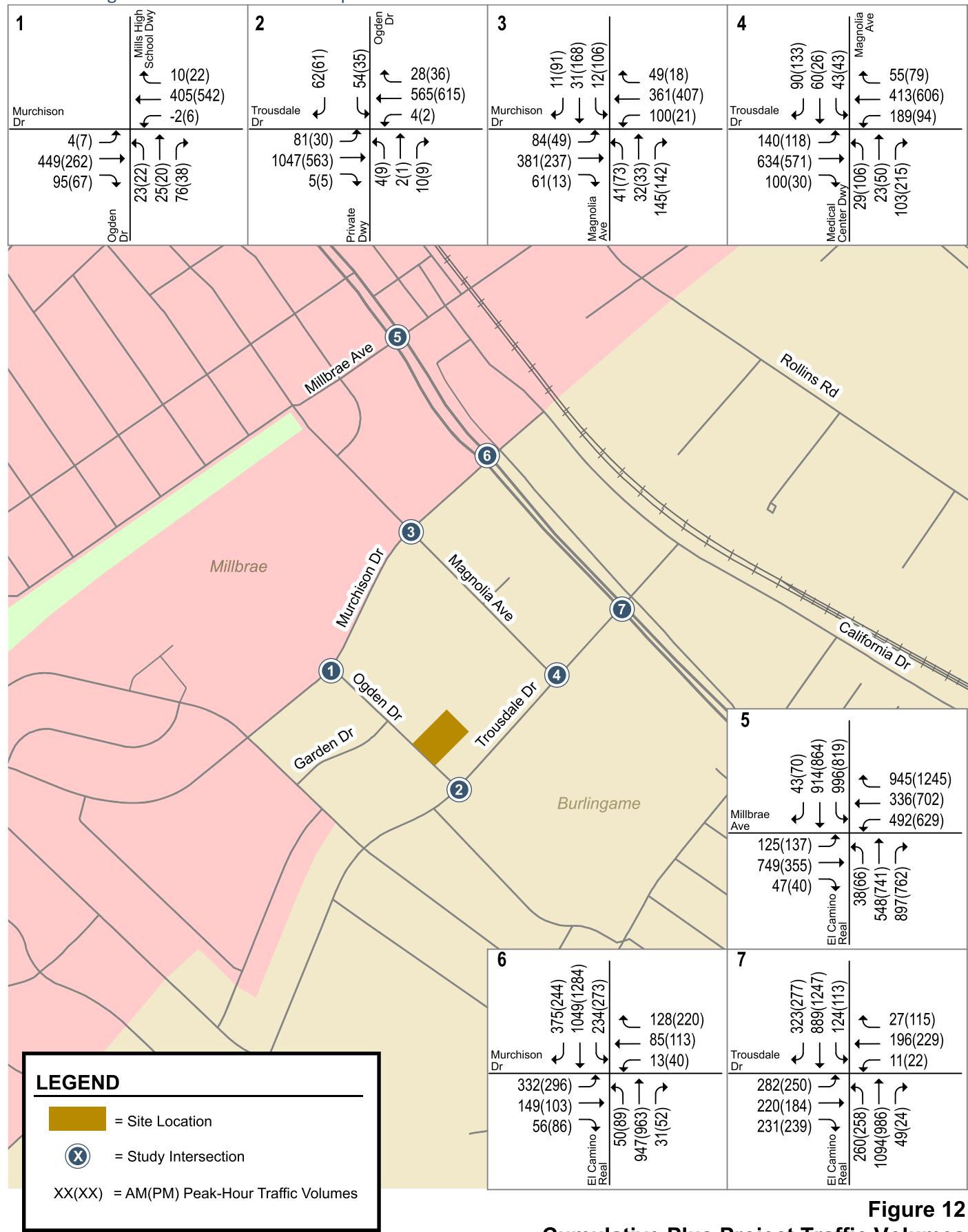
The level of service results for the study intersections under cumulative conditions without and with the project are summarized in Table 9. The results show that the El Camino Real/Millbrae Avenue intersection would operate at an unacceptable LOS F during the AM and PM peak hours under both no-project and with-project conditions. However, since the project would not increase the average delay by 5 or more seconds, the project is not considered to create a deficiency at this intersection.

1814-1820 Ogden Drive Residential Development TIA



**Figure 11**  
**Cumulative No Project Traffic Volumes**

1814-1820 Ogden Drive Residential Development TIA



**Figure 12**  
**Cumulative Plus Project Traffic Volumes**

**Table 9**  
**Cumulative plus Project Levels of Service**

# Intersection	LOS Standard	Peak Hour	Cumulative Conditions					
			No Project			With Project		
			Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Increase in Delay (sec)	
1 Ogden Drive & Murchison Drive <sup>1,2</sup>	None	AM	18.1	C 0	17.3	C	-0.8	
		PM	18.8	C 0	17.3	C	-1.5	
2 Ogden Drive & Trousdale Drive <sup>2</sup>	None	AM	34.9	D 0	34.0	D	-0.9	
		PM	13.6	B 0	13.4	B	-0.2	
3 Magnolia Avenue & Murchison Drive <sup>1,2</sup>	None	AM	29.1	D 0	27.0	D	-2.1	
		PM	36.8	E 0	32.9	D	-3.9	
4 Magnolia Avenue & Trousdale Drive <sup>2</sup>	D	AM	32.5	C 0	32.6	C	0.1	
		PM	79.9	E 0	79.6	E	-0.3	
5 El Camino Real & Millbrae Avenue <sup>2</sup>	E	AM	<b>120.2</b>	F 0	<b>120.8</b>	F	<b>0.6</b>	
		PM	<b>103.3</b>	F 0	<b>102.9</b>	F	<b>-0.4</b>	
6 El Camino Real & Murchison Dr <sup>2</sup>	D	AM	26.7	C 0	26.7	C	0.0	
		PM	32.8	C 0	32.8	C	0.0	
7 El Camino Real & Trousdale Drive	D	AM	24.5	C 0	24.2	C	-0.3	
		PM	32.5	C 0	32.1	C	-0.4	

**Notes:**

1. Recent counts were not available. Volumes were extrapolated from nearby intersections.

2. Cumulative traffic volumes were estimated by applying a growth rate to the existing volumes.

**Bold** indicates a substandard level of service.

## 6. **Vehicle Miles Traveled**

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Average daily VMT for the project area was estimated using the MTC's VMT database, which includes the forecasted VMT for each transportation analysis zone (TAZ) in urbanized areas in the Bay Area. The VMT database provides two types of VMT forecasts: the average daily VMT per capita based on location of residence and the average daily VMT per worker based on location of work. Because the project VMT would be generated by residents, the average daily VMT per capita based on location of residence is used to evaluate the project's VMT level by comparing with the City and the County average VMT per capita. The simulated VMT by place of residence for the Year 2020 was used to calculate the average VMT per capita for (a) the TAZ in which the project is located, (b) the City of Burlingame, and (c) San Mateo County.

The TAZ containing the proposed project (TAZ 246) is estimated to have an average daily VMT per capita of 15.52, which is greater than the average VMT per capita for the City of Burlingame (14.21) and lower than the average VMT per capita for San Mateo County (17.31).

The CEQA Guidelines Section 15064.3, subdivision (b)(1), states that lead agencies generally should presume that certain projects (including residential, retail, and office projects, as well as projects that are a mix of these uses) proposed within a half mile of an existing major transit stop or an existing stop along a high quality transit corridor will have a less-than-significant impact on VMT. A high-quality transit corridor is a corridor with fixed route bus service with service intervals that do not exceed 15 minutes during peak commute hours. El Camino Real is considered a high-quality transit corridor as SamTrans Route ECR has a 15-minute headway during peak hours. Also, the project site is 0.8 mile from the Millbrae Station, which is within walking distance.

## 7. **Other Transportation Issues**

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This chapter presents other transportation issues associated with the project. These include an analysis of:

- Traffic operations at unsignalized intersections
- Site access and circulation
- Potential effects to pedestrians, bicycles, and transit facilities
- Parking

The analyses in this chapter are based on professional judgement in accordance with the standards and methods employed by traffic engineering professionals. Although operational issues are not considered CEQA impacts, they do describe traffic conditions that are relevant to describing the effects of added project traffic.

### Traffic Operations at Unsignalized Intersections

The study evaluates three unsignalized intersections: Ogden Drive/Murchison Drive, Ogden Drive/Trousdale Drive, and Magnolia Avenue/Murchison Drive. All three intersections are all-way stop controlled.

Based on the level of service analysis results, the Ogden Drive/Murchison Drive and the Ogden Drive/Trousdale Drive intersections would operate at LOS D or better under all study scenarios. The project is not expected to add traffic to any left-turn pockets; therefore, no vehicle queueing issues would occur under project scenarios. Therefore, the project traffic would not result in the need for intersection improvement or modification of traffic control at these intersections.

Based on the level of service analysis results, the Magnolia Avenue/Murchison Drive intersection would operate at LOS C or better under existing and background conditions without vehicle queueing issues. However, the intersection would experience some delay with LOS E during the PM peak hour under cumulative conditions.

In conjunction with the level of service analysis, a signal warrant analysis was conducted based on the Peak Hour Volume Warrant (Warrant 3) described in the California Manual on Uniform Traffic Control Devices for Streets and Highways (CA MUTCD), Part 4, Highway Traffic Signals. The results of the peak-hour signal warrant checks indicate that the AM peak hour volumes at the Ogden Drive/Trousdale Drive intersection and both the AM and PM peak-hour volumes at the Magnolia Avenue/Murchison

Drive intersection meet the peak-hour signal warrant under cumulative conditions, both with and without the project traffic (see Table 10). The peak-hour signal warrant sheets are contained in Appendix C.

Based on the estimated peak-hour volumes at the Ogden Drive/Trousdale Drive and the Magnolia Avenue/Murchison Drive intersections, the average delay can be improved by installation of a traffic signal at the intersections, which would improve the both intersections level of service to LOS B during the AM peak hour for Ogden Drive/Trousdale drive and both the AM and PM peak hour for Magnolia Avenue/Murchison Drive. However, because the project would not be adding traffic to these intersections, the project would not be required to contribute to the cost for the installation of the signals.

**Table 10**  
**Signal Warrant Analysis Results**

Intersection	Signal Warranted <sup>1</sup>					
	Existing		Background		Cumulative	
	No Project	With Project	No Project	With Project	No Project	With Project
Ogden Drive & Murchison Drive	No	No	No	No	No	No
Ogden Drive & Trousdale Drive	No	No	No	No	Yes (AM)	Yes (AM)
Magnolia Avenue & Murchison Drive	No	No	No	No	Yes (AM/PM)	Yes (AM/PM)

Notes:

1. The signal warrant analysis was conducted based on the Peak Hour Volume Warrant (Warrant 3) described in the California Manual on Uniform Traffic Control Devices for Streets and Highways (CA MUTCD), Part 4, Highway Traffic Signals.

## Site Access and Circulation

The site access and on-site circulation evaluation is based on the May 14, 2020 site plan prepared by Levy Design Partners. Site access was evaluated to determine the adequacy of the site's driveway with regard to the following: traffic volume, geometric design, sight distance, and operations (e.g., vehicle queuing and delay). On-site vehicular circulation was reviewed in accordance with generally accepted traffic engineering standards and transportation planning principles.

### Site Access

Vehicle access to the parking garage would be provided via a new full-access driveway on Ogden Drive (see Figure 2). The project would close the existing outbound only driveway and convert the existing inbound only driveway into a new full access driveway.

### Project Driveway Design

The proposed driveway measures 21 feet in width, with a 20-foot entrance to the garage. The City of Burlingame Zoning Code requires a minimum of either two 12-foot driveways or one 18-foot driveway for parking areas of more than 30 vehicle spaces. Therefore, the proposed driveway meets the City's minimum width requirement for two-way driveways.

The project driveway must provide adequate access and stacking space for vehicles entering the site to avoid backups onto the sidewalks and streets. The driveway would provide approximately 50 feet of stacking space between the face of curb and the gate. Typically, a minimum distance of 50 feet, the equivalent of two vehicles, measured from the face of the curb provides adequate stacking space at driveways. Therefore, the inbound stacking space at the driveway is expected to be adequate.

## **Sight Distance at Project Driveway**

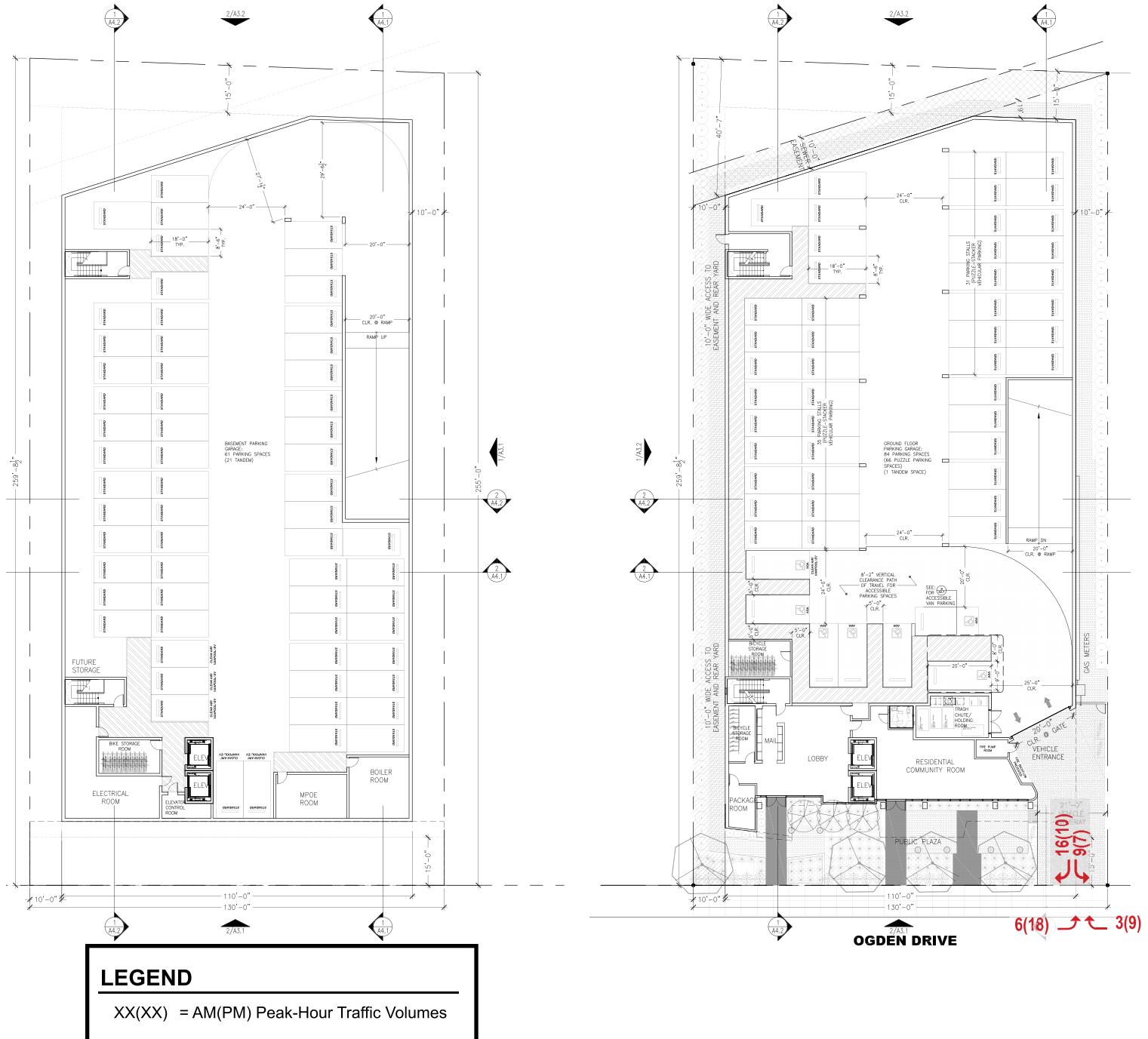
The proposed driveway location was evaluated to determine if the sight distance at the driveway would be adequate. Adequate sight distance reduces the likelihood of a collision at driveways and provides drivers with the ability to locate sufficient gaps in traffic to exit a driveway. Sight distance of a driveway is evaluated based on the stopping sight distance recommended by Caltrain for a given design speed.

Since there is no posted speed limit on Ogden Drive, it was assumed that the speed limit is 25 mph. The Caltrans stopping sight distance is 200 feet (based on a design speed of 30 mph). Thus, a driver must be able to see 200 feet in both directions of Ogden Drive to locate a sufficient gap to turn out of the driveway.

The driveway would be located 180 feet north of Trousdale Drive. Vehicles turning from the stop controls at Trousdale Drive to northbound Ogden Drive are expected to travel with lower speed while making turns. Given that vehicles are more likely to travel at a speed of 10 mph, the recommended stopping sight distance would be 100 feet (based on a design speed of 15 mph). Thus, the sight distance (180 feet) for traffic turning from Trousdale Drive is adequate. According to the site plan, the landscape plan shows street trees would be added along the project frontage on Ogden Drive. The type and location of the street trees would be determined by the City at the implementation stage. Note that street trees have a high canopy and would not obstruct the view of drivers exiting the project driveway. On-street parking is present on Ogden Drive along the project frontage and adjacent to the new proposed driveway and could obstruct the vision of exiting drivers from the driveway. Therefore, it is recommended that red curb be painted north of the project driveway to prevent on-street parking from obstructing the vision of exiting drivers.

## **Project Driveway Operations**

The project-generated gross trips that are estimated to occur at the project driveway are shown in Figure 13. The level of service analysis at the driveway shows that that the outbound and left-turn inbound movements at the driveway would operate adequately (LOS A) with short delay under all project scenarios. The project is estimated to generate 23 fewer southbound left-turn trips in the AM peak hour and 12 new southbound left-turn trips in the PM peak hour compared to the existing buildings. The vehicle delay would be 9 seconds per vehicle in the AM and PM peak hours for the left-turn movement. The short delay is not expected to affect traffic flow on southbound Ogden Drive. Therefore, no operational issues related to vehicle queueing and/or vehicle delay are expected to occur at the driveway. Some minor on-site vehicle queuing could occur due to a combination of the inherent unpredictability of vehicle arrivals at the driveway and the random occurrence of gaps in traffic along Ogden Drive. However, given the estimated 24 outbound trips in the AM peak hour at the driveway, that calculates to about one outbound trip every 2 minutes, the probability of two or more outbound vehicles exiting the site at the same time would likely be low. The maximum queue is not expected to affect the on-site circulation. Additionally, vehicles turning right into the project site from Ogden Drive may block the travel lane momentarily due to vehicles slowing down to turn into the driveway, but this would not have a significant effect on traffic operations.



**Figure 13**  
**Gross Project Trips at Driveways**

## On-Site Circulation

On-site vehicular circulation was reviewed in accordance with the City of Burlingame Zoning Code and generally accepted traffic engineering standards. Generally, the proposed site plan would provide vehicle traffic with adequate connectivity through the parking areas. The site plan shows dead-end aisles in the parking structure. Dead-end aisles are undesirable because drivers may enter the aisle, and upon discovering that there is no available parking, must back out or conduct three-point turns. Therefore, all parking spaces should be assigned to specific residents. Thus, a driver would know if the parking space were available and would not be required to conduct a three-point turn. With that assumption, the project provides adequate circulation.

The slope of the parking garage ramp would be approximately 18 percent. Transition slopes should be provided at the two ends of the 18 percent ramp to avoid vehicles bottoming out. The project would provide 90-degree parking throughout the proposed parking garage. The City's standard minimum width for two-way drive aisles is 24 feet wide where 90-degree parking is provided. This allows sufficient room for vehicles to back out of the parking spaces. According to the site plan, the drive aisles between 90-degree parking spaces throughout the parking measure 24 feet wide.

### Parking Stall Dimensions

Parking spaces are shown to be 18 feet long by 8.5 feet wide for standard parking spaces and 20 feet long by 9 feet wide for accessible parking spaces. According to the City of Burlingame Zoning Code for the North Burlingame Residential Zoning District, all parking stalls may be provided in a single dimension, 8.5 feet in width by 17 feet in length, except for required accessible parking spaces which shall meet the dimensions required in the California Building Code. The project also proposes tandem spaces. However, the City does not have any requirements for tandem spaces. Tandem spaces are shown to also be 18 feet long by 8.5 feet wide for each vehicle space. The proposed parking space dimensions would meet the City requirements.

### Passenger Loading

The project does not propose any specific passenger loading area on-site for residents. However, on-street parking along Ogden Drive is permitted. Thus, it is recommended that a loading space be provided along the project frontage. Loading areas would allow for residents to be picked up or dropped off.

### Bike and Pedestrian On-site Circulation

The site plan provides adequate pedestrian circulation throughout the site, as well as between the site and the surrounding pedestrian facilities. In addition to the sidewalks along Ogden Drive, the project would provide a public plaza between the sidewalk and the building. The project proposes two bicycle parking rooms: within the lobby and the surface lot. The bicycle storage room in the lobby could be accessed through the front door of the residential lobby. The bicycle storage room in the surface lot could be accessed through the backdoor of the lobby and from the surface lot.

## Truck Access and Circulation

The site plan does not show spaces provided for moving trucks. As described above, the project should provide a passenger loading space along the project frontage on Ogden Drive. Moving vehicles could utilize this loading space, and new residents would be able to load through the lobby elevator.

## Garbage Collection

The site plan shows one trash room on the ground level of the building. Garbage collection activities for the project are not expected to occur on-site due to access limitations. Therefore, the trash bins would be moved to the curb along Ogden Drive on designated garbage collection days. Given that on-street parking is permitted along the street, signs prohibiting parking during garbage pickup hours should be placed adjacent to the proposed staging areas. The trash bins also should be removed from the public right-of-way immediately after garbage pickup as to not impact AM or PM peak-hour traffic conditions.

## Potential Effects on Pedestrians, Bicycles, and Transit Facilities

All new development projects in the City of Burlingame should encourage multi-modal travel, consistent with the goals of the City's General Plan. It is the goal of the General Plan that all development projects accommodate and encourage the use of non-automobile transportation modes to achieve Burlingame's mobility goals. In addition, the adopted Bicycle Transportation Plan establishes goals and policies to make bicycling a daily part of life in Burlingame. The Transportation Plan includes designated bike lanes where possible, as well as designated routes for both local and regional trips, to provide a complete connection through Burlingame. In order to further the goals of the City, pedestrian and bicycle facilities should be encouraged with new development projects.

The project is consistent with many of the General Plan's goals. The project is consistent with Goal M-6 in that the development is near Millbrae Station, is in a designated Residential area, and has a site design that is convenient for pedestrians.

### Pedestrian Facilities

Pedestrian facilities in the study area consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections (see Chapter 2 for details). Within a typical walking distance (a half mile or 10 minutes), continuous pedestrian facilities are present between the site and the surrounding land uses, including bus stops in the area and the nearby Millbrae Station. The project site plan shows the frontage would be set back with a pedestrian plaza between the building and the sidewalk.

### Bicycle Facilities

The project is near the bike route on Trousdale Drive, which can connect to the bike lane on California Drive and lead to the Millbrae Station. There are some planned additional bicycle facilities in the study area, including a bike route along Millbrae Avenue between Old Bayshore Highway and California Drive.

The project would not remove any bicycle facilities, nor would it conflict with any adopted plans or policies for new bicycle facilities.

### Transit Services

The project site is well-served by transit, primarily by Caltrain and BART, whose distance is about 0.6-mile from the project site, an approximately 15-minute walk. The project is also 1,560 feet from the bus stop for SamTrans bus route ECR, which provides frequent busses along El Camino Real. Both cycling and walking are feasible to reach the Millbrae Station. Although the project is not close enough to be technically classified as a transit-oriented development, it is expected that many residents' trips would be made by transit.

The project would not remove any transit facilities, nor would it conflict with any adopted plans or policies associated with new transit facilities. The project's proximity to the Millbrae Station makes it

consistent with the City of Burlingame's General Plan Goal M-6, which encourages development that is supportive of transit use.

## Parking

According to the City of Burlingame Zoning Code for the North Burlingame (NBMU) Residential District (Section 25.40.050), the project is required to provide 118 vehicle parking spaces (see Table 11).

**Table 11**  
**Parking Requirement**

Land Use	Size	Requirement	Spaces Needed
Studio	15 units	1 spaces per unit	15
1-Bedroom	20 units	1 spaces per unit	20
2-Bedroom	55 units	1.5 spaces per unit	83
<b>Total:</b>			<b>118</b>

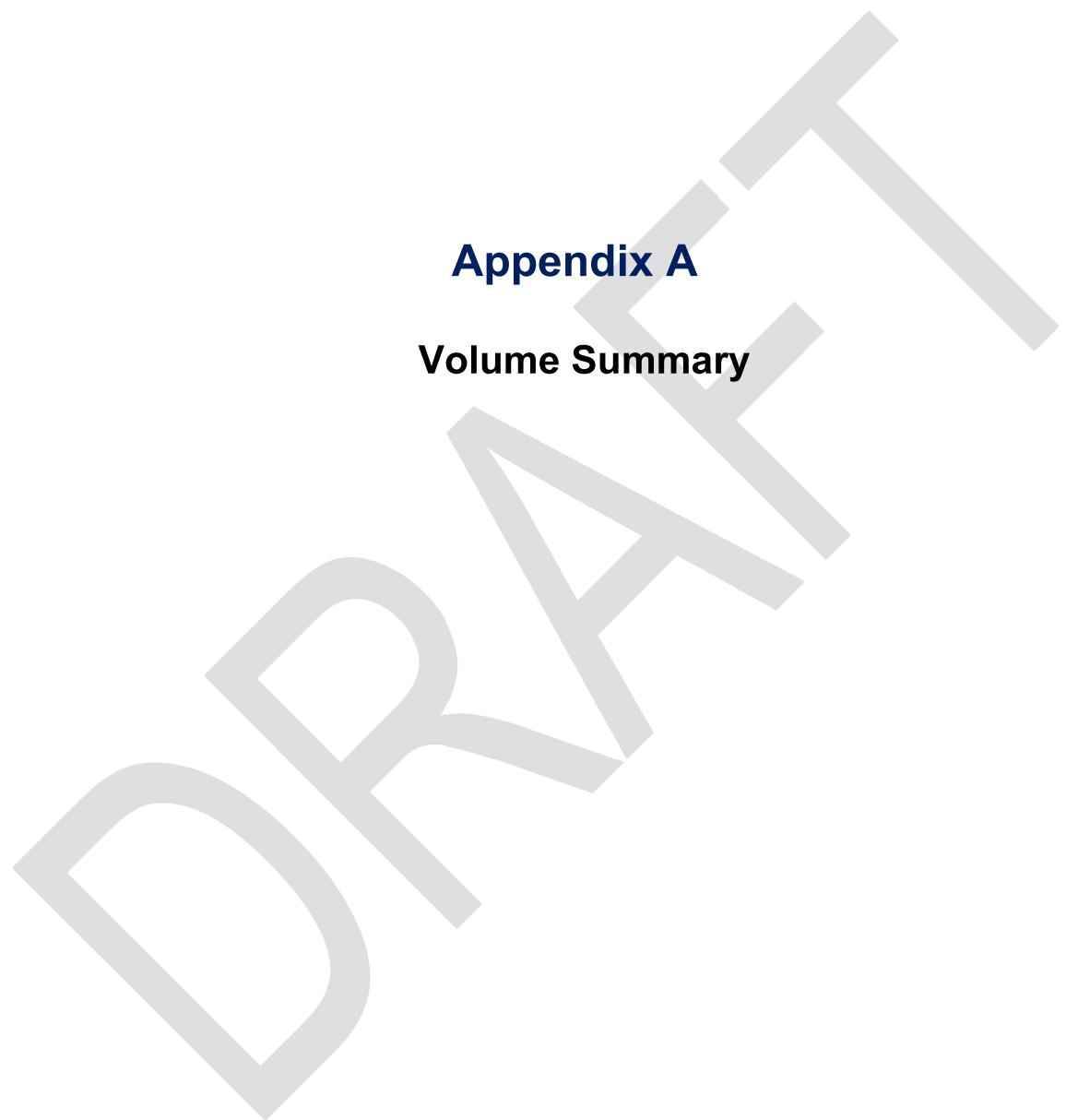
The project proposes to provide 145 spaces, including 22 tandem spaces for 44 vehicles and puzzle lifts for 66 spaces. The tandem spaces would be assigned to the two-bedroom units, which leaves 101 spaces for 53 units (15 studio units, 20 one-bedroom units, and the remaining 18 two-bedroom units that would not be assigned to a tandem space), which is sufficient. The project proposes to install Klaus TrendVario 4000 puzzle lifts for 66 of the parking spaces. Puzzle lifts allow each space to move freely; thus, the space would not be required to be assigned to one unit, which is the restriction with traditional stacker spaces.

The Zoning Code requires residential developments in the NBMU District to provide 0.5 long-term bicycle parking spaces per unit and 0.05 short-term bicycle parking spaces per unit. Therefore, the project is required to provide 45 long-term bicycle parking spaces and 5 short-term bicycle spaces. The site plan shows two bicycle storage rooms on the ground floor but does not specify the number of bicycles able to be stored.

# **1814-1820 Ogden Drive Residential Development**

## **Technical Appendices**

August 4, 2020



## **Appendix A**

### **Volume Summary**

### Existing Volume Adjustment Summary

Study Inter. #	N/S Street	E/W Street	Jurisdiction	Count Date		Count Source	Number of growth years with 1% per year	
				AM	PM		AM	PM
1	Ogden Drive	Murchison Drive	Burlingame	N/A	N/A	N/A	0	0
2	Ogden Drive	Trousdale Drive	Burlingame	09/20/17	09/20/17	TDS	3	3
3	Magnolia Avenue	Murchison Drive	Burlingame	N/A	N/A	N/A	0	0
4	Magnolia Avenue	Trousdale Drive	Burlingame	02/27/20	02/27/20	Burlingame Road Diet (Trousdale)	0	0
5	El Camino Real	Millbrae Avenue	Millbrae	04/15/19	04/15/19	C/CAG	0	0
6	El Camino Real	Murchison Drive	Burlingame	04/05/16	04/05/16	Burlingame Road Diet	4	4
7	El Camino Real	Trousdale Drive	Burlingame	02/27/20	02/27/20	Burlingame Road Diet	0	0

Intersection Number:	1	Ogden Drive and Murchison Drive	Date of Analysis: 06/30/20										
Intersection Name:													
Peak Hour:	AM												
Count Date:	N/A												
Movements													
Scenario	Southbound Approach			Westbound Approach			Northbound Approach			Eastbound Approach			Total
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	
Existing Conditions	0	0	0	8	339	16	64	21	19	81	376	3	927
Approved Project Trips													
1 Adrian Court Residential	0	0	0	0	0	0	0	0	0	0	0	0	0
1499 Old Bayshore Hwy Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0
1600 Trousdale Dr Assisted Living Facility	0	0	0	0	0	0	0	0	0	0	0	0	0
Serra Station Development	0	0	0	0	4	0	0	0	0	0	7	0	11
Gateway at Millbrae Station	0	0	0	0	7	0	0	0	0	0	11	0	18
Total Approved Trips	0	0	0	0	11	0	0	0	0	0	18	0	29
Background Conditions	0	0	0	8	350	16	64	21	19	81	394	3	956
Proposed Project Trips	0	0	0	0	0	-21	0	0	0	-2	0	0	-23
Existing + Project Conditions	0	0	0	8	339	-5	64	21	19	79	376	3	904
Background + Project Conditions	0	0	0	8	350	-5	64	21	19	79	394	3	933
Cumulative No Project Conditions	0	0	0	10	405	19	76	25	23	97	449	4	1108
Cumulative + Project Conditions	0	0	0	10	405	-2	76	25	23	95	449	4	1085
Movements													
Scenario	Southbound Approach			Westbound Approach			Northbound Approach			Eastbound Approach			Total
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	
Existing Conditions	52	0	45	31	473	3	8	2	3	4	877	71	1569
Approved Project Trips													
1 Adrian Court Residential	0	0	0	0	0	0	0	0	0	0	0	0	0
1499 Old Bayshore Hwy Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0
1600 Trousdale Dr Assisted Living Facility	0	0	0	0	2	0	0	0	0	0	4	0	6
Serra Station Development	0	0	0	0	7	0	0	0	0	0	11	0	18
Gateway at Millbrae Station	0	0	0	0	12	0	0	0	0	0	18	0	30
Total Approved Trips	0	0	0	0	21	0	0	0	0	0	33	0	54
Background Conditions	52	0	45	31	494	3	8	2	3	4	910	71	1623
Proposed Project Trips	0	0	0	-9	0	0	0	0	0	0	0	-4	-13
Existing + Project Conditions	52	0	45	22	473	3	8	2	3	4	877	67	1556
Background + Project Conditions	52	0	45	22	494	3	8	2	3	4	910	67	1610
Cumulative No Project Conditions	62	0	54	37	565	4	10	2	4	5	1047	85	1875
Cumulative + Project Conditions	62	0	54	28	565	4	10	2	4	5	1047	81	1862
Movements													
Scenario	Southbound Approach			Westbound Approach			Northbound Approach			Eastbound Approach			Total
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	
Existing Conditions	52	0	45	31	473	3	8	2	3	4	877	71	1569
Approved Project Trips													
1 Adrian Court Residential	0	0	0	0	0	0	0	0	0	0	0	0	0
1499 Old Bayshore Hwy Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0
1600 Trousdale Dr Assisted Living Facility	0	0	0	0	2	0	0	0	0	0	4	0	6
Serra Station Development	0	0	0	0	7	0	0	0	0	0	11	0	18
Gateway at Millbrae Station	0	0	0	0	12	0	0	0	0	0	18	0	30
Total Approved Trips	0	0	0	0	21	0	0	0	0	0	33	0	54
Background Conditions	52	0	45	31	494	3	8	2	3	4	910	71	1623
Proposed Project Trips	0	0	0	-9	0	0	0	0	0	0	0	-4	-13
Existing + Project Conditions	52	0	45	22	473	3	8	2	3	4	877	67	1556
Background + Project Conditions	52	0	45	22	494	3	8	2	3	4	910	67	1610
Cumulative No Project Conditions	62	0	54	37	565	4	10	2	4	5	1047	85	1875
Cumulative + Project Conditions	62	0	54	28	565	4	10	2	4	5	1047	81	1862

Intersection Number:	3	Magnolia Avenue and Murchison Drive	Date of Analysis: 06/30/20										
Intersection Name:													
Peak Hour:	AM												
Count Date:	N/A												
Movements													
Scenario	Southbound Approach			Westbound Approach			Northbound Approach			Eastbound Approach			Total
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	
Existing Conditions	11	26	10	41	318	84	121	27	34	51	319	70	1112
Approved Project Trips													
1 Adrian Court Residential	0	0	0	0	0	0	0	0	0	0	0	0	0
1499 Old Bayshore Hwy Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0
1600 Trousdale Dr Assisted Living Facility	0	0	0	0	0	0	0	0	0	0	0	0	0
Serra Station Development	0	0	0	0	0	11	0	0	0	0	0	0	11
Gateway at Millbrae Station	0	0	0	0	7	0	0	0	0	0	11	0	18
Total Approved Trips	0	0	0	0	7	11	0	0	0	0	11	0	29
Background Conditions	11	26	10	41	325	95	121	27	34	51	330	70	1141
Proposed Project Trips	-2	0	0	0	-19	0	0	0	0	0	0	0	-21
Existing + Project Conditions	9	26	10	41	299	84	121	27	34	51	319	70	1091
Background + Project Conditions	9	26	10	41	306	95	121	27	34	51	330	70	1120
Cumulative No Project Conditions	13	31	12	49	380	100	145	32	41	61	381	84	1329
Cumulative + Project Conditions	11	31	12	49	361	100	145	32	41	61	381	84	1308
Movements													
Scenario	Southbound Approach			Westbound Approach			Northbound Approach			Eastbound Approach			Total
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	
Existing Conditions	75	50	36	46	353	158	86	19	24	84	531	117	1579
Approved Project Trips													
1 Adrian Court Residential	0	0	0	0	0	0	0	0	0	0	0	0	0
1499 Old Bayshore Hwy Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0
1600 Trousdale Dr Assisted Living Facility	0	0	0	0	16	0	0	0	0	0	8	0	24
Serra Station Development	0	0	0	0	7	0	0	0	0	0	11	0	18
Gateway at Millbrae Station	0	0	0	0	12	0	0	0	0	0	18	0	30
Total Approved Trips	0	0	0	0	35	0	0	0	0	0	37	0	72
Background Conditions	75	50	36	46	388	158	86	19	24	84	568	117	1651
Proposed Project Trips	0	0	0	0	-9	0	0	0	0	0	0	0	-9
Existing + Project Conditions	75	50	36	46	344	158	86	19	24	84	531	117	1570
Background + Project Conditions	75	50	36	46	379	158	86	19	24	84	568	117	1642
Cumulative No Project Conditions	90	60	43	55	422	189	103	23	29	100	634	140	1888
Cumulative + Project Conditions	90	60	43	55	413	189	103	23	29	100	634	140	1879
Movements													
Scenario	Southbound Approach			Westbound Approach			Northbound Approach			Eastbound Approach			Total
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	
Existing Conditions	75	50	36	46	353	158	86	19	24	84	531	117	1579
Approved Project Trips													
1 Adrian Court Residential	0	0	0	0	0	0	0	0	0	0	0	0	0
1499 Old Bayshore Hwy Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0
1600 Trousdale Dr Assisted Living Facility	0	0	0	0	16	0	0	0	0	0	8	0	24
Serra Station Development	0	0	0	0	7	0	0	0	0	0	11	0	18
Gateway at Millbrae Station	0	0	0	0	12	0	0	0	0	0	18	0	30
Total Approved Trips	0	0	0	0	35	0	0	0	0	0	37	0	72
Background Conditions	75	50	36	46	388	158	86	19	24	84	568	117	1651
Proposed Project Trips	0	0	0	0	-9	0	0	0	0	0	0	0	-9
Existing + Project Conditions	75	50	36	46	344	158	86	19	24	84	531	117	1570
Background + Project Conditions	75	50	36	46	379	158	86	19	24	84	568	117	1642
Cumulative No Project Conditions	90	60	43	55	422	189	103	23	29	100	634	140	1888
Cumulative + Project Conditions	90	60	43	55	413	189	103	23	29	100	634	140	1879

Intersection Number:	5	Intersection Name:	El Camino Real and Millbrae Avenue*																					
Peak Hour:	AM	Date of Analysis:	06/30/20																					
Count Date:	04/15/19																							
Movements																								
Scenario																								
Southbound Approach																								
RT			TH			LT			RT			LT												
Westbound Approach																								
RT			TH			LT			RT			LT												
Northbound Approach																								
RT			TH			LT			RT			LT												
Eastbound Approach																								
Total																								
Existing Conditions	36	786	798	755	295	359	715	431	31	45	648	108	5007											
Approved Project Trips																								
1 Adrian Court Residential	0	0	3	7	11	1	1	0	0	0	4	0	27											
1499 Old Bayshore Hwy Hotel	0	0	8	5	0	4	7	0	0	0	0	0	24											
1600 Trousdale Dr Assisted Living Facility	0	8	0	0	0	0	0	4	0	0	0	0	12											
Serra Station Development	4	12	37	80	0	38	37	19	0	0	0	7	234											
Gateway at Millbrae Station	0	0	67	45	7	41	62	0	0	0	11	0	233											
Total Approved Trips	4	20	115	137	18	84	107	23	0	0	15	7	530											
Background Conditions	40	806	913	892	313	443	822	454	31	45	663	115	5537											
Proposed Project Trips	0	-7	0	0	0	-12	0	0	0	0	0	0	-19											
Existing + Project Conditions	36	779	798	755	295	347	715	431	31	45	648	108	4988											
Background + Project Conditions	40	799	913	892	313	431	822	454	31	45	663	115	5518											
Cumulative No Project Conditions	43	921	996	945	336	504	897	548	38	47	749	125	6149											
Cumulative + Project Conditions	43	914	996	945	336	492	897	548	38	47	749	125	6130											
Intersection Number:																								
6																								
Intersection Name:																								
El Camino Real and Murchison Drive																								
Peak Hour:																								
AM																								
Count Date:																								
04/05/16																								
Date of Analysis:																								
Movements																								
Scenario																								
Southbound Approach																								
RT			TH			LT			RT			LT												
Westbound Approach																								
RT			TH			LT			RT			LT												
Northbound Approach																								
RT			TH			LT			RT			LT												
Eastbound Approach																								
Total																								
Existing Conditions	330	878	196	107	71	11	26	793	42	47	125	278	2904											
Approved Project Trips																								
1 Adrian Court Residential	0	1	0	0	0	0	0	0	0	0	0	0	1											
1499 Old Bayshore Hwy Hotel	0	5	0	0	0	0	0	8	0	0	0	0	13											
1600 Trousdale Dr Assisted Living Facility	0	8	0	0	0	0	0	4	0	0	0	0	12											
Serra Station Development	2	10	38	37	2	6	10	16	0	0	3	3	127											
Gateway at Millbrae Station	7	30	5	7	0	0	0	44	0	0	0	11	104											
Total Approved Trips	9	54	43	44	2	6	10	72	0	0	3	14	257											
Background Conditions	339	932	239	151	73	17	36	865	42	47	128	292	3161											
Proposed Project Trips	-19	0	0	0	0	0	0	0	0	0	0	0	-19											
Existing + Project Conditions	311	878	196	107	71	11	26	793	42	47	125	278	2885											
Background + Project Conditions	320	932	239	151	73	17	36	865	42	47	128	292	3142											
Cumulative No Project Conditions	394	1049	234	128	85	13	31	947	50	56	149	332	3468											
Cumulative + Project Conditions	375	1049	234	128	85	13	31	947	50	56	149	332	3449											
Intersection Number:																								
7																								
Intersection Name:																								
El Camino Real and Trousdale Drive																								
Peak Hour:																								
AM																								
Count Date:																								
02/27/20																								
Date of Analysis:																								
Movements																								
Scenario																								
Southbound Approach																								
RT			TH			LT			RT			LT												
Westbound Approach																								
RT			TH			LT			RT			LT												
Northbound Approach																								
RT			TH			LT			RT			LT												
Eastbound Approach																								
Total																								
Existing Conditions	195	620	115	33	163	11	51	490	255	218	190	192	2533											
Approved Project Trips																								
1 Adrian Court Residential	0	1	0	0	0	0	0	0	0	0	0	0	1											
1499 Old Bayshore Hwy Hotel	0	5	0	0	0	0	0	8	0	0	0	0	13											
1600 Trousdale Dr Assisted Living Facility	8	0	0	0	0	0	0	0	8	4	0	4	24											
Serra Station Development	3	12	0	0	3	8	13	20	0	0	6	6	71											
Gateway at Millbrae Station	12	18	0	0	0	0	0	26	0	0	0	18	74											
Total Approved Trips	23	36	0	0	3	8	13	54	8	4	6	28	183											
Background Conditions	218	656	115	33	166	19	64	544	263	222	196	220	2716											
Proposed Project Trips	0	0	0	0	0	0	0	0	-9	0	0	0	-9											
Existing + Project Conditions	195	620	115	33	163	11	51	490	246	218	190	192	2524											
Background + Project Conditions	218	656	115	33	166	19	64	544	254	222														

Intersection Number:	1	Ogden Drive and Murchison Drive	Date of Analysis: 06/30/20										
Intersection Name:													
Peak Hour:	PM												
Count Date:	N/A												
Movements													
Scenario	Southbound Approach			Westbound Approach			Northbound Approach			Eastbound Approach			Total
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	
Existing Conditions	0	0	0	19	462	23	32	17	19	59	223	6	860
Approved Project Trips													
1 Adrian Court Residential	0	0	0	0	0	0	0	0	0	0	0	0	0
1499 Old Bayshore Hwy Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0
1600 Trousdale Dr Assisted Living Facility	0	0	0	0	0	0	0	0	0	0	0	0	0
Serra Station Development	0	0	0	0	8	0	0	0	0	0	5	0	13
Gateway at Millbrae Station	0	0	0	0	11	0	0	0	0	0	9	0	20
Total Approved Trips	0	0	0	0	19	0	0	0	0	0	14	0	33
Background Conditions	0	0	0	19	481	23	32	17	19	59	237	6	893
Proposed Project Trips	0	0	0	0	0	-21	0	0	0	-2	0	0	-23
Existing + Project Conditions	0	0	0	19	462	2	32	17	19	57	223	6	837
Background + Project Conditions	0	0	0	19	481	2	32	17	19	57	237	6	870
Cumulative No Project Conditions	0	0	0	22	542	27	38	20	22	69	262	7	1005
Cumulative + Project Conditions	0	0	0	22	542	6	38	20	22	67	262	7	986
Movements													
Scenario	Southbound Approach			Westbound Approach			Northbound Approach			Eastbound Approach			Total
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	
Existing Conditions	52	0	30	38	524	2	8	1	8	4	480	29	1176
Approved Project Trips													
1 Adrian Court Residential	0	0	0	0	0	0	0	0	0	0	0	0	0
1499 Old Bayshore Hwy Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0
1600 Trousdale Dr Assisted Living Facility	0	0	0	0	5	0	0	0	0	0	3	0	8
Serra Station Development	0	0	0	0	14	0	0	0	0	0	8	0	22
Gateway at Millbrae Station	0	0	0	0	18	0	0	0	0	0	15	0	33
Total Approved Trips	0	0	0	0	37	0	0	0	0	0	26	0	63
Background Conditions	52	0	30	38	561	2	8	1	8	4	506	29	1239
Proposed Project Trips	0	0	0	-9	0	0	0	0	0	0	0	-4	-13
Existing + Project Conditions	52	0	30	29	524	2	8	1	8	4	480	25	1163
Background + Project Conditions	52	0	30	29	561	2	8	1	8	4	506	25	1226
Cumulative No Project Conditions	61	0	35	45	615	2	9	1	9	5	563	34	1379
Cumulative + Project Conditions	61	0	35	36	615	2	9	1	9	5	563	30	1366

Intersection Number:	3	Magnolia Avenue and Murchison Drive	Date of Analysis: 06/30/20										
Intersection Name:		PM											
Peak Hour:		N/A											
Count Date:													
Movements													
Scenario	Southbound Approach			Westbound Approach			Northbound Approach			Eastbound Approach			Total
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	
Existing Conditions	79	143	90	15	363	18	121	28	62	11	202	42	1174
Approved Project Trips													
1 Adrian Court Residential	0	0	0	0	0	0	0	0	0	0	0	0	0
1499 Old Bayshore Hwy Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0
1600 Trousdale Dr Assisted Living Facility	0	0	0	0	0	0	0	0	0	0	0	0	0
Serra Station Development	0	0	0	0	0	13	0	0	0	0	0	0	13
Gateway at Millbrae Station	0	0	0	0	11	0	0	0	0	0	9	0	20
Total Approved Trips	0	0	0	0	11	13	0	0	0	0	9	0	33
Background Conditions	79	143	90	15	374	31	121	28	62	11	211	42	1207
Proposed Project Trips	-2	0	0	0	-19	0	0	0	0	0	0	0	-21
Existing + Project Conditions	77	143	90	15	344	18	121	28	62	11	202	42	1153
Background + Project Conditions	77	143	90	15	355	31	121	28	62	11	211	42	1186
Cumulative No Project Conditions	93	168	106	18	426	21	142	33	73	13	237	49	1375
Cumulative + Project Conditions	91	168	106	18	407	21	142	33	73	13	237	49	1356
Movements													
Scenario	Southbound Approach			Westbound Approach			Northbound Approach			Eastbound Approach			Total
	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	
Existing Conditions	113	22	37	67	524	80	183	43	90	26	487	101	1773
Approved Project Trips													
1 Adrian Court Residential	0	0	0	0	0	0	0	0	0	0	0	0	0
1499 Old Bayshore Hwy Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0
1600 Trousdale Dr Assisted Living Facility	0	0	0	0	12	0	0	0	0	0	20	0	32
Serra Station Development	0	0	0	0	14	0	0	0	0	0	8	0	22
Gateway at Millbrae Station	0	0	0	0	18	0	0	0	0	0	15	0	33
Total Approved Trips	0	0	0	0	44	0	0	0	0	0	43	0	87
Background Conditions	113	22	37	67	568	80	183	43	90	26	530	101	1860
Proposed Project Trips	0	0	0	0	-9	0	0	0	0	0	0	0	-9
Existing + Project Conditions	113	22	37	67	515	80	183	43	90	26	487	101	1764
Background + Project Conditions	113	22	37	67	559	80	183	43	90	26	530	101	1851
Cumulative No Project Conditions	133	26	43	79	615	94	215	50	106	30	571	118	2080
Cumulative + Project Conditions	133	26	43	79	606	94	215	50	106	30	571	118	2071

Intersection Number:	5	Intersection Name:	El Camino Real and Millbrae Avenue*	Peak Hour:	PM	Date of Analysis:	06/30/20
Count Date: 04/15/19							
						Movements	
Scenario			Southbound Approach	Westbound Approach	Northbound Approach	Eastbound Approach	Total
			RT TH LT	RT TH LT	RT TH LT	RT TH LT	
Existing Conditions			58 774 642	1055 648 508	599 666 58	36 319 127	5490
Approved Project Trips							
1 Adrian Court Residential	0	0	7	5 7 1	1 0 0	0 11 0	22
1499 Old Bayshore Hwy Hotel	0	0	7	6 0 6	6 0 0	0 0 0	25
1600 Trousdale Dr Assisted Living Facility	0	6	0	0 0 0	0 10 0	0 0 0	16
Serra Station Development	8	23	72	60 0 28	72 14 0	0 0 5	282
Gateway at Millbrae Station	0	0	56	67 11 61	52 0 0	0 9 0	256
Total Approved Trips	8	29	142	138 18 96	131 24 0	0 20 5	611
Background Conditions			66 803 784	1193 666 604	730 690 58	36 339 132	6101
Proposed Project Trips			0 -7 0	0 0 -12	0 0 0	0 0 0	-19
Existing + Project Conditions			58 767 642	1055 648 496	599 666 58	36 319 127	5471
Background + Project Conditions			66 796 784	1193 666 592	730 690 58	36 339 132	6082
Cumulative No Project Conditions			70 871 819	1245 702 641	762 741 66	40 355 137	6449
Cumulative + Project Conditions			70 864 819	1245 702 629	762 741 66	40 355 137	6430
Intersection Number:	6	Intersection Name:	El Camino Real and Murchison Drive	Peak Hour:	PM	Date of Analysis:	06/30/20
Count Date:	04/05/16						
						Movements	
Scenario			Southbound Approach	Westbound Approach	Northbound Approach	Eastbound Approach	Total
			RT TH LT	RT TH LT	RT TH LT	RT TH LT	
Existing Conditions			224 1095 233	188 96 34	44 821 76	73 88 252	3224
Approved Project Trips							
1 Adrian Court Residential	0	1	0	0 0 0	0 0 0	0 0 0	1
1499 Old Bayshore Hwy Hotel	0	6	0	0 0 0	0 7 0	0 0 0	13
1600 Trousdale Dr Assisted Living Facility	0	6	0	0 0 0	0 10 0	0 0 0	16
Serra Station Development	4	19	28	72 4 12	7 12 0	0 2 2	162
Gateway at Millbrae Station	11	44	7	6 0 0	0 37 0	0 0 9	114
Total Approved Trips	15	76	35	78 4 12	7 66 0	0 2 11	306
Background Conditions			239 1171 268	266 100 46	51 887 76	73 90 263	3530
Proposed Project Trips			-19 0 0	0 0 0	0 0 0	0 0 0	-19
Existing + Project Conditions			205 1095 233	188 96 34	44 821 76	73 88 252	3205
Background + Project Conditions			220 1171 268	266 100 46	51 887 76	73 90 263	3511
Cumulative No Project Conditions			263 1284 273	220 113 40	52 963 89	86 103 296	3782
Cumulative + Project Conditions			244 1284 273	220 113 40	52 963 89	86 103 296	3763
Intersection Number:	7	Intersection Name:	El Camino Real and Trousdale Drive	Peak Hour:	PM	Date of Analysis:	06/30/20
Count Date:	02/27/20						
						Movements	
Scenario			Southbound Approach	Westbound Approach	Northbound Approach	Eastbound Approach	Total
			RT TH LT	RT TH LT	RT TH LT	RT TH LT	
Existing Conditions			175 764 74	58 232 20	30 697 230	223 164 267	2934
Approved Project Trips							
1 Adrian Court Residential	0	1	0	0 0 0	0 0 0	0 0 0	1
1499 Old Bayshore Hwy Hotel	0	6	0	0 0 0	0 7 0	0 0 0	13
1600 Trousdale Dr Assisted Living Facility	6	0	0	0 0 0	0 0 6	10 0 10	32
Serra Station Development	7	24	0	0 7 16	10 15 0	0 4 4	87
Gateway at Millbrae Station	18	26	0	0 0 0	0 22 0	0 0 15	81
Total Approved Trips	31	57	0	0 7 16	10 44 6	10 4 29	214
Background Conditions			206 821 74	58 239 36	40 741 236	233 168 296	3148
Proposed Project Trips			0 0 0	0 0 0	0 0 -9	0 0 0	-9
Existing + Project Conditions			175 764 74	58 232 20	30 697 221	223 164 267	2925
Background + Project Conditions			206 821 74	58 239 36	40 741 227	233 168 296	3139
Cumulative No Project Conditions			277 1247 113	115 229 22	24 986 267	239 184 250	3953
Cumulative + Project Conditions			277 1247 113	115 229 22	24 986 258	239 184 250	3944

**Appendix B**

**Level of Service Calculations**

DRAFT

Intersection

Intersection Delay, s/veh 13.4

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	376	81	16	339	8	19	21	64	0	0	0
Future Vol, veh/h	3	376	81	16	339	8	19	21	64	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	376	81	16	339	8	19	21	64	0	0	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	0	0
Approach												
Opposing Approach	WB		WB			NB						
Opposing Lanes	2		1			0						
Conflicting Approach Left			NB			EB						
Conflicting Lanes Left	0		1			1						
Conflicting Approach Right	NB					WB						
Conflicting Lanes Right	1		0			2						
HCM Control Delay	14.3		13.3			9.6						
HCM LOS	B		B			A						

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	18%	1%	5%	0%
Vol Thru, %	20%	82%	95%	0%
Vol Right, %	62%	18%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	104	460	355	8
LT Vol	19	3	16	0
Through Vol	21	376	339	0
RT Vol	64	81	0	8
Lane Flow Rate	104	460	355	8
Geometry Grp	2	5	7	7
Degree of Util (X)	0.158	0.594	0.513	0.01
Departure Headway (Hd)	5.46	4.65	5.198	4.47
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	651	773	689	795
Service Time	3.546	2.704	2.958	2.23
HCM Lane V/C Ratio	0.16	0.595	0.515	0.01
HCM Control Delay	9.6	14.3	13.4	7.3
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.6	4	3	0

Intersection

Intersection Delay, s/veh 18.9

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	71	877	4	3	473	31	3	2	8	45	0	52
Future Vol, veh/h	71	877	4	3	473	31	3	2	8	45	0	52
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	71	877	4	3	473	31	3	2	8	45	0	52
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Approach												
Opposing Approach	WB			WB			NB			SB		
Opposing Lanes	2			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			2			2		
HCM Control Delay	23			13.1			9.8			10.8		
HCM LOS	C			B			A			B		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	23%	14%	0%	1%	0%	46%
Vol Thru, %	15%	86%	99%	99%	88%	0%
Vol Right, %	62%	0%	1%	0%	12%	54%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	13	510	443	240	268	97
LT Vol	3	71	0	3	0	45
Through Vol	2	439	439	237	237	0
RT Vol	8	0	4	0	31	52
Lane Flow Rate	13	510	442	240	268	97
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.024	0.792	0.678	0.403	0.444	0.172
Departure Headway (Hd)	6.616	5.594	5.518	6.058	5.97	6.401
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	541	647	655	594	605	562
Service Time	4.654	3.32	3.243	3.795	3.706	4.432
HCM Lane V/C Ratio	0.024	0.788	0.675	0.404	0.443	0.173
HCM Control Delay	9.8	26.3	19.1	12.8	13.4	10.8
HCM Lane LOS	A	D	C	B	B	B
HCM 95th-tile Q	0.1	7.8	5.3	1.9	2.3	0.6

Intersection

Intersection Delay, s/veh 16.1

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	70	319	51	84	318	41	34	27	121	10	26	11
Future Vol, veh/h	70	319	51	84	318	41	34	27	121	10	26	11
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	319	51	84	318	41	34	27	121	10	26	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	17.2			17.5			11.5			10.2		
HCM LOS	C			C			B			B		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	16%	19%	21%
Vol Thru, %	15%	72%	72%	55%
Vol Right, %	66%	12%	9%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	182	440	443	47
LT Vol	34	70	84	10
Through Vol	27	319	318	26
RT Vol	121	51	41	11
Lane Flow Rate	182	440	443	47
Geometry Grp	1	1	1	1
Degree of Util (X)	0.298	0.641	0.647	0.085
Departure Headway (Hd)	5.893	5.245	5.259	6.523
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	608	686	687	546
Service Time	3.956	3.292	3.306	4.607
HCM Lane V/C Ratio	0.299	0.641	0.645	0.086
HCM Control Delay	11.5	17.2	17.5	10.2
HCM Lane LOS	B	C	C	B
HCM 95th-tile Q	1.2	4.6	4.7	0.3

HCM 2010 Signalized Intersection Summary  
4: Mills-Peninsula Dwy/Magnolia Av & Trousdale Dr

Existing AM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑	↑↑			↑	↑		↑	↑
Traffic Volume (veh/h)	117	531	84	158	353	46	24	19	86	36	50	75
Future Volume (veh/h)	117	531	84	158	353	46	24	19	86	36	50	75
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	117	531	84	158	353	46	24	19	86	36	50	75
Adj No. of Lanes	1	2	0	2	2	0	0	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	118	1017	160	229	1046	135	275	153	240	245	174	346
Arrive On Green	0.07	0.33	0.33	0.07	0.33	0.33	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1774	3064	483	3442	3153	408	580	1006	1583	492	1149	1583
Grp Volume(v), veh/h	117	306	309	158	197	202	43	0	86	86	0	75
Grp Sat Flow(s),veh/h/ln	1774	1770	1778	1721	1770	1791	1586	0	1583	1641	0	1583
Q Serve(g_s), s	2.0	4.2	4.2	1.3	2.5	2.6	0.0	0.0	1.5	0.1	0.0	1.2
Cycle Q Clear(g_c), s	2.0	4.2	4.2	1.3	2.5	2.6	0.6	0.0	1.5	1.3	0.0	1.2
Prop In Lane	1.00		0.27	1.00		0.23	0.56		1.00	0.42		1.00
Lane Grp Cap(c), veh/h	118	587	590	229	587	594	428	0	240	419	0	346
V/C Ratio(X)	0.99	0.52	0.52	0.69	0.34	0.34	0.10	0.00	0.36	0.21	0.00	0.22
Avail Cap(c_a), veh/h	118	1533	1540	229	1533	1551	2018	0	1952	2113	0	2058
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.0	8.1	8.1	13.7	7.5	7.6	11.1	0.0	11.4	11.3	0.0	9.6
Incr Delay (d2), s/veh	79.4	0.7	0.7	8.4	0.3	0.3	0.1	0.0	0.9	0.2	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	2.2	2.2	0.9	1.3	1.3	0.3	0.0	0.7	0.6	0.0	0.5
LnGrp Delay(d),s/veh	93.4	8.8	8.8	22.1	7.9	7.9	11.2	0.0	12.3	11.6	0.0	9.9
LnGrp LOS	F	A	A	C	A	A	B		B	B		A
Approach Vol, veh/h	732				557				129			161
Approach Delay, s/veh	22.3				11.9				11.9			10.8
Approach LOS	C				B				B			B
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	6.5	14.5		9.1	6.5	14.5		9.1				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	2.0	26.0		37.0	2.0	26.0		37.0				
Max Q Clear Time (g_c+l1), s	3.3	6.2		3.3	4.0	4.6		3.5				
Green Ext Time (p_c), s	0.0	3.7		0.7	0.0	2.3		0.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				16.6								
HCM 2010 LOS				B								
Notes												

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User approved changes to right turn type.

HCM 2010 Signalized Intersection Summary  
5: El Camino Real & Millbrae Av

Existing AM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑↑	↑↑	↑	↑	↑↑↑	↑	↑↑↑	↑↑↑	
Traffic Volume (veh/h)	108	648	45	359	295	755	31	431	715	798	786	36
Future Volume (veh/h)	108	648	45	359	295	755	31	431	715	798	786	36
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	1.00		0.91	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	108	648	45	359	295	671	31	431	671	798	786	36
Adj No. of Lanes	1	2	0	3	2	1	1	3	1	2	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	223	1018	71	714	1142	774	42	1214	590	677	2050	94
Arrive On Green	0.13	0.31	0.31	0.14	0.32	0.32	0.02	0.24	0.24	0.20	0.41	0.41
Sat Flow, veh/h	1774	3331	231	5003	3539	1435	1774	5085	1527	3442	4979	227
Grp Volume(v), veh/h	108	344	349	359	295	671	31	431	671	798	534	288
Grp Sat Flow(s),veh/h/ln	1774	1770	1792	1668	1770	1435	1774	1695	1527	1721	1695	1816
Q Serve(g_s), s	8.8	25.9	26.0	10.3	9.5	50.0	2.7	10.9	37.0	30.5	17.1	17.2
Cycle Q Clear(g_c), s	8.8	25.9	26.0	10.3	9.5	50.0	2.7	10.9	37.0	30.5	17.1	17.2
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	223	541	548	714	1142	774	42	1214	590	677	1396	748
V/C Ratio(X)	0.48	0.64	0.64	0.50	0.26	0.87	0.74	0.36	1.14	1.18	0.38	0.38
Avail Cap(c_a), veh/h	223	541	548	888	1142	774	80	1214	590	677	1396	748
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.87	0.87	0.87	0.78	0.78	0.78	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.1	46.4	46.4	61.4	38.8	33.5	75.2	49.1	48.2	62.2	31.8	31.9
Incr Delay (d2), s/veh	1.6	5.6	5.6	0.5	0.5	11.1	17.4	0.6	77.1	95.1	0.8	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	13.5	13.8	4.8	4.7	27.8	1.5	5.2	37.9	23.4	8.2	8.9
LnGrp Delay(d),s/veh	64.7	52.0	52.0	61.8	39.3	44.5	92.6	49.7	125.3	157.3	32.6	33.4
LnGrp LOS	E	D	D	E	D	D	F	D	F	F	C	C
Approach Vol, veh/h		801			1325			1133			1620	
Approach Delay, s/veh		53.7			48.1			95.7			94.2	
Approach LOS		D			D			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R <sub>c</sub> ), s	35.0	41.5	26.6	51.9	8.2	68.3	24.0	54.5				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	30.5	37.0	27.5	42.0	7.0	60.5	19.5	50.0				
Max Q Clear Time (g_c+l1), s	32.5	39.0	12.3	28.0	4.7	19.2	10.8	52.0				
Green Ext Time (p_c), s	0.0	0.0	1.2	3.7	0.0	6.4	0.1	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				75.4								
HCM 2010 LOS				E								
Notes												

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User approved changes to right turn type.

HCM 2010 Signalized Intersection Summary  
6: El Camino Real & Murchison Dr/Murichson Dr

Existing AM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑		↑↑	↑	↑	↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	278	125	47	11	71	107	42	793	26	196	878	330
Future Volume (veh/h)	278	125	47	11	71	107	42	793	26	196	878	330
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	278	125	47	11	71	107	42	793	26	196	878	330
Adj No. of Lanes	1	1	0	0	2	1	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	367	268	101	48	329	166	73	1374	428	250	1882	586
Arrive On Green	0.21	0.21	0.21	0.10	0.10	0.10	0.04	0.27	0.27	0.14	0.37	0.37
Sat Flow, veh/h	1774	1291	486	461	3148	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	278	0	172	44	38	107	42	793	26	196	878	330
Grp Sat Flow(s),veh/h/ln	1774	0	1777	1840	1770	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	9.6	0.0	5.5	1.4	1.3	4.2	1.5	8.7	0.8	6.9	8.5	10.8
Cycle Q Clear(g_c), s	9.6	0.0	5.5	1.4	1.3	4.2	1.5	8.7	0.8	6.9	8.5	10.8
Prop In Lane	1.00		0.27	0.25		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	367	0	368	192	185	166	73	1374	428	250	1882	586
V/C Ratio(X)	0.76	0.00	0.47	0.23	0.21	0.65	0.58	0.58	0.06	0.79	0.47	0.56
Avail Cap(c_a), veh/h	1080	0	1082	1148	1104	988	697	4349	1354	697	4349	1354
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	0.0	22.6	26.7	26.6	27.9	30.6	20.5	17.6	26.9	15.6	16.3
Incr Delay (d2), s/veh	3.2	0.0	0.9	0.6	0.5	4.2	7.1	0.4	0.1	5.4	0.2	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	2.8	0.8	0.7	2.0	0.9	4.1	0.4	3.8	4.0	4.8
LnGrp Delay(d),s/veh	27.4	0.0	23.5	27.3	27.1	32.1	37.7	20.9	17.6	32.3	15.7	17.1
LnGrp LOS	C		C	C	C	D	C	B	C	B		B
Approach Vol, veh/h		450			189			861			1404	
Approach Delay, s/veh		25.9			30.0			21.6			18.4	
Approach LOS		C			C			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	13.6	22.0		17.9	7.2	28.5		11.3				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	25.5	55.5		39.5	25.5	55.5		40.5				
Max Q Clear Time (g_c+l1), s	8.9	10.7		11.6	3.5	12.8		6.2				
Green Ext Time (p_c), s	0.5	6.8		1.9	0.1	9.3		0.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			21.2									
HCM 2010 LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↔↑		↔↑			↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	192	190	218	11	163	33	255	490	51	115	620	195
Future Volume (veh/h)	192	190	218	11	163	33	255	490	51	115	620	195
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	192	190	218	11	163	33	255	490	51	115	620	195
Adj No. of Lanes	1	2	0	0	2	0	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	416	437	372	24	365	77	355	1702	530	192	1234	679
Arrive On Green	0.23	0.23	0.23	0.10	0.13	0.10	0.20	0.33	0.33	0.11	0.24	0.22
Sat Flow, veh/h	1774	1863	1583	186	2830	595	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	192	190	218	109	0	98	255	490	51	115	620	195
Grp Sat Flow(s), veh/h/ln	1774	1863	1583	1853	0	1758	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	5.8	5.4	7.6	3.4	0.0	3.2	8.3	4.4	1.4	3.8	6.5	5.0
Cycle Q Clear(g_c), s	5.8	5.4	7.6	3.4	0.0	3.2	8.3	4.4	1.4	3.8	6.5	5.0
Prop In Lane	1.00		1.00	0.10		0.34	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	416	437	372	239	0	227	355	1702	530	192	1234	679
V/C Ratio(X)	0.46	0.43	0.59	0.46	0.00	0.43	0.72	0.29	0.10	0.60	0.50	0.29
Avail Cap(c_a), veh/h	1228	1290	1096	1194	0	1132	1228	4503	1402	657	2866	1187
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	20.3	21.1	25.1	0.0	25.2	23.2	15.2	14.2	26.4	20.3	11.5
Incr Delay (d2), s/veh	0.8	0.7	1.5	1.4	0.0	1.3	2.7	0.1	0.1	3.0	0.3	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	2.9	2.8	3.5	1.8	0.0	1.6	4.3	2.1	0.6	2.0	3.1	3.0
LnGrp Delay(d), s/veh	21.2	20.9	22.6	26.5	0.0	26.5	25.9	15.3	14.3	29.4	20.6	11.8
LnGrp LOS	C	C	C	C		C	C	B	B	C	C	B
Approach Vol, veh/h		600			207			796			930	
Approach Delay, s/veh		21.6			26.5			18.6			19.8	
Approach LOS		C			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	9.7	23.8		17.6	15.4	18.1		11.0				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	21.5	53.5		41.5	41.5	33.5		38.5				
Max Q Clear Time (g_c+l1), s	5.8	6.4		9.6	10.3	8.5		5.4				
Green Ext Time (p_c), s	0.2	3.8		3.5	0.7	5.0		1.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay		20.4										
HCM 2010 LOS		C										
Notes												

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User approved volume balancing among the lanes for turning movement.

Intersection

Intersection Delay, s/veh 14  
Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	223	59	23	462	19	19	17	32	0	0	0
Future Vol, veh/h	6	223	59	23	462	19	19	17	32	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	223	59	23	462	19	19	17	32	0	0	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	0	0
Approach												
Opposing Approach	WB		EB		NB							
Opposing Lanes	2		1		0							
Conflicting Approach Left			NB		EB							
Conflicting Lanes Left	0		1		1							
Conflicting Approach Right	NB				WB							
Conflicting Lanes Right	1		0		2							
HCM Control Delay	10.5		16.7		9.2							
HCM LOS	B		C		A							

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	28%	2%	5%	0%
Vol Thru, %	25%	77%	95%	0%
Vol Right, %	47%	20%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	68	288	485	19
LT Vol	19	6	23	0
Through Vol	17	223	462	0
RT Vol	32	59	0	19
Lane Flow Rate	68	288	485	19
Geometry Grp	2	5	7	7
Degree of Util (X)	0.104	0.373	0.668	0.022
Departure Headway (Hd)	5.507	4.668	4.959	4.231
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	647	769	728	844
Service Time	3.567	2.706	2.693	1.966
HCM Lane V/C Ratio	0.105	0.375	0.666	0.023
HCM Control Delay	9.2	10.5	17.1	7.1
HCM Lane LOS	A	B	C	A
HCM 95th-tile Q	0.3	1.7	5.1	0.1

Intersection

Intersection Delay, s/veh 11.5

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	480	4	2	524	38	8	1	8	30	0	52
Future Vol, veh/h	29	480	4	2	524	38	8	1	8	30	0	52
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	480	4	2	524	38	8	1	8	30	0	52
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Approach												
Opposing Approach	WB			EB			SB			NB		SB
Opposing Lanes	2			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			2			2		
HCM Control Delay	11.6			11.8			9.4			9.7		
HCM LOS	B			B			A			A		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	47%	11%	0%	1%	0%	37%
Vol Thru, %	6%	89%	98%	99%	87%	0%
Vol Right, %	47%	0%	2%	0%	13%	63%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	17	269	244	264	300	82
LT Vol	8	29	0	2	0	30
Through Vol	1	240	240	262	262	0
RT Vol	8	0	4	0	38	52
Lane Flow Rate	17	269	244	264	300	82
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.029	0.405	0.363	0.391	0.436	0.131
Departure Headway (Hd)	6.172	5.423	5.357	5.328	5.235	5.767
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	584	659	666	671	681	615
Service Time	4.172	3.204	3.138	3.107	3.013	3.867
HCM Lane V/C Ratio	0.029	0.408	0.366	0.393	0.441	0.133
HCM Control Delay	9.4	11.9	11.2	11.5	12.1	9.7
HCM Lane LOS	A	B	B	B	B	A
HCM 95th-tile Q	0.1	2	1.7	1.9	2.2	0.4

Intersection

Intersection Delay, s/veh 17.7

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	42	202	11	18	363	15	62	28	121	90	143	79
Future Vol, veh/h	42	202	11	18	363	15	62	28	121	90	143	79
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	202	11	18	363	15	62	28	121	90	143	79
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	15.2			21.8			13.6			17.3		
HCM LOS	C			C			B			C		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	16%	5%	29%
Vol Thru, %	13%	79%	92%	46%
Vol Right, %	57%	4%	4%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	211	255	396	312
LT Vol	62	42	18	90
Through Vol	28	202	363	143
RT Vol	121	11	15	79
Lane Flow Rate	211	255	396	312
Geometry Grp	1	1	1	1
Degree of Util (X)	0.381	0.464	0.684	0.557
Departure Headway (Hd)	6.503	6.546	6.217	6.423
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	551	548	578	558
Service Time	4.585	4.623	4.283	4.493
HCM Lane V/C Ratio	0.383	0.465	0.685	0.559
HCM Control Delay	13.6	15.2	21.8	17.3
HCM Lane LOS	B	C	C	C
HCM 95th-tile Q	1.8	2.4	5.3	3.4

HCM 2010 Signalized Intersection Summary  
4: Mills-Peninsula Dwy/Magnolia Av & Trousdale Dr

Existing PM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑	↑↑			↑	↑		↑	↑
Traffic Volume (veh/h)	101	487	26	80	524	67	90	43	183	37	22	113
Future Volume (veh/h)	101	487	26	80	524	67	90	43	183	37	22	113
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	101	487	26	80	524	67	90	43	183	37	22	113
Adj No. of Lanes	1	2	0	2	2	0	0	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	57	783	42	111	724	92	119	39	826	112	46	826
Arrive On Green	0.03	0.23	0.23	0.03	0.23	0.23	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1774	3418	182	3442	3159	403	43	75	1583	34	89	1583
Grp Volume(v), veh/h	101	252	261	80	293	298	133	0	183	59	0	113
Grp Sat Flow(s),veh/h/ln	1774	1770	1831	1721	1770	1792	118	0	1583	122	0	1583
Q Serve(g_s), s	2.0	7.9	8.0	1.4	9.5	9.6	1.5	0.0	3.9	1.3	0.0	2.3
Cycle Q Clear(g_c), s	2.0	7.9	8.0	1.4	9.5	9.6	32.4	0.0	3.9	32.4	0.0	2.3
Prop In Lane	1.00		0.10	1.00		0.22	0.68		1.00	0.63		1.00
Lane Grp Cap(c), veh/h	57	405	419	111	405	410	159	0	826	158	0	826
V/C Ratio(X)	1.77	0.62	0.62	0.72	0.72	0.73	0.84	0.00	0.22	0.37	0.00	0.14
Avail Cap(c_a), veh/h	57	741	766	111	741	750	263	0	943	258	0	943
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.1	21.5	21.5	29.8	22.1	22.1	24.0	0.0	8.0	14.9	0.0	7.7
Incr Delay (d2), s/veh	407.3	1.6	1.5	20.5	2.4	2.5	11.5	0.0	0.1	1.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	4.0	4.2	1.0	4.9	5.0	2.8	0.0	1.7	0.6	0.0	1.0
LnGrp Delay(d),s/veh	437.4	23.1	23.1	50.2	24.6	24.6	35.5	0.0	8.2	16.3	0.0	7.7
LnGrp LOS	F	C	C	D	C	C	D		A	B		A
Approach Vol, veh/h		614			671			316		172		
Approach Delay, s/veh		91.2			27.6			19.7		10.7		
Approach LOS		F			C			B		B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	6.5	19.0		38.1	6.5	19.0		38.1				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	2.0	26.0		37.0	2.0	26.0		37.0				
Max Q Clear Time (g_c+l1), s	3.4	10.0		34.4	4.0	11.6		34.4				
Green Ext Time (p_c), s	0.0	2.8		0.2	0.0	3.1		0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay		46.6										
HCM 2010 LOS		D										

HCM 2010 Signalized Intersection Summary  
5: El Camino Real & Millbrae Av

Existing PM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑↑	↑↑	↑	↑	↑↑↑	↑	↑↑↑	↑↑↑	
Traffic Volume (veh/h)	127	319	36	508	648	1055	58	666	599	642	774	58
Future Volume (veh/h)	127	319	36	508	648	1055	58	666	599	642	774	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.89	1.00		0.90	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	127	319	36	508	648	971	58	666	555	642	774	58
Adj No. of Lanes	1	2	0	3	2	1	1	3	1	2	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	196	858	95	698	1062	755	74	1355	629	712	2080	155
Arrive On Green	0.11	0.27	0.27	0.14	0.30	0.30	0.04	0.27	0.27	0.21	0.43	0.43
Sat Flow, veh/h	1774	3166	352	5003	3539	1423	1774	5085	1531	3442	4819	359
Grp Volume(v), veh/h	127	176	179	508	648	971	58	666	555	642	543	289
Grp Sat Flow(s),veh/h/ln	1774	1770	1748	1668	1770	1423	1774	1695	1531	1721	1695	1788
Q Serve(g_s), s	10.6	12.5	12.9	15.1	24.3	46.5	5.0	17.1	41.3	28.2	16.8	17.0
Cycle Q Clear(g_c), s	10.6	12.5	12.9	15.1	24.3	46.5	5.0	17.1	41.3	28.2	16.8	17.0
Prop In Lane	1.00		0.20	1.00		1.00	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	196	480	474	698	1062	755	74	1355	629	712	1463	772
V/C Ratio(X)	0.65	0.37	0.38	0.73	0.61	1.29	0.78	0.49	0.88	0.90	0.37	0.37
Avail Cap(c_a), veh/h	196	480	474	698	1062	755	121	1355	629	899	1463	772
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.62	0.62	0.62	0.75	0.75	0.75	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.1	45.7	45.9	63.9	46.5	39.2	73.6	48.0	42.9	59.9	29.8	29.9
Incr Delay (d2), s/veh	7.3	2.2	2.3	2.4	1.6	135.1	12.6	1.0	13.0	10.3	0.7	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	6.4	6.5	7.1	12.1	60.5	2.7	8.1	24.3	14.4	8.0	8.6
LnGrp Delay(d),s/veh	73.3	47.9	48.2	66.2	48.1	174.3	86.2	49.0	55.8	70.3	30.5	31.2
LnGrp LOS	E	D	D	E	D	F	F	D	E	E	C	C
Approach Vol, veh/h		482			2127			1279			1474	
Approach Delay, s/veh		54.7			110.1			53.6			48.0	
Approach LOS		D			F			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R <sub>c</sub> ), s	36.6	45.8	26.1	46.5	11.0	71.4	21.6	51.0				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	40.5	37.0	17.5	42.0	10.6	66.9	15.7	43.8				
Max Q Clear Time (g_c+l1), s	30.2	43.3	17.1	14.9	7.0	19.0	12.6	48.5				
Green Ext Time (p_c), s	1.9	0.0	0.1	2.2	0.0	6.6	0.1	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			74.6									
HCM 2010 LOS			E									
Notes												

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User approved changes to right turn type.

HCM 2010 Signalized Intersection Summary  
6: El Camino Real & Murchison Dr

Existing PM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑		↑↑	↑	↑	↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	252	88	73	34	96	188	76	821	44	233	1095	224
Future Volume (veh/h)	252	88	73	34	96	188	76	821	44	233	1095	224
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	252	88	73	34	96	188	76	821	44	233	1095	224
Adj No. of Lanes	1	1	0	0	2	1	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	174	145	138	417	245	99	1314	409	286	1850	576
Arrive On Green	0.18	0.18	0.18	0.15	0.15	0.15	0.06	0.26	0.26	0.16	0.36	0.36
Sat Flow, veh/h	1774	943	782	892	2696	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	252	0	161	69	61	188	76	821	44	233	1095	224
Grp Sat Flow(s), veh/h/ln	1774	0	1725	1818	1770	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	10.1	0.0	6.3	2.5	2.2	8.5	3.2	10.7	1.6	9.5	13.1	7.8
Cycle Q Clear(g_c), s	10.1	0.0	6.3	2.5	2.2	8.5	3.2	10.7	1.6	9.5	13.1	7.8
Prop In Lane	1.00		0.45	0.49		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	328	0	319	282	274	245	99	1314	409	286	1850	576
V/C Ratio(X)	0.77	0.00	0.50	0.25	0.22	0.77	0.77	0.62	0.11	0.81	0.59	0.39
Avail Cap(c_a), veh/h	937	0	911	571	556	497	368	2821	878	889	4317	1344
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	0.0	27.4	27.8	27.7	30.3	34.8	24.5	21.2	30.3	19.3	17.6
Incr Delay (d2), s/veh	3.8	0.0	1.2	0.5	0.4	5.0	11.7	0.5	0.1	5.6	0.3	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	5.2	0.0	3.1	1.3	1.1	4.1	1.9	5.0	0.7	5.1	6.1	3.5
LnGrp Delay(d), s/veh	32.8	0.0	28.6	28.2	28.1	35.3	46.5	25.0	21.3	35.9	19.6	18.1
LnGrp LOS	C	C	C	C	D	D	C	C	D	B	B	
Approach Vol, veh/h	413				318			941		1552		
Approach Delay, s/veh	31.2				32.4			26.6		21.8		
Approach LOS	C				C			C		C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	16.6	23.8		18.3	8.7	31.7		16.1				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	37.5	41.5		39.5	15.5	63.5		23.5				
Max Q Clear Time (g_c+l1), s	11.5	12.7		12.1	5.2	15.1		10.5				
Green Ext Time (p_c), s	0.7	6.7		1.7	0.1	11.7		1.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				25.4								
HCM 2010 LOS				C								

HCM 2010 Signalized Intersection Summary  
7: El Camino Real & Trousdale Dr

Existing PM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↔↑		↔↑			↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	267	164	223	20	232	58	230	697	30	74	764	175
Future Volume (veh/h)	267	164	223	20	232	58	230	697	30	74	764	175
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	218	233	223	20	232	58	230	697	16	74	764	175
Adj No. of Lanes	1	2	0	0	2	0	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	408	428	364	36	424	111	316	1882	586	132	1353	785
Arrive On Green	0.23	0.23	0.23	0.14	0.16	0.14	0.18	0.37	0.37	0.07	0.27	0.27
Sat Flow, veh/h	1774	1863	1583	225	2671	696	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	218	233	223	165	0	145	230	697	16	74	764	175
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1852	0	1740	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	7.8	7.9	9.1	5.9	0.0	5.5	8.8	7.2	0.5	2.9	9.3	4.5
Cycle Q Clear(g_c), s	7.8	7.9	9.1	5.9	0.0	5.5	8.8	7.2	0.5	2.9	9.3	4.5
Prop In Lane	1.00		1.00	0.12		0.40	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	408	428	364	294	0	276	316	1882	586	132	1353	785
V/C Ratio(X)	0.53	0.54	0.61	0.56	0.00	0.52	0.73	0.37	0.03	0.56	0.56	0.22
Avail Cap(c_a), veh/h	1061	1114	947	1030	0	968	938	4386	1366	395	2830	1245
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.3	24.4	24.8	28.0	0.0	28.0	27.9	16.5	14.4	32.1	22.8	10.3
Incr Delay (d2), s/veh	1.1	1.1	1.7	1.7	0.0	1.5	3.2	0.1	0.0	3.7	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	4.2	4.1	3.2	0.0	2.8	4.6	3.4	0.2	1.6	4.4	2.9
LnGrp Delay(d),s/veh	25.4	25.4	26.5	29.7	0.0	29.6	31.1	16.7	14.4	35.8	23.2	10.4
LnGrp LOS	C	C	C	C		C	C	B	B	D	C	B
Approach Vol, veh/h		674				310			943		1013	
Approach Delay, s/veh		25.8				29.6			20.1		21.9	
Approach LOS		C				C			C		C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	29.6		19.5	15.8	22.1		14.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	14.5	60.5		41.5	36.5	38.5		38.5				
Max Q Clear Time (g_c+l1), s	4.9	9.2		11.1	10.8	11.3		7.9				
Green Ext Time (p_c), s	0.1	5.5		3.9	0.6	6.3		2.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			23.0									
HCM 2010 LOS			C									
Notes												

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User approved volume balancing among the lanes for turning movement.

Intersection												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	394	81	16	350	8	19	21	64	0	0	0
Future Vol, veh/h	3	394	81	16	350	8	19	21	64	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	394	81	16	350	8	19	21	64	0	0	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	0	0
Approach	EB		WB			NB						
Opposing Approach	WB		EB									
Opposing Lanes	2		1			0						
Conflicting Approach Left				NB			EB					
Conflicting Lanes Left	0			1			1					
Conflicting Approach Right	NB						WB					
Conflicting Lanes Right	1			0			2					
HCM Control Delay	15.1			13.7			9.7					
HCM LOS	C			B			A					
Lane	NBLn1	EBLn1	WBLn1	WBLn2								
Vol Left, %	18%	1%	4%	0%								
Vol Thru, %	20%	82%	96%	0%								
Vol Right, %	62%	17%	0%	100%								
Sign Control	Stop	Stop	Stop	Stop								
Traffic Vol by Lane	104	478	366	8								
LT Vol	19	3	16	0								
Through Vol	21	394	350	0								
RT Vol	64	81	0	8								
Lane Flow Rate	104	478	366	8								
Geometry Grp	2	5	7	7								
Degree of Util (X)	0.16	0.62	0.53	0.01								
Departure Headway (Hd)	5.522	4.67	5.215	4.487								
Convergence, Y/N	Yes	Yes	Yes	Yes								
Cap	643	770	688	791								
Service Time	3.614	2.728	2.98	2.251								
HCM Lane V/C Ratio	0.162	0.621	0.532	0.01								
HCM Control Delay	9.7	15.1	13.8	7.3								
HCM Lane LOS	A	C	B	A								
HCM 95th-tile Q	0.6	4.4	3.1	0								

Intersection

Intersection Delay, s/veh 20.5

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	71	910	4	3	494	31	3	2	8	45	0	52
Future Vol, veh/h	71	910	4	3	494	31	3	2	8	45	0	52
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	71	910	4	3	494	31	3	2	8	45	0	52
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			2			2		
HCM Control Delay	25.2			13.7			9.9			10.9		
HCM LOS	D			B			A			B		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	23%	13%	0%	1%	0%	46%
Vol Thru, %	15%	87%	99%	99%	89%	0%
Vol Right, %	62%	0%	1%	0%	11%	54%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	13	526	459	250	278	97
LT Vol	3	71	0	3	0	45
Through Vol	2	455	455	247	247	0
RT Vol	8	0	4	0	31	52
Lane Flow Rate	13	526	459	250	278	97
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.024	0.823	0.709	0.425	0.466	0.174
Departure Headway (Hd)	6.683	5.632	5.558	6.118	6.033	6.459
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	536	642	652	588	598	556
Service Time	4.724	3.358	3.284	3.856	3.771	4.489
HCM Lane V/C Ratio	0.024	0.819	0.704	0.425	0.465	0.174
HCM Control Delay	9.9	29.2	20.7	13.3	14	10.9
HCM Lane LOS	A	D	C	B	B	B
HCM 95th-tile Q	0.1	8.6	5.8	2.1	2.5	0.6

Intersection

Intersection Delay, s/veh 17.1

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	330	51	95	325	41	34	27	121	10	26	11
Future Vol, veh/h	70	330	51	95	325	41	34	27	121	10	26	11
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	330	51	95	325	41	34	27	121	10	26	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	18.2			18.8			11.6			10.3		
HCM LOS	C			C			B			B		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	16%	21%	21%
Vol Thru, %	15%	73%	70%	55%
Vol Right, %	66%	11%	9%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	182	451	461	47
LT Vol	34	70	95	10
Through Vol	27	330	325	26
RT Vol	121	51	41	11
Lane Flow Rate	182	451	461	47
Geometry Grp	1	1	1	1
Degree of Util (X)	0.302	0.662	0.678	0.086
Departure Headway (Hd)	5.971	5.286	5.295	6.618
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	599	681	682	537
Service Time	4.04	3.336	3.345	4.709
HCM Lane V/C Ratio	0.304	0.662	0.676	0.088
HCM Control Delay	11.6	18.2	18.8	10.3
HCM Lane LOS	B	C	C	B
HCM 95th-tile Q	1.3	5	5.3	0.3

HCM 2010 Signalized Intersection Summary  
4: Mills-Peninsula Dwy/Magnolia Av & Trousdale Dr

Background AM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑	↑↑			↑	↑		↑	↑
Traffic Volume (veh/h)	117	568	84	158	388	46	24	19	86	36	50	75
Future Volume (veh/h)	117	568	84	158	388	46	24	19	86	36	50	75
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	117	568	84	158	388	46	24	19	86	36	50	75
Adj No. of Lanes	1	2	0	2	2	0	0	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	1063	157	225	1096	129	270	150	237	241	172	237
Arrive On Green	0.07	0.34	0.34	0.07	0.34	0.34	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1774	3095	457	3442	3190	376	581	1005	1583	493	1148	1583
Grp Volume(v), veh/h	117	324	328	158	214	220	43	0	86	86	0	75
Grp Sat Flow(s),veh/h/ln	1774	1770	1782	1721	1770	1796	1585	0	1583	1640	0	1583
Q Serve(g_s), s	2.0	4.5	4.5	1.4	2.8	2.8	0.0	0.0	1.5	0.1	0.0	1.3
Cycle Q Clear(g_c), s	2.0	4.5	4.5	1.4	2.8	2.8	0.6	0.0	1.5	1.3	0.0	1.3
Prop In Lane	1.00		0.26	1.00		0.21	0.56		1.00	0.42		1.00
Lane Grp Cap(c), veh/h	116	608	612	225	608	617	421	0	237	412	0	237
V/C Ratio(X)	1.01	0.53	0.54	0.70	0.35	0.36	0.10	0.00	0.36	0.21	0.00	0.32
Avail Cap(c_a), veh/h	116	1505	1515	225	1505	1528	1980	0	1916	2074	0	1916
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.3	8.1	8.1	14.0	7.5	7.5	11.3	0.0	11.7	11.6	0.0	11.6
Incr Delay (d2), s/veh	85.8	0.7	0.7	9.4	0.3	0.3	0.1	0.0	0.9	0.2	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	2.3	2.3	0.9	1.4	1.4	0.3	0.0	0.7	0.7	0.0	0.6
LnGrp Delay(d),s/veh	100.1	8.8	8.8	23.4	7.8	7.9	11.4	0.0	12.6	11.8	0.0	12.4
LnGrp LOS	F	A	A	C	A	A	B		B	B		B
Approach Vol, veh/h		769			592			129			161	
Approach Delay, s/veh		22.7			12.0			12.2			12.1	
Approach LOS		C			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	6.5	15.0		9.1	6.5	15.0		9.1				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	2.0	26.0		37.0	2.0	26.0		37.0				
Max Q Clear Time (g_c+l1), s	3.4	6.5		3.3	4.0	4.8		3.5				
Green Ext Time (p_c), s	0.0	4.0		0.7	0.0	2.5		0.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay		17.0										
HCM 2010 LOS		B										

## HCM 2010 Signalized Intersection Summary

5: El Camino Real &amp; Millbrae Av

Background AM

06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑↑	↑↑	↑	↑	↑↑↑	↑	↑↑↑	↑↑↑	
Traffic Volume (veh/h)	115	663	45	443	313	892	31	454	822	913	806	40
Future Volume (veh/h)	115	663	45	443	313	892	31	454	822	913	806	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.89	1.00		0.90	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	115	663	45	443	313	808	31	454	778	913	806	40
Adj No. of Lanes	1	2	0	3	2	1	1	3	1	2	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	232	959	65	804	1123	766	42	1214	619	677	2041	101
Arrive On Green	0.13	0.29	0.29	0.16	0.32	0.32	0.02	0.24	0.24	0.20	0.41	0.41
Sat Flow, veh/h	1774	3335	226	5003	3539	1432	1774	5085	1527	3442	4957	245
Grp Volume(v), veh/h	115	351	357	443	313	808	31	454	778	913	550	296
Grp Sat Flow(s), veh/h/ln	1774	1770	1792	1668	1770	1432	1774	1695	1527	1721	1695	1812
Q Serve(g_s), s	9.3	27.4	27.4	12.6	10.3	49.2	2.7	11.6	37.0	30.5	17.7	17.8
Cycle Q Clear(g_c), s	9.3	27.4	27.4	12.6	10.3	49.2	2.7	11.6	37.0	30.5	17.7	17.8
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	232	509	515	804	1123	766	42	1214	619	677	1396	746
V/C Ratio(X)	0.49	0.69	0.69	0.55	0.28	1.05	0.74	0.37	1.26	1.35	0.39	0.40
Avail Cap(c_a), veh/h	232	509	515	888	1123	766	80	1214	619	677	1396	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.87	0.87	0.87	0.73	0.73	0.73	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.6	49.1	49.1	59.9	39.6	38.6	75.2	49.3	46.8	62.2	32.0	32.0
Incr Delay (d2), s/veh	1.6	7.5	7.5	0.5	0.5	45.7	16.4	0.6	125.1	166.4	0.8	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	4.7	14.4	14.6	5.9	5.1	42.4	1.5	5.5	48.0	30.1	8.4	9.2
LnGrp Delay(d), s/veh	64.2	56.6	56.6	60.4	40.1	84.3	91.5	50.0	171.9	228.6	32.9	33.6
LnGrp LOS	E	E	E	E	D	F	F	D	F	F	C	C
Approach Vol, veh/h		823			1564			1263			1759	
Approach Delay, s/veh		57.6			68.7			126.1			134.6	
Approach LOS		E			E			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R <sub>c</sub> ), s	35.0	41.5	29.4	49.1	8.2	68.3	24.8	53.7				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	30.5	37.0	27.5	42.0	7.0	60.5	20.3	49.2				
Max Q Clear Time (g <sub>c</sub> +l1), s	32.5	39.0	14.6	29.4	4.7	19.8	11.3	51.2				
Green Ext Time (p <sub>c</sub> ), s	0.0	0.0	1.4	3.6	0.0	6.6	0.2	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				101.8								
HCM 2010 LOS				F								
Notes												

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User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑			↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	292	128	47	17	73	151	42	865	36	239	932	339
Future Volume (veh/h)	292	128	47	17	73	151	42	865	36	239	932	339
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	292	128	47	17	73	151	42	865	36	239	932	339
Adj No. of Lanes	1	1	0	0	2	1	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	366	269	99	84	382	205	68	1381	430	288	2011	626
Arrive On Green	0.21	0.21	0.21	0.13	0.13	0.13	0.04	0.27	0.27	0.16	0.40	0.40
Sat Flow, veh/h	1774	1301	478	647	2953	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	292	0	175	48	42	151	42	865	36	239	932	339
Grp Sat Flow(s),veh/h/ln	1774	0	1778	1830	1770	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	12.2	0.0	6.8	1.8	1.7	7.2	1.8	11.7	1.3	10.2	10.6	12.9
Cycle Q Clear(g_c), s	12.2	0.0	6.8	1.8	1.7	7.2	1.8	11.7	1.3	10.2	10.6	12.9
Prop In Lane	1.00		0.27	0.35		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	366	0	367	237	229	205	68	1381	430	288	2011	626
V/C Ratio(X)	0.80	0.00	0.48	0.20	0.18	0.74	0.62	0.63	0.08	0.83	0.46	0.54
Avail Cap(c_a), veh/h	896	0	898	948	916	820	578	3609	1124	578	3609	1124
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.5	0.0	27.3	30.4	30.4	32.8	37.0	25.0	21.2	31.7	17.5	18.2
Incr Delay (d2), s/veh	4.0	0.0	1.0	0.4	0.4	5.1	8.8	0.5	0.1	6.1	0.2	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	3.4	0.9	0.8	3.4	1.1	5.5	0.6	5.5	4.9	5.7
LnGrp Delay(d),s/veh	33.5	0.0	28.3	30.8	30.7	37.8	45.9	25.5	21.3	37.8	17.7	18.9
LnGrp LOS	C	C	C	C	D	D	C	C	D	B	B	
Approach Vol, veh/h		467			241			943			1510	
Approach Delay, s/veh		31.5			35.2			26.2			21.1	
Approach LOS		C			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.2	25.7		20.7	7.5	35.4		14.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	25.5	55.5		39.5	25.5	55.5		40.5				
Max Q Clear Time (g_c+l1), s	12.2	13.7		14.2	3.8	14.9		9.2				
Green Ext Time (p_c), s	0.6	7.6		1.9	0.1	10.0		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay		25.3										
HCM 2010 LOS		C										

HCM 2010 Signalized Intersection Summary  
7: El Camino Real & Trousdale Dr

Background AM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↔↑		↔↑			↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	220	196	222	19	166	33	263	544	64	115	656	218
Future Volume (veh/h)	220	196	222	19	166	33	263	544	64	115	656	218
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	213	206	222	19	166	33	263	544	64	115	656	218
Adj No. of Lanes	1	2	0	0	2	0	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	417	438	373	40	358	74	359	1746	543	190	1259	692
Arrive On Green	0.24	0.24	0.24	0.11	0.13	0.11	0.20	0.34	0.34	0.11	0.25	0.22
Sat Flow, veh/h	1774	1863	1583	305	2740	566	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	213	206	222	115	0	103	263	544	64	115	656	218
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1848	0	1763	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	6.8	6.2	8.1	3.8	0.0	3.5	9.1	5.1	1.8	4.0	7.3	5.9
Cycle Q Clear(g_c), s	6.8	6.2	8.1	3.8	0.0	3.5	9.1	5.1	1.8	4.0	7.3	5.9
Prop In Lane	1.00		1.00	0.16		0.32	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	417	438	373	241	0	230	359	1746	543	190	1259	692
V/C Ratio(X)	0.51	0.47	0.60	0.48	0.00	0.45	0.73	0.31	0.12	0.61	0.52	0.32
Avail Cap(c_a), veh/h	1169	1227	1043	1132	0	1081	1169	4286	1334	625	2727	1149
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.7	21.5	22.2	26.4	0.0	26.4	24.4	15.8	14.7	27.8	21.2	12.0
Incr Delay (d2), s/veh	1.0	0.8	1.5	1.5	0.0	1.4	2.9	0.1	0.1	3.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	3.3	3.7	2.0	0.0	1.8	4.7	2.4	0.8	2.1	3.4	3.6
LnGrp Delay(d),s/veh	22.7	22.2	23.7	27.9	0.0	27.8	27.2	15.9	14.8	30.9	21.5	12.3
LnGrp LOS	C	C	C	C		C	C	B	B	C	C	B
Approach Vol, veh/h		641			218			871			989	
Approach Delay, s/veh		22.9			27.8			19.2			20.6	
Approach LOS		C			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	25.4		18.4	16.2	19.2		11.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	21.5	53.5		41.5	41.5	33.5		38.5				
Max Q Clear Time (g_c+l1), s	6.0	7.1		10.1	11.1	9.3		5.8				
Green Ext Time (p_c), s	0.2	4.3		3.7	0.8	5.4		1.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			21.3									
HCM 2010 LOS			C									
Notes												

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User approved volume balancing among the lanes for turning movement.

Intersection

Intersection Delay, s/veh 14.8

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	237	59	23	481	19	19	17	32	0	0	0
Future Vol, veh/h	6	237	59	23	481	19	19	17	32	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	237	59	23	481	19	19	17	32	0	0	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	0	0
Approach												
Opposing Approach	WB			WB			NB					
Opposing Lanes	2			1			0					
Conflicting Approach Left				NB			EB					
Conflicting Lanes Left	0			1			1					
Conflicting Approach Right	NB						WB					
Conflicting Lanes Right	1			0			2					
HCM Control Delay	10.8			17.9			9.3					
HCM LOS	B			C			A					

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	28%	2%	5%	0%
Vol Thru, %	25%	78%	95%	0%
Vol Right, %	47%	20%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	68	302	504	19
LT Vol	19	6	23	0
Through Vol	17	237	481	0
RT Vol	32	59	0	19
Lane Flow Rate	68	302	504	19
Geometry Grp	2	5	7	7
Degree of Util (X)	0.105	0.394	0.696	0.022
Departure Headway (Hd)	5.577	4.698	4.971	4.244
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	639	764	726	841
Service Time	3.645	2.738	2.707	1.981
HCM Lane V/C Ratio	0.106	0.395	0.694	0.023
HCM Control Delay	9.3	10.8	18.3	7.1
HCM Lane LOS	A	B	C	A
HCM 95th-tile Q	0.4	1.9	5.7	0.1

Intersection

Intersection Delay, s/veh 12  
Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	506	4	2	561	38	8	1	8	30	0	52
Future Vol, veh/h	29	506	4	2	561	38	8	1	8	30	0	52
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	29	506	4	2	561	38	8	1	8	30	0	52
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Approach												
Opposing Approach	WB			WB			NB			SB		
Opposing Lanes	2			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			2			2		
HCM Control Delay	12			12.4			9.5			9.9		
HCM LOS	B			B			A			A		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	47%	10%	0%	1%	0%	37%
Vol Thru, %	6%	90%	98%	99%	88%	0%
Vol Right, %	47%	0%	2%	0%	12%	63%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	17	282	257	283	319	82
LT Vol	8	29	0	2	0	30
Through Vol	1	253	253	281	281	0
RT Vol	8	0	4	0	38	52
Lane Flow Rate	17	282	257	282	318	82
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.03	0.429	0.386	0.421	0.467	0.136
Departure Headway (Hd)	6.28	5.471	5.408	5.366	5.278	5.964
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	573	651	658	664	675	604
Service Time	4.286	3.265	3.203	3.158	3.07	3.966
HCM Lane V/C Ratio	0.03	0.433	0.391	0.425	0.471	0.136
HCM Control Delay	9.5	12.4	11.6	12.1	12.7	9.9
HCM Lane LOS	A	B	B	B	B	A
HCM 95th-tile Q	0.1	2.2	1.8	2.1	2.5	0.5

Intersection

Intersection Delay, s/veh 19.3

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	4		4	4		4			4	4
Traffic Vol, veh/h	42	211	11	31	374	15	62	28	121	90	143	79
Future Vol, veh/h	42	211	11	31	374	15	62	28	121	90	143	79
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	211	11	31	374	15	62	28	121	90	143	79
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	16			25			14			18.1		
HCM LOS	C			C			B			C		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	16%	7%	29%
Vol Thru, %	13%	80%	89%	46%
Vol Right, %	57%	4%	4%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	211	264	420	312
LT Vol	62	42	31	90
Through Vol	28	211	374	143
RT Vol	121	11	15	79
Lane Flow Rate	211	264	420	312
Geometry Grp	1	1	1	1
Degree of Util (X)	0.391	0.489	0.735	0.57
Departure Headway (Hd)	6.675	6.663	6.3	6.578
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	536	539	571	546
Service Time	4.768	4.749	4.374	4.658
HCM Lane V/C Ratio	0.394	0.49	0.736	0.571
HCM Control Delay	14	16	25	18.1
HCM Lane LOS	B	C	C	C
HCM 95th-tile Q	1.8	2.7	6.2	3.5

HCM 2010 Signalized Intersection Summary  
4: Mills-Peninsula Dwy/Magnolia Av & Trousdale Dr

Background PM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑	↑↑			↑	↑		↑	↑
Traffic Volume (veh/h)	101	530	26	80	568	67	90	43	183	37	22	113
Future Volume (veh/h)	101	530	26	80	568	67	90	43	183	37	22	113
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	101	530	26	80	568	67	90	43	183	37	22	113
Adj No. of Lanes	1	2	0	2	2	0	0	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	55	825	40	107	766	90	114	37	820	108	44	820
Arrive On Green	0.03	0.24	0.24	0.03	0.24	0.24	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1774	3434	168	3442	3191	375	39	72	1583	32	86	1583
Grp Volume(v), veh/h	101	273	283	80	314	321	133	0	183	59	0	113
Grp Sat Flow(s),veh/h/ln	1774	1770	1833	1721	1770	1796	111	0	1583	118	0	1583
Q Serve(g_s), s	2.0	8.9	8.9	1.5	10.5	10.6	1.4	0.0	4.0	1.3	0.0	2.4
Cycle Q Clear(g_c), s	2.0	8.9	8.9	1.5	10.5	10.6	33.2	0.0	4.0	33.2	0.0	2.4
Prop In Lane	1.00		0.09	1.00		0.21	0.68		1.00	0.63		1.00
Lane Grp Cap(c), veh/h	55	425	440	107	425	431	152	0	820	153	0	820
V/C Ratio(X)	1.82	0.64	0.64	0.74	0.74	0.74	0.88	0.00	0.22	0.39	0.00	0.14
Avail Cap(c_a), veh/h	55	718	744	107	718	729	236	0	915	233	0	915
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.0	21.9	21.9	30.8	22.5	22.5	25.0	0.0	8.4	15.4	0.0	8.0
Incr Delay (d2), s/veh	432.1	1.6	1.6	24.1	2.5	2.6	19.7	0.0	0.1	1.6	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	4.5	4.7	1.1	5.5	5.6	3.2	0.0	1.8	0.6	0.0	1.0
LnGrp Delay(d),s/veh	463.1	23.5	23.5	54.9	25.0	25.1	44.7	0.0	8.6	17.0	0.0	8.1
LnGrp LOS	F	C	C	D	C	C	D		A	B		A
Approach Vol, veh/h		657			715			316		172		
Approach Delay, s/veh		91.0			28.4			23.8		11.1		
Approach LOS		F			C			C		B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	6.5	20.1		38.8	6.5	20.1		38.8				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	2.0	26.0		37.0	2.0	26.0		37.0				
Max Q Clear Time (g_c+l1), s	3.5	10.9		35.2	4.0	12.6		35.2				
Green Ext Time (p_c), s	0.0	3.0		0.1	0.0	3.3		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay		48.1										
HCM 2010 LOS		D										

HCM 2010 Signalized Intersection Summary  
5: El Camino Real & Millbrae Av

Background PM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑↑	↑↑	↑	↑	↑↑↑	↑	↑↑↑	↑↑↑	
Traffic Volume (veh/h)	132	339	36	604	666	1193	58	690	730	784	803	66
Future Volume (veh/h)	132	339	36	604	666	1193	58	690	730	784	803	66
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.89	1.00		0.90	1.00		0.96	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	132	339	36	604	666	1109	58	690	686	784	803	66
Adj No. of Lanes	1	2	0	3	2	1	1	3	1	2	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	166	864	91	666	1099	825	74	1214	575	830	2094	171
Arrive On Green	0.09	0.27	0.27	0.13	0.31	0.31	0.04	0.24	0.24	0.24	0.44	0.44
Sat Flow, veh/h	1774	3189	335	5003	3539	1429	1774	5085	1527	3442	4781	391
Grp Volume(v), veh/h	132	186	189	604	666	1109	58	690	686	784	568	301
Grp Sat Flow(s),veh/h/ln	1774	1770	1754	1668	1770	1429	1774	1695	1527	1721	1695	1782
Q Serve(g_s), s	11.3	13.3	13.6	18.4	24.8	48.1	5.0	18.5	37.0	34.7	17.5	17.7
Cycle Q Clear(g_c), s	11.3	13.3	13.6	18.4	24.8	48.1	5.0	18.5	37.0	34.7	17.5	17.7
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	166	480	475	666	1099	825	74	1214	575	830	1485	781
V/C Ratio(X)	0.80	0.39	0.40	0.91	0.61	1.34	0.78	0.57	1.19	0.94	0.38	0.39
Avail Cap(c_a), veh/h	203	480	475	666	1099	825	121	1214	575	855	1485	781
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.62	0.62	0.62	0.68	0.68	0.68	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.8	46.0	46.2	66.2	45.4	35.8	73.6	52.0	48.9	57.8	29.4	29.4
Incr Delay (d2), s/veh	16.3	2.4	2.5	11.0	1.5	159.7	11.5	1.3	98.2	18.5	0.7	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	6.8	6.9	9.2	12.4	71.8	2.7	8.8	40.4	18.7	8.4	9.0
LnGrp Delay(d),s/veh	85.1	48.4	48.6	77.2	46.9	195.5	85.1	53.3	147.1	76.3	30.1	30.9
LnGrp LOS	F	D	D	E	D	F	F	D	F	E	C	C
Approach Vol, veh/h		507			2379			1434			1653	
Approach Delay, s/veh		58.0			123.9			99.5			52.2	
Approach LOS		E			F			F			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R <sub>c</sub> ), s	41.9	41.5	25.1	46.5	11.0	72.4	19.0	52.6				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	38.5	37.0	19.5	42.0	10.6	64.9	17.7	43.8				
Max Q Clear Time (g_c+l1), s	36.7	39.0	20.4	15.6	7.0	19.7	13.3	50.1				
Green Ext Time (p_c), s	0.7	0.0	0.0	2.3	0.0	7.0	0.1	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				92.6								
HCM 2010 LOS				F								
Notes												

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User approved changes to right turn type.

## HCM 2010 Signalized Intersection Summary

6: El Camino Real &amp; Murchison Dr

Background PM

06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑			↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	263	90	73	46	100	266	76	887	51	268	1171	239
Future Volume (veh/h)	263	90	73	46	100	266	76	887	51	268	1171	239
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	263	90	73	46	100	266	76	887	51	268	1171	239
Adj No. of Lanes	1	1	0	0	2	1	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	324	174	141	112	588	308	99	1292	402	312	1904	593
Arrive On Green	0.18	0.18	0.18	0.19	0.19	0.19	0.06	0.25	0.25	0.18	0.37	0.37
Sat Flow, veh/h	1774	953	773	578	3026	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	263	0	163	146	0	266	76	887	51	268	1171	239
Grp Sat Flow(s), veh/h/ln	1774	0	1726	1834	1770	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	13.3	0.0	8.0	6.5	0.0	15.2	3.9	14.7	2.3	13.7	17.5	10.4
Cycle Q Clear(g_c), s	13.3	0.0	8.0	6.5	0.0	15.2	3.9	14.7	2.3	13.7	17.5	10.4
Prop In Lane	1.00		0.45	0.32		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	324	0	315	357	344	308	99	1292	402	312	1904	593
V/C Ratio(X)	0.81	0.00	0.52	0.41	0.00	0.86	0.77	0.69	0.13	0.86	0.61	0.40
Avail Cap(c_a), veh/h	751	0	731	462	446	399	295	2262	704	713	3461	1078
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	0.0	34.4	32.9	0.0	36.4	43.5	31.4	26.8	37.3	23.7	21.5
Incr Delay (d2), s/veh	4.9	0.0	1.3	0.8	0.0	14.4	11.8	0.7	0.1	6.8	0.3	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	6.9	0.0	3.9	3.4	0.0	7.8	2.2	7.0	1.0	7.3	8.2	4.6
LnGrp Delay(d), s/veh	41.5	0.0	35.7	33.6	0.0	50.8	55.3	32.1	27.0	44.1	24.0	21.9
LnGrp LOS	D		D	C		D	E	C	C	D	C	C
Approach Vol, veh/h		426			412			1014			1678	
Approach Delay, s/veh		39.3			44.7			33.6			26.9	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	20.9	28.2		21.5	9.7	39.4		22.6				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	37.5	41.5		39.5	15.5	63.5		23.5				
Max Q Clear Time (g_c+l1), s	15.7	16.7		15.3	5.9	19.5		17.2				
Green Ext Time (p_c), s	0.8	7.0		1.8	0.1	12.7		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			32.4									
HCM 2010 LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↔↑		↔↑			↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	296	168	233	36	239	58	236	741	40	74	821	206
Future Volume (veh/h)	296	168	233	36	239	58	236	741	40	74	821	206
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	232	257	233	36	239	58	236	741	26	74	821	206
Adj No. of Lanes	1	2	0	0	2	0	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	412	432	367	61	415	105	317	1928	600	129	1391	801
Arrive On Green	0.23	0.23	0.23	0.14	0.16	0.14	0.18	0.38	0.38	0.07	0.27	0.27
Sat Flow, veh/h	1774	1863	1583	375	2567	650	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	232	257	233	177	0	156	236	741	26	74	821	206
Grp Sat Flow(s), veh/h/ln	1774	1863	1583	1844	0	1748	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	9.0	9.6	10.3	6.9	0.0	6.4	9.8	8.2	0.8	3.1	10.9	5.8
Cycle Q Clear(g_c), s	9.0	9.6	10.3	6.9	0.0	6.4	9.8	8.2	0.8	3.1	10.9	5.8
Prop In Lane	1.00		1.00	0.20		0.37	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	412	432	367	298	0	283	317	1928	600	129	1391	801
V/C Ratio(X)	0.56	0.59	0.63	0.59	0.00	0.55	0.75	0.38	0.04	0.57	0.59	0.26
Avail Cap(c_a), veh/h	980	1029	875	924	0	876	866	4116	1282	365	2679	1201
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.4	26.6	26.9	30.4	0.0	30.3	30.3	17.6	15.3	34.9	24.5	10.9
Incr Delay (d2), s/veh	1.2	1.3	1.8	1.9	0.0	1.7	3.5	0.1	0.0	3.9	0.4	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	4.5	5.1	4.7	3.7	0.0	3.2	5.1	3.9	0.4	1.7	5.1	3.7
LnGrp Delay(d), s/veh	27.6	27.9	28.7	32.3	0.0	32.0	33.8	17.7	15.3	38.9	24.9	11.1
LnGrp LOS	C	C	C	C		C	C	B	B	D	C	B
Approach Vol, veh/h	722				333			1003			1101	
Approach Delay, s/veh	28.1				32.1			21.4			23.3	
Approach LOS	C				C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	8.7	32.5		21.1	16.9	24.3		15.6				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	14.5	61.5		41.5	36.5	39.5		37.5				
Max Q Clear Time (g_c+l1), s	5.1	10.2		12.3	11.8	12.9		8.9				
Green Ext Time (p_c), s	0.1	6.0		4.3	0.7	6.9		2.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				24.7								
HCM 2010 LOS				C								
Notes												

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User approved volume balancing among the lanes for turning movement.

Intersection

Intersection Delay, s/veh 18.1

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	449	97	19	405	10	23	25	76	0	0	0
Future Vol, veh/h	4	449	97	19	405	10	23	25	76	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	449	97	19	405	10	23	25	76	0	0	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	0	0
Approach												
Opposing Approach	WB			WB			NB					
Opposing Lanes	2			1			0					
Conflicting Approach Left				NB			EB					
Conflicting Lanes Left	0			1			1					
Conflicting Approach Right	NB						WB					
Conflicting Lanes Right	1			0			2					
HCM Control Delay	20.4			17.3			10.5					
HCM LOS	C			C			B					

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	19%	1%	4%	0%
Vol Thru, %	20%	82%	96%	0%
Vol Right, %	61%	18%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	550	424	10
LT Vol	23	4	19	0
Through Vol	25	449	405	0
RT Vol	76	97	0	10
Lane Flow Rate	124	550	424	10
Geometry Grp	2	5	7	7
Degree of Util (X)	0.205	0.737	0.644	0.013
Departure Headway (Hd)	5.95	4.928	5.47	4.74
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	605	737	666	760
Service Time	3.967	2.928	3.17	2.44
HCM Lane V/C Ratio	0.205	0.746	0.637	0.013
HCM Control Delay	10.5	20.4	17.5	7.5
HCM Lane LOS	B	C	C	A
HCM 95th-tile Q	0.8	6.6	4.7	0

Intersection

Intersection Delay, s/veh 34.9

Intersection LOS D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4B			4B			4B			4B	
Traffic Vol, veh/h	85	1047	5	4	565	37	4	2	10	54	0	62
Future Vol, veh/h	85	1047	5	4	565	37	4	2	10	54	0	62
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	85	1047	5	4	565	37	4	2	10	54	0	62
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			2			2		
HCM Control Delay	47.3			16.7			10.3			11.5		
HCM LOS	E			C			B			B		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	25%	14%	0%	1%	0%	47%
Vol Thru, %	12%	86%	99%	99%	88%	0%
Vol Right, %	62%	0%	1%	0%	12%	53%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	16	609	529	287	320	116
LT Vol	4	85	0	4	0	54
Through Vol	2	524	524	283	283	0
RT Vol	10	0	5	0	37	62
Lane Flow Rate	16	608	528	286	320	116
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.031	0.996	0.854	0.517	0.568	0.215
Departure Headway (Hd)	7.013	5.892	5.814	6.491	6.401	6.684
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	510	615	624	553	562	538
Service Time	5.057	3.632	3.555	4.251	4.162	4.716
HCM Lane V/C Ratio	0.031	0.989	0.846	0.517	0.569	0.216
HCM Control Delay	10.3	59.3	33.4	16.1	17.3	11.5
HCM Lane LOS	B	F	D	C	C	B
HCM 95th-tile Q	0.1	14.9	9.5	2.9	3.5	0.8

Intersection

Intersection Delay, s/veh 29.1

Intersection LOS D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	84	381	61	100	380	49	41	32	145	12	31	13
Future Vol, veh/h	84	381	61	100	380	49	41	32	145	12	31	13
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	381	61	100	380	49	41	32	145	12	31	13
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	32.4			34			14			11.6		
HCM LOS	D			D			B			B		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	16%	19%	21%
Vol Thru, %	15%	72%	72%	55%
Vol Right, %	67%	12%	9%	23%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	218	526	529	56
LT Vol	41	84	100	12
Through Vol	32	381	380	31
RT Vol	145	61	49	13
Lane Flow Rate	218	526	529	56
Geometry Grp	1	1	1	1
Degree of Util (X)	0.4	0.844	0.857	0.117
Departure Headway (Hd)	6.601	5.774	5.829	7.492
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	543	626	624	476
Service Time	4.663	3.823	3.829	5.577
HCM Lane V/C Ratio	0.401	0.84	0.848	0.118
HCM Control Delay	14	32.4	34	11.6
HCM Lane LOS	B	D	D	B
HCM 95th-tile Q	1.9	9.2	9.6	0.4

HCM 2010 Signalized Intersection Summary  
4: Mills-Peninsula Dwy/Magnolia Av & Trousdale Dr

Cumulative AM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑	↑↑			↑	↑		↑	↑
Traffic Volume (veh/h)	140	634	100	189	422	55	29	23	103	43	60	90
Future Volume (veh/h)	140	634	100	189	422	55	29	23	103	43	60	90
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	140	634	100	189	422	55	29	23	103	43	60	90
Adj No. of Lanes	1	2	0	2	2	0	0	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	102	1082	170	198	1113	144	220	126	318	194	193	318
Arrive On Green	0.06	0.35	0.35	0.06	0.35	0.35	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1774	3065	483	3442	3152	408	291	629	1583	235	959	1583
Grp Volume(v), veh/h	140	366	368	189	236	241	52	0	103	103	0	90
Grp Sat Flow(s),veh/h/ln	1774	1770	1778	1721	1770	1791	919	0	1583	1193	0	1583
Q Serve(g_s), s	2.0	5.9	5.9	1.9	3.5	3.5	0.1	0.0	1.9	0.1	0.0	1.7
Cycle Q Clear(g_c), s	2.0	5.9	5.9	1.9	3.5	3.5	4.6	0.0	1.9	4.6	0.0	1.7
Prop In Lane	1.00		0.27	1.00		0.23	0.56		1.00	0.42		1.00
Lane Grp Cap(c), veh/h	102	625	628	198	625	632	346	0	318	387	0	318
V/C Ratio(X)	1.37	0.59	0.59	0.95	0.38	0.38	0.15	0.00	0.32	0.27	0.00	0.28
Avail Cap(c_a), veh/h	102	1323	1329	198	1323	1339	1597	0	1685	1726	0	1685
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	9.2	9.2	16.3	8.4	8.4	11.5	0.0	11.9	11.8	0.0	11.8
Incr Delay (d2), s/veh	217.6	0.9	0.9	51.0	0.4	0.4	0.2	0.0	0.6	0.4	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	3.0	3.0	2.3	1.7	1.7	0.4	0.0	0.9	0.9	0.0	0.8
LnGrp Delay(d),s/veh	233.9	10.0	10.0	67.3	8.8	8.8	11.7	0.0	12.5	12.2	0.0	12.2
LnGrp LOS	F	B	B	E	A	A	B		B	B		B
Approach Vol, veh/h		874			666			155			193	
Approach Delay, s/veh		45.9			25.4			12.2			12.2	
Approach LOS		D			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.5	16.8		11.6	6.5	16.8		11.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	2.0	26.0		37.0	2.0	26.0		37.0				
Max Q Clear Time (g_c+l1), s	3.9	7.9		6.6	4.0	5.5		6.6				
Green Ext Time (p_c), s	0.0	4.5		0.9	0.0	2.8		0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			32.5									
HCM 2010 LOS			C									

## HCM 2010 Signalized Intersection Summary

5: El Camino Real &amp; Millbrae Av

Cumulative AM

06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑↑	↑↑	↑	↑	↑↑↑	↑	↑↑↑	↑↑↑	
Traffic Volume (veh/h)	125	749	47	504	336	945	38	548	897	996	921	43
Future Volume (veh/h)	125	749	47	504	336	945	38	548	897	996	921	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.89	1.00		0.90	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	125	749	47	504	336	861	38	548	853	996	921	43
Adj No. of Lanes	1	2	0	3	2	1	1	3	1	2	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	241	926	58	862	1105	758	49	1214	637	677	2028	95
Arrive On Green	0.14	0.28	0.28	0.17	0.31	0.31	0.03	0.24	0.24	0.20	0.41	0.41
Sat Flow, veh/h	1774	3354	210	5003	3539	1430	1774	5085	1527	3442	4973	232
Grp Volume(v), veh/h	125	395	401	504	336	861	38	548	853	996	627	337
Grp Sat Flow(s), veh/h/ln	1774	1770	1795	1668	1770	1430	1774	1695	1527	1721	1695	1815
Q Serve(g_s), s	10.1	32.2	32.3	14.4	11.2	48.4	3.3	14.3	37.0	30.5	20.8	20.9
Cycle Q Clear(g_c), s	10.1	32.2	32.3	14.4	11.2	48.4	3.3	14.3	37.0	30.5	20.8	20.9
Prop In Lane	1.00		0.12	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	241	488	495	862	1105	758	49	1214	637	677	1383	740
V/C Ratio(X)	0.52	0.81	0.81	0.58	0.30	1.14	0.78	0.45	1.34	1.47	0.45	0.45
Avail Cap(c_a), veh/h	241	488	495	888	1105	758	102	1214	637	677	1383	740
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.87	0.87	0.87	0.69	0.69	0.69	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.2	52.3	52.3	59.0	40.5	39.0	74.9	50.3	45.9	62.2	33.3	33.4
Incr Delay (d2), s/veh	1.9	13.5	13.4	0.8	0.6	75.2	16.4	0.8	159.6	219.8	1.1	2.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	5.1	17.6	17.9	6.7	5.6	48.1	1.8	6.8	55.6	35.2	10.0	10.9
LnGrp Delay(d), s/veh	64.2	65.8	65.7	59.8	41.1	114.2	91.3	51.2	205.5	282.1	34.4	35.4
LnGrp LOS	E	E	E	E	D	F	F	D	F	F	C	D
Approach Vol, veh/h					1701			1439			1960	
Approach Delay, s/veh					83.6			143.7			160.4	
Approach LOS					F			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R <sub>c</sub> ), s	35.0	41.5	31.2	47.3	8.8	67.7	25.6	52.9				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	30.5	37.0	27.5	42.0	8.9	58.6	21.1	48.4				
Max Q Clear Time (g_c+l1), s	32.5	39.0	16.4	34.3	5.3	22.9	12.1	50.4				
Green Ext Time (p_c), s	0.0	0.0	1.5	3.0	0.0	7.7	0.2	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				120.2								
HCM 2010 LOS				F								
Notes												

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User approved changes to right turn type.

HCM 2010 Signalized Intersection Summary  
6: El Camino Real & Murchison Dr/Murichson Dr

Cumulative AM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑			↑↑	↑	↑	↑↑↑	↑	↑↑	↑↑↑	↑
Traffic Volume (veh/h)	332	149	56	13	85	128	50	947	31	234	1049	394
Future Volume (veh/h)	332	149	56	13	85	128	50	947	31	234	1049	394
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	332	149	56	13	85	128	50	947	31	234	1049	394
Adj No. of Lanes	1	1	0	0	2	1	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	405	295	111	51	356	179	73	1460	455	279	2053	639
Arrive On Green	0.23	0.23	0.23	0.11	0.11	0.11	0.04	0.29	0.29	0.16	0.40	0.40
Sat Flow, veh/h	1774	1292	485	456	3153	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	332	0	205	52	46	128	50	947	31	234	1049	394
Grp Sat Flow(s), veh/h/ln	1774	0	1777	1840	1770	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	14.9	0.0	8.4	2.2	2.0	6.6	2.3	13.7	1.2	10.7	13.0	16.6
Cycle Q Clear(g_c), s	14.9	0.0	8.4	2.2	2.0	6.6	2.3	13.7	1.2	10.7	13.0	16.6
Prop In Lane	1.00		0.27	0.25		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	405	0	405	208	200	179	73	1460	455	279	2053	639
V/C Ratio(X)	0.82	0.00	0.51	0.25	0.23	0.72	0.69	0.65	0.07	0.84	0.51	0.62
Avail Cap(c_a), veh/h	835	0	836	888	854	764	539	3362	1047	539	3362	1047
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.8	0.0	28.3	34.0	33.9	35.9	39.7	26.2	21.8	34.3	18.8	19.9
Incr Delay (d2), s/veh	4.2	0.0	1.0	0.6	0.6	5.3	10.9	0.5	0.1	6.6	0.2	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	7.8	0.0	4.3	1.1	1.0	3.1	1.4	6.5	0.5	5.8	6.1	7.4
LnGrp Delay(d), s/veh	34.9	0.0	29.2	34.6	34.5	41.2	50.6	26.7	21.8	40.9	19.0	20.8
LnGrp LOS	C		C	C	D	D	C	C	D	B	C	
Approach Vol, veh/h		537			226			1028			1677	
Approach Delay, s/veh		32.8			38.3			27.7			22.5	
Approach LOS		C			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	17.7	28.6		23.7	7.9	38.4		14.0				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	25.5	55.5		39.5	25.5	55.5		40.5				
Max Q Clear Time (g_c+l1), s	12.7	15.7		16.9	4.3	18.6		8.6				
Green Ext Time (p_c), s	0.5	8.4		2.2	0.1	11.6		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			26.7									
HCM 2010 LOS			C									

## HCM 2010 Signalized Intersection Summary

7: El Camino Real &amp; Trousdale Dr

Cumulative AM

06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Volume (veh/h)	282	220	231	11	196	27	269	1094	49	124	889	323
Future Volume (veh/h)	282	220	231	11	196	27	269	1094	49	124	889	323
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	244	273	231	11	196	27	269	1094	49	124	889	323
Adj No. of Lanes	1	2	0	0	2	0	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	413	442	362	21	378	54	349	1953	608	191	1500	776
Arrive On Green	0.23	0.23	0.23	0.11	0.12	0.11	0.20	0.38	0.38	0.11	0.29	0.28
Sat Flow, veh/h	1774	1899	1553	165	3039	436	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	244	268	236	123	0	111	269	1094	49	124	889	323
Grp Sat Flow(s), veh/h/ln	1774	1863	1589	1854	0	1786	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	9.7	10.2	10.6	5.0	0.0	4.6	11.4	13.4	1.6	5.3	11.9	10.4
Cycle Q Clear(g_c), s	9.7	10.2	10.6	5.0	0.0	4.6	11.4	13.4	1.6	5.3	11.9	10.4
Prop In Lane	1.00		0.98	0.09		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	413	434	370	230	0	222	349	1953	608	191	1500	776
V/C Ratio(X)	0.59	0.62	0.64	0.54	0.00	0.50	0.77	0.56	0.08	0.65	0.59	0.42
Avail Cap(c_a), veh/h	916	962	820	899	0	866	894	3874	1206	469	2658	1136
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.1	27.3	27.4	32.7	0.0	32.6	30.2	19.2	15.5	34.0	23.9	13.0
Incr Delay (d2), s/veh	1.3	1.4	1.8	1.9	0.0	1.7	3.6	0.3	0.1	3.7	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	4.9	5.5	4.9	2.7	0.0	2.4	6.0	6.3	0.7	2.8	5.6	6.4
LnGrp Delay(d), s/veh	28.4	28.7	29.3	34.6	0.0	34.4	33.8	19.4	15.6	37.7	24.3	13.3
LnGrp LOS	C	C	C	C		C	C	B	B	D	C	B
Approach Vol, veh/h	748				234			1412			1336	
Approach Delay, s/veh	28.8				34.5			22.0			22.9	
Approach LOS	C				C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	11.6	33.5		21.5	18.6	26.4		12.9				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	19.5	59.0		39.5	38.5	40.0		37.0				
Max Q Clear Time (g_c+l1), s	7.3	15.4		12.6	13.4	13.9		7.0				
Green Ext Time (p_c), s	0.2	9.9		4.3	0.8	8.1		1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay	24.5											
HCM 2010 LOS	C											
Notes												

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User approved volume balancing among the lanes for turning movement.

Intersection

Intersection Delay, s/veh 18.8  
Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	262	69	27	542	22	22	20	38	0	0	0
Future Vol, veh/h	7	262	69	27	542	22	22	20	38	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	262	69	27	542	22	22	20	38	0	0	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	0	0
Approach												
Opposing Approach	WB		EB				NB					
Opposing Lanes	2		1				0					
Conflicting Approach Left					NB		EB					
Conflicting Lanes Left	0		1				1					
Conflicting Approach Right	NB						WB					
Conflicting Lanes Right	1		0				2					
HCM Control Delay	11.8		24.1				9.8					
HCM LOS	B		C				A					

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	28%	2%	5%	0%
Vol Thru, %	25%	78%	95%	0%
Vol Right, %	47%	20%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	338	569	22
LT Vol	22	7	27	0
Through Vol	20	262	542	0
RT Vol	38	69	0	22
Lane Flow Rate	80	338	569	22
Geometry Grp	2	5	7	7
Degree of Util (X)	0.129	0.453	0.798	0.026
Departure Headway (Hd)	5.805	4.82	5.049	4.32
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	612	744	717	824
Service Time	3.893	2.876	2.8	2.072
HCM Lane V/C Ratio	0.131	0.454	0.794	0.027
HCM Control Delay	9.8	11.8	24.8	7.2
HCM Lane LOS	A	B	C	A
HCM 95th-tile Q	0.4	2.4	8.1	0.1

Intersection

Intersection Delay, s/veh 13.6

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	563	5	2	615	45	9	1	9	35	0	61
Future Vol, veh/h	34	563	5	2	615	45	9	1	9	35	0	61
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	563	5	2	615	45	9	1	9	35	0	61
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Approach												
Opposing Approach	WB			WB			NB			SB		
Opposing Lanes	2			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			2			2		
HCM Control Delay	13.6			14.1			9.8			10.4		
HCM LOS	B			B			A			B		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	47%	11%	0%	1%	0%	36%
Vol Thru, %	5%	89%	98%	99%	87%	0%
Vol Right, %	47%	0%	2%	0%	13%	64%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	19	316	287	310	353	96
LT Vol	9	34	0	2	0	35
Through Vol	1	282	282	308	308	0
RT Vol	9	0	5	0	45	61
Lane Flow Rate	19	316	286	310	352	96
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.035	0.502	0.451	0.483	0.541	0.164
Departure Headway (Hd)	6.545	5.731	5.664	5.621	5.528	6.167
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	547	631	636	644	652	582
Service Time	4.584	3.457	3.39	3.346	3.253	4.199
HCM Lane V/C Ratio	0.035	0.501	0.45	0.481	0.54	0.165
HCM Control Delay	9.8	14.1	13	13.5	14.6	10.4
HCM Lane LOS	A	B	B	B	B	B
HCM 95th-tile Q	0.1	2.8	2.3	2.6	3.3	0.6

Intersection

Intersection Delay, s/veh 36.8

Intersection LOS E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	4		4	4		4			4	4
Traffic Vol, veh/h	49	237	13	21	426	18	73	33	142	106	168	93
Future Vol, veh/h	49	237	13	21	426	18	73	33	142	106	168	93
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	237	13	21	426	18	73	33	142	106	168	93
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB		WB			NB			SB			
Opposing Approach	WB		EB			SB			NB			
Opposing Lanes	1		1			1			1			
Conflicting Approach Left	SB		NB			EB			WB			
Conflicting Lanes Left	1		1			1			1			
Conflicting Approach Right	NB		SB			WB			EB			
Conflicting Lanes Right	1		1			1			1			
HCM Control Delay	24.9		56.4			20.2			32.9			
HCM LOS	C		F			C			D			

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	16%	5%	29%
Vol Thru, %	13%	79%	92%	46%
Vol Right, %	57%	4%	4%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	248	299	465	367
LT Vol	73	49	21	106
Through Vol	33	237	426	168
RT Vol	142	13	18	93
Lane Flow Rate	248	299	465	367
Geometry Grp	1	1	1	1
Degree of Util (X)	0.546	0.656	0.949	0.779
Departure Headway (Hd)	7.931	7.893	7.35	7.646
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	454	457	493	473
Service Time	6.014	5.971	5.417	5.716
HCM Lane V/C Ratio	0.546	0.654	0.943	0.776
HCM Control Delay	20.2	24.9	56.4	32.9
HCM Lane LOS	C	C	F	D
HCM 95th-tile Q	3.2	4.6	11.7	6.9

HCM 2010 Signalized Intersection Summary  
4: Mills-Peninsula Dwy/Magnolia Av & Trousdale Dr

Cumulative PM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑	↑↑			↑	↑		↑	↑
Traffic Volume (veh/h)	118	571	30	94	615	79	106	50	215	43	26	133
Future Volume (veh/h)	118	571	30	94	615	79	106	50	215	43	26	133
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	118	571	30	94	615	79	106	50	215	43	26	133
Adj No. of Lanes	1	2	0	2	2	0	0	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	50	872	46	98	804	103	90	27	831	87	34	831
Arrive On Green	0.03	0.25	0.25	0.03	0.25	0.25	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1774	3421	180	3442	3156	405	8	51	1583	7	65	1583
Grp Volume(v), veh/h	118	295	306	94	344	350	156	0	215	69	0	133
Grp Sat Flow(s),veh/h/ln	1774	1770	1831	1721	1770	1791	59	0	1583	72	0	1583
Q Serve(g_s), s	2.0	10.5	10.5	1.9	12.7	12.7	0.3	0.0	5.2	0.3	0.0	3.1
Cycle Q Clear(g_c), s	2.0	10.5	10.5	1.9	12.7	12.7	36.9	0.0	5.2	36.9	0.0	3.1
Prop In Lane	1.00		0.10	1.00		0.23	0.68		1.00	0.62		1.00
Lane Grp Cap(c), veh/h	50	451	466	98	451	456	117	0	831	121	0	831
V/C Ratio(X)	2.34	0.65	0.66	0.96	0.76	0.77	1.33	0.00	0.26	0.57	0.00	0.16
Avail Cap(c_a), veh/h	50	655	677	98	655	663	119	0	833	123	0	833
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.1	23.4	23.4	34.1	24.2	24.3	27.4	0.0	9.2	18.3	0.0	8.7
Incr Delay (d2), s/veh	658.9	1.6	1.6	77.7	3.2	3.3	196.9	0.0	0.2	6.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	5.3	5.5	2.0	6.5	6.6	8.6	0.0	2.3	1.5	0.0	1.3
LnGrp Delay(d),s/veh	693.1	25.0	25.0	111.8	27.5	27.5	224.3	0.0	9.3	24.3	0.0	8.8
LnGrp LOS	F	C	C	F	C	C	F		A	C		A
Approach Vol, veh/h		719			788			371		202		
Approach Delay, s/veh		134.7			37.5			99.7		14.1		
Approach LOS		F			D			F		B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	6.5	22.5		41.4	6.5	22.5		41.4				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	2.0	26.0		37.0	2.0	26.0		37.0				
Max Q Clear Time (g_c+l1), s	3.9	12.5		38.9	4.0	14.7		38.9				
Green Ext Time (p_c), s	0.0	3.1		0.0	0.0	3.3		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			79.9									
HCM 2010 LOS			E									

## HCM 2010 Signalized Intersection Summary

5: El Camino Real &amp; Millbrae Av

Cumulative PM

06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑↑	↑↑	↑	↑	↑↑↑	↑	↑↑↑	↑↑↑	
Traffic Volume (veh/h)	137	355	40	641	702	1245	66	741	762	819	871	70
Future Volume (veh/h)	137	355	40	641	702	1245	66	741	762	819	871	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.89	1.00		0.90	1.00		0.96	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	137	355	40	641	702	1161	66	741	718	819	871	70
Adj No. of Lanes	1	2	0	3	2	1	1	3	1	2	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	858	95	631	1087	831	84	1214	564	854	2106	169
Arrive On Green	0.09	0.27	0.27	0.13	0.31	0.31	0.05	0.24	0.24	0.25	0.44	0.44
Sat Flow, veh/h	1774	3166	352	5003	3539	1427	1774	5085	1527	3442	4790	384
Grp Volume(v), veh/h	137	197	198	641	702	1161	66	741	718	819	615	326
Grp Sat Flow(s), veh/h/ln	1774	1770	1748	1668	1770	1427	1774	1695	1527	1721	1695	1784
Q Serve(g_s), s	11.8	14.1	14.5	19.6	26.6	47.6	5.7	20.1	37.0	36.4	19.3	19.4
Cycle Q Clear(g_c), s	11.8	14.1	14.5	19.6	26.6	47.6	5.7	20.1	37.0	36.4	19.3	19.4
Prop In Lane	1.00		0.20	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	160	480	474	631	1087	831	84	1214	564	854	1491	784
V/C Ratio(X)	0.86	0.41	0.42	1.02	0.65	1.40	0.79	0.61	1.27	0.96	0.41	0.42
Avail Cap(c_a), veh/h	207	480	474	631	1087	831	141	1214	564	855	1491	784
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.62	0.62	0.62	0.65	0.65	0.65	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.6	46.3	46.5	67.7	46.4	35.6	73.1	52.6	49.5	57.5	29.7	29.8
Incr Delay (d2), s/veh	23.4	2.6	2.7	32.0	1.8	183.2	10.3	1.5	131.6	21.4	0.8	1.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	6.8	7.2	7.4	10.9	13.2	77.6	3.0	9.6	44.8	19.8	9.2	9.9
LnGrp Delay(d), s/veh	93.0	48.9	49.2	99.8	48.2	218.8	83.4	54.1	181.1	79.0	30.6	31.4
LnGrp LOS	F	D	D	F	D	F	F	D	F	E	C	C
Approach Vol, veh/h		532			2504			1525			1760	
Approach Delay, s/veh		60.4			140.5			115.2			53.2	
Approach LOS		E			F			F			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R <sub>c</sub> ), s	42.9	41.5	24.1	46.5	11.8	72.6	18.4	52.1				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	38.5	37.0	19.5	42.0	12.3	63.2	18.1	43.4				
Max Q Clear Time (g <sub>c</sub> +l1), s	38.4	39.0	21.6	16.5	7.7	21.4	13.8	49.6				
Green Ext Time (p <sub>c</sub> ), s	0.0	0.0	0.0	2.4	0.0	7.7	0.1	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				103.3								
HCM 2010 LOS				F								
Notes												

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User approved changes to right turn type.

HCM 2010 Signalized Intersection Summary  
6: El Camino Real & Murchison Dr

Cumulative PM  
06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑			↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	296	103	86	40	113	220	89	963	52	273	1284	263
Future Volume (veh/h)	296	103	86	40	113	220	89	963	52	273	1284	263
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	296	103	86	40	113	220	89	963	52	273	1284	263
Adj No. of Lanes	1	1	0	0	2	1	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	357	189	158	148	447	263	115	1367	426	316	1943	605
Arrive On Green	0.20	0.20	0.20	0.17	0.17	0.17	0.06	0.27	0.27	0.18	0.38	0.38
Sat Flow, veh/h	1774	940	785	892	2695	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	296	0	189	81	72	220	89	963	52	273	1284	263
Grp Sat Flow(s), veh/h/ln	1774	0	1724	1818	1770	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	15.5	0.0	9.5	3.8	3.4	13.0	4.8	16.5	2.4	14.5	20.2	11.9
Cycle Q Clear(g_c), s	15.5	0.0	9.5	3.8	3.4	13.0	4.8	16.5	2.4	14.5	20.2	11.9
Prop In Lane	1.00		0.46	0.49		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	357	0	347	302	294	263	115	1367	426	316	1943	605
V/C Ratio(X)	0.83	0.00	0.54	0.27	0.24	0.84	0.78	0.70	0.12	0.86	0.66	0.43
Avail Cap(c_a), veh/h	724	0	703	441	429	384	284	2179	679	687	3335	1038
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	0.0	34.7	35.3	35.1	39.1	44.6	31.9	26.8	38.7	24.7	22.2
Incr Delay (d2), s/veh	4.9	0.0	1.3	0.5	0.4	10.2	10.6	0.7	0.1	7.0	0.4	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	8.1	0.0	4.6	1.9	1.7	6.4	2.7	7.8	1.1	7.7	9.5	5.3
LnGrp Delay(d), s/veh	42.0	0.0	36.0	35.7	35.5	49.3	55.2	32.6	26.9	45.7	25.1	22.7
LnGrp LOS	D		D	D	D	D	E	C	C	D	C	C
Approach Vol, veh/h		485			373			1104			1820	
Approach Delay, s/veh		39.7			43.7			34.2			27.9	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	21.7	30.5		24.0	10.8	41.5		20.6				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	37.5	41.5		39.5	15.5	63.5		23.5				
Max Q Clear Time (g_c+l1), s	16.5	18.5		17.5	6.8	22.2		15.0				
Green Ext Time (p_c), s	0.8	7.5		2.0	0.1	14.4		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			32.8									
HCM 2010 LOS			C									

## HCM 2010 Signalized Intersection Summary

7: El Camino Real &amp; Trousdale Dr

Cumulative PM

06/10/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↔↑			↔↑		↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	250	184	239	22	229	115	267	986	24	113	1247	277
Future Volume (veh/h)	250	184	239	22	229	115	267	986	24	113	1247	277
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	224	220	239	22	229	115	267	986	10	113	1247	277
Adj No. of Lanes	1	2	0	0	2	0	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	367	385	328	32	337	176	325	2210	688	165	1751	873
Arrive On Green	0.21	0.21	0.21	0.14	0.16	0.14	0.18	0.43	0.43	0.09	0.34	0.34
Sat Flow, veh/h	1774	1863	1583	206	2172	1136	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	224	220	239	198	0	168	267	986	10	113	1247	277
Grp Sat Flow(s), veh/h/ln	1774	1863	1583	1852	0	1662	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	12.4	11.5	15.3	11.0	0.0	10.4	15.7	14.7	0.4	6.7	23.1	10.3
Cycle Q Clear(g_c), s	12.4	11.5	15.3	11.0	0.0	10.4	15.7	14.7	0.4	6.7	23.1	10.3
Prop In Lane	1.00		1.00	0.11		0.68	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	367	385	328	287	0	258	325	2210	688	165	1751	873
V/C Ratio(X)	0.61	0.57	0.73	0.69	0.00	0.65	0.82	0.45	0.01	0.69	0.71	0.32
Avail Cap(c_a), veh/h	630	662	562	658	0	590	556	3040	946	314	2346	1058
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.0	38.7	40.2	43.4	0.0	43.6	42.6	21.5	17.4	47.6	30.9	13.2
Incr Delay (d2), s/veh	1.6	1.3	3.1	2.9	0.0	2.8	5.2	0.1	0.0	5.0	0.7	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	6.3	6.1	7.0	5.8	0.0	4.9	8.2	6.9	0.2	3.5	10.8	6.6
LnGrp Delay(d), s/veh	40.7	40.0	43.3	46.3	0.0	46.3	47.8	21.6	17.4	52.7	31.5	13.4
LnGrp LOS	D	D	D	D		D	D	C	B	D	C	B
Approach Vol, veh/h		683			366			1263			1637	
Approach Delay, s/veh		41.4			46.3			27.1			29.9	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	13.1	50.1		25.4	22.8	40.3		19.8				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	17.7	63.3		37.0	32.5	48.5		37.0				
Max Q Clear Time (g_c+l1), s	8.7	16.7		17.3	17.7	25.1		13.0				
Green Ext Time (p_c), s	0.2	8.5		3.6	0.7	10.7		2.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			32.5									
HCM 2010 LOS			C									
Notes												

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User approved volume balancing among the lanes for turning movement.

Intersection

Intersection Delay, s/veh 13.1

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	376	79	0	339	8	19	21	64	0	0	0
Future Vol, veh/h	3	376	79	0	339	8	19	21	64	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	376	79	0	339	8	19	21	64	0	0	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	0	0
Approach												
Opposing Approach	WB			EB			NB					
Opposing Lanes	2			1			0					
Conflicting Approach Left							NB			EB		
Conflicting Lanes Left	0			1			1					
Conflicting Approach Right	NB						WB					
Conflicting Lanes Right	1						0			2		
HCM Control Delay	14.2			12.7			9.5					
HCM LOS	B			B			A					

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	18%	1%	0%	0%
Vol Thru, %	20%	82%	100%	0%
Vol Right, %	62%	17%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	104	458	339	8
LT Vol	19	3	0	0
Through Vol	21	376	339	0
RT Vol	64	79	0	8
Lane Flow Rate	104	458	339	8
Geometry Grp	2	5	7	7
Degree of Util (X)	0.156	0.589	0.487	0.01
Departure Headway (Hd)	5.415	4.628	5.171	4.465
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	656	774	695	796
Service Time	3.499	2.679	2.928	2.222
HCM Lane V/C Ratio	0.159	0.592	0.488	0.01
HCM Control Delay	9.5	14.2	12.8	7.3
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.6	3.9	2.7	0

Intersection

Intersection Delay, s/veh 18.6

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	67	877	4	3	473	22	3	2	8	45	0	52
Future Vol, veh/h	67	877	4	3	473	22	3	2	8	45	0	52
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	877	4	3	473	22	3	2	8	45	0	52
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Approach												
Opposing Approach	WB			WB			NB			SB		
Opposing Lanes	2			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			2			2		
HCM Control Delay	22.5			13			9.8			10.7		
HCM LOS	C			B			A			B		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	23%	13%	0%	1%	0%	46%
Vol Thru, %	15%	87%	99%	99%	91%	0%
Vol Right, %	62%	0%	1%	0%	9%	54%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	13	506	443	240	259	97
LT Vol	3	67	0	3	0	45
Through Vol	2	439	439	237	237	0
RT Vol	8	0	4	0	22	52
Lane Flow Rate	13	506	442	240	258	97
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.024	0.784	0.677	0.402	0.43	0.172
Departure Headway (Hd)	6.598	5.58	5.507	6.05	5.984	6.385
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	543	652	659	594	602	563
Service Time	4.636	3.304	3.231	3.786	3.72	4.415
HCM Lane V/C Ratio	0.024	0.776	0.671	0.404	0.429	0.172
HCM Control Delay	9.8	25.6	19	12.8	13.2	10.7
HCM Lane LOS	A	D	C	B	B	B
HCM 95th-tile Q	0.1	7.6	5.2	1.9	2.2	0.6

Intersection

Intersection Delay, s/veh 15.5

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	70	319	51	84	299	41	34	27	121	10	26	9
Future Vol, veh/h	70	319	51	84	299	41	34	27	121	10	26	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	319	51	84	299	41	34	27	121	10	26	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach												
Opposing Approach	WB			WB			NB			SB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	16.9			16.4			11.3			10.1		
HCM LOS	C			C			B			B		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	16%	20%	22%
Vol Thru, %	15%	72%	71%	58%
Vol Right, %	66%	12%	10%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	182	440	424	45
LT Vol	34	70	84	10
Through Vol	27	319	299	26
RT Vol	121	51	41	9
Lane Flow Rate	182	440	424	45
Geometry Grp	1	1	1	1
Degree of Util (X)	0.295	0.636	0.617	0.081
Departure Headway (Hd)	5.831	5.202	5.24	6.481
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	613	691	687	549
Service Time	3.892	3.246	3.285	4.56
HCM Lane V/C Ratio	0.297	0.637	0.617	0.082
HCM Control Delay	11.3	16.9	16.4	10.1
HCM Lane LOS	B	C	C	B
HCM 95th-tile Q	1.2	4.6	4.3	0.3

HCM 2010 Signalized Intersection Summary  
4: Mills-Peninsula Dwy/Magnolia Av & Trousdale Dr

Existing + Project AM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑ ↗	↑ ↘		↑ ↗	↑ ↘		↑ ↗	↑ ↘		↑ ↗	↑ ↘	
Traffic Volume (veh/h)	117	531	84	158	344	46	24	19	86	36	50	75
Future Volume (veh/h)	117	531	84	158	344	46	24	19	86	36	50	75
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A <sub>pbT</sub> )	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	117	531	84	158	344	46	24	19	86	36	50	75
Adj No. of Lanes	1	2	0	2	2	0	0	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	118	1017	160	229	1042	138	275	153	240	245	174	240
Arrive On Green	0.07	0.33	0.33	0.07	0.33	0.33	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1774	3064	483	3442	3142	417	580	1006	1583	492	1149	1583
Grp Volume(v), veh/h	117	306	309	158	193	197	43	0	86	86	0	75
Grp Sat Flow(s),veh/h/ln	1774	1770	1778	1721	1770	1789	1586	0	1583	1641	0	1583
Q Serve(g_s), s	2.0	4.2	4.2	1.3	2.4	2.5	0.0	0.0	1.5	0.1	0.0	1.3
Cycle Q Clear(g_c), s	2.0	4.2	4.2	1.3	2.4	2.5	0.6	0.0	1.5	1.3	0.0	1.3
Prop In Lane	1.00		0.27	1.00		0.23	0.56		1.00	0.42		1.00
Lane Grp Cap(c), veh/h	118	587	590	229	587	594	428	0	240	419	0	240
V/C Ratio(X)	0.99	0.52	0.52	0.69	0.33	0.33	0.10	0.00	0.36	0.21	0.00	0.31
Avail Cap(c_a), veh/h	118	1533	1540	229	1533	1550	2018	0	1952	2113	0	1952
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.0	8.1	8.1	13.7	7.5	7.5	11.1	0.0	11.4	11.3	0.0	11.3
Incr Delay (d2), s/veh	79.4	0.7	0.7	8.4	0.3	0.3	0.1	0.0	0.9	0.2	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	2.2	2.2	0.9	1.2	1.3	0.3	0.0	0.7	0.6	0.0	0.6
LnGrp Delay(d),s/veh	93.4	8.8	8.8	22.1	7.8	7.9	11.2	0.0	12.3	11.6	0.0	12.1
LnGrp LOS	F	A	A	C	A	A	B		B	B		B
Approach Vol, veh/h		732			548			129			161	
Approach Delay, s/veh		22.3			12.0			11.9			11.8	
Approach LOS		C			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	6.5	14.5		9.1	6.5	14.5		9.1				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	2.0	26.0		37.0	2.0	26.0		37.0				
Max Q Clear Time (g_c+l1), s	3.3	6.2		3.3	4.0	4.5		3.5				
Green Ext Time (p_c), s	0.0	3.7		0.7	0.0	2.3		0.5				
Intersection Summary												
HCM 2010 Ctrl Delay				16.8								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary  
5: El Camino Real & Millbrae Av

Existing + Project AM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑↑	↑↑	↑	↑	↑↑↑	↑	↑↑↑	↑↑↑	
Traffic Volume (veh/h)	108	648	45	347	295	755	31	431	715	798	779	36
Future Volume (veh/h)	108	648	45	347	295	755	31	431	715	798	779	36
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.90	1.00		0.91	1.00		0.96	1.00	0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	108	648	45	347	295	671	31	431	671	798	779	36
Adj No. of Lanes	1	2	0	3	2	1	1	3	1	2	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	223	1026	71	702	1142	774	42	1214	587	677	2049	94
Arrive On Green	0.13	0.31	0.31	0.14	0.32	0.32	0.02	0.24	0.24	0.20	0.41	0.41
Sat Flow, veh/h	1774	3331	231	5003	3539	1435	1774	5085	1527	3442	4976	229
Grp Volume(v), veh/h	108	344	349	347	295	671	31	431	671	798	530	285
Grp Sat Flow(s), veh/h/ln	1774	1770	1792	1668	1770	1435	1774	1695	1527	1721	1695	1815
Q Serve(g_s), s	8.8	25.9	26.0	9.9	9.5	50.0	2.7	10.9	37.0	30.5	16.9	17.0
Cycle Q Clear(g_c), s	8.8	25.9	26.0	9.9	9.5	50.0	2.7	10.9	37.0	30.5	16.9	17.0
Prop In Lane	1.00			0.13	1.00		1.00	1.00		1.00	1.00	0.13
Lane Grp Cap(c), veh/h	223	545	552	702	1142	774	42	1214	587	677	1396	747
V/C Ratio(X)	0.48	0.63	0.63	0.49	0.26	0.87	0.74	0.36	1.14	1.18	0.38	0.38
Avail Cap(c_a), veh/h	223	545	552	888	1142	774	80	1214	587	677	1396	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.87	0.87	0.87	0.78	0.78	0.78	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.1	46.0	46.1	61.6	38.8	33.5	75.2	49.1	48.4	62.2	31.8	31.8
Incr Delay (d2), s/veh	1.6	5.5	5.4	0.5	0.5	11.1	17.4	0.6	80.1	95.1	0.8	1.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	4.4	13.4	13.7	4.6	4.7	27.8	1.5	5.2	38.2	23.4	8.0	8.9
LnGrp Delay(d), s/veh	64.7	51.5	51.5	62.0	39.3	44.5	92.6	49.7	128.5	157.3	32.6	33.3
LnGrp LOS	E	D	D	E	D	D	F	D	F	F	C	C
Approach Vol, veh/h		801			1313			1133			1613	
Approach Delay, s/veh		53.3			48.0			97.5			94.4	
Approach LOS		D			D			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R <sub>c</sub> ), s	35.0	41.5	26.2	52.3	8.2	68.3	24.0	54.5				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	30.5	37.0	27.5	42.0	7.0	60.5	19.5	50.0				
Max Q Clear Time (g_c+l1), s	32.5	39.0	11.9	28.0	4.7	19.0	10.8	52.0				
Green Ext Time (p_c), s	0.0	0.0	1.1	3.7	0.0	6.3	0.1	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				75.8								
HCM 2010 LOS				E								
Notes												

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User approved changes to right turn type.

HCM 2010 Signalized Intersection Summary  
6: El Camino Real & Murchison Dr/Murichson Dr

Existing + Project AM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑		↑↑	↑	↑	↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	278	125	47	11	71	107	42	793	26	196	878	311
Future Volume (veh/h)	278	125	47	11	71	107	42	793	26	196	878	311
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	278	125	47	11	71	107	42	793	26	196	878	311
Adj No. of Lanes	1	1	0	0	2	1	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	367	268	101	48	329	166	73	1374	428	250	1882	586
Arrive On Green	0.21	0.21	0.21	0.10	0.10	0.10	0.04	0.27	0.27	0.14	0.37	0.37
Sat Flow, veh/h	1774	1291	486	461	3148	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	278	0	172	44	38	107	42	793	26	196	878	311
Grp Sat Flow(s), veh/h/ln	1774	0	1777	1840	1770	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	9.6	0.0	5.5	1.4	1.3	4.2	1.5	8.7	0.8	6.9	8.5	10.0
Cycle Q Clear(g_c), s	9.6	0.0	5.5	1.4	1.3	4.2	1.5	8.7	0.8	6.9	8.5	10.0
Prop In Lane	1.00		0.27	0.25		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	367	0	368	192	185	166	73	1374	428	250	1882	586
V/C Ratio(X)	0.76	0.00	0.47	0.23	0.21	0.65	0.58	0.58	0.06	0.79	0.47	0.53
Avail Cap(c_a), veh/h	1080	0	1082	1148	1104	988	697	4349	1354	697	4349	1354
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	0.0	22.6	26.7	26.6	27.9	30.6	20.5	17.6	26.9	15.6	16.0
Incr Delay (d2), s/veh	3.2	0.0	0.9	0.6	0.5	4.2	7.1	0.4	0.1	5.4	0.2	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	5.0	0.0	2.8	0.8	0.7	2.0	0.9	4.1	0.4	3.8	4.0	4.4
LnGrp Delay(d), s/veh	27.4	0.0	23.5	27.3	27.1	32.1	37.7	20.9	17.6	32.3	15.7	16.8
LnGrp LOS	C		C	C	C	C	D	C	B	C	B	B
Approach Vol, veh/h		450			189			861			1385	
Approach Delay, s/veh		25.9			30.0			21.6			18.3	
Approach LOS		C			C			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	13.6	22.0		17.9	7.2	28.5		11.3				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	25.5	55.5		39.5	25.5	55.5		40.5				
Max Q Clear Time (g_c+l1), s	8.9	10.7		11.6	3.5	12.0		6.2				
Green Ext Time (p_c), s	0.5	6.8		1.9	0.1	9.2		0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			21.2									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary  
7: El Camino Real & Trousdale Dr

Existing + Project AM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↔	↓	↙	↔	↑	↑	↔	↑	↑	↔	↑
Traffic Volume (veh/h)	192	190	218	11	163	33	246	490	51	115	620	195
Future Volume (veh/h)	192	190	218	11	163	33	246	490	51	115	620	195
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A <sub>pbT</sub> )	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	192	190	218	11	163	33	246	490	51	115	620	195
Adj No. of Lanes	1	2	0	0	2	0	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	418	439	373	24	367	77	347	1682	524	193	1241	682
Arrive On Green	0.24	0.24	0.24	0.11	0.13	0.11	0.20	0.33	0.33	0.11	0.24	0.22
Sat Flow, veh/h	1774	1863	1583	186	2830	595	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	192	190	218	109	0	98	246	490	51	115	620	195
Grp Sat Flow(s), veh/h/ln	1774	1863	1583	1853	0	1758	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	5.7	5.3	7.5	3.4	0.0	3.2	8.0	4.4	1.4	3.8	6.5	4.9
Cycle Q Clear(g_c), s	5.7	5.3	7.5	3.4	0.0	3.2	8.0	4.4	1.4	3.8	6.5	4.9
Prop In Lane	1.00		1.00	0.10		0.34	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	418	439	373	240	0	228	347	1682	524	193	1241	682
V/C Ratio(X)	0.46	0.43	0.58	0.46	0.00	0.43	0.71	0.29	0.10	0.60	0.50	0.29
Avail Cap(c_a), veh/h	1241	1303	1107	1206	0	1144	1241	4549	1416	664	2895	1197
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.1	20.0	20.8	24.8	0.0	24.9	23.1	15.2	14.2	26.1	20.0	11.4
Incr Delay (d2), s/veh	0.8	0.7	1.5	1.3	0.0	1.3	2.7	0.1	0.1	2.9	0.3	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	2.9	2.8	3.4	1.8	0.0	1.6	4.2	2.1	0.6	2.0	3.0	3.0
LnGrp Delay(d), s/veh	20.9	20.7	22.3	26.2	0.0	26.2	25.8	15.3	14.3	29.1	20.3	11.6
LnGrp LOS	C	C	C	C		C	C	B	B	C	C	B
Approach Vol, veh/h	600				207			787			930	
Approach Delay, s/veh	21.3				26.2			18.5			19.6	
Approach LOS	C				C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	9.7	23.3		17.5	15.0	18.0		11.0				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	21.5	53.5		41.5	41.5	33.5		38.5				
Max Q Clear Time (g_c+l1), s	5.8	6.4		9.5	10.0	8.5		5.4				
Green Ext Time (p_c), s	0.2	3.8		3.5	0.7	5.0		1.3				
Intersection Summary												
HCM 2010 Ctrl Delay				20.2								
HCM 2010 LOS				C								
Notes												

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User approved volume balancing among the lanes for turning movement.

Intersection

Intersection Delay, s/veh 13.3

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	223	57	2	462	19	19	17	32	0	0	0
Future Vol, veh/h	6	223	57	2	462	19	19	17	32	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	223	57	2	462	19	19	17	32	0	0	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	0	0
Approach	EB			WB			NB					
Opposing Approach		WB			EB							
Opposing Lanes		2			1			0				
Conflicting Approach Left					NB			EB				
Conflicting Lanes Left		0			1			1				
Conflicting Approach Right			NB					WB				
Conflicting Lanes Right		1			0			2				
HCM Control Delay		10.4			15.6			9.1				
HCM LOS		B			C			A				

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	28%	2%	0%	0%
Vol Thru, %	25%	78%	100%	0%
Vol Right, %	47%	20%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	68	286	464	19
LT Vol	19	6	2	0
Through Vol	17	223	462	0
RT Vol	32	57	0	19
Lane Flow Rate	68	286	464	19
Geometry Grp	2	5	7	7
Degree of Util (X)	0.103	0.369	0.636	0.022
Departure Headway (Hd)	5.449	4.643	4.932	4.227
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	655	772	733	845
Service Time	3.508	2.68	2.667	1.961
HCM Lane V/C Ratio	0.104	0.37	0.633	0.022
HCM Control Delay	9.1	10.4	15.9	7.1
HCM Lane LOS	A	B	C	A
HCM 95th-tile Q	0.3	1.7	4.6	0.1

Intersection

Intersection Delay, s/veh 11.4

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	480	4	2	524	29	8	1	8	30	0	52
Future Vol, veh/h	25	480	4	2	524	29	8	1	8	30	0	52
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	480	4	2	524	29	8	1	8	30	0	52
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Approach												
Opposing Approach	WB			WB			NB			SB		
Opposing Lanes	2			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			2			2		
HCM Control Delay	11.5			11.7			9.3			9.7		
HCM LOS	B			B			A			A		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	47%	9%	0%	1%	0%	37%
Vol Thru, %	6%	91%	98%	99%	90%	0%
Vol Right, %	47%	0%	2%	0%	10%	63%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	17	265	244	264	291	82
LT Vol	8	25	0	2	0	30
Through Vol	1	240	240	262	262	0
RT Vol	8	0	4	0	29	52
Lane Flow Rate	17	265	244	264	291	82
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.029	0.398	0.362	0.39	0.424	0.131
Departure Headway (Hd)	6.151	5.407	5.348	5.323	5.249	5.749
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	585	660	666	671	681	617
Service Time	4.151	3.187	3.128	3.1	3.026	3.847
HCM Lane V/C Ratio	0.029	0.402	0.366	0.393	0.427	0.133
HCM Control Delay	9.3	11.8	11.2	11.5	11.9	9.7
HCM Lane LOS	A	B	B	B	B	A
HCM 95th-tile Q	0.1	1.9	1.7	1.9	2.1	0.4

Intersection

Intersection Delay, s/veh 16.8

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	4		4	4		4		4	4	4
Traffic Vol, veh/h	42	202	11	18	344	15	62	28	121	90	143	77
Future Vol, veh/h	42	202	11	18	344	15	62	28	121	90	143	77
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	202	11	18	344	15	62	28	121	90	143	77
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	14.9			20			13.3			16.8		
HCM LOS	B			C			B			C		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	16%	5%	29%
Vol Thru, %	13%	79%	91%	46%
Vol Right, %	57%	4%	4%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	211	255	377	310
LT Vol	62	42	18	90
Through Vol	28	202	344	143
RT Vol	121	11	15	77
Lane Flow Rate	211	255	377	310
Geometry Grp	1	1	1	1
Degree of Util (X)	0.375	0.458	0.647	0.546
Departure Headway (Hd)	6.405	6.465	6.181	6.34
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	559	556	584	567
Service Time	4.476	4.532	4.239	4.402
HCM Lane V/C Ratio	0.377	0.459	0.646	0.547
HCM Control Delay	13.3	14.9	20	16.8
HCM Lane LOS	B	B	C	C
HCM 95th-tile Q	1.7	2.4	4.6	3.3

HCM 2010 Signalized Intersection Summary  
4: Mills-Peninsula Dwy/Magnolia Av & Trousdale Dr

Existing + Prj PM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑	↑↑			↑	↑		↑	↑
Traffic Volume (veh/h)	101	487	26	80	515	67	90	43	183	37	22	113
Future Volume (veh/h)	101	487	26	80	515	67	90	43	183	37	22	113
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	101	487	26	80	515	67	90	43	183	37	22	113
Adj No. of Lanes	1	2	0	2	2	0	0	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	57	775	41	112	715	93	121	40	827	113	47	827
Arrive On Green	0.03	0.23	0.23	0.03	0.23	0.23	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1774	3418	182	3442	3152	409	44	76	1583	34	89	1583
Grp Volume(v), veh/h	101	252	261	80	288	294	133	0	183	59	0	113
Grp Sat Flow(s),veh/h/ln	1774	1770	1831	1721	1770	1791	120	0	1583	123	0	1583
Q Serve(g_s), s	2.0	7.9	7.9	1.4	9.3	9.4	1.5	0.0	3.9	1.3	0.0	2.3
Cycle Q Clear(g_c), s	2.0	7.9	7.9	1.4	9.3	9.4	32.2	0.0	3.9	32.2	0.0	2.3
Prop In Lane	1.00		0.10	1.00		0.23	0.68		1.00	0.63		1.00
Lane Grp Cap(c), veh/h	57	401	415	112	401	406	160	0	827	159	0	827
V/C Ratio(X)	1.76	0.63	0.63	0.72	0.72	0.72	0.83	0.00	0.22	0.37	0.00	0.14
Avail Cap(c_a), veh/h	57	745	771	112	745	754	268	0	949	263	0	949
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.9	21.5	21.5	29.6	22.0	22.1	23.8	0.0	8.0	14.8	0.0	7.6
Incr Delay (d2), s/veh	402.3	1.6	1.6	19.8	2.4	2.5	10.4	0.0	0.1	1.4	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.4	4.0	4.2	1.0	4.8	4.8	2.7	0.0	1.7	0.6	0.0	1.0
LnGrp Delay(d),s/veh	432.2	23.1	23.1	49.3	24.5	24.5	34.2	0.0	8.1	16.2	0.0	7.7
LnGrp LOS	F	C	C	D	C	C	C		A	B		A
Approach Vol, veh/h		614			662			316		172		
Approach Delay, s/veh		90.4			27.5			19.1		10.6		
Approach LOS		F			C			B		B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	6.5	18.7		37.9	6.5	18.7		37.9				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	2.0	26.0		37.0	2.0	26.0		37.0				
Max Q Clear Time (g_c+l1), s	3.4	9.9		34.2	4.0	11.4		34.2				
Green Ext Time (p_c), s	0.0	2.8		0.2	0.0	3.1		0.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay		46.2										
HCM 2010 LOS		D										

HCM 2010 Signalized Intersection Summary  
5: El Camino Real & Millbrae Av

Existing + Prj PM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑↑	↑↑	↑	↑	↑↑↑	↑	↑↑↑	↑↑↑	
Traffic Volume (veh/h)	127	319	36	496	648	1055	58	666	599	642	767	58
Future Volume (veh/h)	127	319	36	496	648	1055	58	666	599	642	767	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.89	1.00		0.90	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	127	319	36	496	648	971	58	666	555	642	767	58
Adj No. of Lanes	1	2	0	3	2	1	1	3	1	2	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	199	858	95	698	1056	752	74	1355	629	712	2079	156
Arrive On Green	0.11	0.27	0.27	0.14	0.30	0.30	0.04	0.27	0.27	0.21	0.43	0.43
Sat Flow, veh/h	1774	3166	352	5003	3539	1422	1774	5085	1531	3442	4816	362
Grp Volume(v), veh/h	127	176	179	496	648	971	58	666	555	642	539	286
Grp Sat Flow(s),veh/h/ln	1774	1770	1748	1668	1770	1422	1774	1695	1531	1721	1695	1788
Q Serve(g_s), s	10.6	12.5	12.9	14.7	24.4	46.2	5.0	17.1	41.3	28.2	16.6	16.8
Cycle Q Clear(g_c), s	10.6	12.5	12.9	14.7	24.4	46.2	5.0	17.1	41.3	28.2	16.6	16.8
Prop In Lane	1.00		0.20	1.00		1.00	1.00		1.00	1.00		0.20
Lane Grp Cap(c), veh/h	199	480	474	698	1056	752	74	1355	629	712	1463	772
V/C Ratio(X)	0.64	0.37	0.38	0.71	0.61	1.29	0.78	0.49	0.88	0.90	0.37	0.37
Avail Cap(c_a), veh/h	199	480	474	698	1056	752	121	1355	629	899	1463	772
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.62	0.62	0.62	0.75	0.75	0.75	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.8	45.7	45.9	63.7	46.7	39.4	73.6	48.0	42.9	59.9	29.8	29.8
Incr Delay (d2), s/veh	6.6	2.2	2.3	2.1	1.7	137.3	12.6	1.0	12.9	10.3	0.7	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	6.4	6.5	6.9	12.1	60.8	2.7	8.1	24.3	14.4	7.9	8.6
LnGrp Delay(d),s/veh	72.4	47.9	48.2	65.8	48.4	176.7	86.2	49.0	55.8	70.3	30.5	31.2
LnGrp LOS	E	D	D	E	D	F	F	D	E	E	C	C
Approach Vol, veh/h		482			2115			1279			1467	
Approach Delay, s/veh		54.5			111.4			53.6			48.0	
Approach LOS		D			F			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R <sub>c</sub> ), s	36.6	45.8	26.1	46.5	11.0	71.4	21.9	50.7				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	40.5	37.0	17.5	42.0	10.6	66.9	15.7	43.8				
Max Q Clear Time (g_c+l1), s	30.2	43.3	16.7	14.9	7.0	18.8	12.6	48.2				
Green Ext Time (p_c), s	1.9	0.0	0.2	2.2	0.0	6.6	0.1	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				75.0								
HCM 2010 LOS				E								
Notes												

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User approved changes to right turn type.

HCM 2010 Signalized Intersection Summary  
6: El Camino Real & Murchison Dr

Existing + Prj PM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑		↑↑	↑	↑	↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	252	88	73	34	96	188	76	821	44	233	1095	205
Future Volume (veh/h)	252	88	73	34	96	188	76	821	44	233	1095	205
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	252	88	73	34	96	188	76	821	44	233	1095	205
Adj No. of Lanes	1	1	0	0	2	1	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	174	145	138	417	245	99	1314	409	286	1850	576
Arrive On Green	0.18	0.18	0.18	0.15	0.15	0.15	0.06	0.26	0.26	0.16	0.36	0.36
Sat Flow, veh/h	1774	943	782	892	2696	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	252	0	161	69	61	188	76	821	44	233	1095	205
Grp Sat Flow(s),veh/h/ln	1774	0	1725	1818	1770	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	10.1	0.0	6.3	2.5	2.2	8.5	3.2	10.7	1.6	9.5	13.1	7.1
Cycle Q Clear(g_c), s	10.1	0.0	6.3	2.5	2.2	8.5	3.2	10.7	1.6	9.5	13.1	7.1
Prop In Lane	1.00		0.45	0.49		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	328	0	319	282	274	245	99	1314	409	286	1850	576
V/C Ratio(X)	0.77	0.00	0.50	0.25	0.22	0.77	0.77	0.62	0.11	0.81	0.59	0.36
Avail Cap(c_a), veh/h	937	0	911	571	556	497	368	2821	878	889	4317	1344
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	0.0	27.4	27.8	27.7	30.3	34.8	24.5	21.2	30.3	19.3	17.4
Incr Delay (d2), s/veh	3.8	0.0	1.2	0.5	0.4	5.0	11.7	0.5	0.1	5.6	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	0.0	3.1	1.3	1.1	4.1	1.9	5.0	0.7	5.1	6.1	3.1
LnGrp Delay(d),s/veh	32.8	0.0	28.6	28.2	28.1	35.3	46.5	25.0	21.3	35.9	19.6	17.8
LnGrp LOS	C	C	C	C	D	D	C	C	D	B	B	
Approach Vol, veh/h	413				318			941		1533		
Approach Delay, s/veh	31.2				32.4			26.6		21.8		
Approach LOS	C				C			C		C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	16.6	23.8		18.3	8.7	31.7		16.1				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	37.5	41.5		39.5	15.5	63.5		23.5				
Max Q Clear Time (g_c+l1), s	11.5	12.7		12.1	5.2	15.1		10.5				
Green Ext Time (p_c), s	0.7	6.7		1.7	0.1	11.6		1.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				25.5								
HCM 2010 LOS				C								

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↔↑		↔↑			↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	267	164	223	20	232	58	221	697	30	74	764	175
Future Volume (veh/h)	267	164	223	20	232	58	221	697	30	74	764	175
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	218	233	223	20	232	58	221	697	16	74	764	175
Adj No. of Lanes	1	2	0	0	2	0	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	409	430	365	36	426	111	308	1863	580	132	1360	789
Arrive On Green	0.23	0.23	0.23	0.14	0.16	0.14	0.17	0.37	0.37	0.07	0.27	0.27
Sat Flow, veh/h	1774	1863	1583	225	2671	696	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	218	233	223	165	0	145	221	697	16	74	764	175
Grp Sat Flow(s), veh/h/ln	1774	1863	1583	1852	0	1740	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	7.7	7.8	9.0	5.9	0.0	5.5	8.4	7.2	0.5	2.9	9.2	4.4
Cycle Q Clear(g_c), s	7.7	7.8	9.0	5.9	0.0	5.5	8.4	7.2	0.5	2.9	9.2	4.4
Prop In Lane	1.00		1.00	0.12		0.40	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	409	430	365	296	0	278	308	1863	580	132	1360	789
V/C Ratio(X)	0.53	0.54	0.61	0.56	0.00	0.52	0.72	0.37	0.03	0.56	0.56	0.22
Avail Cap(c_a), veh/h	1073	1126	957	1041	0	979	948	4434	1380	399	2860	1256
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.0	24.0	24.5	27.7	0.0	27.7	27.7	16.5	14.4	31.8	22.5	10.1
Incr Delay (d2), s/veh	1.1	1.1	1.7	1.6	0.0	1.5	3.1	0.1	0.0	3.7	0.4	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.9	4.1	4.1	3.1	0.0	2.7	4.4	3.4	0.2	1.5	4.4	2.9
LnGrp Delay(d), s/veh	25.1	25.1	26.1	29.3	0.0	29.2	30.9	16.7	14.4	35.4	22.8	10.2
LnGrp LOS	C	C	C	C		C	C	B	B	D	C	B
Approach Vol, veh/h		674			310			934			1013	
Approach Delay, s/veh		25.4			29.3			20.0			21.6	
Approach LOS		C			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	8.3	29.0		19.4	15.3	22.0		14.4				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	14.5	60.5		41.5	36.5	38.5		38.5				
Max Q Clear Time (g_c+l1), s	4.9	9.2		11.0	10.4	11.2		7.9				
Green Ext Time (p_c), s	0.1	5.5		3.9	0.6	6.3		2.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			22.8									
HCM 2010 LOS			C									
Notes												

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User approved volume balancing among the lanes for turning movement.

**Intersection**

Intersection Delay, s/veh 13.6

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	3	394	79	0	350	8	19	21	64	0	0	0
Future Vol, veh/h	3	394	79	0	350	8	19	21	64	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	394	79	0	350	8	19	21	64	0	0	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	0	0
<b>Approach</b>												
Opposing Approach	WB				WB		NB					
Opposing Lanes	2				1		0					
Conflicting Approach Left						NB		EB				
Conflicting Lanes Left	0					1		1				
Conflicting Approach Right	NB						WB					
Conflicting Lanes Right	1					0		2				
HCM Control Delay	14.9					13.1		9.6				
HCM LOS	B					B		A				

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	18%	1%	0%	0%
Vol Thru, %	20%	83%	100%	0%
Vol Right, %	62%	17%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	104	476	350	8
LT Vol	19	3	0	0
Through Vol	21	394	350	0
RT Vol	64	79	0	8
Lane Flow Rate	104	476	350	8
Geometry Grp	2	5	7	7
Degree of Util (X)	0.158	0.615	0.505	0.01
Departure Headway (Hd)	5.477	4.65	5.19	4.485
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	648	771	690	793
Service Time	3.568	2.703	2.949	2.243
HCM Lane V/C Ratio	0.16	0.617	0.507	0.01
HCM Control Delay	9.6	14.9	13.2	7.3
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.6	4.3	2.9	0

## Intersection

Intersection Delay, s/veh 20.1

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	67	910	4	3	494	22	3	2	8	45	0	52
Future Vol, veh/h	67	910	4	3	494	22	3	2	8	45	0	52
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	910	4	3	494	22	3	2	8	45	0	52
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
<b>Approach</b>												
Opposing Approach	WB			WB			NB			SB		
Opposing Lanes	2			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			2			2		
HCM Control Delay	24.7			13.5			9.9			10.8		
HCM LOS	C			B			A			B		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	23%	13%	0%	1%	0%	46%
Vol Thru, %	15%	87%	99%	99%	92%	0%
Vol Right, %	62%	0%	1%	0%	8%	54%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	13	522	459	250	269	97
LT Vol	3	67	0	3	0	45
Through Vol	2	455	455	247	247	0
RT Vol	8	0	4	0	22	52
Lane Flow Rate	13	522	459	250	269	97
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.024	0.814	0.707	0.424	0.451	0.174
Departure Headway (Hd)	6.664	5.614	5.543	6.106	6.042	6.443
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	537	647	652	590	597	558
Service Time	4.704	3.342	3.271	3.846	3.782	4.472
HCM Lane V/C Ratio	0.024	0.807	0.704	0.424	0.451	0.174
HCM Control Delay	9.9	28.3	20.6	13.3	13.7	10.8
HCM Lane LOS	A	D	C	B	B	B
HCM 95th-tile Q	0.1	8.4	5.8	2.1	2.3	0.6

Intersection

Intersection Delay, s/veh 16.4

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	70	330	51	95	306	41	34	27	121	10	26	9
Future Vol, veh/h	70	330	51	95	306	41	34	27	121	10	26	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	330	51	95	306	41	34	27	121	10	26	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	17.8			17.6			11.5			10.3		
HCM LOS	C			C			B			B		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	16%	21%	22%
Vol Thru, %	15%	73%	69%	58%
Vol Right, %	66%	11%	9%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	182	451	442	45
LT Vol	34	70	95	10
Through Vol	27	330	306	26
RT Vol	121	51	41	9
Lane Flow Rate	182	451	442	45
Geometry Grp	1	1	1	1
Degree of Util (X)	0.299	0.657	0.648	0.082
Departure Headway (Hd)	5.911	5.241	5.275	6.575
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	604	686	685	541
Service Time	3.977	3.29	3.323	4.662
HCM Lane V/C Ratio	0.301	0.657	0.645	0.083
HCM Control Delay	11.5	17.8	17.6	10.3
HCM Lane LOS	B	C	C	B
HCM 95th-tile Q	1.2	4.9	4.8	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑	↑↑		↑	↑	↑	↑	↑	↑
Traffic Volume (veh/h)	117	568	84	158	379	46	24	19	86	36	50	75
Future Volume (veh/h)	117	568	84	158	379	46	24	19	86	36	50	75
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	117	568	84	158	379	46	24	19	86	36	50	75
Adj No. of Lanes	1	2	0	2	2	0	0	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	116	1063	157	225	1093	132	270	150	237	241	172	237
Arrive On Green	0.07	0.34	0.34	0.07	0.34	0.34	0.15	0.15	0.15	0.15	0.15	0.15
Sat Flow, veh/h	1774	3095	457	3442	3181	384	581	1005	1583	493	1148	1583
Grp Volume(v), veh/h	117	324	328	158	210	215	43	0	86	86	0	75
Grp Sat Flow(s),veh/h/ln	1774	1770	1782	1721	1770	1795	1585	0	1583	1640	0	1583
Q Serve(g_s), s	2.0	4.5	4.5	1.4	2.7	2.7	0.0	0.0	1.5	0.1	0.0	1.3
Cycle Q Clear(g_c), s	2.0	4.5	4.5	1.4	2.7	2.7	0.6	0.0	1.5	1.3	0.0	1.3
Prop In Lane	1.00		0.26	1.00		0.21	0.56		1.00	0.42		1.00
Lane Grp Cap(c), veh/h	116	608	612	225	608	617	421	0	237	412	0	237
V/C Ratio(X)	1.01	0.53	0.54	0.70	0.35	0.35	0.10	0.00	0.36	0.21	0.00	0.32
Avail Cap(c_a), veh/h	116	1505	1515	225	1505	1526	1980	0	1916	2074	0	1916
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.3	8.1	8.1	14.0	7.5	7.5	11.3	0.0	11.7	11.6	0.0	11.6
Incr Delay (d2), s/veh	85.8	0.7	0.7	9.4	0.3	0.3	0.1	0.0	0.9	0.2	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	2.3	2.3	0.9	1.3	1.4	0.3	0.0	0.7	0.7	0.0	0.6
LnGrp Delay(d),s/veh	100.1	8.8	8.8	23.4	7.8	7.8	11.4	0.0	12.6	11.8	0.0	12.4
LnGrp LOS	F	A	A	C	A	A	B		B	B		B
Approach Vol, veh/h		769			583			129			161	
Approach Delay, s/veh		22.7			12.0			12.2			12.1	
Approach LOS		C			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.5	15.0		9.1	6.5	15.0		9.1				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	2.0	26.0		37.0	2.0	26.0		37.0				
Max Q Clear Time (g_c+l1), s	3.4	6.5		3.3	4.0	4.7		3.5				
Green Ext Time (p_c), s	0.0	4.0		0.7	0.0	2.5		0.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			17.0									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary  
5: El Camino Real & Millbrae Av

Background + Project AM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑↑	↑↑	↑	↑	↑↑↑	↑	↑↑↑	↑↑↑	
Traffic Volume (veh/h)	115	663	45	431	313	892	31	454	822	913	799	40
Future Volume (veh/h)	115	663	45	431	313	892	31	454	822	913	799	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.90	1.00		0.90	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	115	663	45	431	313	808	31	454	778	913	799	40
Adj No. of Lanes	1	2	0	3	2	1	1	3	1	2	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	232	967	66	792	1123	766	42	1214	615	677	2040	102
Arrive On Green	0.13	0.29	0.29	0.16	0.32	0.32	0.02	0.24	0.24	0.20	0.41	0.41
Sat Flow, veh/h	1774	3335	226	5003	3539	1432	1774	5085	1527	3442	4954	247
Grp Volume(v), veh/h	115	351	357	431	313	808	31	454	778	913	546	293
Grp Sat Flow(s),veh/h/ln	1774	1770	1792	1668	1770	1432	1774	1695	1527	1721	1695	1811
Q Serve(g_s), s	9.3	27.3	27.4	12.3	10.3	49.2	2.7	11.6	37.0	30.5	17.5	17.6
Cycle Q Clear(g_c), s	9.3	27.3	27.4	12.3	10.3	49.2	2.7	11.6	37.0	30.5	17.5	17.6
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	232	513	520	792	1123	766	42	1214	615	677	1396	746
V/C Ratio(X)	0.49	0.68	0.69	0.54	0.28	1.05	0.74	0.37	1.26	1.35	0.39	0.39
Avail Cap(c_a), veh/h	232	513	520	888	1123	766	80	1214	615	677	1396	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.87	0.87	0.87	0.73	0.73	0.73	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.6	48.7	48.8	60.1	39.6	38.6	75.2	49.3	47.0	62.2	32.0	32.0
Incr Delay (d2), s/veh	1.6	7.2	7.2	0.5	0.5	45.7	16.4	0.6	128.4	166.4	0.8	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	14.4	14.6	5.7	5.1	42.4	1.5	5.5	48.2	30.1	8.3	9.1
LnGrp Delay(d),s/veh	64.2	56.0	56.0	60.6	40.1	84.3	91.5	50.0	175.4	228.6	32.8	33.6
LnGrp LOS	E	E	E	E	D	F	F	D	F	F	C	C
Approach Vol, veh/h		823			1552			1263			1752	
Approach Delay, s/veh		57.1			68.8			128.3			135.0	
Approach LOS		E			E			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R <sub>c</sub> ), s	35.0	41.5	29.0	49.5	8.2	68.3	24.8	53.7				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	30.5	37.0	27.5	42.0	7.0	60.5	20.3	49.2				
Max Q Clear Time (g_c+l1), s	32.5	39.0	14.3	29.4	4.7	19.6	11.3	51.2				
Green Ext Time (p_c), s	0.0	0.0	1.4	3.6	0.0	6.6	0.2	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				102.5								
HCM 2010 LOS				F								
Notes												

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User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑		↑↑	↑		↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	292	128	47	17	73	151	42	865	36	239	932	320
Future Volume (veh/h)	292	128	47	17	73	151	42	865	36	239	932	320
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	292	128	47	17	73	151	42	865	36	239	932	320
Adj No. of Lanes	1	1	0	0	2	1	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	366	269	99	84	382	205	68	1381	430	288	2011	626
Arrive On Green	0.21	0.21	0.21	0.13	0.13	0.13	0.04	0.27	0.27	0.16	0.40	0.40
Sat Flow, veh/h	1774	1301	478	647	2953	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	292	0	175	48	42	151	42	865	36	239	932	320
Grp Sat Flow(s),veh/h/ln	1774	0	1778	1830	1770	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	12.2	0.0	6.8	1.8	1.7	7.2	1.8	11.7	1.3	10.2	10.6	12.0
Cycle Q Clear(g_c), s	12.2	0.0	6.8	1.8	1.7	7.2	1.8	11.7	1.3	10.2	10.6	12.0
Prop In Lane	1.00		0.27	0.35		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	366	0	367	237	229	205	68	1381	430	288	2011	626
V/C Ratio(X)	0.80	0.00	0.48	0.20	0.18	0.74	0.62	0.63	0.08	0.83	0.46	0.51
Avail Cap(c_a), veh/h	896	0	898	948	916	820	578	3609	1124	578	3609	1124
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.5	0.0	27.3	30.4	30.4	32.8	37.0	25.0	21.2	31.7	17.5	17.9
Incr Delay (d2), s/veh	4.0	0.0	1.0	0.4	0.4	5.1	8.8	0.5	0.1	6.1	0.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	3.4	0.9	0.8	3.4	1.1	5.5	0.6	5.5	4.9	5.4
LnGrp Delay(d),s/veh	33.5	0.0	28.3	30.8	30.7	37.8	45.9	25.5	21.3	37.8	17.7	18.6
LnGrp LOS	C	C	C	C	D	D	C	C	D	B	B	
Approach Vol, veh/h		467			241			943			1491	
Approach Delay, s/veh		31.5			35.2			26.2			21.1	
Approach LOS		C			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	17.2	25.7		20.7	7.5	35.4		14.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	25.5	55.5		39.5	25.5	55.5		40.5				
Max Q Clear Time (g_c+l1), s	12.2	13.7		14.2	3.8	14.0		9.2				
Green Ext Time (p_c), s	0.6	7.6		1.9	0.1	9.9		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			25.3									
HCM 2010 LOS			C									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Volume (veh/h)	220	196	222	19	166	33	254	544	64	115	656	218
Future Volume (veh/h)	220	196	222	19	166	33	254	544	64	115	656	218
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	213	206	222	19	166	33	254	544	64	115	656	218
Adj No. of Lanes	1	2	0	0	2	0	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	419	440	374	40	359	74	351	1726	537	190	1266	695
Arrive On Green	0.24	0.24	0.24	0.11	0.13	0.11	0.20	0.34	0.34	0.11	0.25	0.23
Sat Flow, veh/h	1774	1863	1583	305	2740	566	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	213	206	222	115	0	103	254	544	64	115	656	218
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1848	0	1763	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	6.7	6.1	8.0	3.7	0.0	3.5	8.7	5.1	1.8	4.0	7.2	5.8
Cycle Q Clear(g_c), s	6.7	6.1	8.0	3.7	0.0	3.5	8.7	5.1	1.8	4.0	7.2	5.8
Prop In Lane	1.00		1.00	0.16		0.32	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	419	440	374	242	0	231	351	1726	537	190	1266	695
V/C Ratio(X)	0.51	0.47	0.59	0.48	0.00	0.44	0.72	0.32	0.12	0.60	0.52	0.31
Avail Cap(c_a), veh/h	1181	1240	1054	1144	0	1092	1181	4330	1348	632	2755	1158
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.4	21.2	21.9	26.1	0.0	26.1	24.3	15.8	14.7	27.5	20.9	11.8
Incr Delay (d2), s/veh	1.0	0.8	1.5	1.4	0.0	1.3	2.8	0.1	0.1	3.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	3.2	3.7	2.0	0.0	1.8	4.5	2.4	0.8	2.1	3.4	3.5
LnGrp Delay(d),s/veh	22.4	22.0	23.4	27.6	0.0	27.5	27.1	15.9	14.8	30.6	21.2	12.1
LnGrp LOS	C	C	C	C		C	C	B	B	C	C	B
Approach Vol, veh/h		641			218			862			989	
Approach Delay, s/veh		22.6			27.5			19.1			20.3	
Approach LOS		C			C			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.9	24.9		18.3	15.8	19.1		11.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	21.5	53.5		41.5	41.5	33.5		38.5				
Max Q Clear Time (g_c+l1), s	6.0	7.1		10.0	10.7	9.2		5.7				
Green Ext Time (p_c), s	0.2	4.3		3.7	0.7	5.4		1.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			21.0									
HCM 2010 LOS			C									
Notes												

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User approved volume balancing among the lanes for turning movement.

Intersection

Intersection Delay, s/veh 14  
Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	237	57	2	481	19	19	17	32	0	0	0
Future Vol, veh/h	6	237	57	2	481	19	19	17	32	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	237	57	2	481	19	19	17	32	0	0	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	0	0
Approach												
Opposing Approach	WB			WB			NB					
Opposing Lanes	2			1			0					
Conflicting Approach Left				NB			EB					
Conflicting Lanes Left	0			1			1					
Conflicting Approach Right	NB						WB					
Conflicting Lanes Right	1			0			2					
HCM Control Delay	10.7			16.6			9.2					
HCM LOS	B			C			A					

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	28%	2%	0%	0%
Vol Thru, %	25%	79%	100%	0%
Vol Right, %	47%	19%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	68	300	483	19
LT Vol	19	6	2	0
Through Vol	17	237	481	0
RT Vol	32	57	0	19
Lane Flow Rate	68	300	483	19
Geometry Grp	2	5	7	7
Degree of Util (X)	0.104	0.389	0.664	0.022
Departure Headway (Hd)	5.522	4.673	4.946	4.24
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	645	768	729	842
Service Time	3.585	2.712	2.681	1.975
HCM Lane V/C Ratio	0.105	0.391	0.663	0.023
HCM Control Delay	9.2	10.7	17	7.1
HCM Lane LOS	A	B	C	A
HCM 95th-tile Q	0.3	1.9	5.1	0.1

Intersection

Intersection Delay, s/veh 11.9

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	506	4	2	561	29	8	1	8	30	0	52
Future Vol, veh/h	25	506	4	2	561	29	8	1	8	30	0	52
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	506	4	2	561	29	8	1	8	30	0	52
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Approach												
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			1			1		
Conflicting Approach Left	SB			NB			WB			EB		
Conflicting Lanes Left	1			1			2			2		
Conflicting Approach Right	NB			SB			EB			WB		
Conflicting Lanes Right	1			1			2			2		
HCM Control Delay	11.9			12.3			9.5			9.9		
HCM LOS	B			B			A			A		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	47%	9%	0%	1%	0%	37%
Vol Thru, %	6%	91%	98%	99%	91%	0%
Vol Right, %	47%	0%	2%	0%	9%	63%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	17	278	257	283	310	82
LT Vol	8	25	0	2	0	30
Through Vol	1	253	253	281	281	0
RT Vol	8	0	4	0	29	52
Lane Flow Rate	17	278	257	282	310	82
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.03	0.421	0.385	0.421	0.455	0.135
Departure Headway (Hd)	6.26	5.453	5.397	5.359	5.289	5.945
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	575	653	660	664	675	607
Service Time	4.264	3.247	3.191	3.148	3.079	3.947
HCM Lane V/C Ratio	0.03	0.426	0.389	0.425	0.459	0.135
HCM Control Delay	9.5	12.2	11.6	12.1	12.5	9.9
HCM Lane LOS	A	B	B	B	B	A
HCM 95th-tile Q	0.1	2.1	1.8	2.1	2.4	0.5

Intersection

Intersection Delay, s/veh 18.2

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	4		4	4		4			4	4
Traffic Vol, veh/h	42	211	11	31	355	15	62	28	121	90	143	77
Future Vol, veh/h	42	211	11	31	355	15	62	28	121	90	143	77
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	211	11	31	355	15	62	28	121	90	143	77
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	15.7			22.6			13.8			17.6		
HCM LOS	C			C			B			C		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	16%	8%	29%
Vol Thru, %	13%	80%	89%	46%
Vol Right, %	57%	4%	4%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	211	264	401	310
LT Vol	62	42	31	90
Through Vol	28	211	355	143
RT Vol	121	11	15	77
Lane Flow Rate	211	264	401	310
Geometry Grp	1	1	1	1
Degree of Util (X)	0.385	0.482	0.697	0.559
Departure Headway (Hd)	6.572	6.576	6.26	6.491
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	544	544	573	552
Service Time	4.654	4.655	4.329	4.563
HCM Lane V/C Ratio	0.388	0.485	0.7	0.562
HCM Control Delay	13.8	15.7	22.6	17.6
HCM Lane LOS	B	C	C	C
HCM 95th-tile Q	1.8	2.6	5.5	3.4

HCM 2010 Signalized Intersection Summary  
4: Mills-Peninsula Dwy/Magnolia Av & Trousdale Dr

Background + Prj PM

06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑	↑↑			↑	↑		↑	↑
Traffic Volume (veh/h)	101	530	26	80	559	67	90	43	183	37	22	113
Future Volume (veh/h)	101	530	26	80	559	67	90	43	183	37	22	113
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	101	530	26	80	559	67	90	43	183	37	22	113
Adj No. of Lanes	1	2	0	2	2	0	0	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	817	40	108	758	91	116	38	821	109	45	821
Arrive On Green	0.03	0.24	0.24	0.03	0.24	0.24	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	1774	3434	168	3442	3184	381	40	73	1583	33	87	1583
Grp Volume(v), veh/h	101	273	283	80	310	316	133	0	183	59	0	113
Grp Sat Flow(s),veh/h/ln	1774	1770	1833	1721	1770	1796	113	0	1583	119	0	1583
Q Serve(g_s), s	2.0	8.8	8.9	1.5	10.3	10.4	1.4	0.0	4.0	1.3	0.0	2.4
Cycle Q Clear(g_c), s	2.0	8.8	8.9	1.5	10.3	10.4	33.0	0.0	4.0	33.0	0.0	2.4
Prop In Lane	1.00		0.09	1.00		0.21	0.68		1.00	0.63		1.00
Lane Grp Cap(c), veh/h	56	421	436	108	421	427	153	0	821	154	0	821
V/C Ratio(X)	1.81	0.65	0.65	0.74	0.74	0.74	0.87	0.00	0.22	0.38	0.00	0.14
Avail Cap(c_a), veh/h	56	724	749	108	724	734	242	0	921	239	0	921
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.8	21.8	21.8	30.5	22.4	22.4	24.8	0.0	8.3	15.3	0.0	7.9
Incr Delay (d2), s/veh	426.3	1.7	1.6	23.2	2.5	2.5	17.4	0.0	0.1	1.6	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	4.5	4.7	1.0	5.3	5.4	3.0	0.0	1.7	0.6	0.0	1.0
LnGrp Delay(d),s/veh	457.1	23.5	23.5	53.8	24.9	24.9	42.2	0.0	8.5	16.8	0.0	8.0
LnGrp LOS	F	C	C	D	C	C	D		A	B		A
Approach Vol, veh/h		657			706			316		172		
Approach Delay, s/veh		90.1			28.2			22.7		11.0		
Approach LOS		F			C			C		B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	6.5	19.9		38.6	6.5	19.9		38.6				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	2.0	26.0		37.0	2.0	26.0		37.0				
Max Q Clear Time (g_c+l1), s	3.5	10.9		35.0	4.0	12.4		35.0				
Green Ext Time (p_c), s	0.0	3.0		0.1	0.0	3.3		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			47.6									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary  
5: El Camino Real & Millbrae Av

Background + Prj PM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑↑	↑↑	↑	↑	↑↑↑	↑	↑↑↑	↑↑↑	
Traffic Volume (veh/h)	132	339	36	592	666	1193	58	690	730	784	796	66
Future Volume (veh/h)	132	339	36	592	666	1193	58	690	730	784	796	66
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.89	1.00		0.90	1.00		0.96	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	132	339	36	592	666	1109	58	690	686	784	796	66
Adj No. of Lanes	1	2	0	3	2	1	1	3	1	2	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	166	864	91	666	1099	825	74	1214	575	830	2093	173
Arrive On Green	0.09	0.27	0.27	0.13	0.31	0.31	0.04	0.24	0.24	0.24	0.44	0.44
Sat Flow, veh/h	1774	3189	335	5003	3539	1429	1774	5085	1527	3442	4777	394
Grp Volume(v), veh/h	132	186	189	592	666	1109	58	690	686	784	564	298
Grp Sat Flow(s),veh/h/ln	1774	1770	1754	1668	1770	1429	1774	1695	1527	1721	1695	1781
Q Serve(g_s), s	11.3	13.3	13.6	18.0	24.8	48.1	5.0	18.5	37.0	34.7	17.4	17.5
Cycle Q Clear(g_c), s	11.3	13.3	13.6	18.0	24.8	48.1	5.0	18.5	37.0	34.7	17.4	17.5
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	166	480	475	666	1099	825	74	1214	575	830	1485	780
V/C Ratio(X)	0.80	0.39	0.40	0.89	0.61	1.34	0.78	0.57	1.19	0.94	0.38	0.38
Avail Cap(c_a), veh/h	203	480	475	666	1099	825	121	1214	575	855	1485	780
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.62	0.62	0.62	0.68	0.68	0.68	1.00	1.00	1.00
Uniform Delay (d), s/veh	68.8	46.0	46.2	66.1	45.4	35.8	73.6	52.0	48.9	57.8	29.4	29.4
Incr Delay (d2), s/veh	16.3	2.4	2.5	9.3	1.5	159.7	11.5	1.3	98.2	18.5	0.7	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	6.8	6.9	8.9	12.4	71.8	2.7	8.8	40.4	18.7	8.3	8.9
LnGrp Delay(d),s/veh	85.1	48.4	48.6	75.3	46.9	195.5	85.1	53.3	147.1	76.3	30.1	30.8
LnGrp LOS	F	D	D	E	D	F	F	D	F	E	C	C
Approach Vol, veh/h		507			2367			1434			1646	
Approach Delay, s/veh		58.0			123.7			99.5			52.3	
Approach LOS		E			F			F			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R <sub>c</sub> ), s	41.9	41.5	25.1	46.5	11.0	72.4	19.0	52.6				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	38.5	37.0	19.5	42.0	10.6	64.9	17.7	43.8				
Max Q Clear Time (g_c+l1), s	36.7	39.0	20.0	15.6	7.0	19.5	13.3	50.1				
Green Ext Time (p_c), s	0.7	0.0	0.0	2.3	0.0	6.9	0.1	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				92.5								
HCM 2010 LOS				F								
Notes												

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User approved changes to right turn type.

HCM 2010 Signalized Intersection Summary  
6: El Camino Real & Murchison Dr

Background + Prj PM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑			↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	263	90	73	46	100	266	76	887	51	268	1171	220
Future Volume (veh/h)	263	90	73	46	100	266	76	887	51	268	1171	220
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	263	90	73	46	100	266	76	887	51	268	1171	220
Adj No. of Lanes	1	1	0	0	2	1	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	324	174	141	112	588	308	99	1292	402	312	1904	593
Arrive On Green	0.18	0.18	0.18	0.19	0.19	0.19	0.06	0.25	0.25	0.18	0.37	0.37
Sat Flow, veh/h	1774	953	773	578	3026	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	263	0	163	146	0	266	76	887	51	268	1171	220
Grp Sat Flow(s), veh/h/ln	1774	0	1726	1834	1770	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	13.3	0.0	8.0	6.5	0.0	15.2	3.9	14.7	2.3	13.7	17.5	9.4
Cycle Q Clear(g_c), s	13.3	0.0	8.0	6.5	0.0	15.2	3.9	14.7	2.3	13.7	17.5	9.4
Prop In Lane	1.00		0.45	0.32		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	324	0	315	357	344	308	99	1292	402	312	1904	593
V/C Ratio(X)	0.81	0.00	0.52	0.41	0.00	0.86	0.77	0.69	0.13	0.86	0.61	0.37
Avail Cap(c_a), veh/h	751	0	731	462	446	399	295	2262	704	713	3461	1078
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.6	0.0	34.4	32.9	0.0	36.4	43.5	31.4	26.8	37.3	23.7	21.2
Incr Delay (d2), s/veh	4.9	0.0	1.3	0.8	0.0	14.4	11.8	0.7	0.1	6.8	0.3	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	6.9	0.0	3.9	3.4	0.0	7.9	2.2	7.0	1.0	7.3	8.2	4.2
LnGrp Delay(d), s/veh	41.5	0.0	35.7	33.6	0.0	50.8	55.3	32.1	27.0	44.1	24.0	21.6
LnGrp LOS	D		D	C		D	E	C	C	D	C	C
Approach Vol, veh/h		426			412			1014			1659	
Approach Delay, s/veh		39.3			44.7			33.6			27.0	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	20.9	28.2		21.5	9.7	39.4		22.6				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	37.5	41.5		39.5	15.5	63.5		23.5				
Max Q Clear Time (g_c+l1), s	15.7	16.7		15.3	5.9	19.5		17.2				
Green Ext Time (p_c), s	0.8	7.0		1.8	0.1	12.6		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			32.4									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary  
7: El Camino Real & Trousdale Dr

Background + Prj PM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↔		↑	↔		↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	296	168	233	36	239	58	227	741	40	74	821	206
Future Volume (veh/h)	296	168	233	36	239	58	227	741	40	74	821	206
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	232	257	233	36	239	58	227	741	26	74	821	206
Adj No. of Lanes	1	2	0	0	2	0	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	413	434	369	61	417	106	308	1909	595	130	1398	804
Arrive On Green	0.23	0.23	0.23	0.14	0.16	0.14	0.17	0.38	0.38	0.07	0.27	0.27
Sat Flow, veh/h	1774	1863	1583	375	2567	650	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	232	257	233	177	0	156	227	741	26	74	821	206
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1844	0	1748	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	8.9	9.4	10.2	6.9	0.0	6.3	9.3	8.2	0.8	3.1	10.7	5.7
Cycle Q Clear(g_c), s	8.9	9.4	10.2	6.9	0.0	6.3	9.3	8.2	0.8	3.1	10.7	5.7
Prop In Lane	1.00		1.00	0.20		0.37	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	413	434	369	300	0	284	308	1909	595	130	1398	804
V/C Ratio(X)	0.56	0.59	0.63	0.59	0.00	0.55	0.74	0.39	0.04	0.57	0.59	0.26
Avail Cap(c_a), veh/h	991	1041	884	934	0	886	876	4162	1296	369	2708	1212
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.0	26.3	26.5	30.0	0.0	29.9	30.1	17.6	15.3	34.5	24.1	10.7
Incr Delay (d2), s/veh	1.2	1.3	1.8	1.9	0.0	1.7	3.4	0.1	0.0	3.9	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	5.0	4.6	3.7	0.0	3.2	4.8	3.9	0.4	1.7	5.1	3.7
LnGrp Delay(d),s/veh	27.2	27.6	28.3	31.9	0.0	31.6	33.6	17.7	15.3	38.4	24.5	10.9
LnGrp LOS	C	C	C	C		C	C	B	B	D	C	B
Approach Vol, veh/h		722			333			994			1101	
Approach Delay, s/veh		27.7			31.7			21.3			22.9	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	8.6	31.9		20.9	16.4	24.2		15.5				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	14.5	61.5		41.5	36.5	39.5		37.5				
Max Q Clear Time (g_c+l1), s	5.1	10.2		12.2	11.3	12.7		8.9				
Green Ext Time (p_c), s	0.1	6.0		4.3	0.6	6.9		2.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			24.4									
HCM 2010 LOS			C									
Notes												

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User approved volume balancing among the lanes for turning movement.

## Intersection

Intersection Delay, s/veh 17.3

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	4	449	95	0	405	10	23	25	76	0	0	0
Future Vol, veh/h	4	449	95	0	405	10	23	25	76	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	449	95	0	405	10	23	25	76	0	0	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	0	0
<b>Approach</b>												
Opposing Approach	WB				WB		NB					
Opposing Lanes	2				1		0					
Conflicting Approach Left						NB		EB				
Conflicting Lanes Left	0					1		1				
Conflicting Approach Right	NB						WB					
Conflicting Lanes Right	1					0		2				
HCM Control Delay	19.9					15.8		10.4				
HCM LOS	C				C		B					

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	19%	1%	0%	0%
Vol Thru, %	20%	82%	100%	0%
Vol Right, %	61%	17%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	548	405	10
LT Vol	23	4	0	0
Through Vol	25	449	405	0
RT Vol	76	95	0	10
Lane Flow Rate	124	548	405	10
Geometry Grp	2	5	7	7
Degree of Util (X)	0.203	0.73	0.601	0.013
Departure Headway (Hd)	5.895	4.798	5.339	4.632
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	613	745	668	761
Service Time	3.895	2.886	3.138	2.43
HCM Lane V/C Ratio	0.202	0.736	0.606	0.013
HCM Control Delay	10.4	19.9	16	7.5
HCM Lane LOS	B	C	C	A
HCM 95th-tile Q	0.8	6.4	4	0

Intersection

Intersection Delay, s/veh 34  
Intersection LOS D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4B			4B			4B			4B	
Traffic Vol, veh/h	81	1047	5	4	565	28	4	2	10	54	0	62
Future Vol, veh/h	81	1047	5	4	565	28	4	2	10	54	0	62
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	81	1047	5	4	565	28	4	2	10	54	0	62
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	2			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			2			2		
HCM Control Delay	45.9			16.5			10.3			11.5		
HCM LOS	E			C			B			B		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	25%	13%	0%	1%	0%	47%
Vol Thru, %	12%	87%	99%	99%	91%	0%
Vol Right, %	62%	0%	1%	0%	9%	53%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	16	605	529	287	311	116
LT Vol	4	81	0	4	0	54
Through Vol	2	524	524	283	283	0
RT Vol	10	0	5	0	28	62
Lane Flow Rate	16	604	528	286	310	116
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.031	0.987	0.852	0.516	0.553	0.215
Departure Headway (Hd)	6.997	5.875	5.801	6.48	6.409	6.671
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	512	617	624	556	562	538
Service Time	5.042	3.616	3.542	4.241	4.17	4.703
HCM Lane V/C Ratio	0.031	0.979	0.846	0.514	0.552	0.216
HCM Control Delay	10.3	57	33.1	16	16.9	11.5
HCM Lane LOS	B	F	D	C	C	B
HCM 95th-tile Q	0.1	14.5	9.4	2.9	3.4	0.8

Intersection

Intersection Delay, s/veh 27  
Intersection LOS D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Vol, veh/h	84	381	61	100	361	49	41	32	145	12	31	11
Future Vol, veh/h	84	381	61	100	361	49	41	32	145	12	31	11
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	381	61	100	361	49	41	32	145	12	31	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	31.5			29.7			13.8			11.4		
HCM LOS	D			D			B			B		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	16%	20%	22%
Vol Thru, %	15%	72%	71%	57%
Vol Right, %	67%	12%	10%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	218	526	510	54
LT Vol	41	84	100	12
Through Vol	32	381	361	31
RT Vol	145	61	49	11
Lane Flow Rate	218	526	510	54
Geometry Grp	1	1	1	1
Degree of Util (X)	0.395	0.838	0.819	0.111
Departure Headway (Hd)	6.528	5.736	5.778	7.426
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	549	631	627	481
Service Time	4.583	3.755	3.796	5.503
HCM Lane V/C Ratio	0.397	0.834	0.813	0.112
HCM Control Delay	13.8	31.5	29.7	11.4
HCM Lane LOS	B	D	D	B
HCM 95th-tile Q	1.9	9.1	8.5	0.4

HCM 2010 Signalized Intersection Summary  
4: Mills-Peninsula Dwy/Magnolia Av & Trousdale Dr

Cumulative + Project AM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑	↑↑			↑	↑		↑	↑
Traffic Volume (veh/h)	140	634	100	189	413	55	29	23	103	43	60	90
Future Volume (veh/h)	140	634	100	189	413	55	29	23	103	43	60	90
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	140	634	100	189	413	55	29	23	103	43	60	90
Adj No. of Lanes	1	2	0	2	2	0	0	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	102	1082	170	198	1110	147	220	126	318	194	193	318
Arrive On Green	0.06	0.35	0.35	0.06	0.35	0.35	0.20	0.20	0.20	0.20	0.20	0.20
Sat Flow, veh/h	1774	3065	483	3442	3143	416	291	629	1583	235	959	1583
Grp Volume(v), veh/h	140	366	368	189	231	237	52	0	103	103	0	90
Grp Sat Flow(s),veh/h/ln	1774	1770	1778	1721	1770	1789	919	0	1583	1193	0	1583
Q Serve(g_s), s	2.0	5.9	5.9	1.9	3.4	3.4	0.1	0.0	1.9	0.1	0.0	1.7
Cycle Q Clear(g_c), s	2.0	5.9	5.9	1.9	3.4	3.4	4.6	0.0	1.9	4.6	0.0	1.7
Prop In Lane	1.00		0.27	1.00		0.23	0.56		1.00	0.42		1.00
Lane Grp Cap(c), veh/h	102	625	628	198	625	632	346	0	318	387	0	318
V/C Ratio(X)	1.37	0.59	0.59	0.95	0.37	0.37	0.15	0.00	0.32	0.27	0.00	0.28
Avail Cap(c_a), veh/h	102	1323	1329	198	1323	1338	1597	0	1685	1726	0	1685
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	9.2	9.2	16.3	8.4	8.4	11.5	0.0	11.9	11.8	0.0	11.8
Incr Delay (d2), s/veh	217.6	0.9	0.9	51.0	0.4	0.4	0.2	0.0	0.6	0.4	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	3.0	3.0	2.3	1.7	1.7	0.4	0.0	0.9	0.9	0.0	0.8
LnGrp Delay(d),s/veh	233.9	10.0	10.0	67.3	8.7	8.7	11.7	0.0	12.5	12.2	0.0	12.2
LnGrp LOS	F	B	B	E	A	A	B		B	B		B
Approach Vol, veh/h		874			657			155			193	
Approach Delay, s/veh		45.9			25.6			12.2			12.2	
Approach LOS		D			C			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.5	16.8		11.6	6.5	16.8		11.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	2.0	26.0		37.0	2.0	26.0		37.0				
Max Q Clear Time (g_c+l1), s	3.9	7.9		6.6	4.0	5.4		6.6				
Green Ext Time (p_c), s	0.0	4.5		0.9	0.0	2.7		0.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			32.6									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary  
5: El Camino Real & Millbrae Av

Cumulative + Project AM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑↑	↑↑	↑	↑	↑↑↑	↑↑	↑↑↑	↑↑↑	
Traffic Volume (veh/h)	125	749	47	492	336	945	38	548	897	996	914	43
Future Volume (veh/h)	125	749	47	492	336	945	38	548	897	996	914	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.89	1.00		0.90	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	125	749	47	492	336	861	38	548	853	996	914	43
Adj No. of Lanes	1	2	0	3	2	1	1	3	1	2	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	241	934	59	851	1105	758	49	1214	634	677	2028	95
Arrive On Green	0.14	0.28	0.28	0.17	0.31	0.31	0.03	0.24	0.24	0.20	0.41	0.41
Sat Flow, veh/h	1774	3355	210	5003	3539	1430	1774	5085	1527	3442	4971	233
Grp Volume(v), veh/h	125	395	401	492	336	861	38	548	853	996	623	334
Grp Sat Flow(s),veh/h/ln	1774	1770	1795	1668	1770	1430	1774	1695	1527	1721	1695	1814
Q Serve(g_s), s	10.1	32.1	32.2	14.0	11.2	48.4	3.3	14.3	37.0	30.5	20.7	20.7
Cycle Q Clear(g_c), s	10.1	32.1	32.2	14.0	11.2	48.4	3.3	14.3	37.0	30.5	20.7	20.7
Prop In Lane	1.00		0.12	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	241	493	500	851	1105	758	49	1214	634	677	1383	740
V/C Ratio(X)	0.52	0.80	0.80	0.58	0.30	1.14	0.78	0.45	1.35	1.47	0.45	0.45
Avail Cap(c_a), veh/h	241	493	500	888	1105	758	102	1214	634	677	1383	740
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.87	0.87	0.87	0.69	0.69	0.69	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.2	52.0	52.0	59.2	40.5	39.0	74.9	50.3	46.1	62.2	33.3	33.3
Incr Delay (d2), s/veh	1.9	12.9	12.8	0.8	0.6	75.2	16.4	0.8	163.0	219.8	1.1	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	17.5	17.7	6.5	5.6	48.1	1.8	6.8	55.7	35.2	9.9	10.8
LnGrp Delay(d),s/veh	64.2	64.9	64.8	60.0	41.1	114.2	91.3	51.2	209.1	282.1	34.3	35.3
LnGrp LOS	E	E	E	E	D	F	F	D	F	F	C	D
Approach Vol, veh/h		921			1689			1439			1953	
Approach Delay, s/veh		64.7			83.8			145.9			160.8	
Approach LOS		E			F			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R <sub>c</sub> ), s	35.0	41.5	30.9	47.6	8.8	67.7	25.6	52.9				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	30.5	37.0	27.5	42.0	8.9	58.6	21.1	48.4				
Max Q Clear Time (g_c+l1), s	32.5	39.0	16.0	34.2	5.3	22.7	12.1	50.4				
Green Ext Time (p_c), s	0.0	0.0	1.5	3.1	0.0	7.6	0.2	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				120.8								
HCM 2010 LOS				F								
Notes												

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User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑			↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	332	149	56	13	85	128	50	947	31	234	1049	375
Future Volume (veh/h)	332	149	56	13	85	128	50	947	31	234	1049	375
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	332	149	56	13	85	128	50	947	31	234	1049	375
Adj No. of Lanes	1	1	0	0	2	1	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	405	295	111	51	356	179	73	1460	455	279	2053	639
Arrive On Green	0.23	0.23	0.23	0.11	0.11	0.11	0.04	0.29	0.29	0.16	0.40	0.40
Sat Flow, veh/h	1774	1292	485	456	3153	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	332	0	205	52	46	128	50	947	31	234	1049	375
Grp Sat Flow(s),veh/h/ln	1774	0	1777	1840	1770	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	14.9	0.0	8.4	2.2	2.0	6.6	2.3	13.7	1.2	10.7	13.0	15.5
Cycle Q Clear(g_c), s	14.9	0.0	8.4	2.2	2.0	6.6	2.3	13.7	1.2	10.7	13.0	15.5
Prop In Lane	1.00		0.27	0.25		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	405	0	405	208	200	179	73	1460	455	279	2053	639
V/C Ratio(X)	0.82	0.00	0.51	0.25	0.23	0.72	0.69	0.65	0.07	0.84	0.51	0.59
Avail Cap(c_a), veh/h	835	0	836	888	854	764	539	3362	1047	539	3362	1047
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.8	0.0	28.3	34.0	33.9	35.9	39.7	26.2	21.8	34.3	18.8	19.6
Incr Delay (d2), s/veh	4.2	0.0	1.0	0.6	0.6	5.3	10.9	0.5	0.1	6.6	0.2	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	0.0	4.3	1.1	1.0	3.1	1.4	6.5	0.5	5.8	6.1	6.9
LnGrp Delay(d),s/veh	34.9	0.0	29.2	34.6	34.5	41.2	50.6	26.7	21.8	40.9	19.0	20.4
LnGrp LOS	C		C	C	D	D	C	C	D	B	C	
Approach Vol, veh/h		537			226			1028			1658	
Approach Delay, s/veh		32.8			38.3			27.7			22.4	
Approach LOS		C			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	17.7	28.6		23.7	7.9	38.4		14.0				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	25.5	55.5		39.5	25.5	55.5		40.5				
Max Q Clear Time (g_c+l1), s	12.7	15.7		16.9	4.3	17.5		8.6				
Green Ext Time (p_c), s	0.5	8.4		2.2	0.1	11.6		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			26.7									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary  
7: El Camino Real & Trousdale Dr

Cumulative + Project AM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↔↑		↔↑			↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	282	220	231	11	196	27	260	1094	49	124	889	323
Future Volume (veh/h)	282	220	231	11	196	27	260	1094	49	124	889	323
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	244	273	231	11	196	27	260	1094	49	124	889	323
Adj No. of Lanes	1	2	0	0	2	0	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	415	444	363	21	380	54	341	1935	602	192	1507	779
Arrive On Green	0.23	0.23	0.23	0.11	0.12	0.11	0.19	0.38	0.38	0.11	0.30	0.28
Sat Flow, veh/h	1774	1899	1553	165	3039	436	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	244	268	236	123	0	111	260	1094	49	124	889	323
Grp Sat Flow(s),veh/h/ln	1774	1863	1589	1854	0	1786	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	9.6	10.1	10.5	4.9	0.0	4.5	10.9	13.3	1.6	5.3	11.7	10.2
Cycle Q Clear(g_c), s	9.6	10.1	10.5	4.9	0.0	4.5	10.9	13.3	1.6	5.3	11.7	10.2
Prop In Lane	1.00		0.98	0.09		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	415	436	371	232	0	223	341	1935	602	192	1507	779
V/C Ratio(X)	0.59	0.61	0.64	0.53	0.00	0.50	0.76	0.57	0.08	0.65	0.59	0.41
Avail Cap(c_a), veh/h	926	972	829	909	0	875	903	3917	1220	474	2687	1146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.7	26.9	27.1	32.3	0.0	32.2	30.0	19.2	15.6	33.6	23.6	12.7
Incr Delay (d2), s/veh	1.3	1.4	1.8	1.9	0.0	1.7	3.6	0.3	0.1	3.6	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	5.4	4.8	2.6	0.0	2.4	5.7	6.2	0.7	2.8	5.5	6.4
LnGrp Delay(d),s/veh	28.1	28.3	28.9	34.2	0.0	33.9	33.6	19.5	15.6	37.2	23.9	13.1
LnGrp LOS	C	C	C	C		C	C	B	B	D	C	B
Approach Vol, veh/h		748			234			1403			1336	
Approach Delay, s/veh		28.4			34.1			21.9			22.5	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.5	32.9		21.4	18.1	26.3		12.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	19.5	59.0		39.5	38.5	40.0		37.0				
Max Q Clear Time (g_c+l1), s	7.3	15.3		12.5	12.9	13.7		6.9				
Green Ext Time (p_c), s	0.2	9.9		4.3	0.7	8.1		1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				24.2								
HCM 2010 LOS				C								
Notes												

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User approved volume balancing among the lanes for turning movement.

## Intersection

Intersection Delay, s/veh 17.3

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	7	262	67	6	542	22	22	20	38	0	0	0
Future Vol, veh/h	7	262	67	6	542	22	22	20	38	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	262	67	6	542	22	22	20	38	0	0	0
Number of Lanes	0	1	0	0	1	1	0	1	0	0	0	0
<b>Approach</b>												
Opposing Approach	WB			WB			NB					
Opposing Lanes	2			1			0					
Conflicting Approach Left				NB			EB					
Conflicting Lanes Left	0			1			1					
Conflicting Approach Right	NB						WB					
Conflicting Lanes Right	1			0			2					
HCM Control Delay	11.7			21.7			9.7					
HCM LOS	B			C			A					

Lane	NBLn1	EBLn1	WBLn1	WBLn2
Vol Left, %	28%	2%	1%	0%
Vol Thru, %	25%	78%	99%	0%
Vol Right, %	47%	20%	0%	100%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	336	548	22
LT Vol	22	7	6	0
Through Vol	20	262	542	0
RT Vol	38	67	0	22
Lane Flow Rate	80	336	548	22
Geometry Grp	2	5	7	7
Degree of Util (X)	0.128	0.447	0.765	0.026
Departure Headway (Hd)	5.748	4.794	5.025	4.316
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	618	746	718	825
Service Time	3.832	2.849	2.776	2.066
HCM Lane V/C Ratio	0.129	0.45	0.763	0.027
HCM Control Delay	9.7	11.7	22.3	7.2
HCM Lane LOS	A	B	C	A
HCM 95th-tile Q	0.4	2.3	7.2	0.1

## Intersection

Intersection Delay, s/veh 13.4

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
<b>Lane Configurations</b>												
Traffic Vol, veh/h	30	563	5	2	615	36	9	1	9	35	0	61
Future Vol, veh/h	30	563	5	2	615	36	9	1	9	35	0	61
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	563	5	2	615	36	9	1	9	35	0	61
Number of Lanes	0	2	0	0	2	0	0	1	0	0	1	0
<b>Approach</b>												
Opposing Approach	WB			EB			SB			NB		SB
Opposing Lanes	2			2			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			2			2		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			2			2		
HCM Control Delay	13.4			13.9			9.8			10.4		
HCM LOS	B			B			A			B		

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	47%	10%	0%	1%	0%	36%
Vol Thru, %	5%	90%	98%	99%	90%	0%
Vol Right, %	47%	0%	2%	0%	10%	64%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	19	312	287	310	344	96
LT Vol	9	30	0	2	0	35
Through Vol	1	282	282	308	308	0
RT Vol	9	0	5	0	36	61
Lane Flow Rate	19	312	286	310	344	96
Geometry Grp	2	7	7	7	7	2
Degree of Util (X)	0.034	0.494	0.45	0.483	0.528	0.164
Departure Headway (Hd)	6.526	5.714	5.653	5.614	5.537	6.15
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	549	632	639	644	653	584
Service Time	4.565	3.438	3.377	3.337	3.259	4.18
HCM Lane V/C Ratio	0.035	0.494	0.448	0.481	0.527	0.164
HCM Control Delay	9.8	13.9	12.9	13.5	14.3	10.4
HCM Lane LOS	A	B	B	B	B	B
HCM 95th-tile Q	0.1	2.7	2.3	2.6	3.1	0.6

Intersection

Intersection Delay, s/veh 32.9

Intersection LOS D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	49	237	13	21	407	18	73	33	142	106	168	91
Future Vol, veh/h	49	237	13	21	407	18	73	33	142	106	168	91
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	237	13	21	407	18	73	33	142	106	168	91
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Approach	EB			WB			NB			SB		
Opposing Approach	WB			EB			SB			NB		
Opposing Lanes	1			1			1			1		
Conflicting Approach Left	SB			NB			EB			WB		
Conflicting Lanes Left	1			1			1			1		
Conflicting Approach Right	NB			SB			WB			EB		
Conflicting Lanes Right	1			1			1			1		
HCM Control Delay	23.9			48.1			19.5			30.9		
HCM LOS	C			E			C			D		

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	29%	16%	5%	29%
Vol Thru, %	13%	79%	91%	46%
Vol Right, %	57%	4%	4%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	248	299	446	365
LT Vol	73	49	21	106
Through Vol	33	237	407	168
RT Vol	142	13	18	91
Lane Flow Rate	248	299	446	365
Geometry Grp	1	1	1	1
Degree of Util (X)	0.535	0.643	0.908	0.761
Departure Headway (Hd)	7.764	7.742	7.329	7.508
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	461	463	500	482
Service Time	5.851	5.825	5.329	5.584
HCM Lane V/C Ratio	0.538	0.646	0.892	0.757
HCM Control Delay	19.5	23.9	48.1	30.9
HCM Lane LOS	C	C	E	D
HCM 95th-tile Q	3.1	4.4	10.4	6.5

HCM 2010 Signalized Intersection Summary  
4: Mills-Peninsula Dwy/Magnolia Av & Trousdale Dr

Cumulative + Project PM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑	↑↑			↑	↑		↑	↑
Traffic Volume (veh/h)	118	571	30	94	606	79	106	50	215	43	26	133
Future Volume (veh/h)	118	571	30	94	606	79	106	50	215	43	26	133
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1900	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	118	571	30	94	606	79	106	50	215	43	26	133
Adj No. of Lanes	1	2	0	2	2	0	0	1	1	0	1	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	51	864	45	98	795	103	91	27	833	87	34	833
Arrive On Green	0.03	0.25	0.25	0.03	0.25	0.25	0.53	0.53	0.53	0.53	0.53	0.53
Sat Flow, veh/h	1774	3421	180	3442	3150	410	8	51	1583	7	65	1583
Grp Volume(v), veh/h	118	295	306	94	340	345	156	0	215	69	0	133
Grp Sat Flow(s),veh/h/ln	1774	1770	1831	1721	1770	1790	59	0	1583	72	0	1583
Q Serve(g_s), s	2.0	10.5	10.5	1.9	12.5	12.5	0.3	0.0	5.2	0.3	0.0	3.0
Cycle Q Clear(g_c), s	2.0	10.5	10.5	1.9	12.5	12.5	36.9	0.0	5.2	36.9	0.0	3.0
Prop In Lane	1.00		0.10	1.00		0.23	0.68		1.00	0.62		1.00
Lane Grp Cap(c), veh/h	51	447	462	98	447	452	118	0	833	121	0	833
V/C Ratio(X)	2.33	0.66	0.66	0.96	0.76	0.76	1.33	0.00	0.26	0.57	0.00	0.16
Avail Cap(c_a), veh/h	51	657	679	98	657	664	120	0	836	124	0	836
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	34.0	23.5	23.5	34.0	24.2	24.3	27.3	0.0	9.1	18.1	0.0	8.6
Incr Delay (d2), s/veh	655.5	1.7	1.6	76.6	3.0	3.1	194.2	0.0	0.2	5.8	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.2	5.3	5.5	1.9	6.4	6.5	8.6	0.0	2.3	1.5	0.0	1.4
LnGrp Delay(d),s/veh	689.5	25.2	25.1	110.6	27.3	27.3	221.4	0.0	9.3	23.9	0.0	8.7
LnGrp LOS	F	C	C	F	C	C	F		A	C		A
Approach Vol, veh/h		719			779			371		202		
Approach Delay, s/veh		134.2			37.4			98.5		13.9		
Approach LOS		F			D			F		B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	6.5	22.3		41.4	6.5	22.3		41.4				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	2.0	26.0		37.0	2.0	26.0		37.0				
Max Q Clear Time (g_c+l1), s	3.9	12.5		38.9	4.0	14.5		38.9				
Green Ext Time (p_c), s	0.0	3.1		0.0	0.0	3.3		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay		79.6										
HCM 2010 LOS		E										

HCM 2010 Signalized Intersection Summary  
5: El Camino Real & Millbrae Av

Cumulative + Project PM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑↑↑	↑↑	↑	↑	↑↑↑	↑	↑↑↑	↑↑↑	
Traffic Volume (veh/h)	137	355	40	629	702	1245	66	741	762	819	864	70
Future Volume (veh/h)	137	355	40	629	702	1245	66	741	762	819	864	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.89	1.00		0.90	1.00		0.96	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	137	355	40	629	702	1161	66	741	718	819	864	70
Adj No. of Lanes	1	2	0	3	2	1	1	3	1	2	3	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	160	858	95	631	1087	831	84	1214	564	854	2105	170
Arrive On Green	0.09	0.27	0.27	0.13	0.31	0.31	0.05	0.24	0.24	0.25	0.44	0.44
Sat Flow, veh/h	1774	3166	352	5003	3539	1427	1774	5085	1527	3442	4787	386
Grp Volume(v), veh/h	137	197	198	629	702	1161	66	741	718	819	611	323
Grp Sat Flow(s),veh/h/ln	1774	1770	1748	1668	1770	1427	1774	1695	1527	1721	1695	1783
Q Serve(g_s), s	11.8	14.1	14.5	19.5	26.6	47.6	5.7	20.1	37.0	36.4	19.1	19.2
Cycle Q Clear(g_c), s	11.8	14.1	14.5	19.5	26.6	47.6	5.7	20.1	37.0	36.4	19.1	19.2
Prop In Lane	1.00		0.20	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	160	480	474	631	1087	831	84	1214	564	854	1491	784
V/C Ratio(X)	0.86	0.41	0.42	1.00	0.65	1.40	0.79	0.61	1.27	0.96	0.41	0.41
Avail Cap(c_a), veh/h	207	480	474	631	1087	831	141	1214	564	855	1491	784
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	0.62	0.62	0.62	0.65	0.65	0.65	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.6	46.3	46.5	67.7	46.4	35.6	73.1	52.6	49.5	57.5	29.7	29.7
Incr Delay (d2), s/veh	23.4	2.6	2.7	27.2	1.8	183.2	10.3	1.5	131.6	21.4	0.8	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	7.2	7.4	10.6	13.2	77.6	3.0	9.6	44.8	19.8	9.1	9.8
LnGrp Delay(d),s/veh	93.0	48.9	49.2	94.9	48.2	218.8	83.4	54.1	181.1	79.0	30.5	31.3
LnGrp LOS	F	D	D	F	D	F	F	D	F	E	C	C
Approach Vol, veh/h		532			2492			1525			1753	
Approach Delay, s/veh		60.4			139.5			115.2			53.3	
Approach LOS		E			F			F			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+R <sub>c</sub> ), s	42.9	41.5	24.1	46.5	11.8	72.6	18.4	52.1				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	38.5	37.0	19.5	42.0	12.3	63.2	18.1	43.4				
Max Q Clear Time (g_c+l1), s	38.4	39.0	21.5	16.5	7.7	21.2	13.8	49.6				
Green Ext Time (p_c), s	0.0	0.0	0.0	2.4	0.0	7.6	0.1	0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				102.9								
HCM 2010 LOS				F								
Notes												

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User approved changes to right turn type.

HCM 2010 Signalized Intersection Summary  
6: El Camino Real & Murchison Dr

Cumulative + Project PM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑			↑↑	↑	↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	296	103	86	40	113	220	89	963	52	273	1284	244
Future Volume (veh/h)	296	103	86	40	113	220	89	963	52	273	1284	244
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	296	103	86	40	113	220	89	963	52	273	1284	244
Adj No. of Lanes	1	1	0	0	2	1	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	357	189	158	148	447	263	115	1367	426	316	1943	605
Arrive On Green	0.20	0.20	0.20	0.17	0.17	0.17	0.06	0.27	0.27	0.18	0.38	0.38
Sat Flow, veh/h	1774	940	785	892	2695	1583	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	296	0	189	81	72	220	89	963	52	273	1284	244
Grp Sat Flow(s), veh/h/ln	1774	0	1724	1818	1770	1583	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	15.5	0.0	9.5	3.8	3.4	13.0	4.8	16.5	2.4	14.5	20.2	10.9
Cycle Q Clear(g_c), s	15.5	0.0	9.5	3.8	3.4	13.0	4.8	16.5	2.4	14.5	20.2	10.9
Prop In Lane	1.00		0.46	0.49		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	357	0	347	302	294	263	115	1367	426	316	1943	605
V/C Ratio(X)	0.83	0.00	0.54	0.27	0.24	0.84	0.78	0.70	0.12	0.86	0.66	0.40
Avail Cap(c_a), veh/h	724	0	703	441	429	384	284	2179	679	687	3335	1038
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.1	0.0	34.7	35.3	35.1	39.1	44.6	31.9	26.8	38.7	24.7	21.9
Incr Delay (d2), s/veh	4.9	0.0	1.3	0.5	0.4	10.2	10.6	0.7	0.1	7.0	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	8.1	0.0	4.6	1.9	1.7	6.4	2.7	7.8	1.1	7.7	9.5	4.8
LnGrp Delay(d), s/veh	42.0	0.0	36.0	35.7	35.5	49.3	55.2	32.6	26.9	45.7	25.1	22.3
LnGrp LOS	D		D	D	D	D	E	C	C	D	C	C
Approach Vol, veh/h		485			373			1104			1801	
Approach Delay, s/veh		39.7			43.7			34.2			27.9	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	21.7	30.5		24.0	10.8	41.5		20.6				
Change Period (Y+R <sub>c</sub> ), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	37.5	41.5		39.5	15.5	63.5		23.5				
Max Q Clear Time (g_c+l1), s	16.5	18.5		17.5	6.8	22.2		15.0				
Green Ext Time (p_c), s	0.8	7.5		2.0	0.1	14.2		1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			32.8									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary  
7: El Camino Real & Trousdale Dr

Cumulative + Project PM  
06/30/2020

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↔↑		↔↑			↑	↑↑↑	↑	↑	↑↑↑	↑
Traffic Volume (veh/h)	250	184	239	22	229	115	258	986	24	113	1247	277
Future Volume (veh/h)	250	184	239	22	229	115	258	986	24	113	1247	277
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	224	220	239	22	229	115	258	986	10	113	1247	277
Adj No. of Lanes	1	2	0	0	2	0	1	3	1	1	3	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	368	387	329	32	338	177	317	2195	683	165	1760	877
Arrive On Green	0.21	0.21	0.21	0.14	0.16	0.14	0.18	0.43	0.43	0.09	0.35	0.35
Sat Flow, veh/h	1774	1863	1583	206	2172	1136	1774	5085	1583	1774	5085	1583
Grp Volume(v), veh/h	224	220	239	198	0	168	258	986	10	113	1247	277
Grp Sat Flow(s), veh/h/ln	1774	1863	1583	1852	0	1662	1774	1695	1583	1774	1695	1583
Q Serve(g_s), s	12.3	11.4	15.1	10.8	0.0	10.2	15.0	14.6	0.4	6.6	22.7	10.1
Cycle Q Clear(g_c), s	12.3	11.4	15.1	10.8	0.0	10.2	15.0	14.6	0.4	6.6	22.7	10.1
Prop In Lane	1.00		1.00	0.11		0.68	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	368	387	329	288	0	259	317	2195	683	165	1760	877
V/C Ratio(X)	0.61	0.57	0.73	0.69	0.00	0.65	0.82	0.45	0.01	0.68	0.71	0.32
Avail Cap(c_a), veh/h	638	670	569	666	0	598	563	3078	958	318	2375	1068
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	38.1	39.6	42.8	0.0	43.0	42.3	21.5	17.4	47.0	30.3	12.9
Incr Delay (d2), s/veh	1.6	1.3	3.1	2.9	0.0	2.7	5.1	0.1	0.0	4.9	0.6	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	6.2	6.0	6.9	5.8	0.0	4.9	7.8	6.9	0.2	3.5	10.7	6.5
LnGrp Delay(d), s/veh	40.1	39.4	42.6	45.7	0.0	45.7	47.4	21.6	17.4	52.0	30.9	13.1
LnGrp LOS	D	D	D	D		D	D	C	B	D	C	B
Approach Vol, veh/h		683			366			1254			1637	
Approach Delay, s/veh		40.8			45.7			26.9			29.4	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.0	49.2		25.2	22.1	40.1		19.7				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	17.7	63.3		37.0	32.5	48.5		37.0				
Max Q Clear Time (g_c+l1), s	8.6	16.6		17.1	17.0	24.7		12.8				
Green Ext Time (p_c), s	0.2	8.5		3.7	0.6	10.8		2.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				32.1								
HCM 2010 LOS				C								
Notes												

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User approved volume balancing among the lanes for turning movement.

**Appendix C**

**Peak-Hour Signal Warrant Analysis**

**DRAFT**

1814-1820 Ogden Drive

## TRAFFIC SIGNAL WARRANTS WORKSHEET

Major Street: Murchison Drive  
 Minor Street: Ogden Drive/ Mills HS Dwy

Analyst: JL date: 6/30/20  
 Critical Approach Speed\* (mph) 25  
 Critical Approach Speed\* (mph) 25  
 \*Posted Speed.

Critical speed of major street traffic > 50 mph (64 km/h).....

or  Rural (R)

In built up area of isolated community of < 10,000 population.....

Urban (U)

## AM PEAK PERIOD

**Warrant 3 - Peak Hour**

The need for a traffic control signal should be considered if an engineering study finds that the criteria in either of the following two categories (Parts A and B) are met:

**PART A**

(All parts 1, 2, and 3 below must be satisfied)

AM PEAK PERIOD						
	Existing	Background	Ex+Project	Bkgd+Project	Cumulative	Cum+Project
Minor Street Approach Direction w/ Highest Delay	NB	NB	NB	NB	NB	NB
Highest Minor Street Average Delay (sec/veh)	9.6	9.7	9.5	9.6	10.5	10.4
Corresponding Minor Street Approach Volume (veh/hr)	104	104	104	104	124	124
Minor Street Total Delay (veh-hrs)	0.3	0.3	0.3	0.3	0.4	0.4
Total Entering Volume (veh/hr)	927	956	904	933	1108	1085

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; AND	No	No	No	No	No	No
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; AND	Yes	Yes	Yes	Yes	Yes	Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	Yes	Yes	Yes	Yes	Yes	Yes
<b>Signal Warranted based on Part A?</b>	No	No	No	No	No	No

**PART B**

	Approach Lanes	AM PEAK PERIOD					
		Existing	Background	Ex+Project	Bkgd+Project	Cumulative	Cum+Project
Major Street - Both Approaches	Murchison Drive	X		823	852	800	829
Minor Street - Highest Approach	Ogden Drive/ Mills HS Dwy	X		104	104	104	124
<b>Signal Warranted based on Part B?</b>		No	No	No	No	No	No

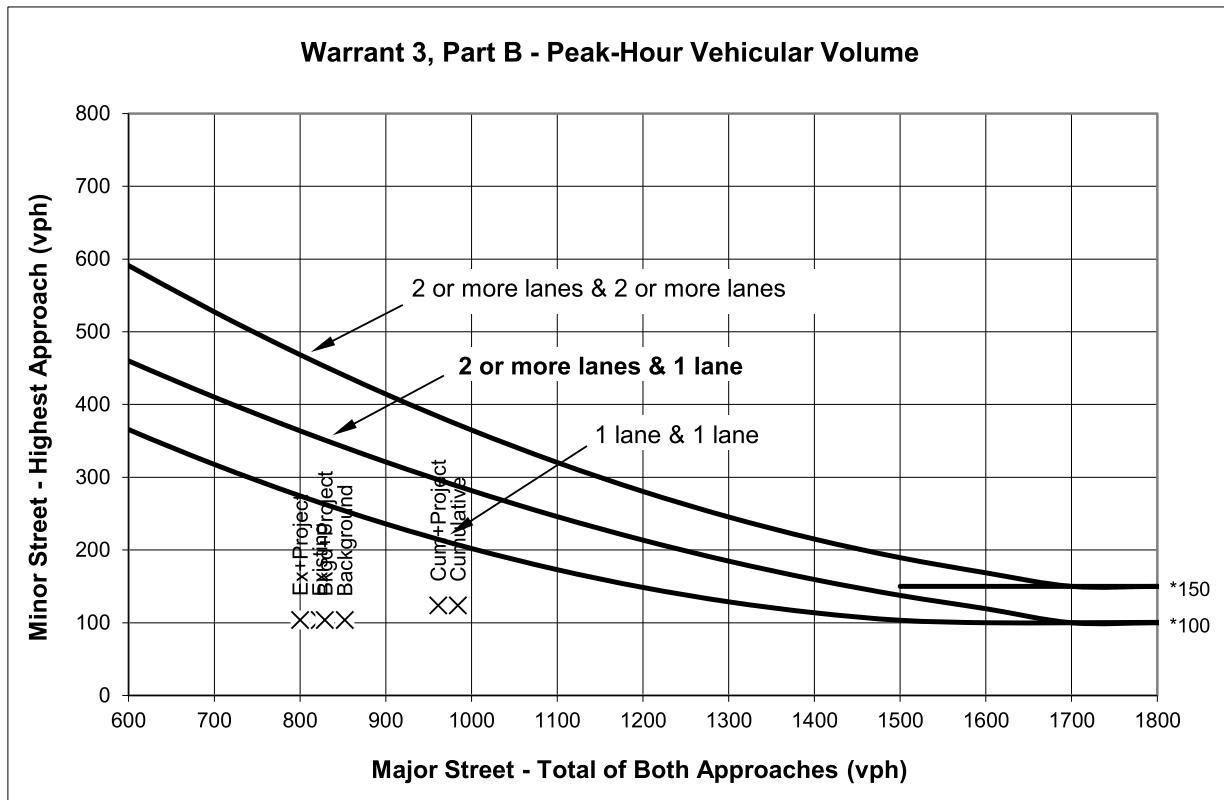
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2009 Edition, as amended for use in California).

1814-1820 Ogden Drive

Murchison Drive &amp; Ogden Drive

AM PEAK PERIOD



Source: Figure 4C-3 California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2009 Edition, as amended for use in California).

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

#### Warrant 3, Part B - Peak-Hour Vehicular Volume

		AM PEAK PERIOD							
		Approach Lanes		Existing	Background	Ex+Project	Bkgd+Project	Cumulative	Cum+Project
		One	2 or More						
Major Street - Both Approaches	Murchison Drive	X		823	852	800	829	984	961
Minor Street - Highest Approach	Ogden Drive/ Mills HS Dwy	X		104	104	104	104	124	124
<b>Signal Warranted Based on Part B - Peak-Hour Volumes?</b>		<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

\*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

1814-1820 Ogden Drive

## TRAFFIC SIGNAL WARRANTS WORKSHEET

Major Street: Murchison Drive  
 Minor Street: Ogden Drive/ Mills HS Dwy

Analyst: JL date: 6/30/20  
 Critical Approach Speed\* (mph) 25  
 Critical Approach Speed\* (mph) 25

\*Posted Speed.

Critical speed of major street traffic &gt; 50 mph (64 km/h).....

In built up area of isolated community of &lt; 10,000 population.....

 Urban (U)

## PM PEAK HOUR

## Warrant 3 - Peak Hour

The need for a traffic control signal should be considered if an engineering study finds that the criteria in either of the following two categories (Parts A and B) are met:

**PART A**

(All parts 1, 2, and 3 below must be satisfied)

PM PEAK HOUR							
	Existing	Background	Ex+Project	Bkgd+Project	Cumulative	Cum+Project	
Minor Street Approach Direction w/ Highest Delay	NB	NB	NB	NB	NB	NB	
Highest Minor Street Average Delay (sec/veh)	9.2	9.3	9.1	9.2	9.8	9.7	
Corresponding Minor Street Approach Volume (veh/hr)	68	68	68	68	80	80	
Minor Street Total Delay (veh-hrs)	0.2	0.2	0.2	0.2	0.2	0.2	
Total Entering Volume (veh/hr)	860	893	837	870	1009	986	
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; <u>AND</u>	No	No	No	No	No	No	
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; <u>AND</u>	No	No	No	No	No	No	
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	Yes	Yes	Yes	Yes	Yes	Yes	
<b>Signal Warranted based on Part A?</b>	No	No	No	No	No	No	

**PART B**

	Approach Lanes	PM PEAK HOUR							
		Existing	Background	Ex+Project	Bkgd+Project	Cumulative	Cum+Project		
Major Street - Both Approaches	Murchison Drive	X		792	825	769	802	929	906
Minor Street - Highest Approach	Ogden Drive/ Mills HS Dwy	X		68	68	68	68	80	80
<b>Signal Warranted based on Part B?</b>		No	No	No	No	No	No	0.00	0

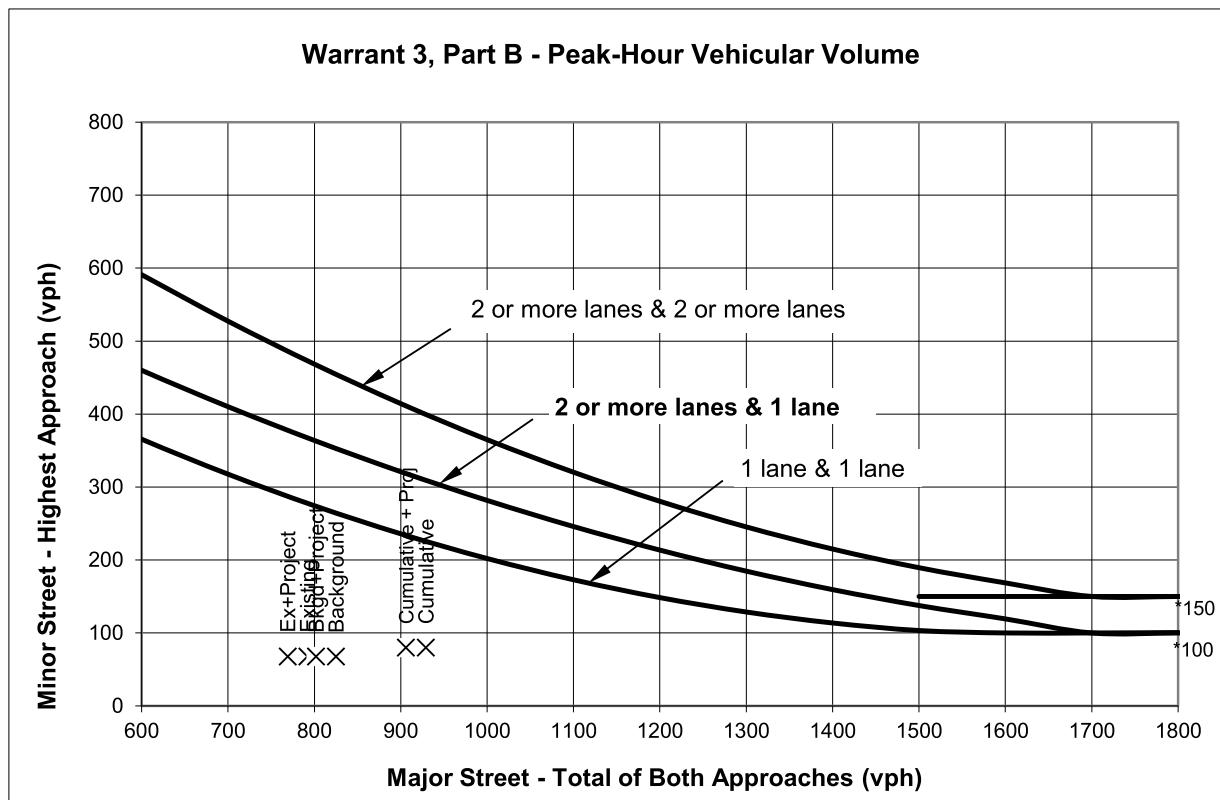
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2009 Edition, as amended for use in California).

1814-1820 Ogden Drive

Murchison Drive &amp; Ogden Drive

PM PEAK HOUR



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2009 Edition, as amended for use in California)*.

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

#### Warrant 3, Part B - Peak-Hour Vehicular Volume

		PM PEAK HOUR							
		Approach Lanes		Existing	Background	Ex+Project	Bkgd+Project	Cumulative	Cum+Project
		One	2 or More						
Major Street - Both Approaches	Murchison Drive	X		792	825	769	802	929	906
Minor Street - Highest Approach	Ogden Drive/ Mills HS Dwy	X		68	68	68	68	80	80
<b>Signal Warranted Based on Part B - Peak-Hour Volumes?</b>		<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

\*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

1814-1820 Ogden Drive

## TRAFFIC SIGNAL WARRANTS WORKSHEET

Major Street: Trousdale Drive  
 Minor Street: Ogden Drive

Analyst: JL date: 6/30/20  
 Critical Approach Speed\* (mph) 35  
 Critical Approach Speed\* (mph) 25  
 \*Posted Speed.

Critical speed of major street traffic &gt; 50 mph (64 km/h).....

In built up area of isolated community of &lt; 10,000 population.....

Urban (U)

or

Rural (R)

## AM PEAK PERIOD

## Warrant 3 - Peak Hour

The need for a traffic control signal should be considered if an engineering study finds that the criteria in either of the following two categories (Parts A and B) are met:

**PART A**

(All parts 1, 2, and 3 below must be satisfied)

AM PEAK PERIOD						
	Existing	Background	Ex+Project	Bkgd+Project	Cumulative	Cum+Project
Minor Street Approach Direction w/ Highest Delay	SB	SB	SB	SB	SB	SB
Highest Minor Street Average Delay (sec/veh)	10.8	10.9	10.7	10.8	11.5	11.5
Corresponding Minor Street Approach Volume (veh/hr)	97	97	97	97	116	116
Minor Street Total Delay (veh-hrs)	0.3	0.3	0.3	0.3	0.4	0.4
Total Entering Volume (veh/hr)	1569	1623	1556	1610	1875	1862
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds 4 vehicle-hours for a 1-lane approach and 5 vehicle-hours for a 2-lane approach; <u>AND</u>	No	No	No	No	No	No
2. The volume on the same minor street approach equals or exceeds 100 vph for 1 moving lane of traffic or 150 vph for 2 moving lanes; <u>AND</u>	No	No	Yes	Yes	Yes	Yes
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with 4 or more approaches or 650 vph for intersections with 3 approaches.	Yes	Yes	Yes	Yes	Yes	Yes
<b>Signal Warranted based on Part A?</b>	No	No	No	No	No	No

**PART B**

	Approach Lanes	AM PEAK PERIOD					
		Existing	Background	Ex+Project	Bkgd+Project	Cumulative	Cum+Project
Major Street - Both Approaches	Trousdale Drive		X	1459	1513	1446	1500
Minor Street - Highest Approach	Ogden Drive	X		97	97	97	97
<b>Signal Warranted based on Part B?</b>		No	No	No	No	Yes	Yes

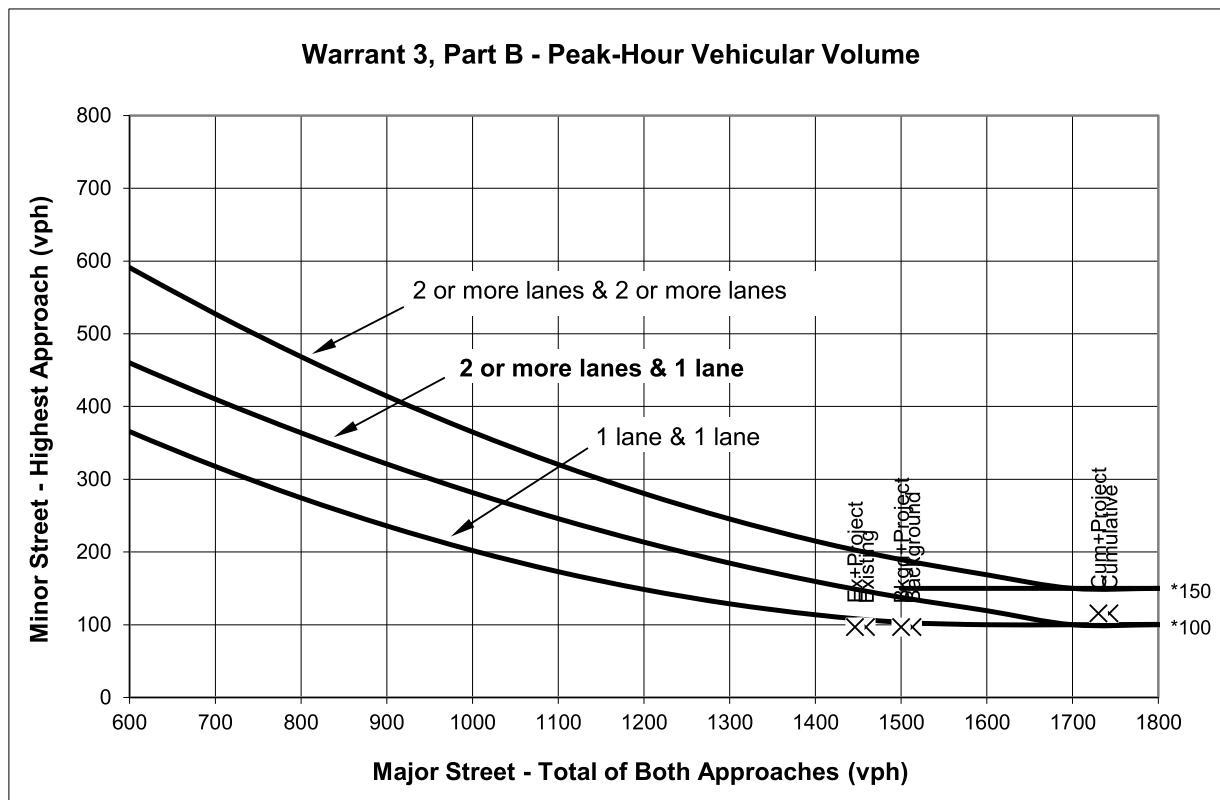
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2009 Edition, as amended for use in California).

1814-1820 Ogden Drive

Trousdale Drive &amp; Ogden Drive

AM PEAK PERIOD



Source: Figure 4C-3 California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2009 Edition, as amended for use in California).

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

#### Warrant 3, Part B - Peak-Hour Vehicular Volume

		AM PEAK PERIOD							
		Approach Lanes		Existing	Background	Ex+Project	Bkgd+Project	Cumulative	Cum+Project
		One	More						
Major Street - Both Approaches	Trousdale Drive		X	1459	1513	1446	1500	1743	1730
Minor Street - Highest Approach	Ogden Drive	X		97	97	97	97	116	116
<b>Signal Warranted Based on Part B - Peak-Hour Volumes?</b>		<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>Yes</b>	<b>Yes</b>		

\*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

1814-1820 Ogden Drive

## TRAFFIC SIGNAL WARRANTS WORKSHEET

Major Street: Trousdale Drive  
 Minor Street: Ogden Drive

Analyst: JL date: 6/30/20  
 Critical Approach Speed\* (mph) 35  
 Critical Approach Speed\* (mph) 25

\*Posted Speed.

Critical speed of major street traffic &gt; 50 mph (64 km/h).....

Rural (R)

In built up area of isolated community of &lt; 10,000 population.....

Urban (U)

## PM PEAK HOUR

## Warrant 3 - Peak Hour

The need for a traffic control signal should be considered if an engineering study finds that the criteria in either of the following two categories (Parts A and B) are met:

PART A

(All parts 1, 2, and 3 below must be satisfied)

PM PEAK HOUR							
	Existing	Background	Ex+Project	Bkgd+Project	Cumulative	Cum+Project	
Minor Street Approach Direction w/ Highest Delay	SB	SB	SB	SB	SB	SB	
Highest Minor Street Average Delay (sec/veh)	9.7	9.9	9.7	9.9	10.4	10.4	
Corresponding Minor Street Approach Volume (veh/hr)	82	82	82	82	96	96	
Minor Street Total Delay (veh-hrs)	0.2	0.2	0.2	0.2	0.3	0.3	
Total Entering Volume (veh/hr)	1176	1239	1163	1226	1379	1366	
Signal Warranted based on Part A?	No	No	No	No	No	No	

PART B

	Approach Lanes	PM PEAK HOUR							
		Existing	Background	Ex+Project	Bkgd+Project	Cumulative	Cum+Project		
Major Street - Both Approaches	Trousdale Drive	X							
Minor Street - Highest Approach	Ogden Drive		X						
Signal Warranted based on Part B?	No	No	No	No	No	No	No	0	

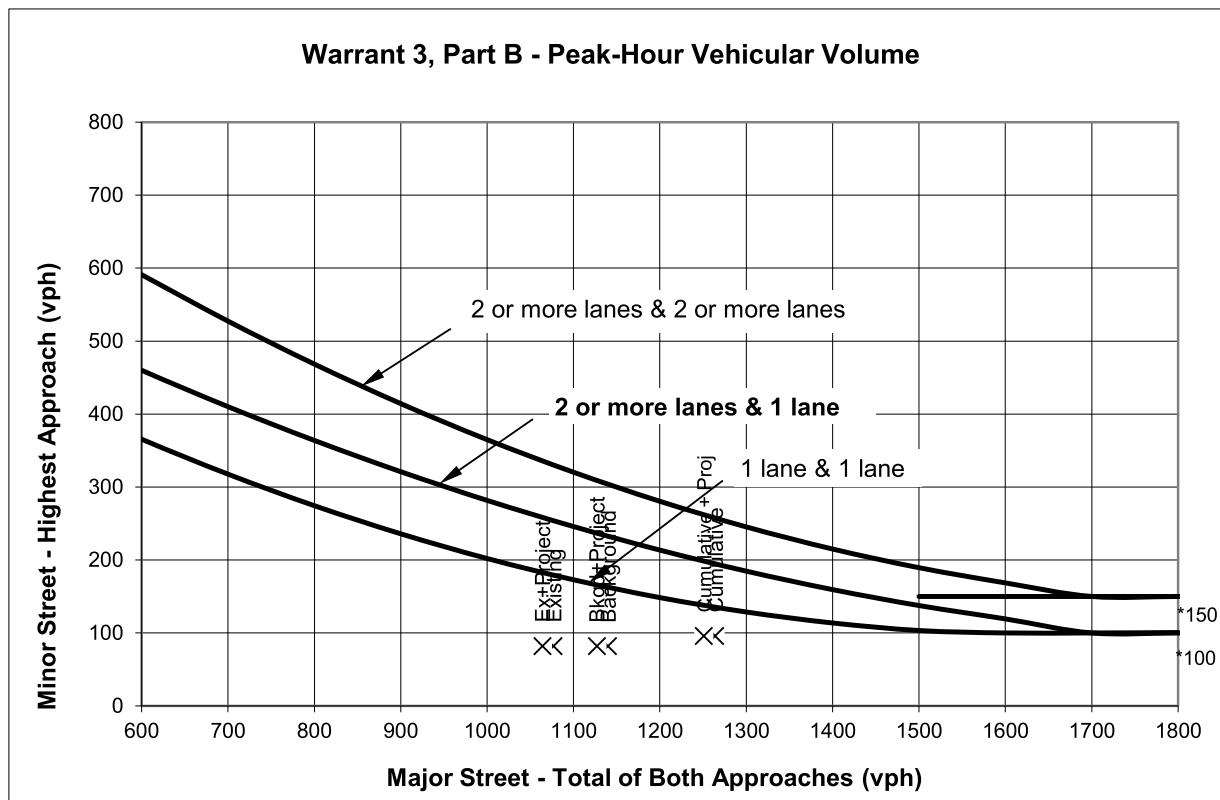
The Warrant is satisfied if the plotted point for vehicles per hour on the major street (both approaches) and the corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any four consecutive 15-minute periods) fall above the applicable curves in California MUTCD Figure 4C-3 or 4C-4.

Source: California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2009 Edition, as amended for use in California).

1814-1820 Ogden Drive

Trousdale Drive &amp; Ogden Drive

PM PEAK HOUR



Source: Figure 4C-3 *California Manual on Uniform Traffic Control Devices for Streets and Highways (FHWA's MUTCD 2009 Edition, as amended for use in California)*.

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

#### **Warrant 3, Part B - Peak-Hour Vehicular Volume**

		PM PEAK HOUR							
		Approach Lanes		Existing	Background	Ex+Project	Bkgd+Project	Cumulative	Cum+Project
		One	2 or More						
Major Street - Both Approaches	Trousdale Drive		X	1077	1140	1064	1127	1264	1251
Minor Street - Highest Approach	Ogden Drive	X		82	82	82	82	96	96
<b>Signal Warranted Based on Part B - Peak-Hour Volumes?</b>				No	No	No	No	No	No

\*Warrant is satisfied if plotted points fall above the appropriate curve in graph above.

**Hexagon Transportation Consultants, Inc.**  
**Traffic Signal Warrant**  
**General Intersection Information Input Sheet**

**1814-1820 Ogden Drive**

3

Murchison Drive & Magnolia Avenue

Analysis Date: **6/30/2020**

Analyst: **JL**

Major Street				Minor Street				
Street Name:	Murchison Drive	Murchison Drive		Magnolia Avenue	Magnolia Avenue			
Approach Leg:	East	▼	West	▼	South	▼	North	▼
Approach Leg List Index:	1	4		3	2			
Approach Leg:	East		West		South		North	
App. Leg Abv.:	E		W		S		N	
App. Designation	Murchison Drive		Murchison Drive		Magnolia Avenue		Magnolia Avenue	
Approach Direction:	WB		EB		NB		SB	
Posted Speed:	25	▼	25	▼	25	▼	25	▼
Number of Approach Lanes:	1 Lane	▼	1 Lane	▼	1 Lane	▼	1 Lane	▼
Number of Lanes Serving Through Traffic:	1 Lane	▼	1 Lane	▼	1 Lane	▼	1 Lane	▼
Adjustment Needed for Right-Turn Traffic?	No	▼	No	▼	No	▼	No	▼
Right-Turn Geometry:	Shared-lane appr.	▼	Shared-lane appr.	▼	Shared-lane appr.	▼	Shared-lane appr.	▼