APPENDIX G

Traffic Study

DRAFT

TRAFFIC STUDY FOR THE MISSION VIEW MIXED-USE DEVELOPMENT PROJECT

SOUTH PASADENA, CALIFORNIA

JANUARY 2017

PREPARED FOR

MISSION BELL PROPERTIES, LLC

PREPARED BY

Gibson
transportation consulting, inc.

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FOR THE
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Prepared for:

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Chapter 1
Introduction

This study presents the traffic impact analysis for the proposed Mission View Mixed-Use Development Project (Project) in the City of South Pasadena, California (City). The methodology and base assumptions used in the analysis were established in accordance with City procedures.

PROJECT LOCATION

The Project Site is located at 1101 Mission Street at the southeast corner of Mission Street & Fairview Avenue. The Project Site is primarily bounded by commercial development (offices, specialty retail) and is located within the City's Mission Street Specific Plan area.

The Project Site is currently occupied with retail, restaurant, and residential uses and is located approximately 0.5 miles south of access to the Harbor Freeway (SR 110). The Project Site is primarily served by Fairview Avenue from Mission Street, with a single driveway located on Fairview Avenue.

PROJECT DESCRIPTION

The Project proposes a mixed-use development consisting of the following densities:

- 36 apartment units
- 2,325 square feet (sf) specialty retail
- 2,142 sf high-turnover restaurant
- 797 sf café-style restaurant
- Renovation of an historic building (retaining one apartment unit included in 36 total)

The Project will replace the following densities of existing development:

- 7,704 sf specialty retail
- 1,776 sf high-turnover restaurant

The Project will provide 112 parking spaces on-site within the underground parking structure accessed from Fairview Avenue.

The Project site plan is shown in Figure 1.

STUDY SCOPE AND ANALYSIS CONDITIONS

The scope of analysis for this study was developed by reviewing City procedures and sample traffic analyses provided by City Planning staff. The base assumptions and technical methodologies (i.e., trip generation, study locations, analysis methodology, etc.) were identified through discussions with City Planning staff and our experience in the circulation corridor.

The study analyzed the potential Project-generated traffic impacts on the street system in the vicinity of the Project Site as compared to existing conditions and projected future conditions at the time the Project is expected to be completed (Year 2020). Potential intersection impacts were evaluated for typical weekday morning (7:00 AM to 10:00 AM) and afternoon (3:00 PM to 6:00 PM) peak periods.

A total of four intersections in the vicinity of the Project Site within the City were selected for detailed traffic analysis.

The following traffic conditions were developed and analyzed as part of this study:

- Existing Conditions (Year 2017) – The analysis of existing traffic conditions provides a basis for the assessment of future traffic conditions. The Existing Conditions analysis includes a description of key area streets, traffic volumes and current operating conditions, in the Study Area. Intersection turning movement counts at the study intersections were collected in December 2016 while schools were still in session.

- Existing with Project Conditions (Year 2017) – This scenario analyzes the potential intersection operating conditions that could be expected if the Project were built under existing conditions. In this scenario, the Project-generated traffic is added to the Existing Conditions.

- Future without Project Conditions (Year 2020) – This scenario analyzes the potential intersection operating conditions that could be expected as a result of regional growth and related project traffic in the Study Area by Year 2020. This analysis provides the baseline conditions by which the Project impacts are evaluated in the future at full buildout.

- Future with Project Conditions (Year 2020) – This scenario analyzes the potential intersection operating conditions that could be expected if the Project were built in the projected buildout year. In this scenario, the Project-generated traffic is added to Future without Project Conditions.

Intersection Analysis Methodology

Intersection capacity has been analyzed using the Intersection Capacity Utilization (ICU) methodology required by the City for peak hour operation at signalized locations. The ICU method determines the volume-to-capacity (V/C) ratio on a critical lane basis and determines the level of service (LOS) associated with each critical V/C ratio at the intersection.

Intersection LOS is characterized on a scale of LOS A to LOS F, where LOS A is a free-flowing traffic condition, while LOS F is severe congestion.

Table 1 summarizes the LOS V/C thresholds when using the ICU methodology.

Roadway Segment Methodology

Roadway segments are analyzed by comparing the Average Daily Traffic (ADT) demand over a 24-hour period against the capacity of the roadway. The output results are presented as V/C with LOS defined as shown on Table 2.

Significant Impact Criteria

Based on *2010 Congestion Management Program for Los Angeles County* (Los Angeles County Metropolitan Transportation Authority, 2010) (CMP), the City has established the following traffic thresholds of significance to determine whether a project has a traffic impact at a signalized study intersection and may require mitigation:

- *A significant project-related impact would occur at a signalized study intersection if the addition of project-generated trips reduces the peak hour LOS of the study intersection from an acceptable operation (LOS A, B, C or D) to a deficient operation (LOS E or F); or*

- *A significant project-related impact would occur at a signalized study intersection already operating at a deficiency (LOS E or F) prior to project traffic if the addition of project traffic increases the demand at the intersection by two percent of capacity (V/C greater or equal to 0.02).*

To determine whether the addition of project-related traffic would have an impact on a particular roadway segment, the City has established the following thresholds of significance:

- *A significant project-related impact would occur on a roadway segment if the addition of project-generated trips reduces the peak hour LOS of the study intersection from an acceptable operation (LOS A, B, C) to a deficient operation (LOS D, E or F); or*

- *A significant project-related impact would occur on a roadway segment already operating at a deficiency (LOS D, E or F) prior to project traffic if the addition of project traffic increases the demand at the intersection by two percent of capacity (V/C greater or equal to 0.02).*

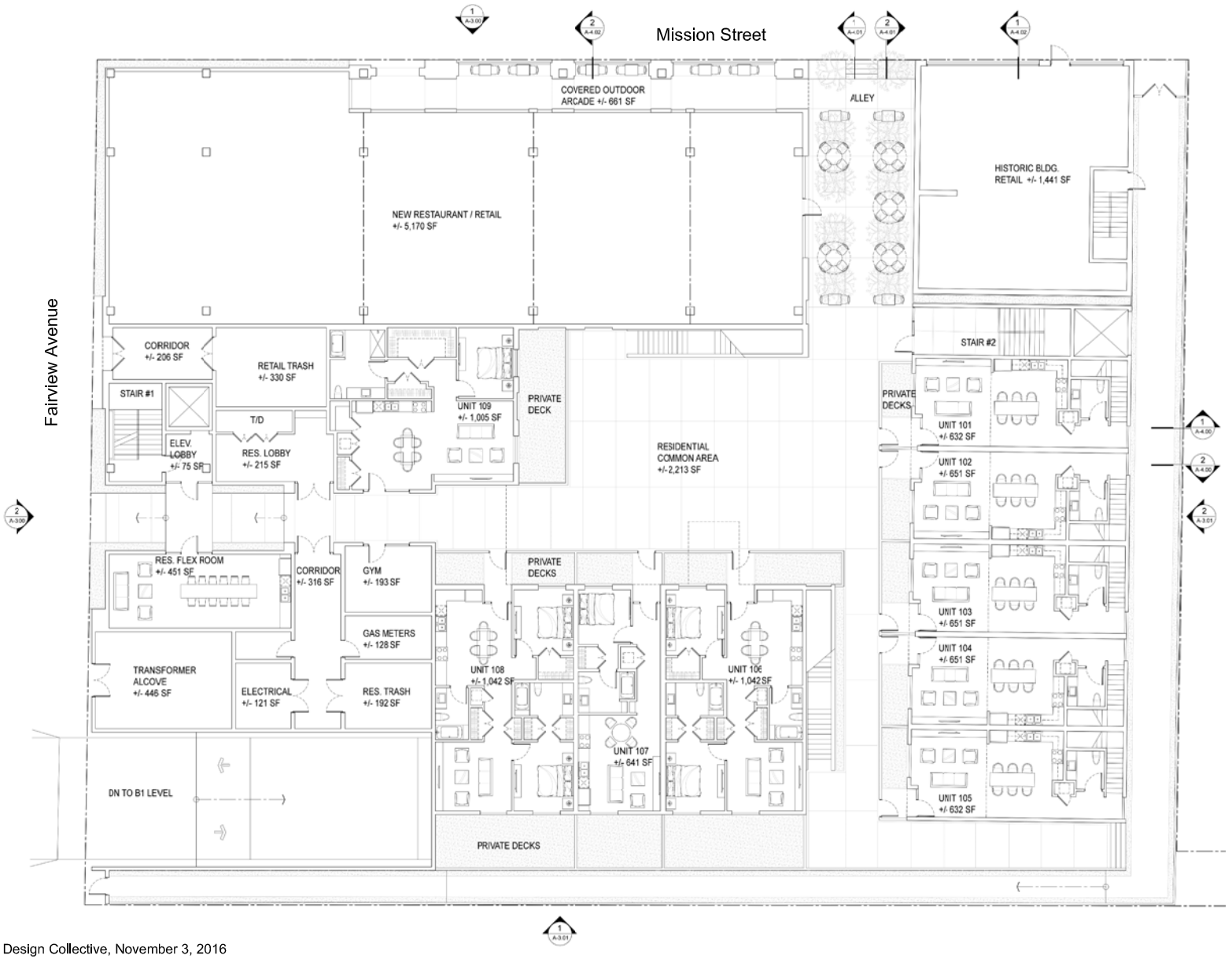
State of California Senate Bill No. 743

Senate Bill 743 (Steinberg, 2013) (SB 743) requires the Governor's Office of Planning and Research to change the California Environmental Quality Act (CEQA) guidelines regarding the analysis of transportation impacts. Under SB 743, the focus of transportation analysis will shift from driver delay to vehicle miles traveled (VMT), reduction of greenhouse gas emissions, creation of multimodal networks and promotion of mixed-use developments. Although originally scheduled to be fully implemented in City guidelines by January 1, 2016, an extension has allowed cities more time to establish an analysis methodology. Therefore, at this time, quantitative analysis cannot be conducted until such time a consensus between agencies is made relative to

implementing a technical analyses protocol that will accurately portray VMT attributable to redevelopment projects.

ORGANIZATION OF REPORT

This report is divided into 11 chapters, including this introduction. Chapter 2 describes the existing circulation system, traffic volumes, and traffic conditions in the Study Area. Chapter 3 describes the development of the Future without Project Conditions. Chapter 4 describes the forecast Project traffic volumes and distribution through the Study Area. Chapter 5 presents the Existing with Project Conditions and associated analysis. Chapter 6 presents the Future with Project Conditions and associated analysis. Chapter 7 assesses the potentially significant traffic impacts associated with the Project compared to the Existing and Future Conditions. Chapter 8 describes the recommended transportation measures to reduce the impacts created by the Project. Chapter 9 describes site access and internal circulation. Chapter 10 summarizes the parking provided for the Project. Chapter 11 summarizes the analyses and study conclusions. The appendices contain supporting documentation and additional details of the technical analyses.



Source: Workshop Design Collective, November 3, 2016

SITE PLAN

FIGURE 1

TABLE 1
LEVEL OF SERVICE DEFINITIONS FOR INTERSECTIONS

Level of Service	Signalized V/C Ratio [a]	Definition
A	0.000 - 0.600	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used.
B	0.601 - 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 - 0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 - 0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 - 1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

Notes

[a] Transportation Research Board Special Report 209, Highway Capacity Manual 2000

TABLE 2
DAILY ROADWAY CAPACITY VOLUMES
CITY OF SOUTH PASADENA

Street Classification	LOS with ADT [1]				
	A	B	C	D	E
6-Lane (divided)	33,900	39,400	45,000	50,600	56,300
4-Lane (divided)	22,500	26,300	30,000	33,800	37,500
4-Lane (undivided)	15,000	17,500	20,000	22,500	25,000
2-Lane (divided)	10,000	11,700	13,300	15,000	16,600
2-Lane (undivided)	7,500	8,800	10,000	11,300	12,500
Local Road	3,000	3,500	4,000	4,500	5,000

Chapter 2
Existing Conditions

A data collection effort was undertaken to develop a description of existing conditions in the Project Study Area. The Existing Conditions analysis includes an assessment of the existing street systems, an analysis of traffic volumes and current operating conditions (traffic counts collected in December 2016), and a description of the existing public transit service and pedestrian and bicycle circulation.

STUDY AREA

The traffic analysis Study Area is generally bounded by Mission Street on the north, commercial properties to the south and east, and Fairview Avenue on the west. Figure 2 shows the study area and selected intersections.

A traffic analysis study area generally comprises those intersections with the greatest potential to experience significant traffic impacts due to the project as defined by the City, including intersections that are:

1. Immediately adjacent or in close proximity to the project site
2. In the vicinity of the project site that are documented to have current or projected future adverse operational issues
3. In the vicinity of the project site that are forecast to experience a relatively greater percentage of project-related vehicular turning movements (e.g., at freeway ramp intersections)

The Project Study Area was established based on the above criteria, as well as peak hour Project trip generation, the anticipated distribution of Project traffic, and the existing intersections/corridor operations. It includes those intersections with the greatest potential to experience significant traffic impacts due to the Project.

As described in Chapter 1, a total of four signalized intersections located within the City were identified for detailed analysis of the above conditions and are also shown on Figure 2.

Other intersections were considered but were not selected for analysis as they did not meet the criteria outlined above, since they (1) are located a great distance from the Project Site, (2) have relatively lower traffic volumes on the side street and minor approach to the intersection, and/or (3) accommodate little, if any, Project-related traffic volumes/vehicular turning movements, eliminating the possibility of a significant Project traffic impact.

Study Area Validation

The results of the traffic impact analysis detailed in this Traffic Study were reviewed to ensure that all potentially significantly impacted intersections, prior to any mitigation, were analyzed, and that the boundary of the Study Area was extended, as necessary, to confirm that there were no significant impacts at or beyond the Study Area periphery. As detailed later in this traffic study, the study intersections on the Study Area periphery are not anticipated to be significantly impacted by the Project and no additional significant impacts are anticipated to occur beyond the Study Area.

EXISTING STREET SYSTEM

The existing street system in the Study Area consists of a regional roadway system including freeways, primary and secondary arterials, and collector and local streets that provide regional, sub-regional, or local access and circulation within the Study Area. These transportation facilities generally provide two to six travel lanes and usually allow parking on either side of the street. Typically, the speed limits range between 25 and 35 miles per hour (mph) on the streets and between 55 and 65 mph on freeways.

Due to the relatively small size of this Project, the analysis of Project-generated traffic is provided for the circulation system serving the Project site.

Roadways

- Mission Street – Mission Street is a four-lane undivided roadway that travels in the east-west direction and borders the Project on the north side. East of Fair Oaks Avenue, Mission Street becomes a two-lane undivided roadway. On-street parking is typically permitted on both sides of the street, with a two-hour limit from 7:00 AM to 7:00 PM, and the posted speed limit is 30 mph. The *Circulation & Accessibility Element* of *City of South Pasadena General Plan* (City of South Pasadena, February 2001) (General Plan) classifies Mission Street as a minor arterial. It is designated as a truck route from Pasadena Avenue to Fair Oaks Avenue.

- Fairview Avenue – Fairview Avenue is a two-lane undivided, north-south local road that provides access to the Project. From El Centro Street south to Oxley Street, Fairview Avenue is a one-way southbound road. This configuration allows for a one-way, clockwise loop toward Diamond Avenue around the Public Library. Restricted two-hour parking is allowed on both sides of Fairview Avenue near the Project's proposed driveway from 7:00 AM to 7:00 PM.

- El Centro Street – El Centro Street is a two-way undivided, east-west street. On-street parking is permitted with a two-hour limit from 7:00 AM to 7:00 PM. El Centro Street is classified as a collector street in the General Plan.

- Fair Oaks Avenue – Fair Oaks Avenue is a four-lane divided roadway that travels north-south. South of Monterey Road, Fair Oaks Avenue is a six-lane divided roadway and terminates south of Huntington Drive. Fair Oaks Avenue is posted at 30 and 35 mph. On-street parking is permitted with various limited parking restrictions (one to two hours during typical daytime hours). Fair Oaks Avenue is classified as a major arterial street in the General Plan and also a truck route from the northern City limits to Huntington Drive.

- Fremont Avenue – Fremont Avenue is a north-south two-lane roadway with a continuous left-turn lane in the vicinity of the Project. North of Hope Street, Fremont Avenue transitions to a two-lane undivided road. Unrestricted on-street parking is permitted and the posted speed limit is 30 mph. Fremont Avenue is classified as a minor arterial street in the General Plan.

EXISTING TRANSIT SYSTEM

The Project Study Area is served by bus lines operated by the Los Angeles County Metropolitan Transit Authority (Metro), as well as Metro Gold Line (fixed rail) service.

- Metro Local 176 – Route 176 is a local line that travels from The Shops at Montebello (in Montebello) to Figueroa/York (in Highland Park), with average headways of approximately 45 minutes during the weekday. In the Project Study Area, Route 176 travels east-west on Mission Street with a stop at Fremont Avenue.

- Metro Local 260 – Route 260 is a local line that travels from Gateway Towne Center (in Compton) to Loma Alta Drive (in Altadena), with average headways of approximately 15 minutes during peak hours on a weekday. In the Project Study Area, Route 260 travels north-south on Fair Oaks Avenue with a stop at Mission Street.

Approximately 600 feet west of the Project Site (at Mission Street & Meridian Avenue) is the Metro Gold Line South Pasadena station. The Gold Line provides service between Azusa and East Los Angeles, connecting to the Metro Red Line and Purple Line, Metrolink, Amtrak and other public transit at Union Station. The Gold Line provides peak hour service with seven-minute headways and off-peak service with 15-minute headways.

BICYCLE AND PEDESTRIAN NETWORK

Existing Bicycle System

The City currently has two existing bikeways comprising less than two miles of roadway. The designated Class II Bike Lanes exist on Raymondale Avenue and Marengo Avenue, outside of the Project Study Area.

Existing Pedestrian Facilities

The walkability of existing facilities is based on the availability of pedestrian routes necessary to accomplish daily tasks without the use of an automobile; these attributes are quantified by WalkScore.com and assigned a score out of 100 points. Located near mass transit, and with the various commercial businesses and cultural facilities adjacent to residential neighborhoods, the walkability of the area is approximately 93 points[1]; this means this location is a "Walker's Paradise" so daily errands do not rely on an automobile.

The sidewalks that serve as routes to the Project Site provide proper connectivity and adequate widths for a comfortable and safe pedestrian environment. The sidewalks are linked to pedestrian crossings at study intersections. Many unsignalized crossings of Mission Street are

[1] WalkScore.com rates the Project site with a score of 93 of 100 possible points (scores accessed on January 2017 for 1101 Mission Street).

marked with zebra-stripes for higher visibility. Generally, signalized intersections are equipped with pedestrian crossing phases (walk/don't walk). Pedestrian ramps are provided at the majority of intersection crossings; however, an assessment of whether they all conform to the latest Americans with Disabilities Act (ADA) standards was not performed for this study.

Sidewalk and curb ramp improvements which are redeveloped by the Project must meet the specifications of the ADA as well as the governing General Plan cross-sections.

EXISTING TRAFFIC VOLUMES AND LEVELS OF SERVICE

This section presents the existing daily and peak hour turning movement traffic volumes for the intersections analyzed in the study, describes the methodology used to assess the traffic conditions at each intersection, and analyzes the resulting operating conditions at each intersection indicating V/C ratios or delay and LOS.

Existing Traffic Volumes

Intersection daily traffic on street segments and peak hour turning movement counts at the study intersections were collected in December 2016. Local schools were in session when all traffic counts were conducted and the weather conditions were typical. The existing intersection peak hour traffic volumes are illustrated in Figure 3. The traffic count worksheets are provided in Appendix A.

Existing Intersection Levels of Service

Table 3 summarizes the weekday morning and afternoon peak hour LOS results for each of the study intersections under Existing Conditions. As shown, three of the study intersections operate acceptably (LOS D or better), while the following intersection shows an existing deficiency:

- Fair Oaks Avenue & Mission Street (LOS F – AM Peak hour)

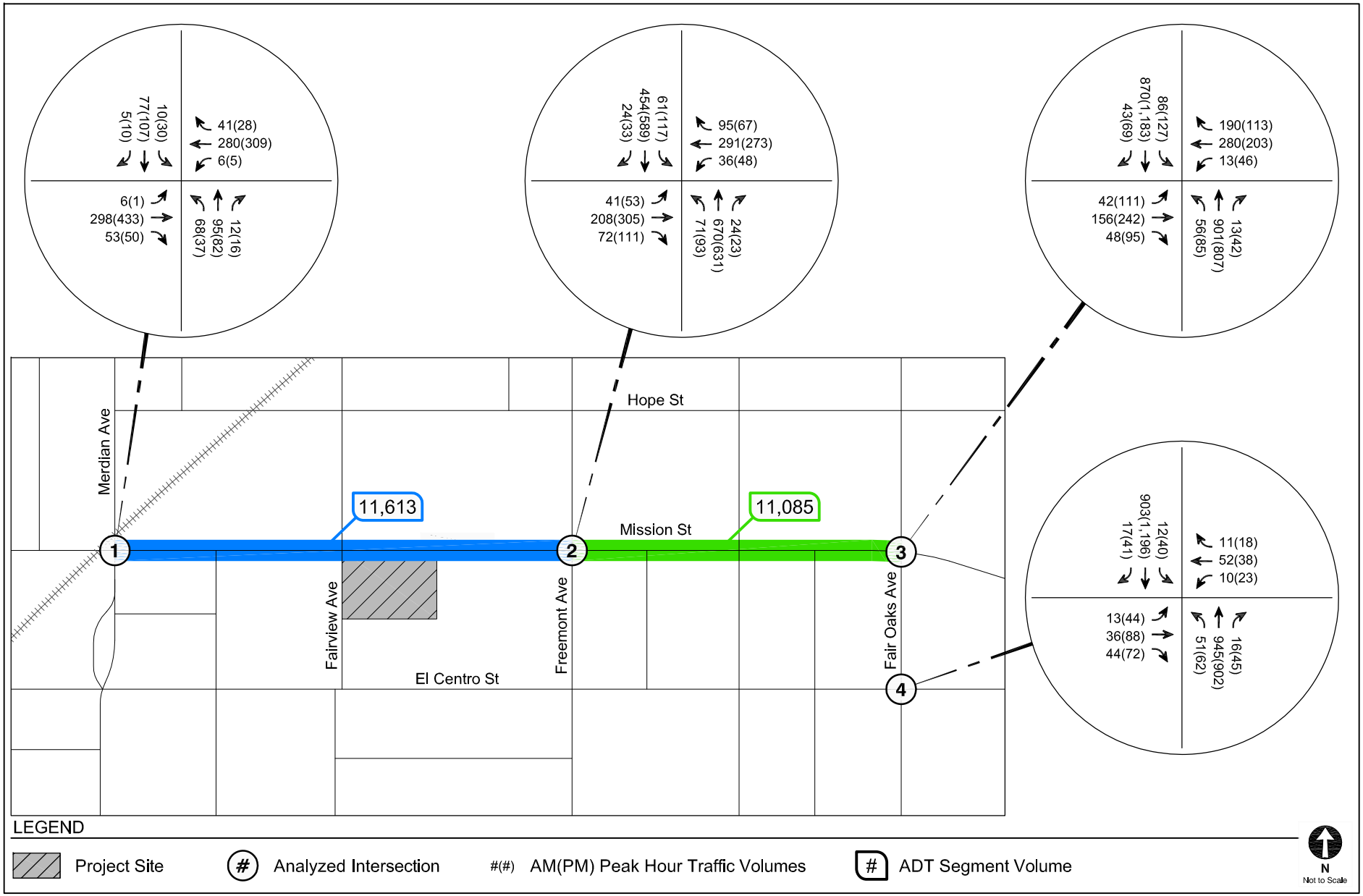
The LOS calculation worksheets are provided in Appendix B.

Existing Roadway Segment Levels of Service

Table 4 summarizes the street segment operation on Mission Street over a 24-hour period. As shown in Table 4, Mission Street currently operates at an acceptable LOS A.

STUDY AREA

FIGURE 2



EXISTING CONDITIONS
PEAK HOUR AND AVERAGE DAILY TRAFFIC VOLUMES

FIGURE
3

TABLE 3
EXISTING CONDITIONS
INTERSECTION LEVELS OF SERVICE

No.	Intersection	Peak Hour	Existing Conditions	
			V/C	LOS
1.	Meridian Avenue Mission Street	AM PM	0.331 0.369	A A
2.	Freemont Avenue Mission Street	AM PM	0.719 0.727	C C
3.	Fair Oaks Ave Mission Street	AM PM	1.045 0.811	F D
4.	Fair Oaks Ave El Centro Street	AM PM	0.773 0.668	C B

TABLE 4
EXISTING CONDITIONS
ROADWAY SEGMENT LEVELS OF SERVICE

No.	Roadway Segment	LOS E Capacity	Existing Conditions		
			ADT	V/C	LOS
1.	Mission Street (Meridian to Freemont)	25,000	11,613	0.465	A
2.	Mission Street (Freemont to Fair Oaks)	25,000	11,085	0.443	A

Chapter 3

Future without Project Conditions

Estimates of future traffic conditions both with and without the Project, representing the Project's buildout conditions, were developed to evaluate the potential impacts of the Project on the local street system. This discussion details the assumptions used to develop the Future without Project Conditions in year 2020, which corresponds to the Project's estimated buildout year.

The existing traffic volumes were factored by an annual ambient growth rate of 1% per year, compounded, to approximate regional growth and development, which is slightly higher than the trending data. In addition to the ambient growth, for purposes of providing a conservative analysis of potential cumulative traffic impacts, the traffic generated by related projects was also added to estimate the Future without Project traffic conditions.

CEQA GUIDELINES REGARDING FUTURE TRAFFIC CONDITIONS

The forecast of Future without Project Conditions was prepared in accordance with procedures outlined in Section 15130 of *Guidelines for Implementation of the California Environmental Quality Act*, *Chapter 3, Title 14, California Code of Regulations* (California Natural Resources Agency, amended July 27, 2007) (*Guidelines*). Specifically, *Guidelines* provides two options for developing the cumulative traffic volume forecast:

> "(A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the [lead] agency, or
>
> "(B) A summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect. Such plans may include: a general plan, regional transportation plan, or plans for the reduction of greenhouse gas emissions. A summary of projections may also be contained in an adopted or certified prior environmental document for such a plan. Such projections may be supplemented with additional information such as a regional modeling program.

> Any such planning document shall be referenced and made available to the public at a location specified by the lead agency."

As described in detail below, this analysis includes traffic growth both from future projects (option "A" above, the "Related Projects") and from regional growth projections (option "B" above, or ambient growth). Given that the ambient growth factor discussed below likely includes some traffic growth resulting from the Related Projects, the traffic analysis provides a conservative estimate of Future without Project traffic volumes.

AMBIENT TRAFFIC GROWTH

Existing traffic is expected to increase as a result of regional growth and development outside the Study Area. An ambient growth factor of 1% per year compounded annually was used to adjust the existing traffic volumes to reflect the effects of the regional growth and development by year 2020, which is slightly higher than the historic trends of 0.83 per year. The total adjustment applied over the three-year period was approximately 3.06%. This growth factor accounts for increases in traffic due to potential projects not yet proposed or projects outside the Study Area.

RELATED PROJECTS

In accordance with the CEQA requirements in *Guidelines*, this study also considers the effects of the Project in relation to the Related Projects. The list of Related Projects is based on information provided by City Planning, and includes two projects:

1. 820 Mission Street (residential and office)
2. South Pasadena Downtown Revitalization Project (various uses within corridor)

Using these assumptions for increasing background traffic, the potential traffic impacts of the Project were evaluated. The development of estimated traffic volumes added to the Study Area as a result of Related Projects involves the use of a three-step process: trip generation, trip distribution, and trip assignment.

Trip Generation

Trip generation estimates for the Related Projects were provided by previous study findings and the trip generation rates contained in *Trip Generation, 9th Edition* (Institute of Transportation Engineers, 2012). The Related Projects' trip generation potential is provided in Table 5.

Trip Distribution

The geographic distribution of the traffic generated by the Related Projects is dependent on several factors. These include the type and density of the proposed land uses, the geographic distribution of the population from which the employees/residents and potential patrons of the proposed developments are drawn, and the location of these projects in relation to the surrounding street system. These factors are considered along with logical travel routes through the street system to develop a reasonable pattern of trip distribution.

For the Related Projects included in Table 5, existing traffic studies were available to determine the patterns attributable for each project to remain consistent with those results.

Trip Assignment

The trip generation estimates for the Related Projects were assigned to the local street system using the trip distribution pattern described above. Figure 4 shows the peak hour traffic volumes associated with these Related Projects at the study intersections. These volumes were then added to the existing traffic volumes after adjustment for ambient growth through the projected buildout year of 2020. These volumes represent the Future without Project Conditions (i.e., existing traffic volumes added to ambient traffic growth and Related Project traffic growth) and are shown in Figure 5.

FUTURE IMPROVEMENTS

No intersection or street segment improvements were identified for inclusion in the future analysis. Therefore, the analysis was conducted on the existing circulation geometrics at study intersections and along roadway segments.

Future Bicycle System

Cycle South Pasadena: Bicycle Master Plan Update (City of South Pasadena, Leslie Scott Consulting and MJB Consulting, August 17, 2011) proposes a comprehensive network of bikeways comprised of approximately 22.8 miles of facilities, including a mix of Class I, Class II and Class III routes.

In the Project Study Area, Mission Street from Grand Avenue to Fair Oaks Avenue (0.7 miles) is scheduled as a "Green Lane" Class III bicycle facility, in which bicycles share the road with vehicles. The Green Lane will include painted pavement treatment (five-foot width) within the curb lane and signed as a Bike Route. The Green Lane designation provides enhanced visibility to increase safety between bicycles and vehicles on high activity corridors.

Additionally, bike boxes (a waiting area for bicycles) will be installed to allow bicycles to make left turns at intersections. Provisions for bicycle-only signal phasing are expected to be included at signalized intersections to allow bicycles to make left turns from the designated bike box.

While bicycle signal phases are not specifically addressed using the ICU methodology, it is expected that the increased phasing would have some effect on the overall intersection capacity. However, it is difficult to assess the severity of that impact as bicycles will not likely trigger a signal phase event every traffic cycle; rather they will arrive intermittently over a peak hour. This intermittent bicycle phasing should accrue a penalty on the overall intersection capacity.

Therefore, to account for the impact of bicycles crossing through a separate signal phase, the capacity of the left turn lanes was reduced from 1600 vehicles per hour to 1550 vehicles per

hour along Mission Street (a 3.5% reduction in left-turn capacity to account for slower moving bicycles). With reduced lane capacity, the effect of bicycles may be reflected in the ICU output.

Similarly, since bicycles will share the curb lane with vehicles, reduced capacity of the roadway segments is expected. To demonstrate this potential, the roadway capacity of Mission Street was reduced from 25,000 daily vehicles to 24,000 daily vehicles for the Future Conditions analyses.

FUTURE WITHOUT PROJECT INTERSECTION LEVELS OF SERVICE

Intersection Levels of Service

Table 6 summarizes the weekday morning and afternoon peak hour LOS results for each of the study intersections under Future without Project Conditions. As shown, three of the study intersections are projected to operate acceptably (LOS D or better), while the following intersection shows a deficiency:

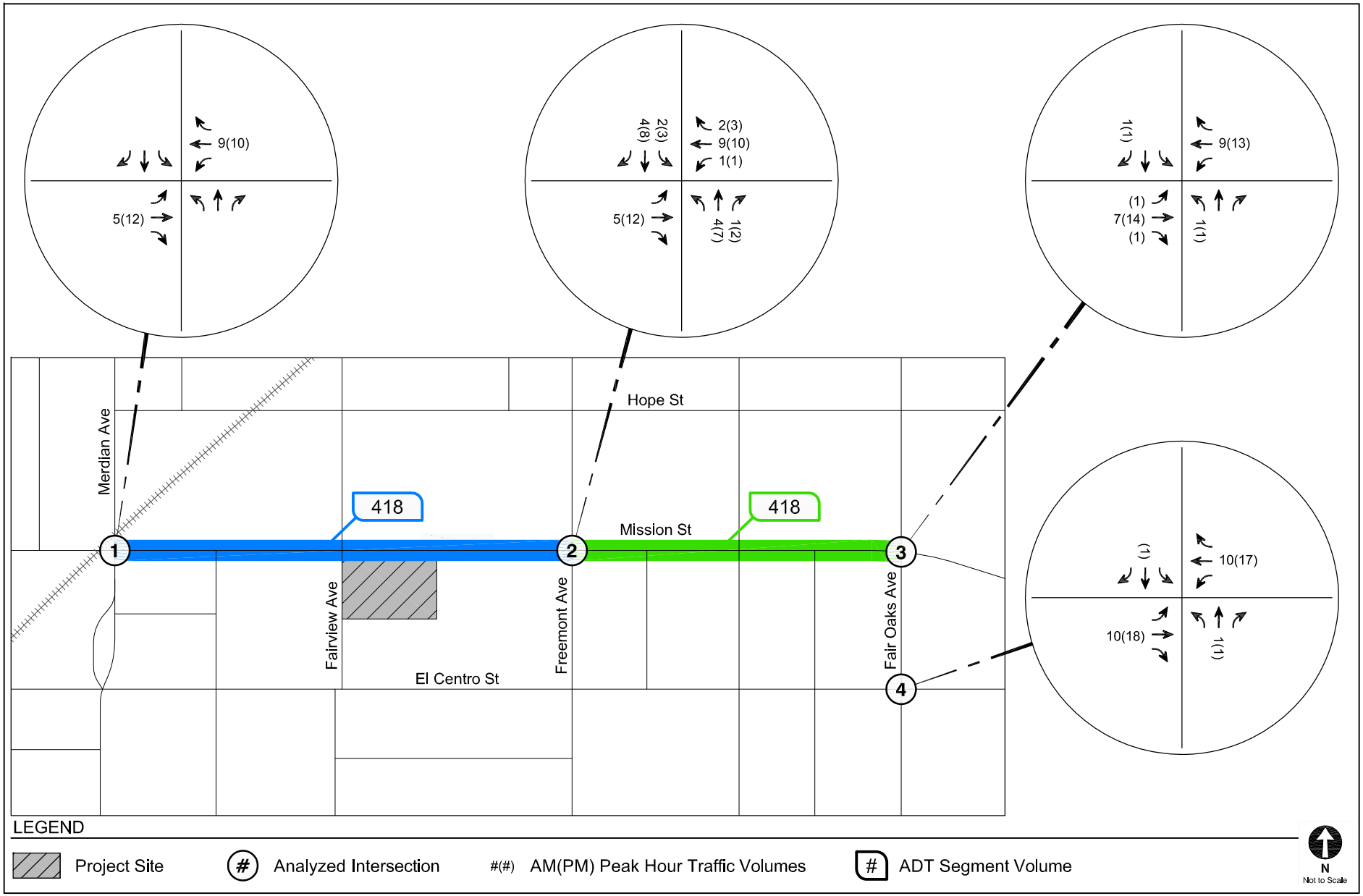
- Fair Oaks Avenue & Mission Street (LOS F – AM Peak hour)

The LOS calculation worksheets are provided in Appendix B.

Roadway Segment Levels of Service

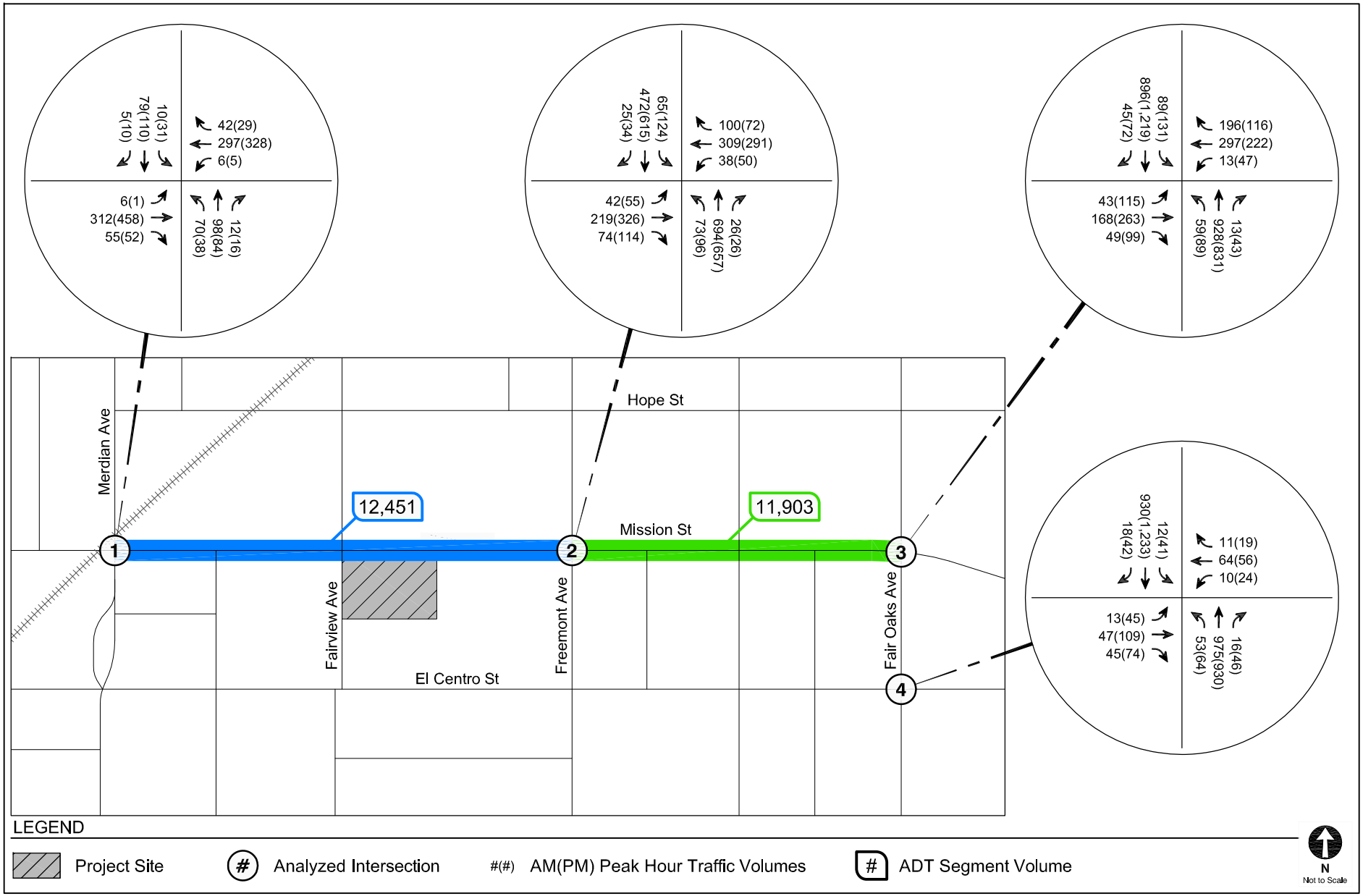
Table 7 summarizes street segment operation on Mission Street over a 24-hour period. As shown in Table 7, Mission Street is projected to operate at an acceptable LOS A.

The LOS calculation worksheets are provided in Appendix B.



RELATED PROJECT
PEAK HOUR AND AVERAGE DAILY TRAFFIC VOLUMES

FIGURE
4



FUTURE WITHOUT PROJECT CONDITIONS
PEAK HOUR AND AVERAGE DAILY TRAFFIC VOLUMES

FIGURE 5

TABLE 5
RELATED PROJECTS

No.	Project	Address	Use	Size	Trip Generation [1]						
					Daily	AM Peak Hour			PM Peak Hour		
						Inbound	Outbound	Total	Inbound	Outbound	Total
1	Mission Street	820 Mission Street	Multi-Family General Office	38 du 3,585 sf	343	24	3	27	11	22	33
2	South Pasadena Downtown Revitilization Project	Downtown South Pasadena	Condominiums Senior Housing Bowling Alley General Office Specialty Retail Quality Restaurant High Turnover Restaurant	210 du 9,000 sf 208 du 5,029 sf 600 du 13,872 sf 172 du	2,331	44	44	88	78	74	152
				Total Trips	**2,674**	**68**	**47**	**115**	**89**	**96**	**185**

[1] Source: Mission Place Mixed-Use Project TIA, Arch Beach Consulting (December 31, 2015, Table 1)

TABLE 6
FUTURE WITHOUT PROJECT CONDITIONS
INTERSECTION LEVELS OF SERVICE

No.	Intersection	Peak Hour	Future without Project	
			V/C	LOS
1.	Meridian Avenue Mission Street	AM PM	0.340 0.381	A A
2.	Freemont Avenue Mission Street	AM PM	0.746 0.759	C C
3.	Fair Oaks Ave Mission Street	AM PM	1.080 0.844	F D
4.	Fair Oaks Ave El Centro Street	AM PM	0.799 0.696	C B

TABLE 7
FUTURE CONDITIONS
ROADWAY SEGMENT LEVEL OF SERVICE

No.	Roadway Segment	LOS E Capacity [1]	Future without Project		
			ADT	V/C	LOS
1.	Mission Street (Meridian to Freemont)	24,000	12,451	0.519	A
2.	Mission Street (Freemont to Fair Oaks)	24,000	11,903	0.496	A

Chapter 4
Project Traffic

This chapter describes the assumptions and methodology used in developing the traffic volumes associated with the proposed Project within the Study Area.

PROJECT DESCRIPTION

As described in Chapter 1, the Project proposes to replace 7,704 sf specialty retail and 1,776 sf high-turnover restaurant with a mixed-use development consisting of the following densities:

- 36 apartment units
- 2,325 square feet (sf) specialty retail
- 2,142 sf high-turnover restaurant
- 797 sf café-style restaurant
- Renovation of an historic building (retaining one apartment unit included in 36 total)

A single driveway into an underground parking garage is proposed on Fairview Avenue between Mission Street and El Centro Street.

PROJECT TRIP GENERATION

The number of trips expected to be generated by the Project was estimated using rates published for specific land uses defined in *Trip Generation, 9th Edition* (Institute of Transportation Engineers, 2012). These rates are based on surveys of similar land uses at sites around the country and are provided as both daily rates and morning and afternoon peak hour rates. They relate the number of vehicle trips traveling to and from the Project Site to the size of development of each land use.

Trip generation credits are also applicable due to the existing operational land uses on site, which currently generate traffic and would, therefore, already be on the circulation network during data collection.

A 5% transit/walk-in reduction was applied to the residential and commercial land uses, which reflects a conservative estimate since this area of South Pasadena is highly walkable and in close proximity to fixed-rail mass transit (less than a quarter-mile). The same reduction was applied to existing uses to provide a fair comparison for trip credits.

To retain the conservative analysis, no internal mixed-use credits were applied.

As shown in Table 8, after accounting for the adjustments above, the Project is expected to generate 504 net new daily trips on a typical weekday, including 65 net new morning peak hour trips (30 inbound, 35 outbound) and 52 net new afternoon peak hour trips (30 inbound, 22 outbound).

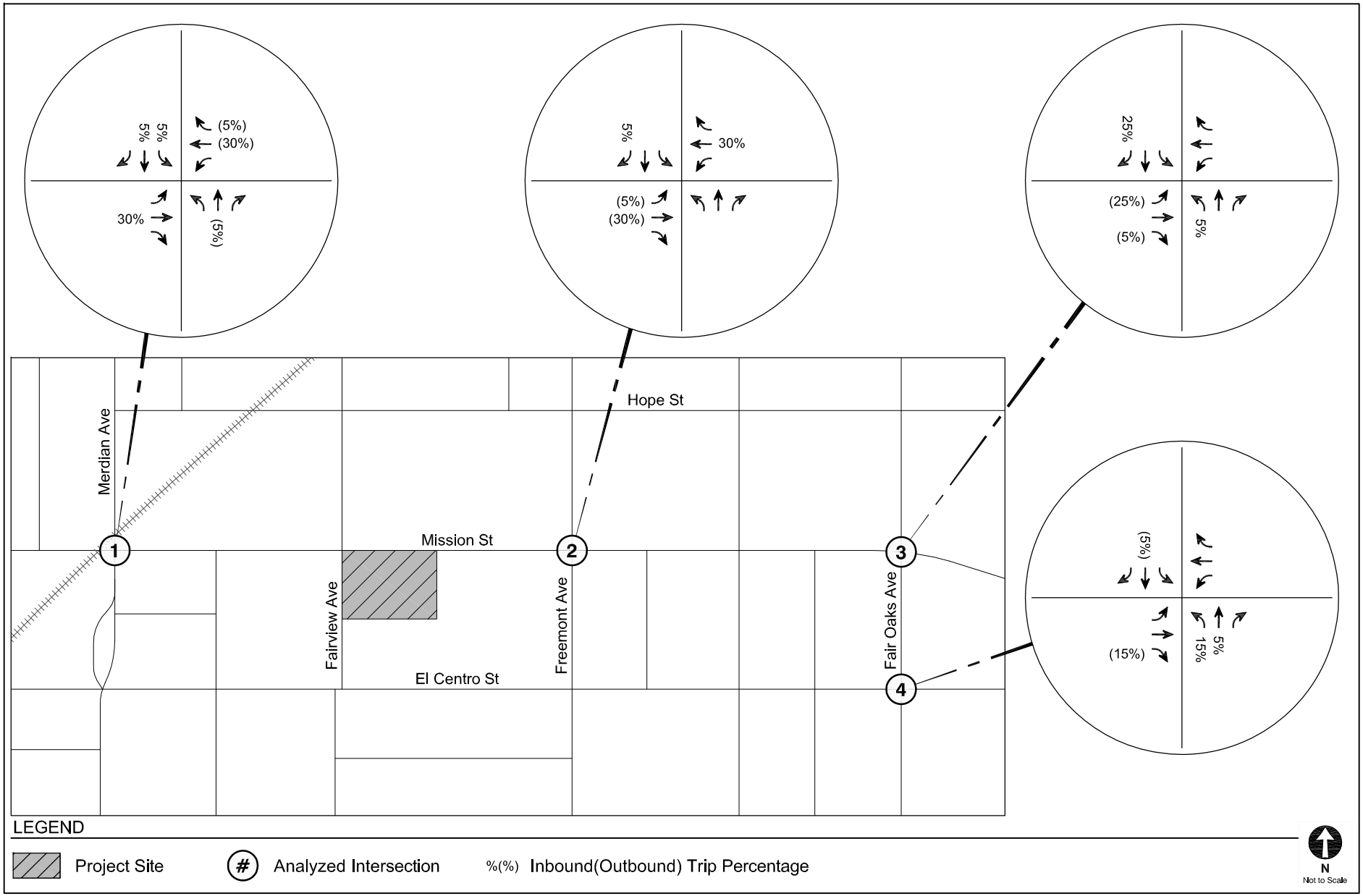
PROJECT TRIP DISTRIBUTION

Similar to the trip distribution of traffic for the Related Projects described in Chapter 3, the geographic distribution of trips generated by the Project is dependent on the location of employment and residential centers from which residents and patrons of the Project would be drawn, characteristics of the street system serving the Project Site, the level of accessibility of the routes to and from the Project Site, existing intersection traffic volumes, and the location of the proposed driveway.

Access to the Project Site would be provided on Fairview Avenue. The driveway would provide full access (i.e., right-turn and left-turn ingress and egress movements). Based on these considerations, traffic entering and exiting the Project was assigned to the surrounding street system. The intersection-level trip distribution patterns for the Project are shown in Figure 6.

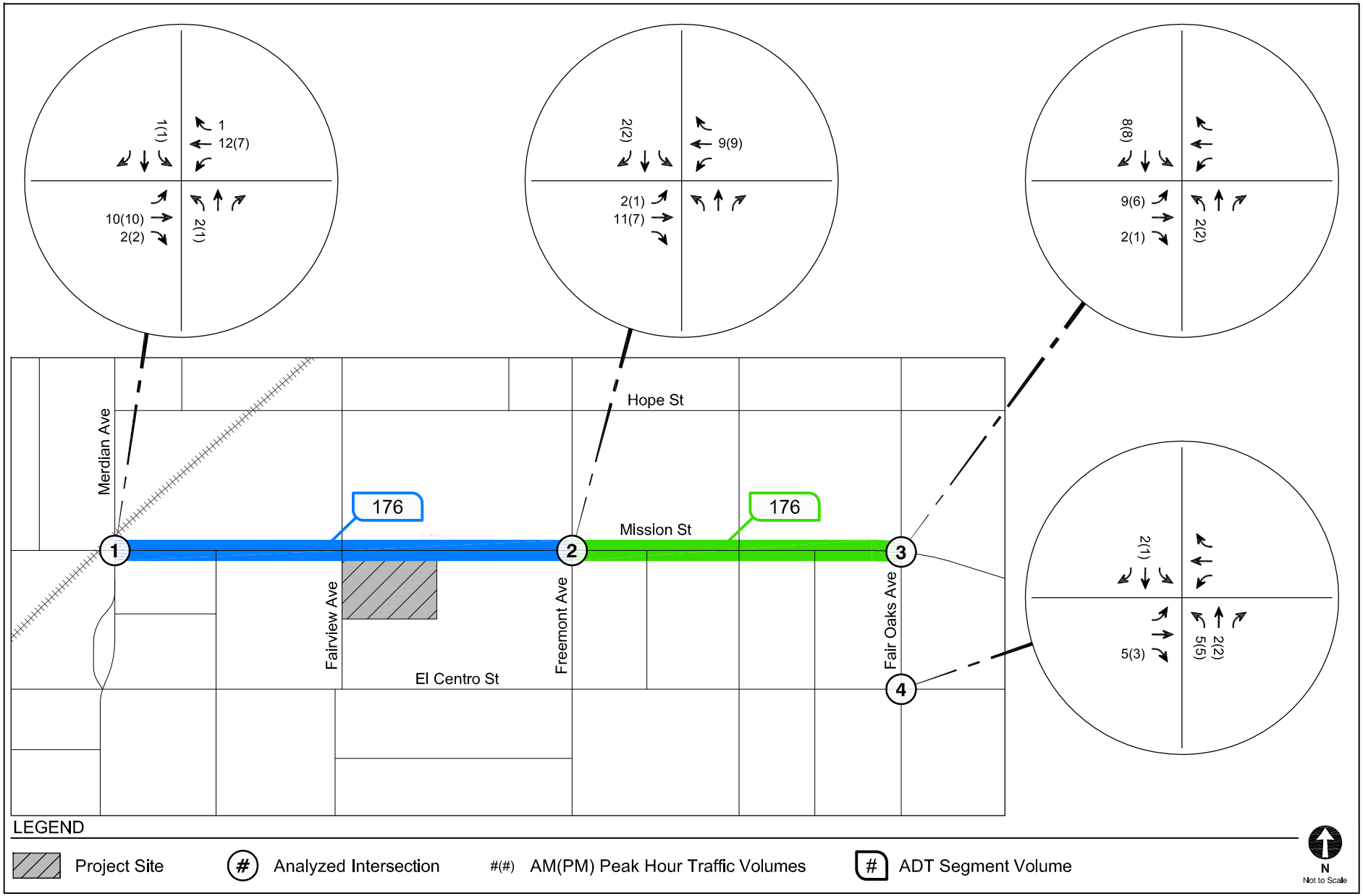
PROJECT TRIP ASSIGNMENT

The Project trip generation estimates summarized in Table 8 and the trip distribution patterns shown in Figure 6 were used to assign the Project-generated traffic through the study intersections. Figure 7 illustrates the Project-only traffic volumes at the study intersections during typical weekday morning and afternoon peak hours.



TRIP DISTRIBUTION

FIGURE 6



PROJECT-ONLY
PEAK HOUR AND AVERAGE DAILY TRAFFIC VOLUMES

FIGURE 7

TABLE 8
PROJECT TRIP GENERATION ESTIMATES

TRIP GENERATION RATES [a]									
Land Use	**ITE Land Use**	**Rate**	**Daily**	**A.M. Peak Hour**			**P.M. Peak Hour**		
				In	**Out**	**Total**	**In**	**Out**	**Total**
Apartments	220	per unit	6.65	20%	80%	0.51	65%	35%	0.62
Specialty Retail	826	per ksf	44.32	48%	52%	6.84	56%	44%	5.02
High Turnover (Sit-Down) Restaurant	932	per ksf	127.15	55%	45%	10.81	60%	40%	9.85
Café	936	per ksf	180.00	50%	50%	38.60	49%	51%	18.99

TRIP GENERATION ESTIMATES									
Land Use	**ITE Land Use**	**Size**	**Daily**	**A.M. Peak Hour**			**P.M. Peak Hour**		
				In	**Out**	**Total**	**In**	**Out**	**Total**
Proposed Project									
Apartments	220	36 unit	239	4	14	18	14	8	22
Transit/Walk-In Reduction - 5%			*(12)*	*0*	*(1)*	*(1)*	*(1)*	*0*	*(1)*
Specialty Retail	826	2.325 ksf	103	8	8	16	7	5	12
Transit/Walk-In Reduction - 5%			*(5)*	*0*	*0*	*0*	*0*	*0*	*0*
High Turnover (Sit-Down) Restaurant	932	2.142 ksf	272	13	10	23	13	8	21
Transit/Walk-In Reduction - 5%			*(14)*	*(1)*	*(1)*	*(2)*	*(1)*	*0*	*(1)*
Café	936	0.797 ksf	143	16	15	31	7	8	15
Transit/Walk-In Reduction - 5%			*(7)*	*(1)*	*(1)*	*(2)*	*0*	*0*	*0*
Proposed Project Subtotal			***719***	***39***	***44***	***83***	***39***	***29***	***68***
Existing to be Removed									
Specialty Retail		7.704 ksf	341	25	28	53	22	17	39
Transit/Walk-In Reduction - 5%			*(17)*	*(1)*	*(1)*	*(2)*	*(1)*	*(1)*	*(2)*
High Turnover (Sit-Down) Restaurant		1.776 ksf	226	10	9	19	10	7	17
Transit/Walk-In Reduction - 5%			*(11)*	*(1)*	*0*	*(1)*	*(1)*	*0*	*(1)*
Existing Use Subtotal			***215***	***9***	***9***	***18***	***9***	***7***	***16***
NET TOTAL PROJECT TRIPS			**504**	**30**	**35**	**65**	**30**	**22**	**52**

Notes:
Dwelling Unit = DU.
1,000 square feet = ksf.
[a] Source: *Trip Generation, 9th Edition* , Institute of Transportation Engineers, 2012.

Chapter 5
Existing with Project Conditions

This chapter describes the results of the analysis of intersection operating conditions associated with the Project when compared to Existing Conditions. The analysis corresponds with the Existing Conditions data and analysis presented in Chapter 2. The Existing with Project Conditions are defined by the existing traffic volumes with the inclusion of Project traffic.

EXISTING WITH PROJECT TRAFFIC VOLUMES

The Project-only daily and peak hour traffic volumes described in Chapter 4 and shown in Figure 7 were added to the existing morning and afternoon peak hour traffic volumes shown in Figure 3. The resulting volumes are illustrated in Figure 8 and represent Existing with Project Conditions after development of the Project under Existing Conditions.

EXISTING WITH PROJECT INTERSECTION LEVELS OF SERVICE

Intersection Levels of Service

Table 9 summarizes the weekday morning and afternoon peak hour LOS results for each of the study intersections under the Existing with Project Conditions. As shown, three of the study intersections are expected to operate acceptably (LOS D or better) with the addition of the Project, while the following intersection shows a deficiency:

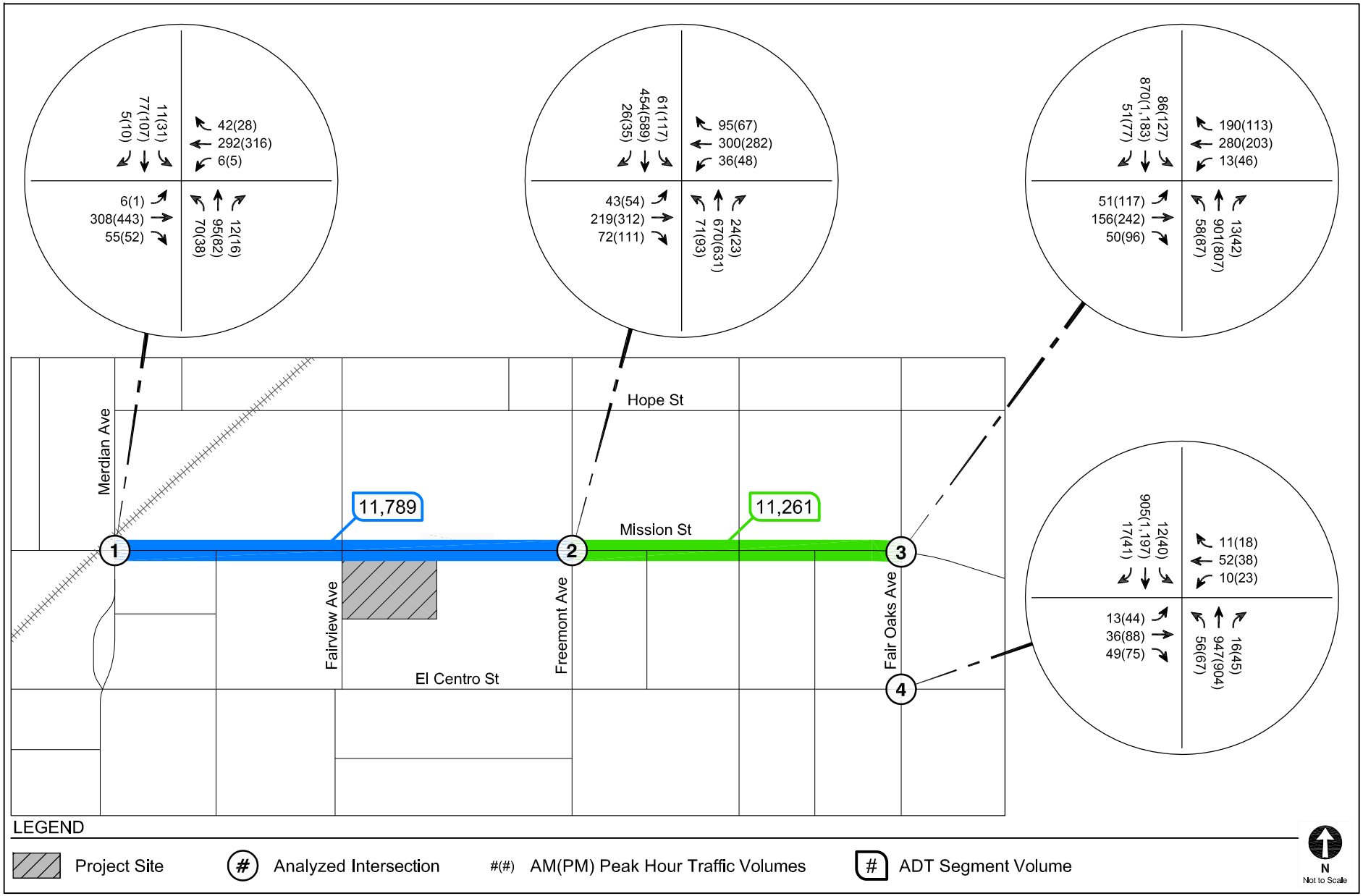
- Fair Oaks Avenue & Mission Street (LOS F – AM Peak hour)

The LOS calculation worksheets are provided in Appendix B.

Roadway Segment Levels of Service

Table 10 summarizes street segment operation on Mission Street over a 24-hour period. As shown in Table 10, Mission Street is projected to operate at an acceptable LOS A with the addition of the Project.

The LOS calculation worksheets are provided in Appendix B.



EXISTING WITH PROJECT CONDITIONS
PEAK HOUR AND AVERAGE DAILY TRAFFIC VOLUMES

FIGURE 8

TABLE 9
EXISTING WITH PROJECT CONDITIONS
INTERSECTION SIGNIFICANT IMPACT ANALYSIS

No.	Intersection	Peak Hour	Existing Conditions		Existing with Project Conditions			
			V/C	LOS	V/C	LOS	Change in V/C	Significant Impact
1.	Meridian Avenue	AM	0.331	A	0.337	A	0.006	NO
	Mission Street	PM	0.369	A	0.375	A	0.006	NO
2.	Freemont Avenue	AM	0.719	C	0.722	C	0.003	NO
	Mission Street	PM	0.727	C	0.729	C	0.002	NO
3.	Fair Oaks Ave	AM	1.045	F	1.051	F	0.006	NO
	Mission Street	PM	0.811	D	0.819	D	0.008	NO
4.	Fair Oaks Ave	AM	0.773	C	0.777	C	0.004	NO
	El Centro Street	PM	0.668	B	0.672	B	0.004	NO

TABLE 10
EXISTING WITH PROJECT CONDITIONS
ROADWAY SEGMENT SIGNIFICANT IMPACT ANALYSIS

No.	Roadway Segment	LOS E Capacity	Existing Conditions			Existing with Project Conditions			Change in V/C	Signif Impact?
			ADT	V/C	LOS	ADT	V/C	LOS		
1.	Mission Street (Meridian to Freemont)	25,000	11,613	0.465	A	11,789	0.472	A	0.007	NO
2.	Mission Street (Freemont to Fair Oaks)	25,000	11,085	0.443	A	11,261	0.450	A	0.007	NO

Notes
ADT = Average Daily Traffic (24 hour)
V/C = Volume to capacity ratio
LOS = Level of Service

Chapter 6
Future with Project Conditions

This chapter describes the results of the analysis of intersection operating conditions associated with the Project when compared to Future without Project Conditions. The analysis year of 2020 corresponds to the buildout year of the Project and to the Future without Project data and analysis developed in Chapter 3. All future background traffic growth and any transportation infrastructure improvements described in Chapter 3 are incorporated into this analysis (including the effect of bicycles on Mission Street).

FUTURE WITH PROJECT TRAFFIC VOLUMES

The Project-only morning and afternoon peak hour traffic volumes described in Chapter 4 and shown in Figure 7 were added to the Future without Project morning and afternoon peak hour traffic volumes shown in Figure 5. The resulting volumes are illustrated in Figure 9 and represent Future with Project Conditions after development of the Project in Year 2020.

FUTURE WITH PROJECT LEVELS OF SERVICE

Intersection Levels of Service

Table 11 summarizes the weekday morning and afternoon peak hour LOS results for each of the study intersections under Future without Project Conditions. As shown, three of the study intersections are projected to operate acceptably (LOS D or better), while the following intersection shows a deficiency:

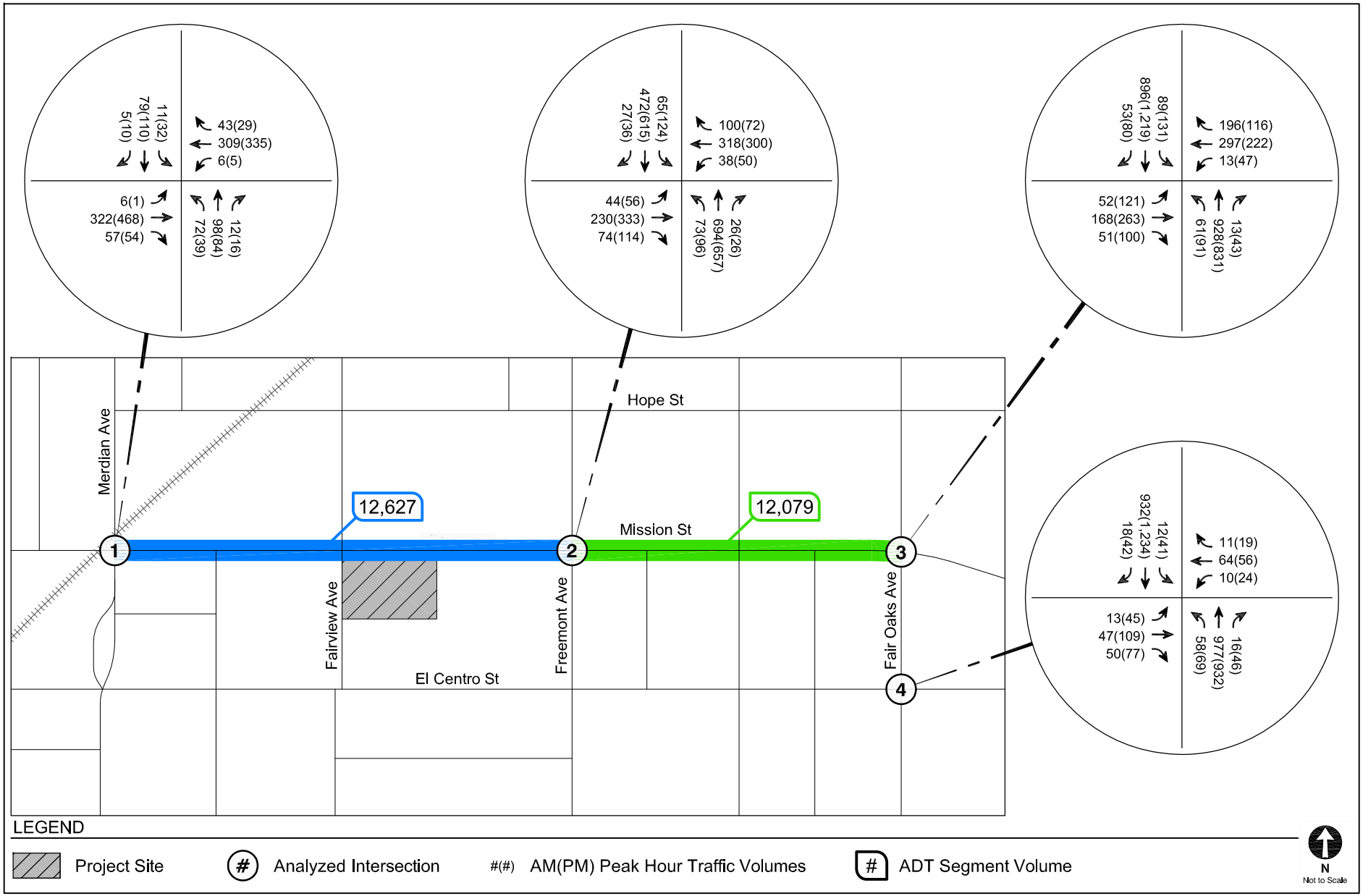
- Fair Oaks Avenue & Mission Street (LOS F – AM Peak hour)

The LOS calculation worksheets are provided in Appendix B.

Roadway Segment Levels of Service

Table 12 summarizes street segment operation on Mission Street over a 24-hour period. As shown in Table 7, Mission Street is expected to operate at an acceptable LOS A with the addition of the Project.

The LOS calculation worksheets are provided in Appendix B.



FUTURE WITH PROJECT CONDITIONS
PEAK HOUR AND AVERAGE DAILY TRAFFIC VOLUMES

FIGURE 9

TABLE 11
FUTURE WITH PROJECT CONDITIONS
INTERSECTION SIGNIFICANT IMPACT ANALYSIS

No.	Intersection	Peak Hour	Future Conditions		Future with Project Conditions			
			V/C	LOS	V/C	LOS	Change in V/C	Significant Impact
1.	Meridian Avenue	AM	0.340	A	0.345	A	0.005	NO
	Mission Street	PM	0.381	A	0.385	A	0.004	NO
2.	Freemont Avenue	AM	0.746	C	0.750	C	0.004	NO
	Mission Street	PM	0.759	C	0.761	C	0.002	NO
3.	Fair Oaks Ave	AM	1.080	F	1.086	F	0.006	NO
	Mission Street	PM	0.844	D	0.852	D	0.008	NO
4.	Fair Oaks Ave	AM	0.799	C	0.804	D	0.005	NO
	El Centro Street	PM	0.696	B	0.701	C	0.005	NO

Notes

TABLE 12
FUTURE WITH PROJECT CONDITIONS
ROADWAY SEGMENT SIGNIFICANT IMPACT ANALYSIS

No.	Roadway Segment	LOS E Capacity [1]	Future Conditions			Future with Project Conditions			Change in V/C	Signif Impact?
			ADT	V/C	LOS	ADT	V/C	LOS		
1.	Mission Street (Meridian to Freemont)	24,000	12,451	0.519	A	12,627	0.526	A	0.007	NO
2.	Mission Street (Freemont to Fair Oaks)	24,000	11,903	0.496	A	12,080	0.503	A	0.007	NO

Notes
ADT = Average Daily Traffic (24 hour)
V/C = Volume to capacity ratio
LOS = Level of Service
[1] Capacity reduced for shared bicycle lane

Chapter 7
Traffic Impact Analysis

This chapter describes the results of the intersection impact analysis for the proposed Project under Existing and Future Conditions. The analyses measured significant intersection impacts according to the impact criteria specified by the City.

The relative impact of adding Project traffic volume during the peak hours was evaluated based on a comparative analysis of the operating conditions without the Project at the study intersections and roadway segments. The previously discussed significance criteria and thresholds outlined in Chapter 1 were used to determine the significance of a traffic impact caused by the Project on the study intersections.

EXISTING WITH PROJECT CONDITIONS

As detailed in Table 9, when measuring the Existing with Project Conditions against the Existing Conditions, the incremental increases in the V/C ratios resulting from Project traffic do not exceed the significance thresholds to generate a traffic impact at intersections.

As shown in Table 10, the Project does not meet significance criteria for establishing traffic impacts on roadway segments along Mission Street.

Based on this analysis, the Project does not meet intersection or street segment thresholds for significant traffic impacts for the Existing with Project Conditions and is not required to provide off-site traffic mitigation.

FUTURE WITH PROJECT CONDITIONS

As detailed in Table 11, when measuring the Future with Project Conditions against the Future Conditions, the incremental increases in the V/C ratios resulting from Project traffic do not exceed the significance thresholds to generate a traffic impact at intersections.

As shown in Table 12, the Project does not meet significance criteria for establishing traffic impacts on roadway segments along Mission Street.

Based on this analysis, the Project does not meet intersection or street segment thresholds for significant traffic impacts for the Future with Project Conditions and is not required to provide off-site traffic mitigation.

MISSION STREET & MERIDIAN AVENUE RAIL CROSSING

The Metro Gold Line station is located on the southwest corner of Mission Street & Meridian Avenue with peak hour service at seven-minute headways. The effects of train crossings at a signalized intersection cannot be fully quantified using the ICU methodology.

Instead, based on observations of train crossing frequency during the peak hours, an assessment of queuing at the intersection may be analyzed to determine if the Project would generate traffic to significantly extend queues at crossings.

Trains at this location come from both eastbound and westbound directions and were observed to often arrive during the same signal cycle. During the morning peak hour, nine eastbound trains and eight westbound trains were present. In the evening peak hour, nine trains were present from each direction.

Gate times, including gap clearances, were approximately 90 seconds where all vehicular movements would be stopped at a red phase. Using the Synchro software, a *2010 Highway Capacity Manual* (Transportation Research Board, 2010) (HCM) based methodology, and incorporating the 90-second gate time, the intersection of Mission Street & Meridian Avenue

was reanalyzed to determine queuing for all directions both with and without the Project traffic for the Future Conditions.

Table 13 summarizes the queue length for the intersection. The Project's worst case traffic-related impact extends the eastbound queue in the morning peak hour by 10 feet, the equivalent of less than one vehicle (typically a vehicle is estimated at 22 feet when queued with other vehicles and includes the gap between vehicles). The worst case queue impact during the evening peak is the eastbound direction at 23 feet, or approximately the length of one vehicle, which is not considered significant.

VEHICLE MILES TRAVELED (VMT)

Caltrans' *Strategic Management Plan 2015-2020* (approved September 2, 2016) seeks to reduce a project's overall VMT by 15% when compared to a similarly sized Project. Although there is currently not an industry consensus on how this reduction may be calculated and quantified, the Project includes components that would qualify for decreased VMT:

- Locating a mixed-use development in close proximity (less than a quarter-mile) of a fixed-rail station will reduce a dependency on vehicular travel, thereby reducing overall VMT. Neighboring jurisdictions (City of Los Angeles) estimate that this reduction may be as much as 25% from comparable sites that are not proximal to mass transit. (For this Traffic Study, reductions for proximity to transit were maintained conservatively at 5%.)

- The Project consists of mixed-use components including residential, retail, and restaurant, which reduce external vehicular activity when compared to typical origin/destination trips now consolidated at a single site. Neighboring agencies allow a reduction between 10% and 20% for internal capture trips, dependent on the land use element. (For this Traffic Study, no reductions were applied for a mixed-use development to remain conservative.)

Therefore, the Project, when compared to a similar sized development that is non-proximal to rail transit, could reduce overall VMT between 25-45%.

TABLE 13
SUMMARY OF FUTURE CONDITIONS INTERSECTION QUEUING
DUE TO TRAIN CROSSING

Intersection	Direction	Queue Distance		
		No Project (feet)	Project (feet)	Increase (feet)
AM PEAK HOUR				
Mission Street/Meridian Avenue	EAST	285	295	10
	WEST	265	274	9
	NORTH	287	291	4
	SOUTH	152	154	2
PM PEAK HOUR				
Mission Street/Meridian Avenue	EAST	407	430	23
	WEST	281	286	5
	NORTH	215	217	2
	SOUTH	237	238	1

Queues are shown as 95th Percentile (measured in feet) per SYNCHRO

Passenger car equates to approximately 22 feet, including gap between vehicles

Chapter 8
Traffic Mitigation

The Project does not demonstrate significant traffic impacts within the study area at intersections or roadway segments and is therefore not required to provide off-site traffic impacts.

The Project will be required to maintain and/or construct all sidewalks and curb ramps along the Project frontage in accordance with ADA standards.

The Project will be required to provide half-width street dedications along Project frontages in accordance with the General Plan roadway classifications, including allowances for future bicycle network implementation.

Chapter 9

Site Access and Internal Circulation

This chapter summarizes site access and internal circulation of the Project Site.

PROJECT SITE ACCESS AND CIRCULATION

Vehicles

Vehicular access to the Project Site would be provided at a single driveway on Fairview Avenue. This driveway to the two-level underground parking garage is proposed for a single exit lane (left/right turns are shared in the same lane), with no additional widening on Fairview Avenue required (southbound and northbound turns will share the through lane).

The driveway was analyzed using the HCM methodology, which can determine the LOS for stop-controlled intersections (the ICU methodology is appropriate for signalized intersections). The HCM methodology also reports a queuing distance to determine if any back-up or stacking will occur at the driveway.

The HCM analysis determined that the driveway will operate at LOS A for both peak periods during the worst case Future with Project scenario, as shown in Table 14.

According to the analysis worksheets, due to the low volume of traffic approaching this driveway southbound on Fairview Avenue, the worst case stacking entering the site would be approximately one vehicle. The worst case stacking for vehicles exiting the site would be approximately one vehicle.

Worksheets for the driveway analysis are provided in Appendix C.

Circulation

Vehicles will enter from Fairview Avenue and circulate to the first underground level, which consists generally of a circular loop with 24-foot drive aisles. The first parking floor consists of a mix of commercial spaces and tandem spaces configured in a 90-degree angle from the drive aisle.

No circulation concerns are evident on the plan in terms of design widths or accessibility. However, it will be important to have a plan to manage the tandem spaces, either through employee agreements or a valet-type service to ensure vehicles are not trapped.

The second underground floor consists of the same circulation pattern as the first floor, with designated spaces for residential use, including a mix of solo and tandem spaces. Tandem spaces in residential areas are easier to manage than commercial spaces and will likely be assigned to the same apartment lease. It is assumed that the residential floor will be reserved for tenants and accessed through a gate or keycard. Since the residential parking is on the bottom floor, no stacking concerns are presented for gate entry as these vehicles will be fully inside the building and will not interfere with circulation on the City street.

West of the Project Site, at Meridian Avenue south of Mission Street, there is an open-air public Farmers Market on Thursdays from 4:00 PM to 8:00 PM. The segment of Meridian Avenue between Mission Street and El Centro Street is closed during this time. One of the parking areas designated for the Farmers Market is located opposite the Project on Fairview Avenue and attracts a large number of vehicles during this temporary event.

Although field observations did show moderate stacking on Fairview Avenue during this event, based on the low volume of Project related traffic, the Farmers Market traffic is not expected to significantly interfere with the Project's proposed access on Fairview Avenue.

This weekly event does alter the circulation somewhat around the Project site as Meridian Avenue is blocked; however, as with all such events, there will be added congestion and inconvenience in the area, but it is not the result of the presence of this Project, which is already generating traffic to Fairview Avenue and will continue in the future with only nominal increases over the current conditions.

Altered Circulation

In discussions with City Planning staff, a circulation alternative is being analyzed in the corridor. This alternative would create a one-way loop on Fairview Avenue from Mission Street southbound to Oxley Street, and northbound on Diamond Avenue back to Mission Street (currently the one-way loop begins at El Centro Street).

Extending the one-way loop to Mission Avenue would have a direct consequence on Project traffic in that vehicles could only enter the site via southbound Fairview Avenue and exit the site to continue traveling southbound. This altered change in travel behavior would, therefore, circulate traffic toward adjacent intersections.

To demonstrate the effect this circulation loop would have on the Project's impact at intersections, the traffic volumes at adjacent intersections were adjusted for the one-way loop flow and reanalyzed for the Future Conditions.

As shown in Table 15, with a redistribution of flow, the intersections continue to operate at similar LOS when compared to the pre-flow changes, and the Project would not have significant impacts at off-site locations. Increases in the V/C demonstrated with this shift are typically attributable to increasing critical movement demand (i.e., conflicting left turns).

Pedestrians and Bicycles

As identified previously, this area of the City is determined to be highly walkable. To support the pedestrian and bicycle paths, the site plan is configured to allow easy access to both pedestrians and bicyclists, by providing fully improved pedestrian corridors on all sides of the Project, as well as internally. Public access is provided on both Mission Street and Fairview Avenue. Passenger lifts and stairs are located on all levels, convenient to parking areas, and free of obstacles. The Mission Street frontage is proposed to have outdoor public seating to help activate the north side of the Project.

External to the site, the City is currently planning to install pedestrian in-roadway warning lights (IRWL) at the intersections of Mission Street & Diamond Avenue (west of the Project), Mission

Street & Fairview Avenue (at the Project), and Fremont Avenue & Lyndon Street (southeast of the Project). The IRWL will improve pedestrian safety at these unsignalized crossings of Mission Avenue and Fremont Avenue by intensifying visibility through lighted crosswalk treatments. The IRWL treatments are expected to be installed in 2017. Since one of these crossings is immediately adjacent to the Project site, the Project should work with the City to ensure that all necessary hardware (including cabinets and underground cable) is identified to avoid conflicts during design and construction.

Any increase in pedestrian traffic due to this Project, related projects, or other future influx of walking patrons will benefit from the safety enhancements and increased visibility provided with IRWL technology.

TABLE 14
FUTURE WITH PROJECT CONDITIONS
DRIVEWAY OPERATION

No.	Driveway Analysis	Future with Project Conditions			
		AM Delay	AM LOS	PM Delay	PM
1.	Fairview Avenue Project Driveway	9.4	A	9.3	A

TABLE 15
FUTURE WITH PROJECT CONDITIONS (ALTERED CIRCULATION)
INTERSECTION SIGNIFICANT IMPACT ANALYSIS

No.	Intersection	Peak Hour	Future Conditions		Future with Project Conditions			
			V/C	LOS	V/C	LOS	Change in V/C	Significant Impact
1.	Meridian Avenue	AM	0.358	A	0.372	A	0.014	NO
	Mission Street	PM	0.381	A	0.385	A	0.004	NO
2.	Freemont Avenue	AM	0.746	C	0.750	C	0.004	NO
	Mission Street	PM	0.759	C	0.761	C	0.002	NO
3.	Fair Oaks Ave	AM	1.080	F	1.086	F	0.006	NO
	Mission Street	PM	0.844	D	0.852	D	0.008	NO
4.	Fair Oaks Ave	AM	0.799	C	0.807	D	0.008	NO
	El Centro Street	PM	0.696	B	0.698	B	0.002	NO

Notes

Chapter 10
Parking

PARKING SUPPLY

The current site plan for the Project identifies a total of 112 spaces provided on site, split between two underground parking levels (56 on each level). A portion of these spaces are configured as tandem.

This Traffic Study did not analyze parking feasibility or other special requirements, which is typically vetted through the site plan approval process as minor changes to site plan densities and/or density bonuses may change during final map design.

Table 16 provides the parking requirements per the current *South Pasadena Municipal Code*, (City of South Pasadena, November 16, 2016) based on the current site plan densities. The Code requires a total of 93 parking spaces, with the assumption the Project qualifies as a “multi-tenant retail site.”

If the Project does not qualify as a multi-tenant retail site, individual land use parking requirements would apply. Table 17 shows the parking requirements if each building were to require separate calculations. As shown, the parking requirement for this condition would be 111 spaces.

TABLE 16
SUMMARY OF CITY MUNICIPAL CODE PARKING
(ASSUMES MULTI-TENANT RETAIL SITE)

Land Use	Rate	Spaces Required
18 one-bedroom units	1 per unit [1]	18
16 two-bedroom units	2 per unit [1]	32
2 three-bedroom units	2 per unit [1]	4
Sub-total Residential		***54***
5,264 square feet of commercial use	4 per 1000 square feet	22
16,675 square feet of bonus area	1 per 1000 square feet	17
Sub-total Commercial		***39***
Total Code Required Parking	**(with Multi-Tenant Retail Site)**	**93**

[1] The Mission Street Specific Plan (MSSP) does not require guest parking for residential uses

TABLE 17
SUMMARY OF CITY MUNICIPAL CODE PARKING
(ASSUMES INDIVIDUAL LAND USE DENSITIES)

Land Use	Rate	Spaces Required
18 one-bedroom units	1 per unit [1]	18
16 two-bedroom units	2 per unit [1]	32
2 three-bedroom units	2 per unit [1]	4
Sub-total Residential		***54***
2,325 square feet of retail	4 per 1000 square feet	10
2,939 square feet of restaurant	10 per 1000 square feet	30
16,675 square feet of bonus area	1 per 1000 square feet	17
Sub-total Commercial		***57***
Total Code Required Parking	**(with individual land uses)**	**111**

[1] The Mission Street Specific Plan (MSSP) does not require guest parking for residential uses

Chapter 11

Summary and Conclusions

This study was undertaken to analyze the potential traffic impacts of the Project on the local street system. The following summarizes the results of this analysis:

- The Project proposes a mixed-use development consisting of 36 apartment units, 2,325 sf specialty retail, 2,142 sf high-turnover restaurant, 797 sf café-style restaurant, and renovation of an historic building (retaining one apartment unit included in 36 total).

- The Project will replace 7,704 sf specialty retail and 1,776 sf high-turnover restaurant.

- The Project will provide 112 parking spaces on-site within the underground parking structure accessed from Fairview Avenue.

- After accounting for existing use credits, the Project is expected to generate 504 net new daily trips on a typical weekday, including 65 net new morning peak hour trips (30 inbound, 35 outbound) and 52 net new afternoon peak hour trips (30 inbound, 22 outbound).

- The Project traffic was added to the existing circulation system to develop the Existing with Project traffic conditions. Based on City significance criteria, the Project does not have impacts for this condition and is not required to provide mitigation.

- The future roadway network was adjusted to account for bicycle lanes and bicycle boxes, with flow rate penalties to account for these changes.

- The Project traffic was added to the future circulation system to develop the Future with Project traffic conditions. Based on City significance criteria, the Project does not have impacts for this condition and is not required to provide mitigation.

- Future traffic conditions were also analyzed assuming that the one-way loop on Fairview Avenue was extended to Mission Street. With this circulation configuration, the Project would not have impacts for this condition and would not be required to provide mitigation.

- The Project extends the queue length on eastbound Mission Street at Meridian Avenue by approximately one vehicle during a train crossing phase.

- The Project may be considered to have a reduction in VMT when compared to similar projects that are not proximal to mass transit.

- Internal circulation to the Project is adequate throughout the parking areas; some of the parking spaces are tandem, which may require a management plan.

- The Project's driveway will operate acceptably with a stop-control and single-lane exit without stacking vehicles into the public streets.

- Parking for the Project is provided within two underground levels for a total of 112 spaces. Parking requirements were not analyzed as part of this study, but would be reviewed as part of the site plan approval process.

References

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Appendix A

Traffic Counts

Turning Movement Count Report AM

Location ID: 1
North/South: Meridian Avenue
East/West: Mission Street

Date: 12/06/16
City: South Pasadena, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
7:00	3	15	2	0	33	2	3	13	5	3	15	1	95
7:15	0	13	0	7	37	1	1	17	4	6	40	0	126
7:30	1	20	5	9	72	1	2	26	16	10	56	1	219
7:45	0	20	2	13	69	0	2	29	18	15	71	0	239
8:00	1	13	5	5	89	0	4	19	15	17	76	1	245
8:15	1	14	0	10	69	4	3	24	12	14	91	3	245
8:30	3	30	3	13	53	2	3	23	23	7	60	2	222
8:45	1	19	1	8	64	0	1	25	9	17	68	1	214
9:00	1	22	3	12	65	2	6	29	10	15	70	1	236
9:15	0	11	4	8	49	0	5	10	7	7	61	0	162
9:30	3	7	5	5	37	1	5	16	3	3	68	0	153
9:45	1	5	4	5	42	3	4	17	2	3	60	0	146

Total Volume:	15	189	34	95	679	16	39	248	124	117	736	10	2302
Approach %	6%	79%	14%	12%	86%	2%	9%	60%	30%	14%	85%	1%	

Peak Hr Begin:	7:45												
PHV	5	77	10	41	280	6	12	95	68	53	298	6	951
PHF	0.639			0.870			0.893			0.826			0.970

Turning Movement Count Report PM

Location ID: 1
North/South: Meridian Avenue
East/West: Mission Street

Date: 12/06/16
City: South Pasadena, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
15:00	3	18	5	8	92	2	5	24	9	20	112	2	300
15:15	1	13	8	12	78	3	8	13	9	15	98	1	259
15:30	2	11	4	4	85	1	2	15	14	19	95	0	252
15:45	2	12	2	8	60	1	4	14	16	10	88	1	218
16:00	4	16	7	7	87	0	7	14	7	8	80	1	238
16:15	2	25	12	1	75	3	4	15	10	12	103	0	262
16:30	0	17	5	8	68	1	9	23	8	8	87	1	235
16:45	0	17	7	4	74	2	6	21	12	13	97	0	253
17:00	6	31	6	9	78	0	2	25	5	18	108	0	288
17:15	3	28	7	9	81	0	1	19	8	8	114	0	278
17:30	1	29	5	4	65	3	7	17	11	13	87	0	242
17:45	0	19	12	6	85	2	6	21	13	11	124	0	299

Total Volume:	24	236	80	80	928	18	61	221	122	155	1193	6	3124
Approach %	7%	69%	24%	8%	90%	2%	15%	55%	30%	11%	88%	0%	

Peak Hr Begin:	17:00												
PHV	10	107	30	28	309	5	16	82	37	50	433	0	1107
PHF	0.855			0.919			0.844			0.894			0.926

Pedestrian/Bicycle Count Report

	North		East		South		West	
Leg:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
7:00	2	0	5	0	11	1	10	0
7:15	4	0	6	0	13	0	13	0
7:30	4	1	4	0	23	0	8	0
7:45	1	0	5	1	30	1	15	0
8:00	4	0	9	0	19	1	11	0
8:15	2	0	6	0	16	0	17	1
8:30	6	0	6	0	13	1	6	0
8:45	17	0	13	0	17	1	14	0
9:00	4	0	10	0	15	2	11	0
9:15	10	0	5	0	11	0	6	0
9:30	2	0	3	0	11	0	5	0
9:45	4	0	4	0	11	0	4	0

	North		East		South		West	
Leg:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
15:00	13	0	12	0	18	0	0	0
15:15	8	0	16	0	30	0	6	0
15:30	5	0	13	0	24	0	2	0
15:45	6	0	6	0	13	0	5	0
16:00	3	0	10	0	15	0	8	0
16:15	4	0	15	0	24	0	6	0
16:30	6	0	6	0	25	1	6	0
16:45	4	0	12	0	35	1	7	0
17:00	5	0	11	0	28	1	4	0
17:15	1	0	4	0	30	0	7	0
17:30	4	0	9	0	24	0	1	0
17:45	4	0	9	0	35	0	7	0

Turning Movement Count Report AM

Location ID: 3
North/South: Fair Oaks Avenue
East/West: Fremont Avenue

Date: 12/06/16
City: South Pasadena, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
7:00	3	178	8	38	26	4	2	223	5	5	16	2	510
7:15	3	190	14	39	41	0	3	265	8	8	23	6	600
7:30	17	210	21	56	76	6	5	254	14	20	38	13	730
7:45	12	256	21	52	84	2	1	180	15	13	49	7	692
8:00	11	214	30	43	79	5	4	202	19	7	46	16	676
8:15	10	174	18	36	54	3	9	203	9	12	29	15	572
8:30	21	217	15	43	49	7	2	189	12	11	30	14	610
8:45	13	192	10	34	68	8	2	188	20	15	31	12	593
9:00	16	210	21	24	50	8	4	233	11	19	54	27	677
9:15	15	169	15	32	24	2	3	221	12	9	31	23	556
9:30	16	167	20	23	39	11	8	195	11	17	44	20	571
9:45	22	161	26	32	35	9	7	215	12	11	30	20	580

Total Volume:	159	2338	219	452	625	65	50	2568	148	147	421	175	7367
Approach %	6%	86%	8%	40%	55%	6%	2%	93%	5%	20%	57%	24%	

Peak Hr Begin:	7:15												
PHV	43	870	86	190	280	13	13	901	56	48	156	42	2698
PHF	0.864			0.875			0.879			0.866			0.924

Turning Movement Count Report PM

Location ID: 3
North/South: Fair Oaks Avenue
East/West: Fremont Avenue

Date: 12/06/16
City: South Pasadena, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
15:00	42	265	34	28	65	8	6	214	27	18	43	32	782
15:15	18	261	31	31	55	13	7	189	30	19	58	24	736
15:30	21	271	32	33	59	13	11	212	24	18	40	28	762
15:45	32	278	29	20	38	12	8	189	17	24	43	32	722
16:00	25	255	21	23	56	10	7	188	23	24	54	25	711
16:15	15	318	23	29	51	13	11	218	21	15	57	26	797
16:30	22	298	38	34	42	14	10	164	18	31	67	30	768
16:45	19	270	35	20	58	9	13	212	24	25	56	27	768
17:00	13	297	31	30	52	10	8	213	22	24	62	28	790
17:15	22	291	36	32	50	9	9	201	23	20	58	25	776
17:30	23	278	34	26	42	14	11	184	20	44	70	18	764
17:45	17	288	38	24	46	8	10	220	29	22	66	22	790

Total Volume:	269	3370	382	330	614	133	111	2404	278	284	674	317	9166
Approach %	7%	84%	10%	31%	57%	12%	4%	86%	10%	22%	53%	25%	

Peak Hr Begin:	16:15												
PHV	69	1183	127	113	203	46	42	807	85	95	242	111	3123
PHF	0.963			0.973			0.934			0.875			0.980

Pedestrian/Bicycle Count Report

	North		East		South		West	
Leg:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
7:00	4	0	3	1	1	0	2	0
7:15	3	0	4	1	2	0	0	0
7:30	1	0	15	0	1	0	3	1
7:45	1	0	4	2	2	0	2	0
8:00	1	1	2	0	5	0	0	0
8:15	6	0	3	0	4	1	3	0
8:30	8	0	9	0	4	0	4	0
8:45	8	0	9	1	2	1	4	0
9:00	5	0	8	0	4	0	2	0
9:15	5	0	4	0	5	0	2	0
9:30	6	0	6	0	2	0	2	0
9:45	2	0	5	0	0	0	3	0

	North		East		South		West	
Leg:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
15:00	11	0	21	4	3	0	7	1
15:15	13	0	43	0	17	0	5	0
15:30	10	0	24	2	14	0	6	0
15:45	2	0	3	1	15	2	8	0
16:00	10	0	8	0	4	2	7	0
16:15	7	0	22	0	2	0	2	0
16:30	4	0	18	0	11	0	2	0
16:45	4	0	9	0	1	1	12	0
17:00	4	0	9	0	5	0	2	0
17:15	5	0	10	2	10	3	4	0
17:30	10	0	8	1	7	2	4	0
17:45	4	0	12	2	9	3	7	0

Turning Movement Count Report AM

Location ID: 2
North/South: Mission Street
East/West: Fremont Avenue

Date: 12/06/16
City: South Pasadena, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
7:00	0	157	7	8	29	2	1	154	15	8	14	4	399
7:15	2	117	11	9	38	10	3	178	11	9	29	6	423
7:30	4	111	13	28	70	16	7	169	7	18	55	9	507
7:45	5	116	15	22	86	9	7	171	25	12	57	15	540
8:00	6	101	17	23	79	7	5	156	25	21	51	6	497
8:15	9	126	16	22	56	4	5	174	14	21	45	11	503
8:30	7	111	12	14	58	9	4	174	16	19	32	5	461
8:45	5	125	18	20	74	8	11	158	19	23	44	5	510
9:00	11	126	21	16	56	10	11	150	17	20	52	10	500
9:15	4	105	13	13	36	2	6	162	15	17	50	11	434
9:30	5	113	20	21	44	7	5	147	12	26	51	9	460
9:45	5	97	24	13	48	11	6	129	13	19	44	9	418

Total Volume:	63	1405	187	209	674	95	71	1922	189	213	524	100	5652
Approach %	4%	85%	11%	21%	69%	10%	3%	88%	9%	25%	63%	12%	

Peak Hr Begin:	7:30												
PHV	24	454	61	95	291	36	24	670	71	72	208	41	2047
PHF	0.892			0.902			0.942			0.955			0.948

Turning Movement Count Report PM

Location ID: 2
North/South: Mission Street
East/West: Fremont Avenue

Date: 12/06/16
City: South Pasadena, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
15:00	5	108	25	14	87	21	7	125	23	32	82	21	550
15:15	3	113	20	18	76	18	8	168	22	38	68	13	565
15:30	10	137	16	14	80	8	6	149	18	28	61	10	537
15:45	11	141	23	22	69	14	6	149	27	28	60	10	560
16:00	6	143	18	20	77	17	8	160	17	28	68	12	574
16:15	4	120	24	8	70	8	8	161	16	35	83	12	549
16:30	4	126	31	15	64	9	7	150	32	29	69	10	546
16:45	11	151	31	15	67	13	5	171	15	24	79	16	598
17:00	7	129	23	17	77	13	4	140	27	24	74	14	549
17:15	10	155	31	17	64	7	5	150	26	40	83	14	602
17:30	5	154	32	18	65	15	9	170	25	23	69	9	594
17:45	6	143	24	11	76	14	5	163	21	27	88	14	592
Total Volume:	82	1620	298	189	872	157	78	1856	269	356	884	155	6816
Approach %	4%	81%	15%	16%	72%	13%	4%	84%	12%	26%	63%	11%	
Peak Hr Begin:	16:45												
PHV	33	589	117	67	273	48	23	631	93	111	305	53	2343
PHF	0.943			0.907			0.915			0.856			0.973

Pedestrian/Bicycle Count Report

	North		East		South		West	
Leg:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
7:00	1	0	1	0	8	0	0	0
7:15	4	0	2	0	8	0	0	0
7:30	5	1	4	0	13	2	2	0
7:45	5	1	0	0	10	0	0	0
8:00	10	0	3	0	11	0	0	0
8:15	0	0	2	0	9	0	0	0
8:30	9	0	3	0	5	0	2	0
8:45	9	0	3	0	6	0	1	0
9:00	10	0	6	0	9	0	5	0
9:15	4	0	0	0	0	0	0	0
9:30	4	0	2	0	8	0	0	0
9:45	4	0	3	0	2	0	0	0

	North		East		South		West	
Leg:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
15:00	16	0	9	0	3	0	2	0
15:15	10	0	14	0	19	0	6	0
15:30	9	0	5	0	14	0	2	1
15:45	5	0	2	0	5	1	3	0
16:00	7	1	0	0	6	0	2	0
16:15	20	0	9	2	13	0	4	1
16:30	5	0	3	0	9	0	2	0
16:45	11	0	6	0	17	0	1	0
17:00	3	0	4	0	20	0	2	0
17:15	8	0	4	0	6	0	0	0
17:30	9	0	6	0	19	0	1	0
17:45	9	0	6	0	12	0	0	0

Turning Movement Count Report AM

Location ID: 4
North/South: Fair Oaks Avenue
East/West: El Centro Street

Date: 12/06/16
City: South Pasadena, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			Totals:
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
7:00	9	196	4	2	3	0	5	235	3	5	4	4	470
7:15	0	174	5	1	3	2	4	279	11	2	4	4	489
7:30	10	239	1	4	8	4	5	256	13	12	8	2	562
7:45	2	265	4	1	19	0	1	198	15	18	12	6	541
8:00	5	225	2	5	22	4	6	212	12	12	12	1	518
8:15	7	182	10	4	10	0	7	212	14	12	14	3	475
8:30	6	194	10	4	11	2	4	199	12	3	10	5	460
8:45	5	211	12	6	11	3	3	189	9	6	12	3	470
9:00	10	221	12	4	7	0	5	251	17	11	8	8	554
9:15	8	149	6	4	11	1	10	224	12	8	9	11	453
9:30	10	184	7	7	7	2	8	197	11	8	6	14	461
9:45	6	177	4	8	5	2	6	207	19	18	12	4	468

Total Volume:	78	2417	77	50	117	20	64	2659	148	115	111	65	5921
Approach %	3%	94%	3%	27%	63%	11%	2%	93%	5%	40%	38%	22%	

Peak Hr Begin:	7:15												
PHV	17	903	12	11	52	10	16	945	51	44	36	13	2110
PHF	0.860			0.589			0.861			0.646			0.939

Turning Movement Count Report PM

Location ID: 4
North/South: Fair Oaks Avenue
East/West: El Centro Street

Date: 12/06/16
City: South Pasadena, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
15:00	17	268	10	3	10	2	11	227	25	18	21	8	620
15:15	11	266	3	5	15	6	11	206	24	18	18	3	586
15:30	18	301	8	9	7	6	13	238	17	24	23	7	671
15:45	9	264	12	4	12	6	5	187	12	14	10	10	545
16:00	14	301	8	9	7	3	15	217	15	23	24	7	643
16:15	17	306	12	2	9	2	12	210	14	21	18	11	634
16:30	10	288	11	2	8	8	5	190	14	31	18	11	596
16:45	9	296	10	2	12	3	8	254	14	20	19	11	658
17:00	7	310	10	5	8	5	11	232	14	12	27	9	650
17:15	11	288	7	6	7	10	15	201	17	22	18	9	611
17:30	14	302	13	5	11	5	11	215	17	18	24	15	650
17:45	7	321	3	8	12	7	6	228	7	20	10	6	635
Total Volume:	144	3511	107	60	118	63	123	2605	190	241	230	107	7499
Approach %	4%	93%	3%	25%	49%	26%	4%	89%	7%	42%	40%	19%	
Peak Hr Begin:	16:45												
PHV	41	1196	40	18	38	23	45	902	62	72	88	44	2569
PHF	0.970			0.859			0.914			0.895			0.976

Pedestrian/Bicycle Count Report

	North		East		South		West	
Leg:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
7:00	1	0	0	3	4	1	0	0
7:15	2	0	0	0	4	1	0	0
7:30	2	0	1	1	15	1	1	0
7:45	2	0	2	0	9	0	0	0
8:00	1	0	0	0	4	0	0	0
8:15	0	0	6	0	10	0	0	0
8:30	2	0	5	0	11	1	0	0
8:45	7	1	2	0	10	0	0	0
9:00	1	1	4	0	7	0	0	0
9:15	4	1	0	0	8	1	0	0
9:30	1	0	4	0	4	0	0	0
9:45	6	0	4	0	10	0	0	0

	North		East		South		West	
Leg:	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*	*Peds*	*Bicycle*
15:00	7	0	9	0	38	2	0	0
15:15	5	0	4	0	27	0	0	0
15:30	5	2	5	0	26	0	0	0
15:45	3	1	8	0	16	0	0	0
16:00	2	0	6	0	18	3	0	0
16:15	2	0	2	3	12	2	0	0
16:30	6	1	9	0	11	0	0	0
16:45	1	0	6	0	9	0	0	0
17:00	0	0	2	1	3	0	0	0
17:15	0	0	1	0	6	0	0	0
17:30	0	0	0	0	10	0	0	0
17:45	0	0	0	0	3	0	0	0

Prepared by City Count, LLC (www.citycount.com)

ADT Volume Report

Mission Avenue (Meridian to Fremont)

Day: Thursday, December 08, 2016 **City:** South Pasadena, CA

Daily Totals	NB	SB	EB	WB	Total
	0	0	6070	5543	11613

AM	NB		SB		EB		WB		Total		PM	NB		SB		EB		WB		Total	
00:00					17		10		27		12:00					96		90		186	
00:15					7		5		12		12:15					90		87		177	
00:30					4		3		7		12:30					105		110		215	
00:45					11	39	8	26	19	65	12:45					88	379	108	395	196	774
01:00					7		3		10		13:00					109		96		205	
01:15					5		3		8		13:15					116		113		229	
01:30					5		6		11		13:30					105		85		190	
01:45					1	18	2	14	3	32	13:45					103	433	108	402	211	835
02:00					3		0		3		14:00					117		95		212	
02:15					0		1		1		14:15					120		84		204	
02:30					4		1		5		14:30					124		104		228	
02:45					0	7	0	2	0	9	14:45					105	466	100	383	205	849
03:00					0		2		2		15:00					133		111		244	
03:15					0		0		0		15:15					119		96		215	
03:30					0		1		1		15:30					114		108		222	
03:45					1	1	1	4	2	5	15:45					136	502	100	415	236	917
04:00					1		3		4		16:00					112		98		210	
04:15					2		1		3		16:15					141		102		243	
04:30					9		4		13		16:30					114		112		226	
04:45					6	18	2	10	8	28	16:45					125	492	108	420	233	912
05:00					3		2		5		17:00					140		105		245	
05:15					12		15		27		17:15					99		101		200	
05:30					8		8		16		17:30					140		102		242	
05:45					10	33	20	45	30	78	17:45					105	484	92	400	197	884
06:00					18		14		32		18:00					122		107		229	
06:15					21		23		44		18:15					133		105		238	
06:30					26		23		49		18:30					117		102		219	
06:45					33	98	34	94	67	192	18:45					126	498	88	402	214	900
07:00					40		54		94		19:00					90		91		181	
07:15					52		61		113		19:15					100		79		179	
07:30					80		89		169		19:30					88		73		161	
07:45					96	268	123	327	219	595	19:45					81	359	61	304	142	663
08:00					79		109		188		20:00					70		66		136	
08:15					92		101		193		20:15					61		47		108	
08:30					80		87		167		20:30					61		56		117	
08:45					70	321	94	391	164	712	20:45					69	261	55	224	124	485
09:00					84		71		155		21:00					61		36		97	
09:15					67		86		153		21:15					48		46		94	
09:30					69		76		145		21:30					41		35		76	
09:45					81	301	79	312	160	613	21:45					40	190	39	156	79	346
10:00					97		84		181		22:00					43		33		76	
10:15					84		89		173		22:15					28		33		61	
10:30					101		82		183		22:30					16		10		26	
10:45					85	367	106	361	191	728	22:45					20	107	21	97	41	204
11:00					83		79		162		23:00					14		10		24	
11:15					89		67		156		23:15					18		11		29	
11:30					96		82		178		23:30					16		6		22	
11:45					103	371	98	326	201	697	23:45					9	57	6	33	15	90
Totals						1842		1912	3754		Totals						4228		3631	7859	
Split %						49.1%		50.9%	32.3%		Split %						53.8%		46.2%	67.7%	

Daily Totals	NB	SB	EB	WB	Total
	0	0	6070	5543	11613

AM Peak Hour	11:00	07:30	07:30	PM Peak Hour	16:15	16:15	16:15
AM Peak Hr Volume	371	422	769	PM Peak Hr Volume	520	427	947
AM Pk Hr Factor	0.900	0.858	0.878	PM Pk Hr Factor	0.922	0.953	0.966

Prepared by City Count, LLC (www.citycount.com)

ADT Volume Report

Mission Avenue (Fremont Avenue to Fair Oaks)

Day: Thursday, December 08, 2016 **City:** South Pasadena, CA

Daily Totals	NB	SB	EB	WB	Total
	0	0	5691	5394	11085

AM	NB	SB	EB		WB		Total		PM	NB	SB	EB		WB		Total	
00:00			11		9		20		12:00			102		83		185	
00:15			9		5		14		12:15			86		92		178	
00:30			2		3		5		12:30			88		97		185	
00:45			10	32	6	23	16	55	12:45			85	361	89	361	174	722
01:00			5		5		10		13:00			103		96		199	
01:15			3		3		6		13:15			108		105		213	
01:30			0		4		4		13:30			73		93		166	
01:45			0	8	2	14	2	22	13:45			94	378	94	388	188	766
02:00			4		0		4		14:00			117		94		211	
02:15			1		2		3		14:15			105		74		179	
02:30			2		1		3		14:30			96		95		191	
02:45			3	10	4	7	7	17	14:45			117	435	103	366	220	801
03:00			0		3		3		15:00			126		109		235	
03:15			0		0		0		15:15			124		97		221	
03:30			1		0		1		15:30			104		111		215	
03:45			1	2	0	3	1	5	15:45			112	466	104	421	216	887
04:00			0		4		4		16:00			133		108		241	
04:15			0		1		1		16:15			129		88		217	
04:30			6		3		9		16:30			117		102		219	
04:45			4	10	3	11	7	21	16:45			129	508	86	384	215	892
05:00			5		1		6		17:00			121		95		216	
05:15			6		11		17		17:15			120		104		224	
05:30			16		7		23		17:30			136		112		248	
05:45			6	33	14	33	20	66	17:45			121	498	96	407	217	905
06:00			11		13		24		18:00			134		106		240	
06:15			7		22		29		18:15			123		111		234	
06:30			24		20		44		18:30			118		86		204	
06:45			27	69	27	82	54	151	18:45			104	479	77	380	181	859
07:00			35		41		76		19:00			89		81		170	
07:15			44		52		96		19:15			94		78		172	
07:30			70		94		164		19:30			90		68		158	
07:45			97	246	130	317	227	563	19:45			62	335	57	284	119	619
08:00			78		107		185		20:00			59		50		109	
08:15			77		97		174		20:15			42		54		96	
08:30			72		84		156		20:30			66		55		121	
08:45			70	297	97	385	167	682	20:45			58	225	42	201	100	426
09:00			79		76		155		21:00			52		48		100	
09:15			71		85		156		21:15			35		49		84	
09:30			72		91		163		21:30			40		32		72	
09:45			74	296	103	355	177	651	21:45			39	166	35	164	74	330
10:00			89		89		178		22:00			38		25		63	
10:15			81		73		154		22:15			30		35		65	
10:30			79		81		160		22:30			11		13		24	
10:45			76	325	96	339	172	664	22:45			19	98	17	90	36	188
11:00			85		83		168		23:00			15		14		29	
11:15			89		75		164		23:15			17		13		30	
11:30			81		85		166		23:30			13		11		24	
11:45			107	362	95	338	202	700	23:45			7	52	3	41	10	93
Totals				1690		1907	3597		Totals				4001		3487	7488	
Split %				47.0%		53.0%	32.4%		Split %				53.4%		46.6%	67.6%	

Daily Totals	NB	SB	EB	WB	Total
	0	0	5691	5394	11085

AM Peak Hour	11:00	07:30	07:30	PM Peak Hour	17:30	17:30	17:30
AM Peak Hr Volume	362	428	750	PM Peak Hr Volume	514	425	939
AM Pk Hr Factor	0.846	0.823	0.826	PM Pk Hr Factor	0.945	0.949	0.947

Appendix B

Intersection Capacity Utilization (ICU) Worksheets

Mission View Mixed Use

Intersection Capacity Utilization Analysis

1. MERIDIAN AVE & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1600 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	5	0.000	N/S 1:	0.115 *
Southbound	Through	1.00	1,600	77	0.058	N/S 2:	0.101
	Left	0.00	1,600	10	0.006 *	E/W 1:	0.116 *
	Right	0.00	0	41	0.000	E/W 2:	0.106
Westbound	Through	2.00	3,200	280	0.102		
	Left	0.00	1,600	6	0.004 *	V/C Ratio:	0.231
	Right	0.00	0	12	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	95	0.109 *	ITS:	0.000
	Left	0.00	1,600	68	0.043		
	Right	0.00	0	53	0.000	ICU:	0.331
Eastbound	Through	2.00	3,200	298	0.112 *		
	Left	0.00	1,600	6	0.004	LOS:	A

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	10	0.000	N/S 1:	0.103
Southbound	Through	1.00	1,600	107	0.092 *	N/S 2:	0.115 *
	Left	0.00	1,600	30	0.019	E/W 1:	0.154 *
	Right	0.00	0	28	0.000	E/W 2:	0.108
Westbound	Through	2.00	3,200	309	0.107		
	Left	0.00	1,600	5	0.003 *	V/C Ratio:	0.269
	Right	0.00	0	16	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	82	0.084	ITS:	0.000
	Left	0.00	1,600	37	0.023 *		
	Right	0.00	0	50	0.000	ICU:	0.369
Eastbound	Through	2.00	3,200	433	0.151 *		
	Left	0.00	1,600	1	0.001	LOS:	A

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

2. FREEMONT & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1600 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	1.00	1,600	24	0.002	N/S 1:	0.472 *
Southbound	Through	1.00	1,600	454	0.284	N/S 2:	0.328
	Left	1.00	1,600	61	0.038 *	E/W 1:	0.111
	Right	0.00	0	95	0.000	E/W 2:	0.147 *
Westbound	Through	2.00	3,200	291	0.121 *		
	Left	1.00	1,600	36	0.023	V/C Ratio:	0.619
	Right	0.00	0	24	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	670	0.434 *	ITS:	0.000
	Left	1.00	1,600	71	0.044		
	Right	0.00	0	72	0.000	ICU:	0.719
Eastbound	Through	2.00	3,200	208	0.088		
	Left	1.00	1,600	41	0.026 *	LOS:	C

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	1.00	1,600	33	0.004	N/S 1:	0.467 *
Southbound	Through	1.00	1,600	589	0.368	N/S 2:	0.426
	Left	1.00	1,600	117	0.073 *	E/W 1:	0.160 *
	Right	0.00	0	67	0.000	E/W 2:	0.139
Westbound	Through	2.00	3,200	273	0.106		
	Left	1.00	1,600	48	0.030 *	V/C Ratio:	0.627
	Right	1.00	1,600	23	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	631	0.394 *	ITS:	0.000
	Left	1.00	1,600	93	0.058		
	Right	0.00	0	111	0.000	ICU:	0.727
Eastbound	Through	2.00	3,200	305	0.130 *		
	Left	1.00	1,600	53	0.033	LOS:	C

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

3. FAIR OAKS & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1600 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	43	0.000	N/S 1:	0.625 *
Southbound	Through	2.00	3,200	870	0.285	N/S 2:	0.320
	Left	1.00	1,600	86	0.054 *	E/W 1:	0.136
	Right	0.00	0	190	0.000	E/W 2:	0.320 *
Westbound	Through	1.00	1,600	280	0.294 *		
	Left	1.00	1,600	13	0.008	V/C Ratio:	0.945
	Right	0.00	0	13	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	901	0.571 *	ITS:	0.000
	Left	1.00	1,600	56	0.035		
	Right	0.00	0	48	0.000	ICU:	1.045
Eastbound	Through	1.00	1,600	156	0.128		
	Left	1.00	1,600	42	0.026 *	LOS:	F

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	69	0.000	N/S 1:	0.344
Southbound	Through	2.00	3,200	1,183	0.391 *	N/S 2:	0.444 *
	Left	1.00	1,600	127	0.079	E/W 1:	0.240
	Right	0.00	0	113	0.000	E/W 2:	0.267 *
Westbound	Through	1.00	1,600	203	0.198 *		
	Left	1.00	1,600	46	0.029	V/C Ratio:	0.711
	Right	0.00	0	42	0.000	Loss Time:	0.100
Northbound	Through	2.00	3,200	807	0.265	ITS:	0.000
	Left	1.00	1,600	85	0.053 *		
	Right	0.00	0	95	0.000	ICU:	0.811
Eastbound	Through	1.00	1,600	242	0.211		
	Left	1.00	1,600	111	0.069 *	LOS:	D

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

4. FAIR OAKS & EL CENTRO

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1600 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C		ICU Analysis	
	Right	0.00	0	17	0.000		N/S 1:	0.609 *
Southbound	Through	2.00	3,200	903	0.288		N/S 2:	0.320
	Left	1.00	1,600	12	0.008	*	E/W 1:	0.064 *
	Right	0.00	0	11	0.000		E/W 2:	0.054
Westbound	Through	1.00	1,600	52	0.046			
	Left	0.00	1,600	10	0.006	*	V/C Ratio:	0.673
	Right	0.00	0	16	0.000		Loss Time:	0.100
Northbound	Through	1.00	1,600	945	0.601	*	ITS:	0.000
	Left	1.00	1,600	51	0.032			
	Right	0.00	0	44	0.000		ICU:	0.773
Eastbound	Through	1.00	1,600	36	0.058	*		
	Left	0.00	1,600	13	0.008		LOS:	C

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C		ICU Analysis	
	Right	0.00	0	41	0.000		N/S 1:	0.321
Southbound	Through	2.00	3,200	1,196	0.387	*	N/S 2:	0.426 *
	Left	1.00	1,600	40	0.025		E/W 1:	0.142 *
	Right	0.00	0	18	0.000		E/W 2:	0.077
Westbound	Through	1.00	1,600	38	0.049			
	Left	0.00	1,600	23	0.014	*	V/C Ratio:	0.568
	Right	0.00	0	45	0.000		Loss Time:	0.100
Northbound	Through	2.00	3,200	902	0.296		ITS:	0.000
	Left	1.00	1,600	62	0.039	*		
	Right	0.00	0	72	0.000		ICU:	0.668
Eastbound	Through	1.00	1,600	88	0.128	*		
	Left	0.00	1,600	44	0.028		LOS:	B

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

1. MERIDIAN AVE & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1600 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	5	0.000	N/S 1:	0.118 *
Southbound	Through	1.00	1,600	77	0.058	N/S 2:	0.102
	Left	0.00	1,600	11	0.007 *	E/W 1:	0.119 *
	Right	0.00	0	42	0.000	E/W 2:	0.110
Westbound	Through	2.00	3,200	292	0.106		
	Left	0.00	1,600	6	0.004 *	V/C Ratio:	0.237
	Right	0.00	0	12	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	95	0.111 *	ITS:	0.000
	Left	0.00	1,600	70	0.044		
	Right	0.00	0	55	0.000	ICU:	0.337
Eastbound	Through	2.00	3,200	308	0.115 *		
	Left	0.00	1,600	6	0.004	LOS:	A

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	10	0.000	N/S 1:	0.104
Southbound	Through	1.00	1,600	107	0.093 *	N/S 2:	0.117 *
	Left	0.00	1,600	31	0.019	E/W 1:	0.158 *
	Right	0.00	0	28	0.000	E/W 2:	0.110
Westbound	Through	2.00	3,200	316	0.109		
	Left	0.00	1,600	5	0.003 *	V/C Ratio:	0.275
	Right	0.00	0	16	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	82	0.085	ITS:	0.000
	Left	0.00	1,600	38	0.024 *		
	Right	0.00	0	52	0.000	ICU:	0.375
Eastbound	Through	2.00	3,200	443	0.155 *		
	Left	0.00	1,600	1	0.001	LOS:	A

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

2. FREEMONT & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1600 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	1.00	1,600	26	0.003	N/S 1:	0.472 *
Southbound	Through	1.00	1,600	454	0.284	N/S 2:	0.328
	Left	1.00	1,600	61	0.038 *	E/W 1:	0.114
	Right	0.00	0	95	0.000	E/W 2:	0.150 *
Westbound	Through	2.00	3,200	300	0.123 *		
	Left	1.00	1,600	36	0.023	V/C Ratio:	0.622
	Right	0.00	0	24	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	670	0.434 *	ITS:	0.000
	Left	1.00	1,600	71	0.044		
	Right	0.00	0	72	0.000	ICU:	0.722
Eastbound	Through	2.00	3,200	219	0.091		
	Left	1.00	1,600	43	0.027 *	LOS:	C

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	1.00	1,600	35	0.005	N/S 1:	0.467 *
Southbound	Through	1.00	1,600	589	0.368	N/S 2:	0.426
	Left	1.00	1,600	117	0.073 *	E/W 1:	0.162 *
	Right	0.00	0	67	0.000	E/W 2:	0.143
Westbound	Through	2.00	3,200	282	0.109		
	Left	1.00	1,600	48	0.030 *	V/C Ratio:	0.629
	Right	1.00	1,600	23	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	631	0.394 *	ITS:	0.000
	Left	1.00	1,600	93	0.058		
	Right	0.00	0	111	0.000	ICU:	0.729
Eastbound	Through	2.00	3,200	312	0.132 *		
	Left	1.00	1,600	54	0.034	LOS:	C

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

3. FAIR OAKS & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1600 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	51	0.000	N/S 1:	0.625 *
Southbound	Through	2.00	3,200	870	0.288	N/S 2:	0.324
	Left	1.00	1,600	86	0.054 *	E/W 1:	0.137
	Right	0.00	0	190	0.000	E/W 2:	0.326 *
Westbound	Through	1.00	1,600	280	0.294 *		
	Left	1.00	1,600	13	0.008	V/C Ratio:	0.951
	Right	0.00	0	13	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	901	0.571 *	ITS:	0.000
	Left	1.00	1,600	58	0.036		
	Right	0.00	0	50	0.000	ICU:	1.051
Eastbound	Through	1.00	1,600	156	0.129		
	Left	1.00	1,600	51	0.032 *	LOS:	F

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	77	0.000	N/S 1:	0.344
Southbound	Through	2.00	3,200	1,183	0.394 *	N/S 2:	0.448 *
	Left	1.00	1,600	127	0.079	E/W 1:	0.240
	Right	0.00	0	113	0.000	E/W 2:	0.271 *
Westbound	Through	1.00	1,600	203	0.198 *		
	Left	1.00	1,600	46	0.029	V/C Ratio:	0.719
	Right	0.00	0	42	0.000	Loss Time:	0.100
Northbound	Through	2.00	3,200	807	0.265	ITS:	0.000
	Left	1.00	1,600	87	0.054 *		
	Right	0.00	0	96	0.000	ICU:	0.819
Eastbound	Through	1.00	1,600	242	0.211		
	Left	1.00	1,600	117	0.073 *	LOS:	D

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

4. FAIR OAKS & EL CENTRO

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1600 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	17	0.000	N/S 1:	0.610 *
Southbound	Through	2.00	3,200	905	0.288	N/S 2:	0.323
	Left	1.00	1,600	12	0.008 *	E/W 1:	0.067 *
	Right	0.00	0	11	0.000	E/W 2:	0.054
Westbound	Through	1.00	1,600	52	0.046		
	Left	0.00	1,600	10	0.006 *	V/C Ratio:	0.677
	Right	0.00	0	16	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	947	0.602 *	ITS:	0.000
	Left	1.00	1,600	56	0.035		
	Right	0.00	0	49	0.000	ICU:	0.777
Eastbound	Through	1.00	1,600	36	0.061 *		
	Left	0.00	1,600	13	0.008	LOS:	C

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	41	0.000	N/S 1:	0.322
Southbound	Through	2.00	3,200	1,197	0.387 *	N/S 2:	0.429 *
	Left	1.00	1,600	40	0.025	E/W 1:	0.143 *
	Right	0.00	0	18	0.000	E/W 2:	0.077
Westbound	Through	1.00	1,600	38	0.049		
	Left	0.00	1,600	23	0.014 *	V/C Ratio:	0.572
	Right	0.00	0	45	0.000	Loss Time:	0.100
Northbound	Through	2.00	3,200	904	0.297	ITS:	0.000
	Left	1.00	1,600	67	0.042 *		
	Right	0.00	0	75	0.000	ICU:	0.672
Eastbound	Through	1.00	1,600	88	0.129 *		
	Left	0.00	1,600	44	0.028	LOS:	B

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

1. MERIDIAN AVE & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1550 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	5	0.000	N/S 1:	0.119 *
Southbound	Through	1.00	1,600	79	0.059	N/S 2:	0.103
	Left	0.00	1,600	10	0.006 *	E/W 1:	0.121 *
	Right	0.00	0	42	0.000	E/W 2:	0.112
Westbound	Through	2.00	3,200	297	0.108		
	Left	0.00	1,550	6	0.004 *	V/C Ratio:	0.240
	Right	0.00	0	12	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	98	0.113 *	ITS:	0.000
	Left	0.00	1,600	70	0.044		
	Right	0.00	0	55	0.000	ICU:	0.340
Eastbound	Through	2.00	3,200	312	0.117 *		
	Left	0.00	1,550	6	0.004	LOS:	A

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	10	0.000	N/S 1:	0.105
Southbound	Through	1.00	1,600	110	0.094 *	N/S 2:	0.118 *
	Left	0.00	1,600	31	0.019	E/W 1:	0.163 *
	Right	0.00	0	29	0.000	E/W 2:	0.114
Westbound	Through	2.00	3,200	328	0.113		
	Left	0.00	1,550	5	0.003 *	V/C Ratio:	0.281
	Right	0.00	0	16	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	84	0.086	ITS:	0.000
	Left	0.00	1,600	38	0.024 *		
	Right	0.00	0	52	0.000	ICU:	0.381
Eastbound	Through	2.00	3,200	458	0.160 *		
	Left	0.00	1,550	1	0.001	LOS:	A

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

2. FREEMONT & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1550 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	1.00	1,600	25	0.002	N/S 1:	0.491 *
Southbound	Through	1.00	1,600	472	0.295	N/S 2:	0.341
	Left	1.00	1,600	65	0.041 *	E/W 1:	0.117
	Right	0.00	0	100	0.000	E/W 2:	0.155 *
Westbound	Through	2.00	3,200	309	0.128 *		
	Left	1.00	1,550	38	0.025	V/C Ratio:	0.646
	Right	0.00	0	26	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	694	0.450 *	ITS:	0.000
	Left	1.00	1,600	73	0.046		
	Right	0.00	0	74	0.000	ICU:	0.746
Eastbound	Through	2.00	3,200	219	0.092		
	Left	1.00	1,550	42	0.027 *	LOS:	C

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	1.00	1,600	34	0.004	N/S 1:	0.489 *
Southbound	Through	1.00	1,600	615	0.384	N/S 2:	0.444
	Left	1.00	1,600	124	0.078 *	E/W 1:	0.170 *
	Right	0.00	0	72	0.000	E/W 2:	0.148
Westbound	Through	2.00	3,200	291	0.113		
	Left	1.00	1,550	50	0.032 *	V/C Ratio:	0.659
	Right	1.00	1,600	26	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	657	0.411 *	ITS:	0.000
	Left	1.00	1,600	96	0.060		
	Right	0.00	0	114	0.000	ICU:	0.759
Eastbound	Through	2.00	3,200	326	0.138 *		
	Left	1.00	1,550	55	0.035	LOS:	C

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

3. FAIR OAKS & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1550 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	45	0.000	N/S 1:	0.644 *
Southbound	Through	2.00	3,200	896	0.294	N/S 2:	0.331
	Left	1.00	1,600	89	0.056 *	E/W 1:	0.144
	Right	0.00	0	196	0.000	E/W 2:	0.336 *
Westbound	Through	1.00	1,600	297	0.308 *		
	Left	1.00	1,550	13	0.008	V/C Ratio:	0.980
	Right	0.00	0	13	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	928	0.588 *	ITS:	0.000
	Left	1.00	1,600	59	0.037		
	Right	0.00	0	49	0.000	ICU:	1.080
Eastbound	Through	1.00	1,600	168	0.136		
	Left	1.00	1,550	43	0.028 *	LOS:	F

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	72	0.000	N/S 1:	0.355
Southbound	Through	2.00	3,200	1,219	0.403 *	N/S 2:	0.459 *
	Left	1.00	1,600	131	0.082	E/W 1:	0.256
	Right	0.00	0	116	0.000	E/W 2:	0.285 *
Westbound	Through	1.00	1,600	222	0.211 *		
	Left	1.00	1,550	47	0.030	V/C Ratio:	0.744
	Right	0.00	0	43	0.000	Loss Time:	0.100
Northbound	Through	2.00	3,200	831	0.273	ITS:	0.000
	Left	1.00	1,600	89	0.056 *		
	Right	0.00	0	99	0.000	ICU:	0.844
Eastbound	Through	1.00	1,600	263	0.226		
	Left	1.00	1,550	115	0.074 *	LOS:	D

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

4. FAIR OAKS & EL CENTRO

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1600 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C		ICU Analysis	
	Right	0.00	0	18	0.000		N/S 1:	0.627 *
Southbound	Through	2.00	3,200	930	0.296		N/S 2:	0.329
	Left	1.00	1,600	12	0.008	*	E/W 1:	0.072 *
	Right	0.00	0	11	0.000		E/W 2:	0.061
Westbound	Through	1.00	1,600	64	0.053			
	Left	0.00	1,600	10	0.006	*	V/C Ratio:	0.699
	Right	0.00	0	16	0.000		Loss Time:	0.100
Northbound	Through	1.00	1,600	975	0.619	*	ITS:	0.000
	Left	1.00	1,600	53	0.033			
	Right	0.00	0	45	0.000		ICU:	0.799
Eastbound	Through	1.00	1,600	47	0.066	*		
	Left	0.00	1,600	13	0.008		LOS:	C

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C		ICU Analysis	
	Right	0.00	0	42	0.000		N/S 1:	0.331
Southbound	Through	2.00	3,200	1,233	0.398	*	N/S 2:	0.438 *
	Left	1.00	1,600	41	0.026		E/W 1:	0.158 *
	Right	0.00	0	19	0.000		E/W 2:	0.090
Westbound	Through	1.00	1,600	56	0.062			
	Left	0.00	1,600	24	0.015	*	V/C Ratio:	0.596
	Right	0.00	0	46	0.000		Loss Time:	0.100
Northbound	Through	2.00	3,200	930	0.305		ITS:	0.000
	Left	1.00	1,600	64	0.040	*		
	Right	0.00	0	74	0.000		ICU:	0.696
Eastbound	Through	1.00	1,600	109	0.143	*		
	Left	0.00	1,600	45	0.028		LOS:	B

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

1. MERIDIAN AVE & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1550 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	5	0.000	N/S 1:	0.121 *
Southbound	Through	1.00	1,600	79	0.059	N/S 2:	0.104
	Left	0.00	1,600	11	0.007 *	E/W 1:	0.124 *
	Right	0.00	0	43	0.000	E/W 2:	0.116
Westbound	Through	2.00	3,200	309	0.112		
	Left	0.00	1,550	6	0.004 *	V/C Ratio:	0.245
	Right	0.00	0	12	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	98	0.114 *	ITS:	0.000
	Left	0.00	1,600	72	0.045		
	Right	0.00	0	57	0.000	ICU:	0.345
Eastbound	Through	2.00	3,200	322	0.120 *		
	Left	0.00	1,550	6	0.004	LOS:	A

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	10	0.000	N/S 1:	0.107
Southbound	Through	1.00	1,600	110	0.095 *	N/S 2:	0.119 *
	Left	0.00	1,600	32	0.020	E/W 1:	0.166 *
	Right	0.00	0	29	0.000	E/W 2:	0.116
Westbound	Through	2.00	3,200	335	0.115		
	Left	0.00	1,550	5	0.003 *	V/C Ratio:	0.285
	Right	0.00	0	16	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	84	0.087	ITS:	0.000
	Left	0.00	1,600	39	0.024 *		
	Right	0.00	0	54	0.000	ICU:	0.385
Eastbound	Through	2.00	3,200	468	0.163 *		
	Left	0.00	1,550	1	0.001	LOS:	A

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

2. FREEMONT & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1550 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	1.00	1,600	27	0.003	N/S 1:	0.491 *
Southbound	Through	1.00	1,600	472	0.295	N/S 2:	0.341
	Left	1.00	1,600	65	0.041 *	E/W 1:	0.120
	Right	0.00	0	100	0.000	E/W 2:	0.159 *
Westbound	Through	2.00	3,200	318	0.131 *		
	Left	1.00	1,550	38	0.025	V/C Ratio:	0.650
	Right	0.00	0	26	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	694	0.450 *	ITS:	0.000
	Left	1.00	1,600	73	0.046		
	Right	0.00	0	74	0.000	ICU:	0.750
Eastbound	Through	2.00	3,200	230	0.095		
	Left	1.00	1,550	44	0.028 *	LOS:	C

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	1.00	1,600	36	0.004	N/S 1:	0.489 *
Southbound	Through	1.00	1,600	615	0.384	N/S 2:	0.444
	Left	1.00	1,600	124	0.078 *	E/W 1:	0.172 *
	Right	0.00	0	72	0.000	E/W 2:	0.152
Westbound	Through	2.00	3,200	300	0.116		
	Left	1.00	1,550	50	0.032 *	V/C Ratio:	0.661
	Right	1.00	1,600	26	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	657	0.411 *	ITS:	0.000
	Left	1.00	1,600	96	0.060		
	Right	0.00	0	114	0.000	ICU:	0.761
Eastbound	Through	2.00	3,200	333	0.140 *		
	Left	1.00	1,550	56	0.036	LOS:	C

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

3. FAIR OAKS & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1550 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	53	0.000	N/S 1:	0.644 *
Southbound	Through	2.00	3,200	896	0.297	N/S 2:	0.335
	Left	1.00	1,600	89	0.056 *	E/W 1:	0.145
	Right	0.00	0	196	0.000	E/W 2:	0.342 *
Westbound	Through	1.00	1,600	297	0.308 *		
	Left	1.00	1,550	13	0.008	V/C Ratio:	0.986
	Right	0.00	0	13	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	928	0.588 *	ITS:	0.000
	Left	1.00	1,600	61	0.038		
	Right	0.00	0	51	0.000	ICU:	1.086
Eastbound	Through	1.00	1,600	168	0.137		
	Left	1.00	1,550	52	0.034 *	LOS:	F

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	80	0.000	N/S 1:	0.355
Southbound	Through	2.00	3,200	1,219	0.406 *	N/S 2:	0.463 *
	Left	1.00	1,600	131	0.082	E/W 1:	0.257
	Right	0.00	0	116	0.000	E/W 2:	0.289 *
Westbound	Through	1.00	1,600	222	0.211 *		
	Left	1.00	1,550	47	0.030	V/C Ratio:	0.752
	Right	0.00	0	43	0.000	Loss Time:	0.100
Northbound	Through	2.00	3,200	831	0.273	ITS:	0.000
	Left	1.00	1,600	91	0.057 *		
	Right	0.00	0	100	0.000	ICU:	0.852
Eastbound	Through	1.00	1,600	263	0.227		
	Left	1.00	1,550	121	0.078 *	LOS:	D

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

4. FAIR OAKS & EL CENTRO

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1600 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C		ICU Analysis	
	Right	0.00	0	18	0.000		N/S 1:	0.629 *
Southbound	Through	2.00	3,200	932	0.297		N/S 2:	0.333
	Left	1.00	1,600	12	0.008	*	E/W 1:	0.075 *
	Right	0.00	0	11	0.000		E/W 2:	0.061
Westbound	Through	1.00	1,600	64	0.053			
	Left	0.00	1,600	10	0.006	*	V/C Ratio:	0.704
	Right	0.00	0	16	0.000		Loss Time:	0.100
Northbound	Through	1.00	1,600	977	0.621	*	ITS:	0.000
	Left	1.00	1,600	58	0.036			
	Right	0.00	0	50	0.000		ICU:	0.804
Eastbound	Through	1.00	1,600	47	0.069	*		
	Left	0.00	1,600	13	0.008		LOS:	D

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C		ICU Analysis	
	Right	0.00	0	42	0.000		N/S 1:	0.332
Southbound	Through	2.00	3,200	1,234	0.399	*	N/S 2:	0.442 *
	Left	1.00	1,600	41	0.026		E/W 1:	0.159 *
	Right	0.00	0	19	0.000		E/W 2:	0.090
Westbound	Through	1.00	1,600	56	0.062			
	Left	0.00	1,600	24	0.015	*	V/C Ratio:	0.601
	Right	0.00	0	46	0.000		Loss Time:	0.100
Northbound	Through	2.00	3,200	932	0.306		ITS:	0.000
	Left	1.00	1,600	69	0.043	*		
	Right	0.00	0	77	0.000		ICU:	0.701
Eastbound	Through	1.00	1,600	109	0.144	*		
	Left	0.00	1,600	45	0.028		LOS:	C

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

1. MERIDIAN AVE & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1550 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	5	0.000	N/S 1:	0.137 *
Southbound	Through	1.00	1,600	79	0.059	N/S 2:	0.121
	Left	0.00	1,600	10	0.006 *	E/W 1:	0.121 *
	Right	0.00	0	42	0.000	E/W 2:	0.103
Westbound	Through	2.00	3,200	269	0.099		
	Left	0.00	1,550	6	0.004 *	V/C Ratio:	0.258
	Right	0.00	0	12	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	98	0.131 *	ITS:	0.000
	Left	0.00	1,600	99	0.062		
	Right	0.00	0	55	0.000	ICU:	0.358
Eastbound	Through	2.00	3,200	312	0.117 *		
	Left	0.00	1,550	6	0.004	LOS:	A

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	10	0.000	N/S 1:	0.125
Southbound	Through	1.00	1,600	110	0.094 *	N/S 2:	0.138 *
	Left	0.00	1,600	31	0.019	E/W 1:	0.163 *
	Right	0.00	0	29	0.000	E/W 2:	0.104
Westbound	Through	2.00	3,200	297	0.103		
	Left	0.00	1,550	5	0.003 *	V/C Ratio:	0.301
	Right	0.00	0	16	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	84	0.106	ITS:	0.000
	Left	0.00	1,600	70	0.044 *		
	Right	0.00	0	52	0.000	ICU:	0.401
Eastbound	Through	2.00	3,200	458	0.160 *		
	Left	0.00	1,550	1	0.001	LOS:	A

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

2. FREEMONT & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1550 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	1.00	1,600	25	0.002	N/S 1:	0.504 *
Southbound	Through	1.00	1,600	472	0.295	N/S 2:	0.341
	Left	1.00	1,600	65	0.041 *	E/W 1:	0.110
	Right	0.00	0	100	0.000	E/W 2:	0.155 *
Westbound	Through	2.00	3,200	309	0.128 *		
	Left	1.00	1,550	38	0.025	V/C Ratio:	0.659
	Right	0.00	0	47	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	694	0.463 *	ITS:	0.000
	Left	1.00	1,600	73	0.046		
	Right	0.00	0	74	0.000	ICU:	0.759
Eastbound	Through	2.00	3,200	198	0.085		
	Left	1.00	1,550	42	0.027 *	LOS:	C

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	1.00	1,600	34	0.004	N/S 1:	0.489 *
Southbound	Through	1.00	1,600	615	0.384	N/S 2:	0.444
	Left	1.00	1,600	124	0.078 *	E/W 1:	0.160 *
	Right	0.00	0	72	0.000	E/W 2:	0.148
Westbound	Through	2.00	3,200	291	0.113		
	Left	1.00	1,550	50	0.032 *	V/C Ratio:	0.649
	Right	1.00	1,600	57	0.019	Loss Time:	0.100
Northbound	Through	1.00	1,600	657	0.411 *	ITS:	0.000
	Left	1.00	1,600	96	0.060		
	Right	0.00	0	114	0.000	ICU:	0.749
Eastbound	Through	2.00	3,200	295	0.128 *		
	Left	1.00	1,550	55	0.035	LOS:	C

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

3. FAIR OAKS & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1550 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	45	0.000	N/S 1:	0.644 *
Southbound	Through	2.00	3,200	896	0.294	N/S 2:	0.331
	Left	1.00	1,600	89	0.056 *	E/W 1:	0.144
	Right	0.00	0	196	0.000	E/W 2:	0.336 *
Westbound	Through	1.00	1,600	297	0.308 *		
	Left	1.00	1,550	13	0.008	V/C Ratio:	0.980
	Right	0.00	0	13	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	928	0.588 *	ITS:	0.000
	Left	1.00	1,600	59	0.037		
	Right	0.00	0	49	0.000	ICU:	1.080
Eastbound	Through	1.00	1,600	168	0.136		
	Left	1.00	1,550	43	0.028 *	LOS:	F

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	72	0.000	N/S 1:	0.355
Southbound	Through	2.00	3,200	1,219	0.403 *	N/S 2:	0.459 *
	Left	1.00	1,600	131	0.082	E/W 1:	0.256
	Right	0.00	0	116	0.000	E/W 2:	0.285 *
Westbound	Through	1.00	1,600	222	0.211 *		
	Left	1.00	1,550	47	0.030	V/C Ratio:	0.744
	Right	0.00	0	43	0.000	Loss Time:	0.100
Northbound	Through	2.00	3,200	831	0.273	ITS:	0.000
	Left	1.00	1,600	89	0.056 *		
	Right	0.00	0	99	0.000	ICU:	0.844
Eastbound	Through	1.00	1,600	263	0.226		
	Left	1.00	1,550	115	0.074 *	LOS:	D

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

4. FAIR OAKS & EL CENTRO

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1600 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C		ICU Analysis	
	Right	0.00	0	18	0.000		N/S 1:	0.627 *
Southbound	Through	2.00	3,200	930	0.296		N/S 2:	0.329
	Left	1.00	1,600	12	0.008	*	E/W 1:	0.072 *
	Right	0.00	0	11	0.000		E/W 2:	0.061
Westbound	Through	1.00	1,600	64	0.053			
	Left	0.00	1,600	10	0.006	*	V/C Ratio:	0.699
	Right	0.00	0	16	0.000		Loss Time:	0.100
Northbound	Through	1.00	1,600	975	0.619	*	ITS:	0.000
	Left	1.00	1,600	53	0.033			
	Right	0.00	0	45	0.000		ICU:	0.799
Eastbound	Through	1.00	1,600	47	0.066	*		
	Left	0.00	1,600	13	0.008		LOS:	C

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C		ICU Analysis	
	Right	0.00	0	42	0.000		N/S 1:	0.331
Southbound	Through	2.00	3,200	1,233	0.398	*	N/S 2:	0.438 *
	Left	1.00	1,600	41	0.026		E/W 1:	0.158 *
	Right	0.00	0	19	0.000		E/W 2:	0.090
Westbound	Through	1.00	1,600	56	0.062			
	Left	0.00	1,600	24	0.015	*	V/C Ratio:	0.596
	Right	0.00	0	46	0.000		Loss Time:	0.100
Northbound	Through	2.00	3,200	930	0.305		ITS:	0.000
	Left	1.00	1,600	64	0.040	*		
	Right	0.00	0	74	0.000		ICU:	0.696
Eastbound	Through	1.00	1,600	109	0.143	*		
	Left	0.00	1,600	45	0.028		LOS:	B

* Critical Movement

FUTURE PLUS PROJECT CONDITIONS - YEAR 2016 (ALTERED CIRCULATION)

Mission View Mixed Use

Intersection Capacity Utilization Analysis

1. MERIDIAN AVE & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1550 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	5	0.000	N/S 1:	0.148 *
Southbound	Through	1.00	1,600	79	0.059	N/S 2:	0.129
	Left	0.00	1,600	11	0.007 *	E/W 1:	0.124 *
	Right	0.00	0	42	0.000	E/W 2:	0.103
Westbound	Through	2.00	3,200	269	0.099		
	Left	0.00	1,550	6	0.004 *	V/C Ratio:	0.272
	Right	0.00	0	14	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	99	0.141 *	ITS:	0.000
	Left	0.00	1,600	112	0.070		
	Right	0.00	0	55	0.000	ICU:	0.372
Eastbound	Through	2.00	3,200	323	0.120 *		
	Left	0.00	1,550	6	0.004	LOS:	A

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	0.00	0	10	0.000	N/S 1:	0.133
Southbound	Through	1.00	1,600	110	0.095 *	N/S 2:	0.144 *
	Left	0.00	1,600	32	0.020	E/W 1:	0.166 *
	Right	0.00	0	29	0.000	E/W 2:	0.104
Westbound	Through	2.00	3,200	297	0.103		
	Left	0.00	1,550	5	0.003 *	V/C Ratio:	0.310
	Right	0.00	0	18	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	84	0.113	ITS:	0.000
	Left	0.00	1,600	78	0.049 *		
	Right	0.00	0	52	0.000	ICU:	0.410
Eastbound	Through	2.00	3,200	469	0.163 *		
	Left	0.00	1,550	1	0.001	LOS:	A

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

2. FREEMONT & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1550 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	1.00	1,600	27	0.003	N/S 1:	0.511 *
Southbound	Through	1.00	1,600	472	0.295	N/S 2:	0.342
	Left	1.00	1,600	65	0.041 *	E/W 1:	0.110
	Right	0.00	0	100	0.000	E/W 2:	0.159 *
Westbound	Through	2.00	3,200	323	0.132 *		
	Left	1.00	1,550	38	0.025	V/C Ratio:	0.670
	Right	0.00	0	56	0.000	Loss Time:	0.100
Northbound	Through	1.00	1,600	696	0.470 *	ITS:	0.000
	Left	1.00	1,600	75	0.047		
	Right	0.00	0	74	0.000	ICU:	0.770
Eastbound	Through	2.00	3,200	198	0.085		
	Left	1.00	1,550	42	0.027 *	LOS:	C

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C	ICU Analysis	
	Right	1.00	1,600	36	0.005	N/S 1:	0.489 *
Southbound	Through	1.00	1,600	615	0.384	N/S 2:	0.445
	Left	1.00	1,600	124	0.078 *	E/W 1:	0.160 *
	Right	0.00	0	72	0.000	E/W 2:	0.153
Westbound	Through	2.00	3,200	305	0.118		
	Left	1.00	1,550	50	0.032 *	V/C Ratio:	0.649
	Right	1.00	1,600	63	0.023	Loss Time:	0.100
Northbound	Through	1.00	1,600	658	0.411 *	ITS:	0.000
	Left	1.00	1,600	98	0.061		
	Right	0.00	0	114	0.000	ICU:	0.749
Eastbound	Through	2.00	3,200	295	0.128 *		
	Left	1.00	1,550	55	0.035	LOS:	C

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

3. FAIR OAKS & MISSION ST

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1550 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C		ICU Analysis		
	Right	0.00	0	53	0.000		N/S 1:	0.644	*
Southbound	Through	2.00	3,200	896	0.297		N/S 2:	0.338	
	Left	1.00	1,600	89	0.056	*	E/W 1:	0.144	
	Right	0.00	0	196	0.000		E/W 2:	0.342	*
Westbound	Through	1.00	1,600	297	0.308	*			
	Left	1.00	1,550	13	0.008		V/C Ratio:	0.986	
	Right	0.00	0	13	0.000		Loss Time:	0.100	
Northbound	Through	1.00	1,600	928	0.588	*	ITS:	0.000	
	Left	1.00	1,600	65	0.041				
	Right	0.00	0	49	0.000		ICU:	1.086	
Eastbound	Through	1.00	1,600	168	0.136				
	Left	1.00	1,550	52	0.034	*	LOS:	F	

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C		ICU Analysis		
	Right	0.00	0	80	0.000		N/S 1:	0.355	
Southbound	Through	2.00	3,200	1,219	0.406	*	N/S 2:	0.465	*
	Left	1.00	1,600	131	0.082		E/W 1:	0.256	
	Right	0.00	0	116	0.000		E/W 2:	0.289	*
Westbound	Through	1.00	1,600	222	0.211	*			
	Left	1.00	1,550	47	0.030		V/C Ratio:	0.754	
	Right	0.00	0	43	0.000		Loss Time:	0.100	
Northbound	Through	2.00	3,200	831	0.273		ITS:	0.000	
	Left	1.00	1,600	95	0.059	*			
	Right	0.00	0	99	0.000		ICU:	0.854	
Eastbound	Through	1.00	1,600	263	0.226				
	Left	1.00	1,550	121	0.078	*	LOS:	D	

* Critical Movement

Mission View Mixed Use

Intersection Capacity Utilization Analysis

4. FAIR OAKS & EL CENTRO

Through Lane Capacity:	1600 vph	North/South Split Phase:	N
Left-Turn Lane Capacity:	1600 vph	E/W Split Phase:	N
Double-Left Penalty:	20 %	Loss Time % per Cycle:	10%
Right-Turn on Red:	50 %	ITS Percentage:	0%
Overlapping Right Turn:			

WEEKDAY A.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C		ICU Analysis	
	Right	0.00	0	18	0.000		N/S 1:	0.631 *
Southbound	Through	2.00	3,200	930	0.296		N/S 2:	0.329
	Left	1.00	1,600	12	0.008	*	E/W 1:	0.076 *
	Right	0.00	0	11	0.000		E/W 2:	0.061
Westbound	Through	1.00	1,600	64	0.053			
	Left	0.00	1,600	10	0.006	*	V/C Ratio:	0.707
	Right	0.00	0	16	0.000		Loss Time:	0.100
Northbound	Through	1.00	1,600	981	0.623	*	ITS:	0.000
	Left	1.00	1,600	53	0.033			
	Right	0.00	0	52	0.000		ICU:	0.807
Eastbound	Through	1.00	1,600	47	0.070	*		
	Left	0.00	1,600	13	0.008		LOS:	D

WEEKDAY P.M. PEAK HOUR

Approach	Movement	Lanes	Capacity	Volume	V/C		ICU Analysis	
	Right	0.00	0	42	0.000		N/S 1:	0.333
Southbound	Through	2.00	3,200	1,233	0.398	*	N/S 2:	0.438 *
	Left	1.00	1,600	41	0.026		E/W 1:	0.160 *
	Right	0.00	0	19	0.000		E/W 2:	0.090
Westbound	Through	1.00	1,600	56	0.062			
	Left	0.00	1,600	24	0.015	*	V/C Ratio:	0.598
	Right	0.00	0	46	0.000		Loss Time:	0.100
Northbound	Through	2.00	3,200	936	0.307		ITS:	0.000
	Left	1.00	1,600	64	0.040	*		
	Right	0.00	0	78	0.000		ICU:	0.698
Eastbound	Through	1.00	1,600	109	0.145	*		
	Left	0.00	1,600	45	0.028		LOS:	B

* Critical Movement

Appendix C

Highway Capacity Manual (HCM) Worksheets

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: GIBSON/bh
Agency/Co.:
Date Performed: 1/2017
Analysis Time Period: AM
Intersection: Fairview/Driveway
Jurisdiction: South Pasadena
Units: U. S. Customary
Analysis Year: Future + Project
Project ID: MISSION VIEW MXD
East/West Street: Driveway
North/South Street: Fairview
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		100	12	27	100	
Peak-Hour Factor, PHF		1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR		100	12	27	100	
Percent Heavy Vehicles		--	--	0	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13		31			
Peak Hour Factor, PHF	1.00		1.00			
Hourly Flow Rate, HFR	13		31			
Percent Heavy Vehicles	0		0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		27		44				
C(m) (vph)		1490		870				
v/c		0.02		0.05				
95% queue length		0.06		0.16				
Control Delay		7.5		9.4				
LOS		A		A				
Approach Delay				9.4				
Approach LOS				A				

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: GIBSON/bh
Agency/Co.:
Date Performed: 1/2017
Analysis Time Period: PM
Intersection: Fairview/Driveway
Jurisdiction: South Pasadena
Units: U. S. Customary
Analysis Year: Future + Project
Project ID: MISSION VIEW MXD
East/West Street: Driveway
North/South Street: Fairview
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		100	12	27	100	
Peak-Hour Factor, PHF		1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR		100	12	27	100	
Percent Heavy Vehicles		--	--	0	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR		LT	
Upstream Signal?		No			No	

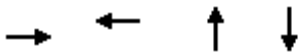
Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	9		20			
Peak Hour Factor, PHF	1.00		1.00			
Hourly Flow Rate, HFR	9		20			
Percent Heavy Vehicles	0		0			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		27		29				
C(m) (vph)		1490		867				
v/c		0.02		0.03				
95% queue length		0.06		0.10				
Control Delay		7.5		9.3				
LOS		A		A				
Approach Delay				9.3				
Approach LOS				A				

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	406	376	196	102
v/c Ratio	0.63	0.58	0.54	0.23
Control Delay	68.1	66.8	63.1	54.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	68.1	66.8	63.1	54.0
Queue Length 50th (ft)	222	204	196	94
Queue Length 95th (ft)	285	265	287	152
Internal Link Dist (ft)	722	708	805	653
Turn Bay Length (ft)				
Base Capacity (vph)	644	644	365	438
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.63	0.58	0.54	0.23

Intersection Summary



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	556	394	149	165
v/c Ratio	0.85	0.63	0.38	0.40
Control Delay	80.7	69.2	56.9	57.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	80.7	69.2	56.9	57.9
Queue Length 50th (ft)	325	218	140	158
Queue Length 95th (ft)	#407	281	215	237
Internal Link Dist (ft)	722	708	805	653
Turn Bay Length (ft)				
Base Capacity (vph)	652	622	388	416
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.85	0.63	0.38	0.40

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	569	401	150	166
v/c Ratio	0.87	0.65	0.39	0.40
Control Delay	82.7	70.0	57.5	58.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	82.7	70.0	57.5	58.0
Queue Length 50th (ft)	334	223	142	159
Queue Length 95th (ft)	#430	286	217	238
Internal Link Dist (ft)	722	708	805	653
Turn Bay Length (ft)				
Base Capacity (vph)	651	614	385	414
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.87	0.65	0.39	0.40

Intersection Summary

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

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	419	390	198	103
v/c Ratio	0.65	0.61	0.55	0.24
Control Delay	68.8	67.6	63.5	54.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	68.8	67.6	63.5	54.1
Queue Length 50th (ft)	231	213	198	95
Queue Length 95th (ft)	295	274	291	154
Internal Link Dist (ft)	722	708	805	653
Turn Bay Length (ft)				
Base Capacity (vph)	644	644	362	437
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.65	0.61	0.55	0.24

Intersection Summary