Appendix D

Local Transportation Analysis, TDM Plan, Non-CEQA Transportation Effects Discussion

HEXAGON TRANSPORTATION CONSULTANTS, INC.

3000 Bowers Avenue Office Development

Local Transportation Analysis

Prepared for:

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Executive Summary

This report presents the results of the local transportation analysis (LTA) conducted for the proposed office development located at 3000 Bowers Avenue in Santa Clara, California. The site is located to the southwest of the intersection of Bowers Avenue and Central Expressway. The project would construct a total of 330,000 square feet (s.f.) of office space within two buildings and a vehicle parking garage on the currently vacant site.

Vehicle access to the site would be provided via a right-in/right-out only driveway on Bowers Avenue and one full-access driveway and one exit-only driveway on Oakmead Village Court. The northern driveway on Oakmead Village Court would provide full access and would be located at the Oakmead Village Court/Oakmead Village Drive intersection opposite Oakmead Village Drive. The southern driveway on Oakmead Village Court would be exit only form the parking garage.

Scope of Study

Per California Senate Bill 743 (SB 743) and CEQA Guidelines, the study evaluates the project's vehicle miles traveled (VMT) impact. The study also includes a local transportation analysis (LTA) that evaluates potential transportation effects of the project in accordance with the standards and methodologies set forth by the City of Santa Clara and the Santa Clara Valley Transportation Authority (VTA). For the LTA, the traffic study includes an analysis of AM and PM peak-hour traffic conditions for 18 intersections and 4 freeway segments (8 directional segments) in the vicinity of the project site. The study intersections were selected based upon the estimated number of project trips through the intersection (10 or more trips per lane per hour) and in coordination with the City of Santa Clara. The study also includes analyses of freeway ramp traffic operations, vehicle queuing at selected intersections, site access and on-site circulation, parking, and potential operational deficiencies on bicycle, pedestrian, and transit facilities.

The results of the study shows that the project would not result in a significant impact on VMT or an adverse effect on nearby freeway segments, cause traffic operation issues at the nearby freeway ramps, result in vehicle queueing issues for left-turn movements at intersections where the project would add a noteworthy number of trips, or have adverse effects on the existing transit, pedestrian, or bicycle facilities in the study area.

VMT Analysis

The Santa Clara VMT Policy establishes screening criteria for various types of developments such as infill developments, small projects, and/or transit supportive projects near major transit corridors to be presumed to have a less than significant impact on VMT under CEQA and are not required to prepare further VMT analysis. The project would qualify as a transit supportive project since it is located within a

half mile of a major transit stop at the Bowers Avenue/Scott Boulevard intersection and meets the following criteria:

- 0.75 floor to area ratio (FAR) for office/retail uses,
- Promotes multimodal transportation,
- Incorporates transit-oriented design, and
- Does not propose excessive parking.

Therefore, the project is presumed to have a less than significant impact on VMT.

Project Trip Estimates

Vehicle trips that would be generated by the proposed project were estimated using the trip generation rates published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*,10th Edition, for general office buildings (Land Use Code 710). The trip estimates also account for a trip reduction of 5 percent to reflect the implementation of a transportation demand management (TDM) plan as required by City's Climate Action Plan. The project is estimated to generate 364 trips during the AM peak hour (313 in and 51 out) and 361 trips during the PM peak hour (58 in and 303 out).

Intersection Level of Service Analysis

The results of the intersection level of service analysis (see Table ES-1) show that one of the study intersections would be adversely affected by the project under background plus project conditions, and two additional study intersections would be adversely affected by the project under cumulative plus project conditions.

Background Plus Project Adverse Effects and Recommended Improvements

In addition to physical improvements recommended to resolve deficiencies at affected intersections, the project would include TDM measures that could reduce the vehicle trips below the level documented in this report. The City of Santa Clara's Climate Action Plan requires a 20 percent reduction in vehicle miles traveled for high density residential developments and high intensity office/R&D developments north of Caltrain, of which 10 percent must come from TDM. A sensitivity analysis was conducted to determine if a 10 percent reduction in project vehicle trips due to TDM would avoid any of the adverse effects at study intersections.

San Tomas Expressway and Walsh Avenue

Adverse Effect: This County expressway intersection would operate at an unacceptable LOS F under background conditions. The addition of project traffic would cause the intersection's average critical-movement delay to increase by 6.4 seconds and the critical v/c to increase by 0.011 during the PM peak hour. Based on City of Santa Clara definitions, this constitutes an adverse effect.

Improvement: Implementation of the required TDM measures could reduce the vehicle trips associated with the project. However, a sensitivity analysis shows that a 10 percent TDM trip reduction would not be sufficient to avoid the adverse effect on intersection operations. Therefore, the below improvement would be required.

This intersection was identified to operate deficiently with the addition of traffic associated with the City Place development under background conditions. The City Place EIR identifies the improvement (addition of a second eastbound left-turn lane) to mitigate the City Place's project impact. The improvement was reflected under background conditions because the City Place developer would be fully responsible for the cost and construction of the improvement at the intersection under Phase 2 of

the development. However, although the planned improvements are projected to improve operating conditions at the intersection, the intersection would continue to operate deficiently under background conditions. The City Place EIR identified the improvement as only partial mitigation to its impact, and the impact was identified as significant and unavoidable.

The necessary improvement to improve the intersection's operating conditions to acceptable levels consists of the addition of a fourth southbound through lane. This improvement, however, would require the widening of San Tomas Expressway, which is not feasible due to right-of-way constraints, or converting the existing HOV lane to a mixed-flow lane. Thus, to address the adverse effect at this intersection, the County has identified the San Tomas Expressway Trail project between Homestead Road and Stevens Creek Boulevard. This project is contained within the Measure B Expressway Program. Based on the trail completed for the section north of Homestead Road, it is expected the new trail would be an off-road paved trail that runs on the west side of San Tomas Expressway. The trail would require removal of trees and landscaping. The project should provide fair-share funding towards this improvement. Although the improvement would not reduce the vehicle delay at the intersection, it would address the adverse effect by paying a fair share towards improvements to the pedestrian or bicycle facilities in the local transportation network.

Cumulative Plus Project Additional Adverse Effects and Recommended Improvements

The adverse effect and recommended improvements to address the cumulative intersection effect at the Bowers Avenue/Scott Boulevard and Bowers Avenue/Monroe Street intersections are described below. The recommended improvements for the San Tomas Expressway/Walsh Avenue intersection are the same as under background plus project conditions.

Bowers Avenue and Scott Boulevard

Adverse Effect: This CMP intersection would degrade from an acceptable LOS E to an unacceptable LOS F during the AM peak hour with the addition of project traffic. Based on City of Santa Clara adverse effect criteria, this constitutes an adverse effect.

Improvement: Implementation of the required TDM measures could reduce the vehicle trips associated with the project. However, a sensitivity analysis shows that a 10 percent TDM trip reduction would not be sufficient to avoid the adverse effect on intersection operations. Therefore, the below improvement would be required.

This intersection was identified to operate deficiently with the addition of traffic associated with the City Place development under cumulative conditions. The City Place EIR identified a fair-share contribution towards the following improvement to mitigate the project impact.

- Addition of a second southbound left-turn lane.

With implementation of a second southbound left-turn lane, the intersection is projected to operate at an acceptable LOS E during the AM peak-hour under cumulative plus project conditions. The City Place EIR indicated the improvement would occur within the existing right of way. Therefore, the project should provide fair-share funding towards the planned second southbound left-turn lane.

Bowers Avenue and Monroe Street

Adverse Effect: This City of Santa Clara intersection would operate at an unacceptable LOS E under cumulative no project conditions. The addition of project traffic would cause the intersection's average critical-movement delay to increase by 4.6 and 4.1 seconds and the critical v/c to increase by 0.014 and 0.012 during the AM and PM peak hours, respectively. Based on City of Santa Clara adverse effect criteria, this constitutes an adverse effect.

Improvement: Implementation of the required TDM measures could reduce the vehicle trips associated with the project. However, a sensitivity analysis shows that a 10 percent TDM trip reduction would not be sufficient to avoid the adverse effect on intersection operations. Therefore, the below improvement would be required.

This intersection was identified to operate deficiently with the addition of traffic associated with the City Place development under background conditions. The City Place EIR identified the following improvements to mitigate the project impact. The City Place developer would be fully responsible for the cost and construction of the improvements at the intersection. The City Place EIR identified the mitigation measure to be implemented in Phase 8 of the development in the project's Mitigation, Monitoring, and Reporting Program (MMRP).

- Addition of northbound and southbound left-turn lanes. Modification of the northbound and southbound signal phases from split to protected left-turn phases.

With implementation of the above improvements, the intersection levels of service are projected to improve to an acceptable LOS D and C during the AM and PM peak hours, respectively. The City Place EIR indicated the improvement would occur within the existing right of way. Therefore, the project should provide fair-share funding towards the improvements.

Site Access and Circulation

Hexagon has the following recommendations resulting from the site access and circulation evaluation and the parking evaluation.

- The exit-only driveway (southern driveway) on Oakmead Village Court at the parking garage should be widened to meet the City's minimum width requirement of 14 feet.
- The on-site landscaping along Oakmead Village Court between two driveways should be kept low to ensure a minimum of 200 feet of clear sight distance from the south driveway. The City requires that no visual obstructions over 3 feet in height are allowed within the driver's sight triangle near driveways.
- The curb segments next to the project driveways on Oakmead Village Court should be painted red for 15 feet to prohibit parking and ensure adequate sight distance for outbound traffic.
- With the new sidewalks along the project frontages on Central Expressway, the project should ensure that the curb ramp at the southwest corner of the Bower Avenue/Central Expressway intersection is built to ADA standards along with the curb ramps at the southwest pork chop island at the intersection.
- The project would provide 978 vehicle parking spaces, which is 122 spaces (or 11 percent) fewer the required number of spaces without the trip reduction from a TDM plan. With the assumed 10 percent trip reduction from a TDM plan, the proposed number of parking spaces would be 12 spaces fewer than the required number of spaces. The project would require City approval for any proposed reduction in the required parking spaces.
- The proposed number of bicycle parking spaces exceeds the required number of bicycle parking spaces based on the requirements in the VTA Bicycle Technical Guidelines, but the number of Class II short-term parking spaces is 6 spaces fewer than the required number of spaces. The project should provide an adequate number of Class I and Class II bicycle parking spaces based on the requirements in the VTA *Bicycle Technical Guidelines*.

Table ES-1
Intersection Level of Service Summary

ID	Intersection (Jurisdiction)	Existing Control	LOS Standard	Peak Hour	Existing Avg. Delay[1]	Existing LOS	Existing+Project Avg. Delay[1]	Existing+Project LOS	Existing+Project Incr. In Crit. Del.	Existing+Project Incr. In Crit. V/C	Background Avg. Delay[1]	Background LOS	Background+Project Avg. Delay[1]	Background+Project LOS	Background+Project Incr. In Crit. Del.	Background+Project Incr. In Crit. V/C	Cumulative Avg. Delay[1]	Cumulative LOS	Cumulative+Project Avg. Delay[1]	Cumulative+Project LOS	Cumulative+Project Incr. In Crit. Del.	Cumulative+Project Incr. In Crit. V/C
1	Great America Pkwy/US 101 (North)*	Signal	E	AM	9.1	A	10.3	B+	1.1	0.023	11.7	B+	12.7	B	1.0	0.023	11.4	B+	12.5	B	1.2	0.023
	(Santa Clara)			PM	10.0	A	10.3	B+	0.3	0.004	11.8	B+	12.0	B	0.3	0.004	12.6	B	12.9	B	0.4	0.004
2	Bowers Av and US 101 (South)*	Signal	E	AM	13.4	B	13.1	B	-0.1	0.014	14.7	B	14.6	B	0.0	0.014	17.1	B	17.0	B	0.2	0.014
	(Santa Clara)			PM	7.6	A	7.5	A	0.0	0.003	7.6	A	7.6	A	0.0	0.003	9.0	A	9.0	A	0.0	0.003
3	Bowers Av and Augustine Dr	Signal	D	AM	21.3	C+	20.8	C+	0.0	0.000	29.7	C	29.5	C	0.0	0.000	29.3	C	29.2	C	0.0	0.000
	(Santa Clara)			PM	33.2	C-	33.2	C-	0.0	0.005	48.7	D	51.0	D	4.8	0.026	**58.4**	**E+**	**62.5**	**E**	1.4	0.005
4	Bowers Av and Scott Bl*	Signal	E	AM	39.6	D	40.0	D	0.2	0.004	61.9	E	63.3	E	1.6	0.004	78.6	E-	**80.5**	**F**	**2.1**	**0.004**
	(Santa Clara)			PM	33.5	C-	33.7	C-	0.0	0.005	48.5	D	50.6	D	3.8	0.025	59.2	E+	61.9	E	5.8	0.025
5	Bowers Av and Central Exp*	Signal	E	AM	56.0	E+	56.8	E+	1.2	0.008	59.4	E+	60.4	E	0.3	0.005	63.2	E	64.5	E	0.7	0.005
	(Santa Clara)			PM	53.8	D-	55.0	D-	1.0	0.016	61.3	E	62.8	E	1.7	0.016	65.7	E	67.9	E	2.9	0.016
6	Bowers Av and Walsh Av	Signal	D	AM	29.8	C	30.6	C	0.9	0.015	36.2	D+	38.1	D+	2.2	0.015	42.9	D	45.7	D	3.7	0.015
	(Santa Clara)			PM	30.1	C	30.2	C	-0.5	0.040	39.6	D	40.7	D	4.1	0.028	44.6	D	46.7	D	6.7	0.028
7	Bowers Av and Monroe St	Signal	D	AM	32.7	C-	33.1	C-	0.5	0.014	**55.8**	**E+**	**58.8**	**E+**	3.4	0.014	**76.1**	**E-**	**80.2**	**F**	**4.6**	**0.014**
	(Santa Clara)			PM	33.9	C-	34.2	C-	0.4	0.012	**57.3**	**E+**	**60.0**	**E**	3.0	0.012	**79.5**	**E-**	**83.3**	**F**	**4.2**	**0.012**
8	Bowers Av and Cabrillo Av	Signal	D	AM	24.8	C	24.9	C	0.1	0.010	30.0	C	30.2	C	0.3	0.010	32.9	C-	33.5	C-	0.6	0.010
	(Santa Clara)			PM	29.5	C	29.6	C	0.1	0.010	36.3	D+	36.8	D+	0.6	0.010	40.9	D	41.9	D	1.1	0.010
9	Mission College Bl and Montague Exp*	Signal	E	AM	65.8	E	66.0	E	0.3	0.004	**119.9**	**F**	**121.1**	**F**	0.0	0.000	**181.2**	**F**	**182.5**	**F**	0.0	0.000
	(Santa Clara)			PM	66.7	E	66.7	E	0.0	0.001	**141.9**	**F**	**142.5**	**F**	0.5	0.001	**233.7**	**F**	**234.6**	**F**	0.5	0.001
10	San Tomas Exp and Scott Bl*	Signal	E	AM	29.5	C	29.4	C	0.0	0.001	40.0	D	40.0	D	0.0	0.000	43.3	D	43.3	D	0.0	0.000
	(Santa Clara)			PM	50.7	D	50.7	D	0.0	0.001	66.1	E	66.3	E	0.3	0.001	**92.7**	**F**	**93.4**	**F**	0.5	0.001
11	San Tomas Exp and Walsh Av	Signal	E	AM	51.4	D-	53.1	D-	4.4	0.007	**106.5**	**F**	**109.1**	**F**	6.7	0.007	**122.8**	**F**	**125.2**	**F**	0.0	0.000
	(Santa Clara)			PM	63.4	E	65.6	E	6.3	-0.040	**100.0**	**F**	**103.9**	**F**	**6.4**	**0.011**	**116.0**	**F**	**119.8**	**F**	**6.3**	**0.011**
12	San Tomas Exp and Monroe St*	Signal	E	AM	39.5	D	39.9	D	0.0	0.001	67.9	E	69.0	E	1.7	0.004	68.7	E	69.5	E	1.2	0.003
	(Santa Clara)			PM	38.5	D+	38.5	D+	0.1	0.003	41.7	D	41.8	D	0.1	0.003	45.8	D	46.1	D	0.4	0.003
13	San Tomas Exp and El Camino Real*	Signal	E	AM	72.6	E	73.3	E	0.1	0.002	**96.7**	**F**	**97.9**	**F**	1.9	0.005	**112.2**	**F**	**113.3**	**F**	1.7	0.005
	(Santa Clara)			PM	71.3	E	71.9	E	1.0	0.004	**97.1**	**F**	**98.1**	**F**	1.8	0.004	**129.4**	**F**	**130.4**	**F**	1.8	0.004
14	Oakmead Pkwy and Central Exp*	Signal	E	AM	52.9	D-	53.2	D-	0.2	0.002	70.4	E	70.8	E	0.3	0.002	76.7	E-	77.2	E-	0.3	0.002
	(Sunnyvale)			PM	45.2	D	45.4	D	0.2	0.002	65.0	E	65.4	E	0.6	0.002	73.6	E	74.1	E	0.5	0.002
15	Lawrence Exp and Arques Av*	Signal	E	AM	39.2	D	39.3	D	0.0	0.001	44.9	D	44.9	D	0.0	0.001	48.1	D	48.2	D	0.0	0.001
	(Sunnyvale)			PM	71.6	E	71.6	E	0.0	0.000	**114.4**	**F**	**114.5**	**F**	0.2	0.000	**130.2**	**F**	**130.3**	**F**	0.2	0.000
16	Lawrence Exp and Kifer Rd	Signal	E	AM	54.2	D-	54.2	D-	0.4	0.001	**110.9**	**F**	**110.9**	**F**	0.7	0.001	**125.3**	**F**	**125.4**	**F**	0.7	0.001
	(Santa Clara)			PM	**101.6**	**F**	**102.0**	**F**	0.9	0.009	**148.0**	**F**	**149.2**	**F**	3.4	0.009	**154.8**	**F**	**156.2**	**F**	2.8	0.009
17	Oakmead Village Ct and Kifer Rd	TWSC	-	AM	24.7	C	27.2	D	N/A		29.3	D	32.9	D	N/A		29.8	D	33.5	D	N/A	
	(Santa Clara)			PM	17.5	B	21.2	C			20.3	C	26.0	D			20.8	C	26.8	D		
18	Oakmead Village Ct/Oakmead Village Dr	TWSC	-	AM	8.4	A	10.0	A	N/A		8.4	A	10.0	A	N/A		8.4	A	10.0	A	N/A	
	(Santa Clara)			PM	8.5	A	10.1	B			8.5	A	10.1	B			8.5	A	10.0	B		

Notes:
* Denotes VTA CMP intersection
- TWSC = two-way stop-controlled intersection
1. Overall weighted average control delay (seconds per vehicle) is reported for signalized intersections.
Worst movement delay (seconds per vehicle) is reported for stop-controlled intersections.
Bold indicates a substandard level of service.
Outline indicates an adverse project effect.

1. Introduction

This report presents the results of the local transportation analysis (LTA) conducted for the proposed office development located at 3000 Bowers Avenue in Santa Clara, California (see Figure 1). The site is located to the southwest of the intersection of Bowers Avenue and Central Expressway. The project would construct a total of 330,000 square feet (s.f.) of office space within two buildings and a vehicle parking garage on the currently vacant site (see Figure 2).

Vehicle access to the site would be provided via a right-in/right-out only driveway on Bowers Avenue and one full-access driveway and one exit-only driveway on Oakmead Village Court. The northern driveway on Oakmead Village Court would provide full access and would be located at the Oakmead Village Court/Oakmead Village Drive intersection opposite Oakmead Village Drive. The southern driveway on Oakmead Village Court would be exit only from the parking garage.

Scope of Study

The purpose of the study is to satisfy the requirements of the City of Santa Clara and the Congestion Management Program (CMP) of the Santa Clara Valley Transportation Authority (VTA) and the California Environmental Quality Act (CEQA). Per California Senate Bill 743 (SB 743) and CEQA Guidelines, the study evaluates the project's vehicle miles traveled (VMT) impact. The study also includes a local transportation analysis (LTA) that evaluates potential transportation effects of the project in accordance with the standards and methodologies set forth by the City of Santa Clara and the VTA.

It should be noted that this transportation analysis is based on existing conditions as of 2018/2019, prior to the recent reductions in traffic volumes and transit services associated with the current pandemic. Since the institution of shelter in place orders went into effect in March 2020 due to COVID-19, most offices and schools are closed, and people are working at home to the extent possible. As a result, current traffic volumes are a fraction of what they were prior to the virus outbreak and transit providers are operating on reduced schedules. It is not known when traffic conditions will return to pre-COVID-19 levels, but it is expected that the current reductions in traffic volumes and transit services are only temporary. Since this transportation analysis is based on pre- COVID-19 conditions, this transportation analysis is considered to be a conservative evaluation of the project's effects.

Vehicle Miles Traveled

Per SB 743, the California Natural Resources Agency, with assistance from the Governor's Office of Planning and Research (OPR), adopted new CEQA guidelines in December 2018. The new guidelines

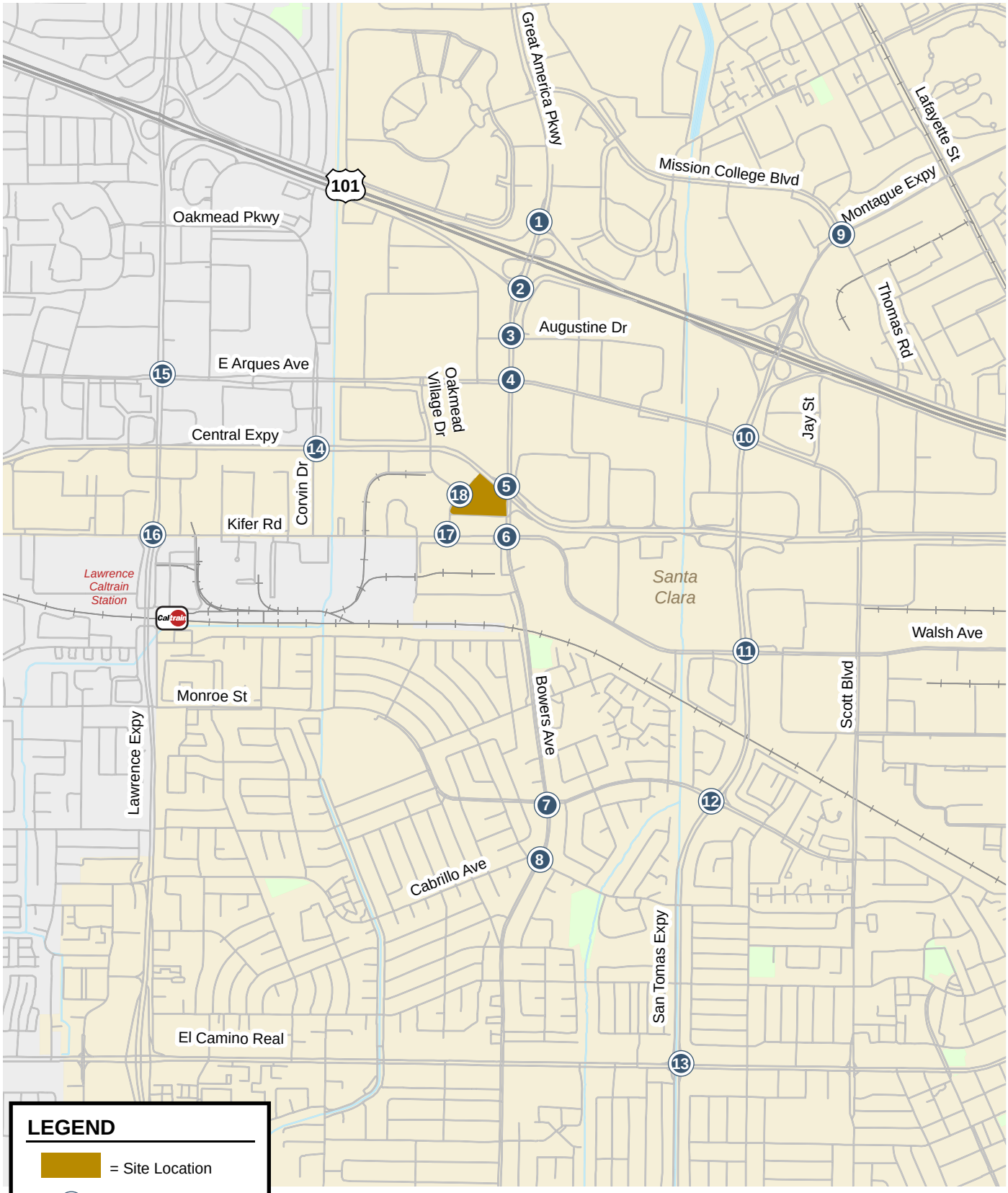


Figure 1
Site Location and Study Intersections

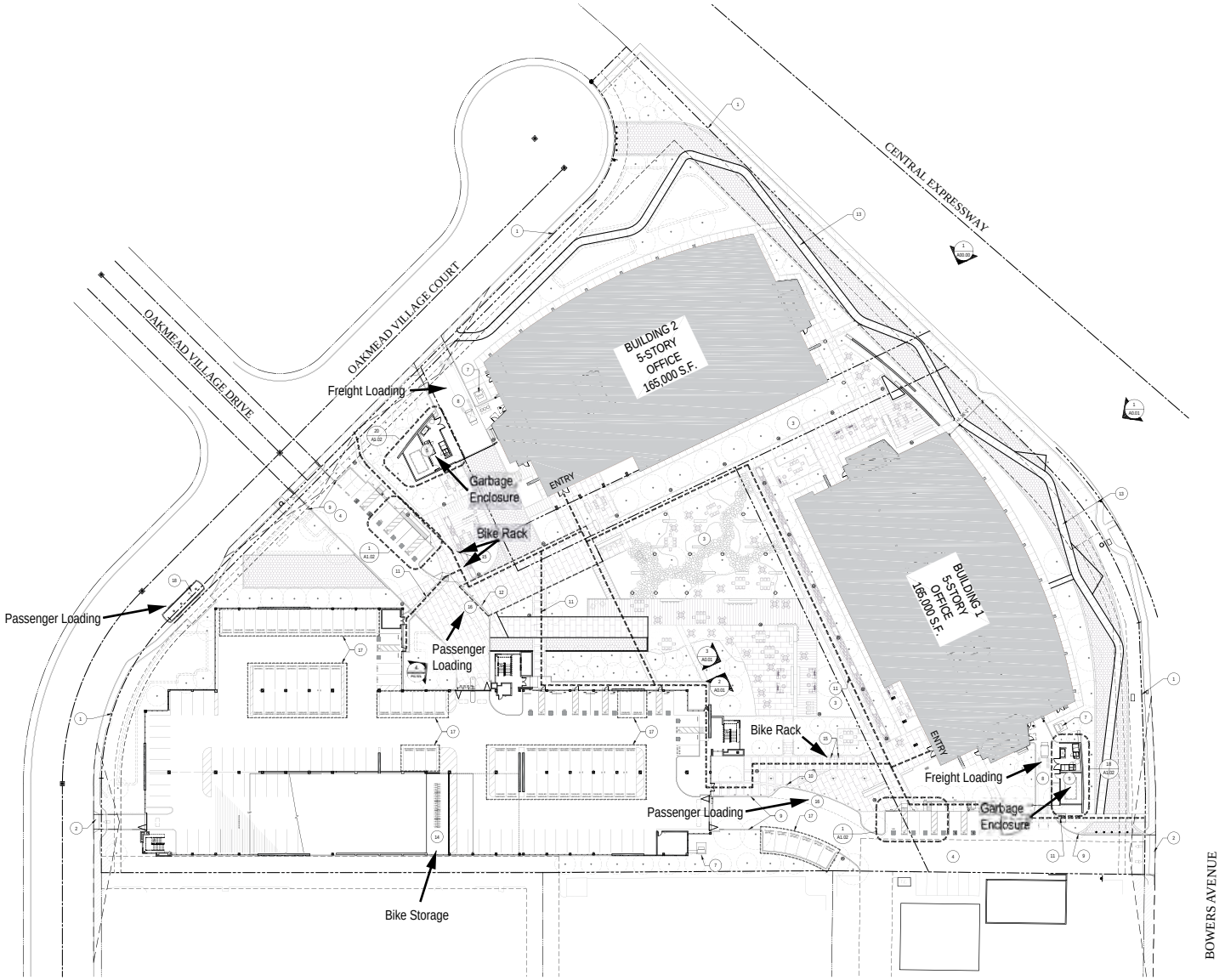


Figure 2
Site Plan

NORTH
Not to Scale

replace Level of Service (LOS) as the evaluation measure for transportation impacts under CEQA with another measure such as Vehicle Miles Traveled (VMT). VMT measures the amount of vehicle trip making and trip length and is a direct measurement of greenhouse gas emissions. A reduction in VMT would promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses that reduces the reliance on individual vehicles.

The City of Santa Clara adopted a VMT Transportation Analysis Policy for Environmental Review on June 30, 2020. The Policy sets forth screening criteria that allow various types of developments such as infill developments, small projects, and/or transit supportive projects near major transit corridors to be presumed to have a less than significant impact on VMT. The project would qualify as a transit supportive project since it is located near a major transit stop and meets the following criteria:

- 0.75 floor to area ratio (FAR) for office/retail uses,
- Promotes multimodal transportation,
- Incorporates transit-oriented design, and
- Does not propose excessive parking.

Proximity to Transit

Transit supportive projects must be located within a half mile of an existing major transit stop or an existing transit stop along a high-quality transit corridor, as those terms are defined by Public Resources Code sections 21064.3 and 21155. A “major transit stop” is defined as a location containing any of the following: (a) an existing rail or bus rapid transit station; (b) the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods; or (3) a major transit stop that is included in Plan Bay Area 2040 (Pub. Res. Code §§ 21064.3, 21155(b)). A “high-quality transit corridor” is defined as a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. (Pub. Res. Code § 21155(b).

The project is within a half mile of the Bowers Avenue/Scott Boulevard intersection where Routes 20 and 57 provide a frequency of service interval of 15 minutes during the morning and afternoon peak commute periods before Covid. Therefore, the intersection meets the definition of a major transit stop. A map showing these transit facilities and a full description of other nearby transit services are presented in Chapter 2 (see Figure 4).

Density

For office projects, transit supportive projects must have a minimum FAR of 0.75. The project would have an FAR of approximately 1.05. Thus, the development density meets the minimum requirements to be considered a transit supportive project.

Multimodal Transportation and Transit-Oriented Design Elements

The City Policy requires that transit supportive projects promote multimodal transportation and include transit-oriented design elements. The project would include the following design features that support safe, active, and sustainable travel options for employees:

- Construct new 5-foot wide sidewalks along the project frontages on Central Expressway and Oakmead Village Court. The sidewalks would facilitate pedestrian movements between the project site and surrounding points of interest, such as bus stops.
- Include pedestrian paths throughout the project site, providing connections between sidewalks on the adjacent streets, the proposed buildings, parking garage, and other amenities on-site.

- Provide long-term and short-term bicycle parking. The short-term spaces would be racks located near the main entrance to each of the office buildings. The long-term spaces would be in a secure bike room located on the ground floor of the parking garage. These bicycle parking locations are convenient for cyclists.
- Provide showers/changing rooms for employees to use after biking or walking to the office.
- Provide fewer vehicle parking spaces than the City requirement.
- Provide loading zones for dropping off and picking up passengers who carpool or vanpool. The drop-off and pick-up zones would provide greater convenience for employees who rideshare with people who work at other nearby work locations, as well as those who use on-demand ride services such as Lyft and Uber.
- Implement transportation demand management (TDM) strategies to promote sustainable modes of transportation and reduce vehicle miles traveled.

Parking

Transit supportive projects may not include more parking than required by the City Code. The project would provide fewer parking spaces than the parking required by the City Code, as described in Chapter 7.

Findings

Per the State's guidance and the City's VMT Policy, the project qualifies as a transit supportive project and is presumed to have a less than significant impact on VMT.

Local Transportation Analysis

Although the project does not require a VMT analysis, the City still requires all projects to measure intersection efficiency (LOS) as part of an operational analysis and to provide improvements or address project related operational deficiencies. Thus, this report contains a local transportation analysis to evaluate the project's consistency with the level of service standards set forth in the City's General Plan and to identify feasible improvements to remedy any deficiencies.

Although the project is located in the City of Santa Clara, the project also would add traffic to facilities outside of the City of Santa Clara. Thus, the potential adverse effects of the project on traffic operations were evaluated following the standards and methodologies set forth by the Cities of Santa Clara and Sunnyvale, and the VTA. The VTA administers the County Congestion Management Program (CMP).

The study analyzes the traffic effects of the project on the key intersections, freeway segments, and freeway ramps in the vicinity of the site during the weekday AM and PM peak hours of traffic. Locally, the AM peak hour of traffic is usually between 7:00 and 9:00 AM, and the PM peak hour is typically between 4:00 and 6:00 PM. It is during these periods that the most congested traffic conditions occur on an average weekday.

Study Intersections

The study intersections were selected in accordance with VTA's *Transportation Impact Analysis Guidelines* (October 2014) and in consultation with Santa Clara staff. The study includes those intersections that provide primary access to the project site and intersections that would experience a traffic increase of 10 or more peak-hour trips per lane. The study intersections are listed below and shown on Figure 1. Ten study intersections are designated as CMP intersections. Two of the CMP study intersections are located in the City of Sunnyvale, and the remaining intersections are in Santa

Clara. All study intersections were evaluated against the standards of the applicable municipality, while the ten CMP intersections also were evaluated against the standards of the Santa Clara County CMP.

1. Great America Parkway and US 101 (Northbound Off-Ramp)*
2. Bowers Avenue and US 101 (Southbound Off-Ramp)*
3. Bowers Avenue and Augustine Drive
4. Bowers Avenue and Scott Boulevard*
5. Bowers Avenue and Central Expressway*
6. Bowers Avenue and Kifer Road/Walsh Avenue
7. Bowers Avenue and Monroe Street
8. Bowers Avenue and Cabrillo Avenue
9. Mission College Boulevard and Montague Expressway*
10. San Tomas Expressway and Scott Boulevard*
11. San Tomas Expressway and Walsh Avenue
12. San Tomas Expressway and Monroe Street*
13. San Tomas Expressway and El Camino Real*
14. Oakmead Parkway/Corvin Drive and Central Expressway* (Sunnyvale)
15. Lawrence Expressway and Arques Avenue* (Sunnyvale)
16. Lawrence Expressway and Kifer Road
17. Oakmead Village Court and Kifer Road (unsignalized)
18. Oakmead Village Court and Oakmead Village Drive (unsignalized)

* Denotes CMP intersection

Intersection traffic conditions were evaluated for the following scenarios:

- ***Existing Conditions.*** Existing AM and PM peak-hour traffic volumes were obtained from new turning-movement counts conducted in October 2019, previously completed traffic studies, and the latest available CMP database.
- ***Existing Plus Project Conditions.*** Existing plus project conditions represent existing traffic volumes with the addition of traffic generated by the project.
- ***Background Conditions*****.** Background traffic volumes were estimated by adding to existing peak-hour volumes the projected volumes from approved but not yet constructed developments in the study area. The added traffic from approved but not yet constructed developments was based on the list of approved projects provided by the Cities of Santa Clara and Sunnyvale, which include traffic generated by Phases 1-3 of the City Place development. Traffic generated by Phase 1 of the North San Jose Development Policy also was included in the background traffic volumes.
- ***Background Plus Project Conditions.*** Background plus project conditions were estimated by adding to the background traffic volumes the new traffic estimated to be generated by the project.
- ***Cumulative No Project Conditions.*** Cumulative conditions represent future traffic volumes on the planned roadway network that would result from traffic growth projected to occur due to the approved developments and other proposed but not yet approved (pending) developments in the study area. The added traffic from pending developments was based on the lists of pending projects provided by the Cities of Santa Clara and Sunnyvale. Traffic generated by Phase 2 of the North San Jose Development Policy also was included in the cumulative traffic volumes.
- ***Cumulative Plus Project Conditions.*** Cumulative plus project traffic volumes were estimated by adding the new traffic generated by the project.

Study Freeway Segments

According to VTA's Guidelines, a freeway level of service analysis is required if the number of project trips added to any freeway segment equals or exceeds one percent of the capacity of the segment. The key freeway segments in the study area were evaluated to determine if the project traffic on each segment would exceed this threshold. US 101 has three mixed flow lanes and one high-occupancy vehicle (HOV) lane in each direction in the vicinity of the project site. The CMP specifies that a mixed-flow lane capacity of 2,300 vehicles per hour per lane (vphpl) be used for segments six lanes or wider in both directions and a capacity of 2,200 vphpl be used for segments with less than six lanes. Thus, the three lanes on US 101 freeway segments near the project site have a capacity of 6,900 vph in each direction. Using the VTA's one-percent threshold, a freeway level of service analysis for US 101 would be needed if the project adds 69 or more peak-hour trips to the freeway segments near the site. A review of the project trip assignment (described in Chapter 3) indicates that the greatest number of project trips in any direction on the subject freeway segments would be no more than 66 trips during the AM and PM peak hours (see Table 1). Since the number of project trips on the freeway segments would be less than the one-percent threshold, the project would not cause a significant increase in traffic on the freeway segments in the study area, and a freeway level of service analysis is not required.

Study Freeway Ramps

Based on VTA's *Transportation Impact Analysis Guidelines*, a TIA should include a queuing analysis for freeway on-ramps with existing or planned ramp meters, and off-ramps controlled by signals at junctions with local streets. The US 101/Bowers Avenue/Great America Parkway interchange provides access to the freeway system from the project site. Therefore, a freeway ramp traffic operations analysis was conducted for the following ramps:

- US 101 southbound diagonal on-ramp from northbound Bowers Avenue
- US 101 northbound diagonal off-ramp to southbound Great America Parkway/Bowers Avenue

The US 101 northbound loop on-ramp from northbound Bowers Avenue is not metered during the AM or PM commute periods, and the US 101 southbound diagonal off-ramp to southbound Bowers Avenue is not controlled by a traffic signal. Therefore, the ramps were not included in the analysis.

Other Transportation Issues

The study includes an evaluation of potential operational deficiencies to transit services and pedestrian and bicycle facilities, and a review of site access, on-site circulation, and parking. In addition, vehicle queuing was evaluated at selected locations where the project would add a significant number of left-turn vehicles. Lastly, a signal warrant analysis was conducted for the unsignalized study intersections.

Methodology

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

Data Requirements

The data required for the analysis were obtained from new traffic counts, the Cities of Santa Clara and Sunnyvale, the CMP, and field observations. The following data were collected from these sources:

- Existing traffic volumes,
- Lane geometries,

Table 1
Freeway Segment Capacity Evaluation

Freeway Segment		Dir	Peak Hour	Existing Conditions: Mixed-Flow # of Lanes[1]	Mixed-Flow Capacity[2]	Mixed-Flow LOS[3]	HOV Lane # of Lanes[1]	HOV Lane Capacity[2]	HOV Lane LOS[3]	Project Trips: Mixed-Flow Project Trips	Mixed-Flow % of Capacity
US 101	De La Cruz Blvd to Montague Expwy / San Tomas Expwy	NB	AM	3	6,900	**F**	1	1,650	**F**	66	0.96%
			PM	3	6,900	D	1	1,650	A	12	0.17%
US 101	Montague Expwy / San Tomas Expwy to De La Cruz Blvd	SB	AM	3	6,900	D	1	1,650	A	11	0.16%
			PM	3	6,900	**F**	1	1,650	**F**	64	0.93%
US 101	Montague Expwy / San Tomas Expwy to Bowers Ave / Great America Pkwy	NB	AM	3	6,900	**F**	1	1,650	**F**	66	0.96%
			PM	3	6,900	D	1	1,650	A	12	0.17%
US 101	Bowers Ave / Great American Pkwy to Montague Expwy / San Tomas Expwy	SB	AM	3	6,900	D	1	1,650	A	11	0.16%
			PM	3	6,900	**F**	1	1,650	**F**	64	0.93%
US 101	Bowers Ave / Great American Pkwy to Lawrence Expwy	NB	AM	3	6,900	**F**	1	1,650	**F**	9	0.13%
			PM	3	6,900	E	1	1,650	A	52	0.75%
US 101	Lawrence Expwy to Bowers Ave / Great American Pkwy	SB	AM	3	6,900	D	1	1,650	A	53	0.77%
			PM	3	6,900	**F**	1	1,650	**F**	10	0.14%
US 101	Lawrence Expwy to N. Fair Oaks Ave	NB	AM	3	6,900	**F**	1	1,650	**F**	9	0.13%
			PM	3	6,900	E	1	1,650	A	52	0.75%
US 101	N. Fair Oaks Ave to Lawrence Expwy	SB	AM	3	6,900	D	1	1,650	A	53	0.77%
			PM	3	6,900	**F**	1	1,650	**F**	10	0.14%

Notes:
HOV = high-occupancy vehicle; LOS = level of service.
1. Number of lanes on each segment are taken from the Google Earth software.
2. Capacity is based on the capacities cited in VTA's *Transportation Impact Analysis Guidelines* (2014).
3. Level of service (LOS) on each segment are taken from VTA's *2018 CMP Monitoring Report*.
Bold indicates a substandard level of service.

- Signal timing and phasing,
- Freeway ramp meter service rates and queue lengths, and
- Lists of approved and pending developments.

Intersection Level of Service Methodologies and Standards

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

Signalized Intersections

The Cities of Santa Clara and Sunnyvale evaluate level of service at signalized intersections based on the 2000 *Highway Capacity Manual (HCM)* level of service methodology. This HCM method evaluates signalized intersection operations on the basis of average control delay time for all vehicles at the intersection. This average delay can then be correlated to a level of service. Table 2 presents the level of service definitions for signalized intersections.

This study utilizes TRAFFIX software to determine intersection levels of service based on the HCM method. Since TRAFFIX is approved by VTA as the level of service analysis software for CMP signalized intersections, the Cities of Santa Clara and Sunnyvale employ the CMP defaults values for the analysis parameters. TRAFFIX software was used to analyze intersection operations and to identify adverse effects based on the increases in critical-movement delay and the volume-to-capacity ratio (v/c) between no-project and project scenarios.

The Cities of Santa Clara and Sunnyvale have set forth LOS D as the minimum standard, except on CMP and expressway facilities within Santa Clara and roadways considered “regionally significant” within Sunnyvale, which have a standard of LOS E. In the study area, the Sunnyvale intersections along Central Expressway are considered regionally significant

Unsignalized Intersections

The study includes the analysis of two unsignalized intersections located in the City of Santa Clara. The City of Santa Clara does not have a level of service standard for unsignalized intersections. The two unsignalized study intersections were analyzed for operational purposes.

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

For unsignalized intersections, level of service depends on the average delay experienced by vehicles on the stop-controlled approaches. Thus, for all-way stop controlled intersections, level of service is determined by the average delay for all movements through the intersection. For side street stop-controlled intersections (two-way or T-intersections), operations are defined by the average control delay experienced by vehicles entering the intersection from the stop-controlled approaches/movements on minor streets or from left-turn approaches on major streets. For side street stop-controlled intersections, the level of service is reported based on the average delay for the worst movement. The level of service definitions for unsignalized intersections is shown in Table 3. This study utilizes TRAFFIX software to determine intersection levels of service based on the 2000 HCM methodology for unsignalized intersection.

Table 2
Signalized Intersection Level of Service Definitions Based on Average Control Delay

Level of Service	Description	Average Control Delay Per Vehicle (sec.)
A	Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay.	10.0 or less
B+ B B-	Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay.	10.1 to 12.0 12.1 to 18.0 18.1 to 20.0
C+ C C-	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though may still pass through the intersection without stopping.	20.1 to 23.0 23.1 to 32.0 32.1 to 35.0
D+ D D-	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lenghts, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 39.0 39.1 to 51.0 51.1 to 55.0
E+ E E-	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Individual cycle failures occur frequently.	55.1 to 60.0 60.1 to 75.0 75.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes of such delay levels.	greater than 80.0

Source: Transportation Research Board, *2000 Highway Capacity Manual* (Washington, D.C., 2000) p10-16.
VTA Traffic Level of Service Analysis Guidelines (June 2003), Table 2.

Table 3
Unsignalized Intersection Level of Service Definitions Based on Average Delay

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

Source: Transportation Research Board, *2000 Highway Capacity Manual* (Washington, D.C., 2000) p17-2.

Intersection Vehicle Queuing Analysis

The analysis of intersection operations is typically supplemented with a vehicle queuing analysis at study intersections where the project would add a substantial number of vehicle trips to the left-turn movements or stop-controlled approaches. The analysis provides a basis for estimating future left-turn pocket storage requirements at the study intersections and is presented for informational purposes only, since the City of Los Altos have not defined a policy related to queuing. Vehicle queues were estimated using a Poisson probability distribution, which estimates the probability of "n" vehicles for a vehicle movement using the following formula:

$$P(x=n) = \frac{\lambda^n e^{-(\lambda)}}{n!}$$

Where:

P (x=n) = probability of "n" vehicles in queue per lane
n = number of vehicles in the queue per lane
λ = average # of vehicles in the queue per lane (vehicles per hr per lane/signal cycles per hr)

The basis of the analysis is as follows: (1) the Poisson probability distribution is used to estimate the 95th percentile maximum number of queued vehicles for a particular left-turn movement; (2) the estimated maximum number of vehicles in the queue is translated into a queue length, assuming 25 feet per vehicle; and (3) the estimated maximum queue length is compared to the existing or planned available storage capacity for the left-turn movement. This analysis thus provides a basis for estimating future turn pocket storage requirements at intersections.

For signalized intersections, the 95th percentile queue length value indicates that during the peak hour, a queue of this length or less would occur on 95 percent of the signal cycles. Or, a queue length larger than the 95th percentile queue would only occur on 5 percent of the signal cycles (about 3 cycles during the peak hour for a signal with a 60-second cycle length). Thus, turn pocket storage designs based on the 95th percentile queue length would ensure that storage space would be exceeded only 5 percent of the time for a signalized movement. Vehicle queuing at unsignalized intersections are evaluated based on the delay experienced at the specific study turn movement.

Freeway Ramp Traffic Operations

A freeway ramp operations analysis was performed to identify the effects of project traffic on the vehicle queues at the metered on-ramp and the signal-controlled off-ramp. Ramp operations at the study ramps were based on field observations during the AM and PM peak hours of traffic. It should be noted that the evaluation of freeway ramps is not required based on the VTA's Guidelines, nor are there adopted methodologies and adverse effect criteria for the analysis of freeway ramps.

Definition of Adverse Effects

Although measures of congestion such as delay and level of service are no longer used to identify significant impacts under CEQA, a local transportation analysis was conducted to evaluate the project's consistency with the level of service standards set forth in the City's General Plan and to identify feasible improvements to remedy any deficiencies. Deficiencies in intersection operations that meet specific criteria are labeled as an "adverse effect" of the project. Such adverse effects on intersection operations do not constitute significant impacts under CEQA.

Signalized Intersections

According to the Cities of Santa Clara and Sunnyvale and CMP level of service standards, a development is said to create an adverse effect on traffic conditions at a signalized intersection if for either peak hour, either of the following conditions occurs:

1. The level of service at the intersection drops below its respective level of service standard (LOS D or better for local intersections and LOS E or better for CMP intersections) when project traffic is added, or
2. An intersection that operates below its level of service standard under no-project conditions experiences an increase in critical-movement delay of four (4) or more seconds, and an increase in critical volume-to-capacity ratio (v/c) of one percent (0.01) or more when project traffic is added.

The exception to this threshold is when the addition of project traffic reduces the amount of average control delay for critical movements, i.e., the change in average control delay for critical movements are negative. In this case, the threshold is when the project increases the critical v/c value by 0.01 or more.

Although adverse effects on intersection operations do not constitute significant impacts under CEQA, the City may require developers to implement improvements to address deficiencies in the local transportation network. Adverse effects at signalized intersections can be addressed by one of the following approaches:

- Construct or pay a fair share towards improvements to the subject intersection or proximate to the intersection to increase overall capacity (e.g., traffic signal modifications, construction of additional turn lanes), or
- Construct or pay a fair share towards improvements to the pedestrian or bicycle facilities within the intersection or proximate to the intersection, or
- Construct or pay a fair share towards improved access to transit or transit facility proximate to the intersection, or
- Implement transportation demand management (TDM) measures that will reduce the project traffic at the intersection and improve the deficiency.

Unsignalized Intersections

The City of Santa Clara has not established criteria to define adverse effects for unsignalized intersections. The determination of appropriate improvements to unsignalized intersections typically includes a qualitative and quantitative analysis of movement delay, movement traffic volumes, intersection safety, and need for signalization. For this reason, adverse effects and the associated improvements to unsignalized intersections are frequently determined on the basis of professional judgment. Like at signalized intersections, adverse effects at unsignalized intersections do not constitute significant impacts under CEQA.

For this study, the following criteria were used to determine if the project would create an adverse effect on traffic conditions at an unsignalized intersection:

1. The addition of project traffic causes the average intersection delay for all-way stop-controlled or the worst movement/approach for side-street stop-controlled intersections to degrade to LOS F, and
2. The intersection satisfies the California Manual of Uniform Traffic Control Devices (CA MUTCD) peak-hour volume signal warrant.

Report Organization

This report has a total of seven chapters. Chapter 2 describes the existing roadway network, transit service, bicycle and pedestrian facilities, and intersection levels of service. Chapter 3 describes the method used to estimate project traffic and the resulting the intersection levels of service under existing plus project conditions. Chapter 4 presents the intersection levels of service under background conditions with the addition of traffic from approved developments. Chapter 5 presents traffic conditions and potential improvements recommended to address deficiencies identified under background plus project conditions. Chapter 6 presents the traffic conditions in the study area under cumulative conditions with the addition of traffic from approved and pending developments. Cumulative conditions were evaluated both without and with the project. Chapter 7 presents the analysis of other transportation-related issues, including freeway ramp traffic operations, site access and circulation, parking, and potential effects on bicycle, pedestrian, and transit facilities.

2. Existing Conditions

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

Existing Roadway Network

Access to the project site would be provided via the project's proposed driveways on Bowers Avenue and Oakmead Village Court. Major roadways that connect to the site in the project vicinity include Central Expressway and Kifer Road. Regional access to the project site is provided via US 101. These roads are described below.

US 101 is an eight-lane freeway with three mixed-flow lanes and one high-occupancy vehicle (HOV) lane in each direction in the vicinity of the site. It extends north through San Francisco and south through Gilroy. Regional access to the project site is provided via its interchange with Bowers Avenue.

Central Expressway is an east-west expressway with four to six lanes. It begins at De La Cruz Boulevard in San Jose and extends westward to San Antonio Road where it transitions into Alma Street in Mountain View. East of San Tomas Expressway, Central Expressway has HOV lanes. It has a posted speed limit of 50 miles per hour (mph). Central Expressway provides access to and from the project site via Bowers Avenue and Oakmead Village Drive.

Bowers Avenue is a six-lane north-south street, north of Kifer Road, and a four-lane street south of Kifer Road. It transitions from Great America Parkway north of US 101 and extends southerly to El Camino Real, where it transitions to Kiely Boulevard. Bowers Avenue has a speed limit of 35 mph south of Central Expressway. Bike lanes exist along most of Bowers Avenue, except along the project frontage between Central Expressway and Kifer Road. Bowers Avenue provides direct access to the project site via an existing right-in and right-out only driveway.

Kifer Road is a four-lane east-west street with left-turn pockets provided at intersections and a center turn lane provided between intersections. It runs between Fair Oaks Avenue in Sunnyvale and Bowers Avenue, where it transitions into Walsh Avenue. Kifer Road has a speed limit of 35 mph east of Bowers Avenue. Bike lanes exist west of Uranium Road. It provides access to the project site via its intersection with Oakmead Village Court.

Oakmead Village Court is a two-lane north-south street that runs from Kifer Road to south of Central Expressway, along the western project site boundary, where it terminates in a cul-de-sac. Oakmead Village Court has a speed limit of 25 mph. Oakmead Village Court provides direct access to the project

site via two proposed driveways. One of the driveways would intersect with Oakmead Village Drive, which provides access to and from eastbound Central Expressway.

Existing Pedestrian Facilities

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. In the project vicinity Bowers Avenue and Walsh Avenue have sidewalks on both sides of the street. Sidewalks do not exist along most of Oakmead Village Court, except at the southwest corner of the Oakmead Village Court/Oakmead Village Drive intersection. Kifer Road has sidewalks along the northern side of the street between Oakmead Village Court and Bowers Avenue and on both sides of the street west of Uranium Road. Sidewalks are present along the north side of Central Expressway between Oakmead Village Drive and the San Tomas Aquino Creek Trail.

Crosswalks are provided on all approaches of all signalized intersections in the vicinity of the project site, with the exception of the east leg of the Oakmead Parkway/Corvin Drive and Central Expressway intersection. All of the crosswalks at the nearby signalized intersections include pedestrian signal heads and push buttons. Sidewalks and crosswalks in the project vicinity provide adequate access to the nearby transit facilities.

Although there are no sidewalks on Oakmead Village Court and Central Expressway along the project frontages, the project would construct new sidewalks along the project frontages. The sidewalks would facilitate pedestrian movements between the project site and surrounding points of interest, such as bus stops.

Existing Bicycle Facilities

The bicycle facilities that exist in the project vicinity (see Figure 3) include multi-use trails/paths (Class I bikeway), striped bike lanes (Class II bikeway), and shared bike routes (Class III bikeway).

Class I Trail or Path is an off-street path with exclusive right-of-way for non-motorized transportation used for commuting as well as recreation. The San Tomas Aquino Creek trail/bike path extends from Sunnyvale Baylands Park, north of SR 237, southward to Homestead Road. Between Cabrillo Avenue and Homestead Road, the trail runs on the west side of San Tomas Expressway. The trail can be accessed via the bike lanes on Scott Boulevard and Central Expressway.

Class II Bike Lanes are lanes on roadways designated for use by bicycles with special lane markings. Within a one-mile radius of the project site, striped bike lanes are present along the following roadway segments:

- Kifer Road, west of Uranium Road,
- Scott Boulevard/Arques Avenue, between Monroe Street and North Fair Oaks Avenue in Sunnyvale,
- Bowers Avenue/Great America Parkway, between Chromite Drive and Yerba Buena Way,
- Lakeside Drive, for the entire street,
- Oakmead Parkway, for the entire street, and
- Calabazas Boulevard, for the entire street.

Class III Bike Routes are typically designated only with signage or with painted shared lane markings (Sharrows) on a road that indicate to motorists that bicyclists may use the full travel lane. Within a one-mile radius of the project site, Sharrows are present along the following roadway segments:

- Bowers Avenue between Chromite Drive and El Camino Real and
- Chromite Drive, between Monroe Street and Bowers Avenue.

Figure 3
Existing Bicycle Facilities

NORTH
Not to Scale

Although none of the local commercial streets near the project site (e.g. Oakmead Village Drive and Oakmead Village Court) are designated as bike routes, due to their low traffic volumes, many of them are conducive to bicycle usage.

Bicycles are also permitted on Central Expressway, Lawrence Expressway, and San Tomas Expressway. However, due to high speeds and traffic volumes, the expressways are recommended for use only by bicyclists of intermediate to advanced skills.

Existing Transit Services

Existing transit services to the project area are provided by the Santa Clara Valley Transportation Authority (VTA)'s bus service, VTA's shuttle service to the Great America Station, and Caltrain's shuttle service to the Lawrence Station. Bus and shuttle services in the project vicinity as of April 2021 are summarized in Table 4 and shown on Figure 4.

Table 4
Existing Transit Services

Route	Route Description	Weekday Hours of Operation	Headways[1] (minutes)	Nearby Bus Stop	Walking Distance from Nearest Stop to Project Site (feet)
Local Route 20	Milpitas BART and Sunnyvale Transit Center	6:15 AM - 7:50 PM	30	Scott Blvd west of Bowers Ave	2,200
Local Route 57	West Valley College - Old Ironsides Station	6:05 AM - 10:50 PM	20	Bowers Avenue south of Kifer Road	750
ACE Gray Shuttle (Route 822)[2]	Great America Station - South Sunnyvale	6:05 AM - 8:05 AM (Southbound) 3:10 PM - 5:40 PM (Northbound)	85 - 115 (2 runs southbound, 3 runs northbound)	Kifer Road west of Uranium Drive	1,850
ACE Yellow Shuttle (Route 827)[2]	Great America Station - South Santa Clara	6:05 AM - 8:05 AM (Southbound) 3:10 PM - 5:40 PM (Northbound)	85 - 116 (2 runs each direction)	Bowers Avenue north of Central Expressway	1,500

Notes:
Source: VTA Service Schedule, April 2021.
1. Headways during weekday peak periods.
2. Limited hours of operation and daily runs.

VTA Bus Service

VTA operates the Local Bus Routes 20 and 57 and the ACE Shuttle routes in the project vicinity (with bus stops within walking distance). The closest bus stops (by Route 57) are located on Bowers Avenue south of Kifer Road, approximately 750 feet from the site.

Caltrain

Caltrain provides commuter rail service between San Francisco and Gilroy. The project is located approximately 1.3 miles from of the Lawrence Caltrain station, which is within reasonable biking distance from the project site. At the Lawrence Caltrain station, Caltrain provides service with 60-minute headways during the weekday commute hours. Caltrain provided two shuttle routes from the station to corporate campuses in the project vicinity during the peak commute hours. Due to Covid-19, shuttle service has been suspended.

Figure 4
Existing Transit Services

Altamont Corridor Express (ACE) Rail Service

The Altamont Commuter Express (ACE) is a commuter rail service connecting the Central Valley with Silicon Valley via the Altamont Pass. The closest station to the project site is the Great America Station, approximately 2.6 miles to the project site. Two ACE trains operate westbound during the AM peak period and two trains operate eastbound during the PM peak period. VTA provides two ACE shuttle routes (Gray and Yellow) from the station to corporate campuses in the project vicinity. The closest shuttle stops are located on Bowers Avenue north of Central Expressway, approximately 1,500 feet from the project site.

Amtrak Capitol Corridor

Capitol Corridor is an intercity passenger rail service that operates along a 170-mile track between Silicon Valley/San Jose and the Sacramento region, with a stop at the Great America Station in the project vicinity. Capitol Corridor service operates throughout the day in both directions but has the most frequent service in the westbound direction in the morning and in the eastbound direction in the evening. There are two westbound trains arriving at the Great America Station during the AM peak period and two eastbound trains departing the Great America Station during the PM peak period. As described above, VTA provides shuttle service from the Great America Station to the project area.

Existing Lane Configurations and Traffic Volumes

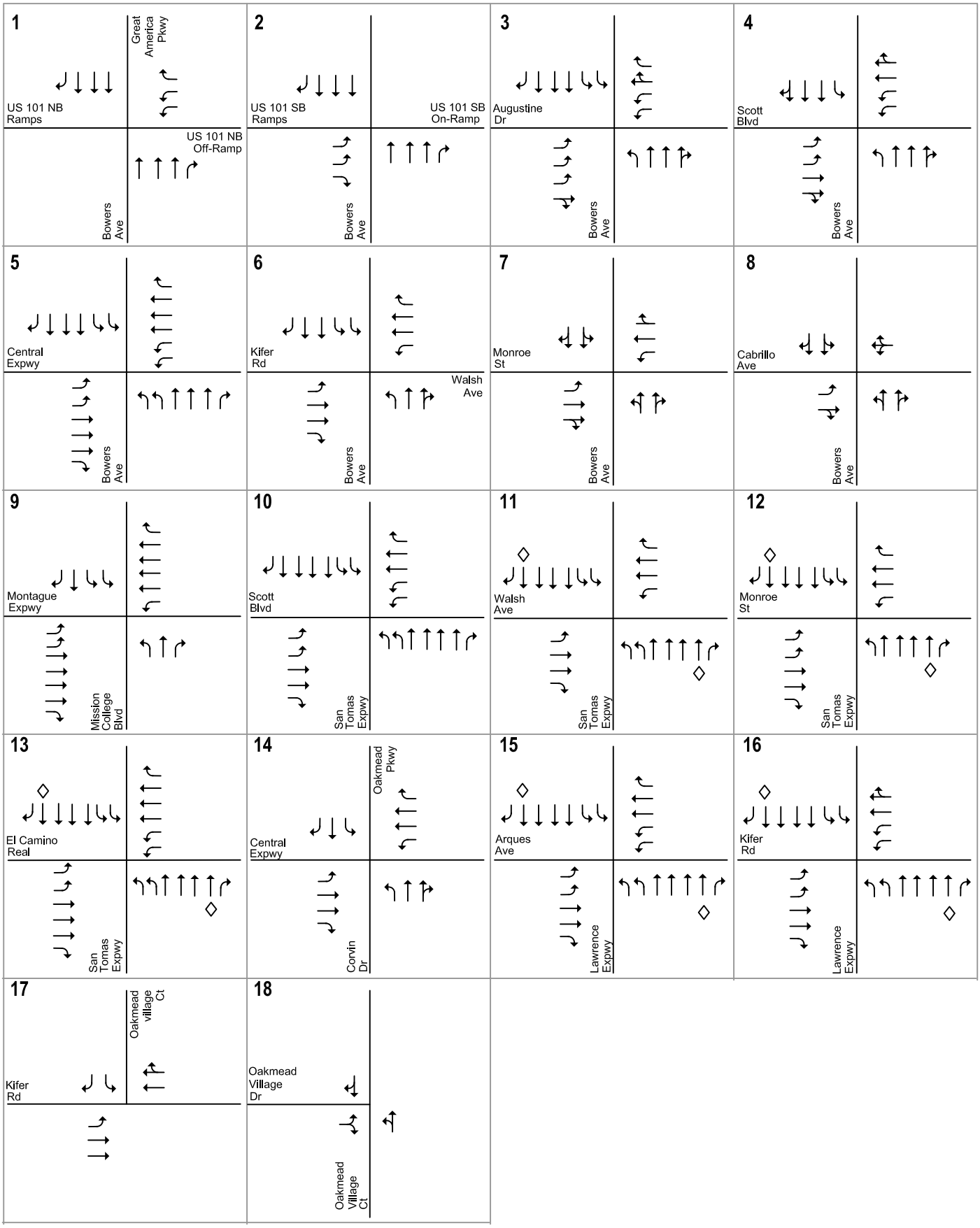
The existing lane configurations at the study intersections were obtained from field observations (see Figure 5).

Existing traffic volumes were obtained from new turning movement counts collected in October 2019, between 7:00 and 9:00 AM and between 4:00 and 6:00 PM, and previously completed traffic studies. PM peak-hour counts for CMP intersections were obtained from the latest available CMP database for the 2018 CMP Annual Monitoring Report. The existing peak-hour intersection volumes are shown in Figure 6. The intersection turning-movement counts conducted for this analysis are presented in Appendix A. Peak-hour traffic volumes for all intersections and study scenarios are tabulated in Appendix B.

Existing Intersection Levels of Service

The results of the intersection level of service analysis show that most of the study intersections currently are operating at acceptable levels of service (see Table 5) with the exception of the Lawrence Expressway/Kifer Road intersection that operates at LOS F in the PM peak hour. All other signalized study intersections currently operate at an acceptable level of service. The level of service calculation sheets are included in Appendix C.

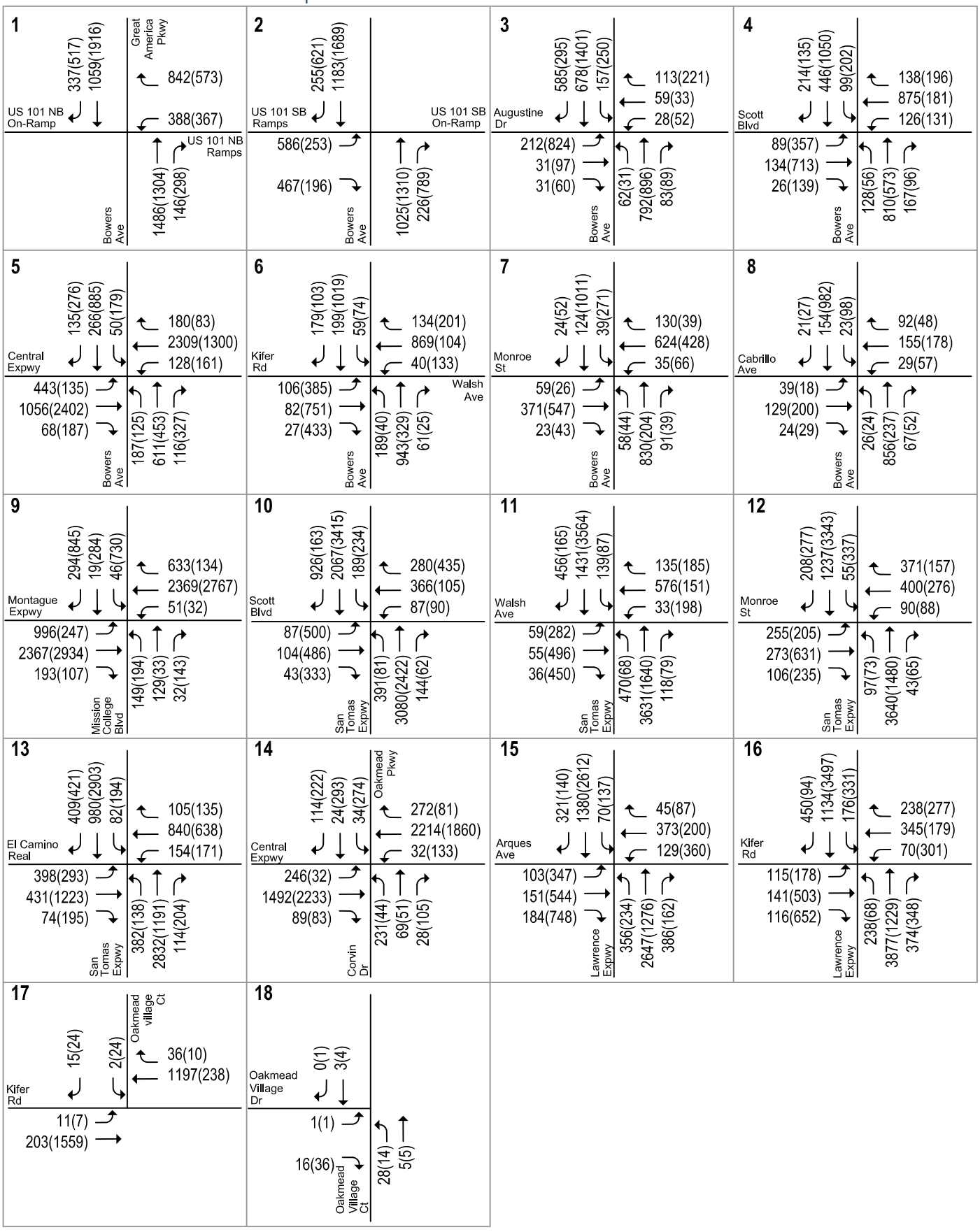
The Oakmead Village Court/Kifer Road and Oakmead Village Court/Oakmead Village Drive intersections are unsignalized, and thus, not subject to the City's level of service standards. The analysis shows that the worst stop-controlled movements (the movement with the highest delay) at these intersections operate at LOS C or better. At the Oakmead Village Court/Kifer Road intersection, the worst stop-controlled movement is for the southbound left-turn lane. At the Oakmead Village Court/Oakmead Village Drive intersection, the study assumed the eastbound lane on Oakmead Village Drive is stop controlled because there is no stop sign for any approach for the intersection. Therefore, the worst stop-controlled movement is the eastbound approach (one approach lane for all eastbound movements).



LEGEND

◇ = HOV Lane

Figure 5
Existing Lane Configurations



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 6
Existing Traffic Volumes

Table 5
Existing Intersection Levels of Service

ID	Intersection (Jurisdiction)	Existing Control	LOS Standard	Peak Hour	Count Date	Avg. Delay[1]	LOS
1	Great America Pkwy/US 101 (North)*	Signal	E	AM	10/30/19	9.1	A
	(Santa Clara)			PM	11/15/18	10.0	A
2	Bowers Av and US 101 (South)*	Signal	E	AM	10/30/19	13.4	B
	(Santa Clara)			PM	11/15/18	7.6	A
3	Bowers Av and Augustine Dr	Signal	D	AM	05/10/18	21.3	C+
	(Santa Clara)			PM	05/10/18	33.2	C-
4	Bowers Av and Scott Bl*	Signal	E	AM	10/30/19	39.6	D
	(Santa Clara)			PM	11/15/18	33.5	C-
5	Bowers Av and Central Exp*	Signal	E	AM	04/09/19	56.0	E+
	(Santa Clara)			PM	11/13/18	53.8	D-
6	Bowers Av and Walsh Av	Signal	D	AM	10/30/19	29.8	C
	(Santa Clara)			PM	10/30/19	30.1	C
7	Bowers Av and Monroe St	Signal	D	AM	10/30/19	32.7	C-
	(Santa Clara)			PM	10/30/19	33.9	C-
8	Bowers Av and Cabrillo Av	Signal	D	AM	10/30/19	24.8	C
	(Santa Clara)			PM	10/30/19	29.5	C
9	Mission College Bl and Montague Exp*	Signal	E	AM	04/09/19	65.8	E
	(Santa Clara)			PM	11/08/18	66.7	E
10	San Tomas Exp and Scott Bl*	Signal	E	AM	04/09/19	29.5	C
	(Santa Clara)			PM	11/13/18	50.7	D
11	San Tomas Exp and Walsh Av	Signal	E	AM	04/09/19	51.4	D-
	(Santa Clara)			PM	03/07/18	63.4	E
12	San Tomas Exp and Monroe St*	Signal	E	AM	04/09/19	39.5	D
	(Santa Clara)			PM	11/08/18	38.5	D+
13	San Tomas Exp and El Camino Real*	Signal	E	AM	04/09/19	72.6	E
	(Santa Clara)			PM	11/08/18	71.3	E
14	Oakmead Pkwy and Central Exp*	Signal	E	AM	04/09/19	52.9	D-
	(Sunnyvale)			PM	11/13/18	45.2	D
15	Lawrence Exp and Arques Av*	Signal	E	AM	10/30/19	39.2	D
	(Sunnyvale)			PM	11/13/18	71.6	E
16	Lawrence Exp and Kifer Rd	Signal	E	AM	03/07/18	54.2	D-
	(Santa Clara)			PM	03/07/18	**101.6**	**F**
17	Oakmead Village Ct and Kifer Rd	TWSC	-	AM	10/30/19	24.7	C
	(Santa Clara)			PM	10/30/19	17.5	B
18	Oakmead Village Ct/Oakmead Village Dr	TWSC	-	AM	10/30/19	8.4	A
	(Santa Clara)			PM	10/30/19	8.5	A

Notes:
* Denotes VTA CMP intersection
- TWSC = two-way stop-controlled intersection
1. Overall weighted average control delay (seconds per vehicle) is reported for signalized intersections.
Worst movement delay (seconds per vehicle) is reported for stop-controlled intersections.
Bold indicates a substandard level of service.

Observed Existing Traffic Conditions

Traffic conditions were observed in the field to identify existing operational deficiencies and to confirm the accuracy of calculated levels of service. The purpose of this effort was (1) to identify any existing traffic problems that may not be directly related to level of service, and (2) to identify any locations where the level of service analysis does not accurately reflect actual existing traffic conditions.

Overall, most study intersections operated adequately during both the AM and PM peak hours of traffic, and the level of service analysis appears to accurately reflect existing traffic conditions. However, field observations showed that some operational problems currently occur during the peak commute hours. These issues are described below.

Bowers Avenue and Central Expressway

No operational issues were observed during the AM peak hour. During the PM peak hour, the left-turn vehicles occasionally experienced additional delay because the southbound vehicle queues at the Bowers Avenue/Kifer Road extended to Central Expressway and prevented left-turn vehicles from entering the southbound lanes. When this occurred, the last one or two vehicles in the left-turn queue required two signal cycles to clear the intersection.

Bowers Avenue and Kifer Road

No operational issues were observed during the AM peak hour. During the PM peak hour, the eastbound left-turn queue on Kifer Road extended from the left-turn pocket into the center turn lane. Occasionally, the vehicle queue in the center turn lane took two signal cycles to clear the intersection.

3. Existing Plus Project Conditions

This chapter describes existing traffic conditions with the addition of the traffic that would be generated by the proposed project if the project were complete and operating today. Existing plus project conditions were evaluated relative to existing conditions in order to determine potential deficiencies on the existing roadway network attributable solely to the project. Included within this chapter is the description of the procedure of estimating project-generated traffic and the resulting traffic conditions under existing plus project conditions.

Roadway Network under Baseline Conditions

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

At the Oakmead Village Court/Oakmead Village Drive intersection, the project would add a driveway to the intersection, opposite to Oakmead Village Drive. It was assumed that the intersection would be stop controlled for the eastbound traffic on Oakmead Village Drive and the westbound traffic on the project driveway.

Project Trip Estimates

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

Trip Generation

Through empirical research, data have been collected that show trip generation rates for many types of land uses. The research is compiled in the publication *Trip Generation Manual, 10th Edition* by the Institute of Transportation Engineers (ITE). The magnitude of traffic added to the roadway system by a particular development is estimated by multiplying the applicable trip generation rates by the size of the development. The rates published for general office buildings (Land Use Code 70) were used to estimate the trips generated by the proposed office development (see Table 6).

The City's Climate Action Plan states that the project must achieve a minimum 20 percent reduction in VMT with at least 10 percent reduction through the implementation of a transportation demand

management (TDM) plan. The applicant will submit a TDM plan that complies with the City's requirements prior to the issuance of a building occupancy permit. VTA guidelines allow traffic analyses to assume a maximum trip reduction of 5 percent for a TDM plan with financial incentives. Therefore, the trip generation estimates for the proposed office space include a 5 percent trip reduction for TDM.

With the 5 percent TDM trip reduction, the project is estimated to generate 364 trips during the AM peak hour (313 in and 51 out) and 361 trips during the PM peak hour (58 in and 303 out).

Table 6
Project Trip Generation Estimates

		Daily		AM Peak Hour				PM Peak Hour			
		Trip		Trip	Trips			Trip	Trips		
Land Use	Size	Rate	Trips	Rate	In	Out	Total	Rate	In	Out	Total
General Office Building	330,000 s.f.	9.74	3,214	1.16	329	54	383	1.15	61	319	380
- TDM Reduction (5%)			-161		-16	-3	-19		-3	-16	-19
Total Proposed Trips			***3,053***		***313***	***51***	***364***		***58***	***303***	***361***

Source: ITE Trip Generation Manual, 10th Edition, 2017.
Average trip rates expressed in trips per 1,000 square feet (s.f.) for General Office (ITE Land Use 710) are used.

Trip Distribution and Assignment

The trip distribution pattern for the proposed office development was estimated based on traffic patterns on the surrounding roadway system and on the locations of complementary land uses (see Figure 7).

The peak-hour trips associated with the project site were added to the roadway network in accordance with the distribution pattern discussed above, the roadway network connections, freeway access points, and the locations of project driveways. Figure 8 shows the trip assignment at the study intersections. A tabular summary of project traffic at each study intersection is contained in Appendix B.

Existing Plus Project Traffic Volumes

Project trips associated with the proposed development, as represented in the above project trip assignment, were added to the existing traffic volumes to obtain existing plus project traffic volumes (see Figure 9).

Existing Plus Project Intersection Levels of Service

The results of the intersection level of service analysis (see Table 7) show that the Lawrence Expressway/Kifer Road intersection would continue to operate at LOS F during the PM peak hour under existing plus project conditions. However, the added project traffic would not result in an adverse effect on the operation of the intersection because the project traffic would not cause an increase in critical-movement delay of four (4) or more seconds or an increase in critical v/c of one percent (0.01) or more.

All other study intersections would continue to operate at an acceptable level of service and would not be adversely affected by the project traffic. The level of service calculation sheets are included in Appendix C.

There are few intersections for which the average delay under project conditions is shown to be less than under existing conditions. The decrease in average delay is due to the intersection delay being

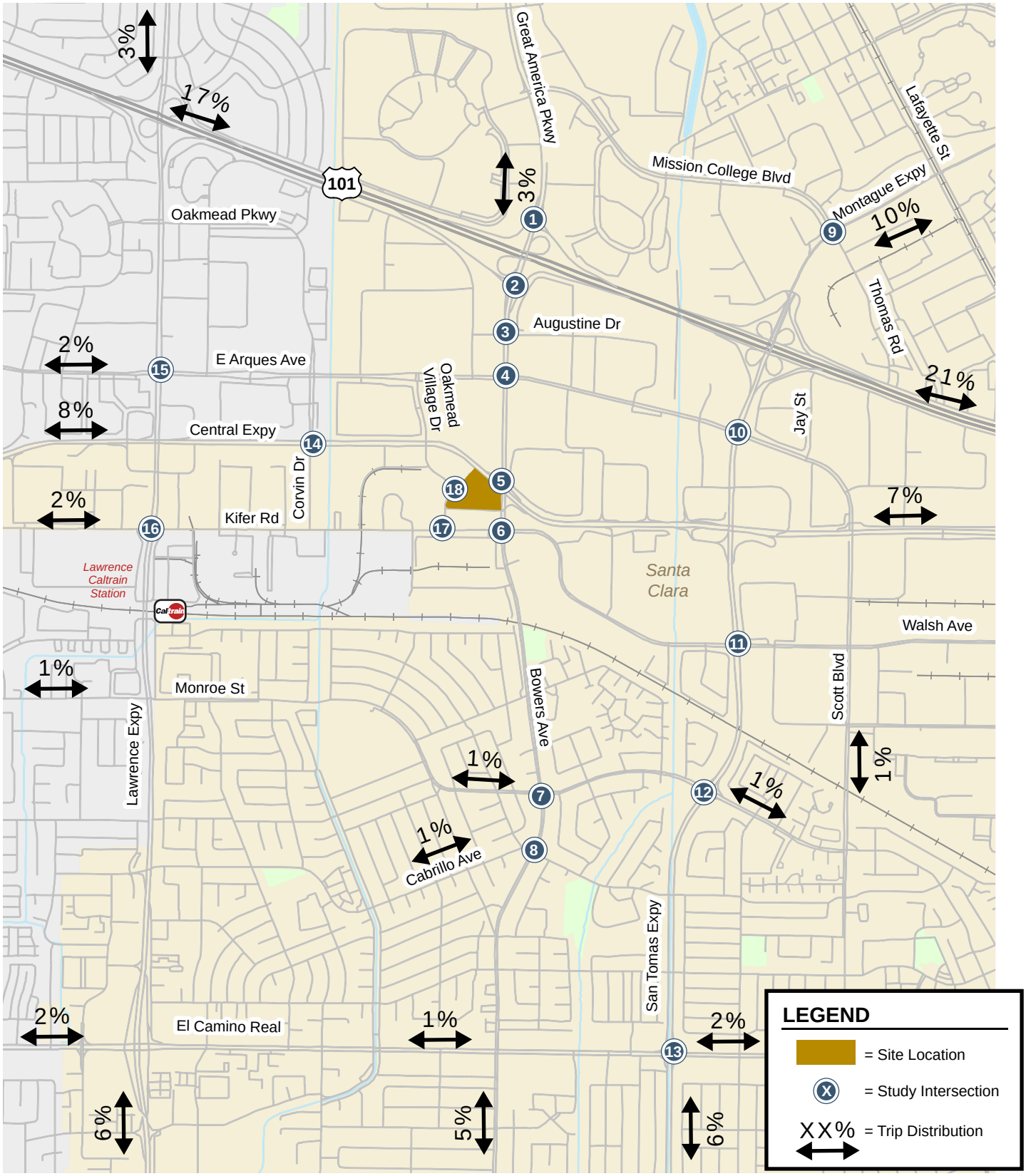
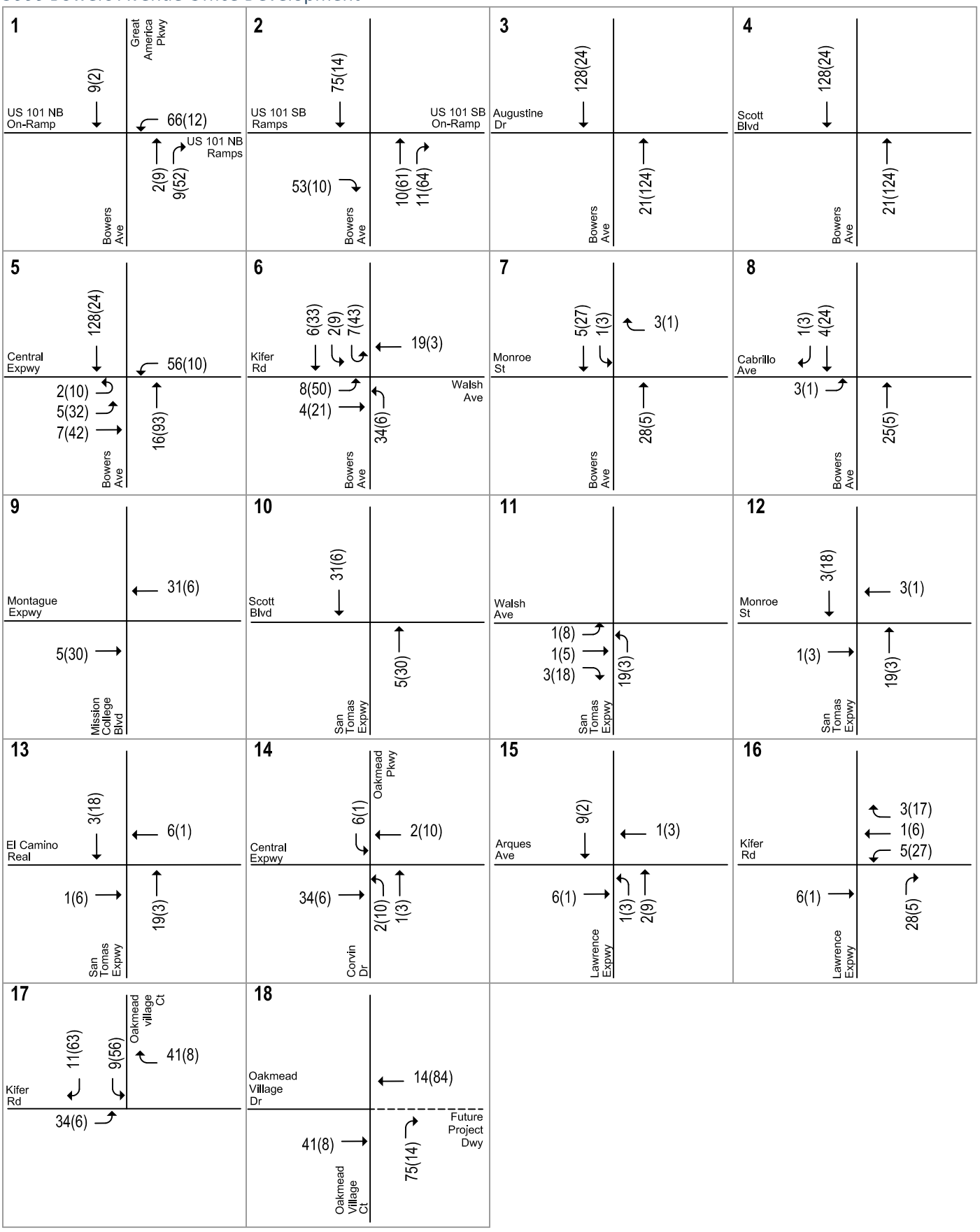


Figure 7
Project Trip Distribution



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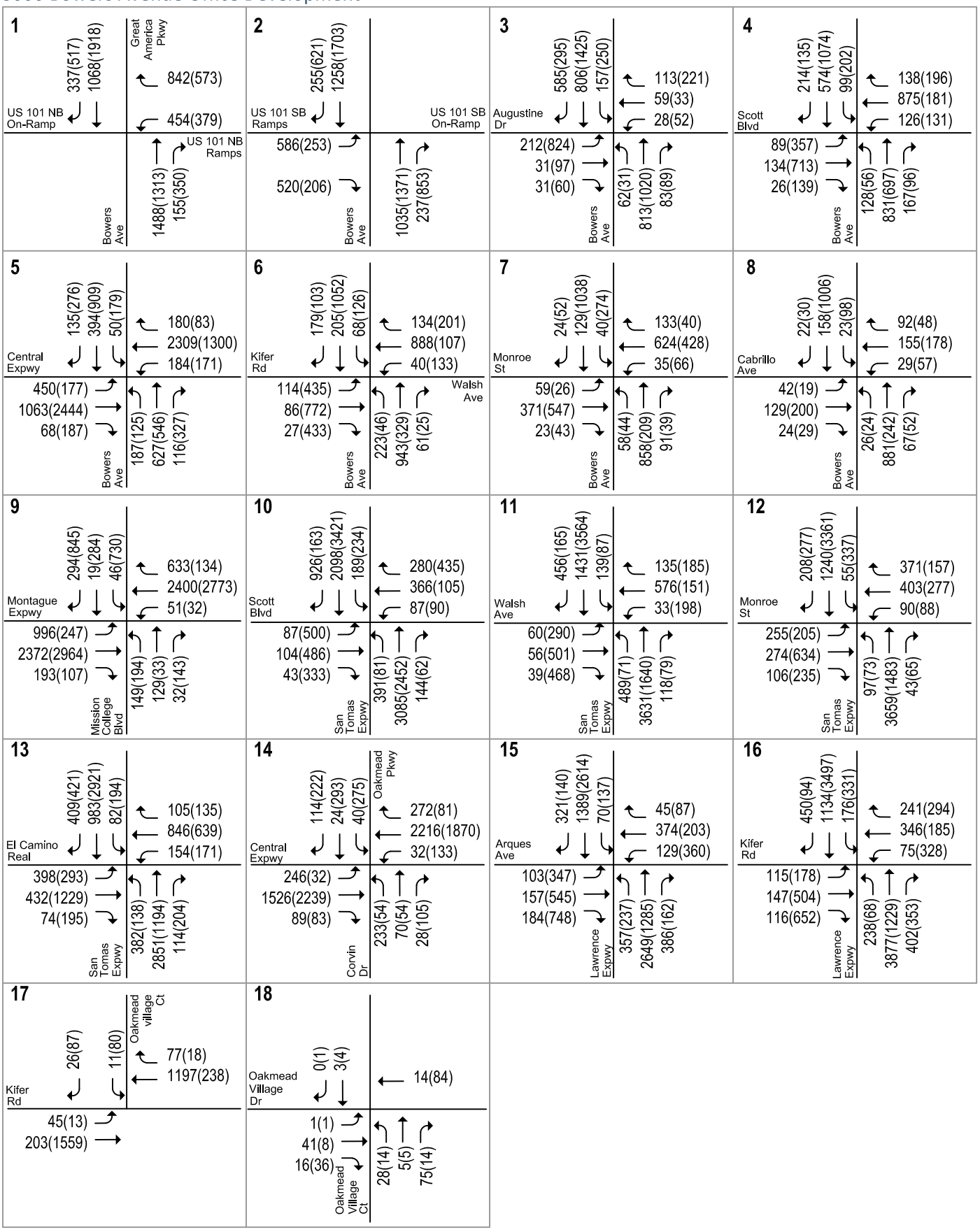
XX(XX) = AM(PM) Peak-Hour Trips

Figure 8
Project Trip Assignment



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XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 9
Existing Plus Project Traffic Volumes

based on a weighted average of all intersection movements. The addition of project traffic to movements with delays lower than the average intersection delay can result in a reduction in the average delay for the entire intersection.

Table 7
Existing Plus Project Intersection Levels of Service

ID	Intersection (Jurisdiction)	Control	LOS Standard	Peak Hour	Existing Avg. Delay[1]	Existing LOS	Existing+Project Avg. Delay[1]	Existing+Project LOS	Incr. In Crit. Delay	Incr. In Crit. V/C
1	Great America Pkwy/US 101 (North)*	Signal	E	AM	9.1	A	10.3	B+	1.1	0.023
	(Santa Clara)			PM	10.0	A	10.3	B+	0.3	0.004
2	Bowers Av and US 101 (South)*	Signal	E	AM	13.4	B	13.1	B	-0.1	0.014
	(Santa Clara)			PM	7.6	A	7.5	A	0.0	0.003
3	Bowers Av and Augustine Dr	Signal	D	AM	21.3	C+	20.8	C+	0.0	0.000
	(Santa Clara)			PM	33.2	C-	33.2	C-	0.0	0.005
4	Bowers Av and Scott Bl*	Signal	E	AM	39.6	D	40.0	D	0.2	0.004
	(Santa Clara)			PM	33.5	C-	33.7	C-	0.0	0.005
5	Bowers Av and Central Exp*	Signal	E	AM	56.0	E+	56.8	E+	1.2	0.008
	(Santa Clara)			PM	53.8	D-	55.0	D-	1.0	0.016
6	Bowers Av and Walsh Av	Signal	D	AM	29.8	C	30.6	C	0.9	0.015
	(Santa Clara)			PM	30.1	C	30.2	C	-0.5	0.040
7	Bowers Av and Monroe St	Signal	D	AM	32.7	C-	33.1	C-	0.5	0.014
	(Santa Clara)			PM	33.9	C-	34.2	C-	0.4	0.012
8	Bowers Av and Cabrillo Av	Signal	D	AM	24.8	C	24.9	C	0.1	0.010
	(Santa Clara)			PM	29.5	C	29.6	C	0.1	0.010
9	Mission College Bl and Montague Exp*	Signal	E	AM	65.8	E	66.0	E	0.3	0.004
	(Santa Clara)			PM	66.7	E	66.7	E	0.0	0.001
10	San Tomas Exp and Scott Bl*	Signal	E	AM	29.5	C	29.4	C	0.0	0.001
	(Santa Clara)			PM	50.7	D	50.7	D	0.0	0.001
11	San Tomas Exp and Walsh Av	Signal	E	AM	51.4	D-	53.1	D-	4.4	0.007
	(Santa Clara)			PM	63.4	E	65.6	E	6.3	-0.040
12	San Tomas Exp and Monroe St*	Signal	E	AM	39.5	D	39.9	D	0.0	0.001
	(Santa Clara)			PM	38.5	D+	38.5	D+	0.1	0.003
13	San Tomas Exp and El Camino Real*	Signal	E	AM	72.6	E	73.3	E	0.1	0.002
	(Santa Clara)			PM	71.3	E	71.9	E	1.0	0.004
14	Oakmead Pkwy and Central Exp*	Signal	E	AM	52.9	D-	53.2	D-	0.2	0.002
	(Sunnyvale)			PM	45.2	D	45.4	D	0.2	0.002
15	Lawrence Exp and Arques Av*	Signal	E	AM	39.2	D	39.3	D	0.0	0.001
	(Sunnyvale)			PM	71.6	E	71.6	E	0.0	0.000
16	Lawrence Exp and Kifer Rd	Signal	E	AM	54.2	D-	54.2	D-	0.4	0.001
	(Santa Clara)			PM	**101.6**	**F**	**102.0**	**F**	0.9	0.009
17	Oakmead Village Ct and Kifer Rd	TWSC	-	AM	24.7	C	27.2	D	N/A	
	(Santa Clara)			PM	17.5	B	21.2	C		
18	Oakmead Village Ct/Oakmead Village Dr	TWSC	-	AM	8.4	A	10.0	A	N/A	
	(Santa Clara)			PM	8.5	A	10.1	B		

Notes:
* Denotes VTA CMP intersection
- TWSC = two-way stop-controlled intersection
1. Overall weighted average control delay (seconds per vehicle) is reported for signalized intersections. Worst movement delay (seconds per vehicle) is reported for stop-controlled intersections.
Bold indicates a substandard level of service.

4. Background Conditions

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

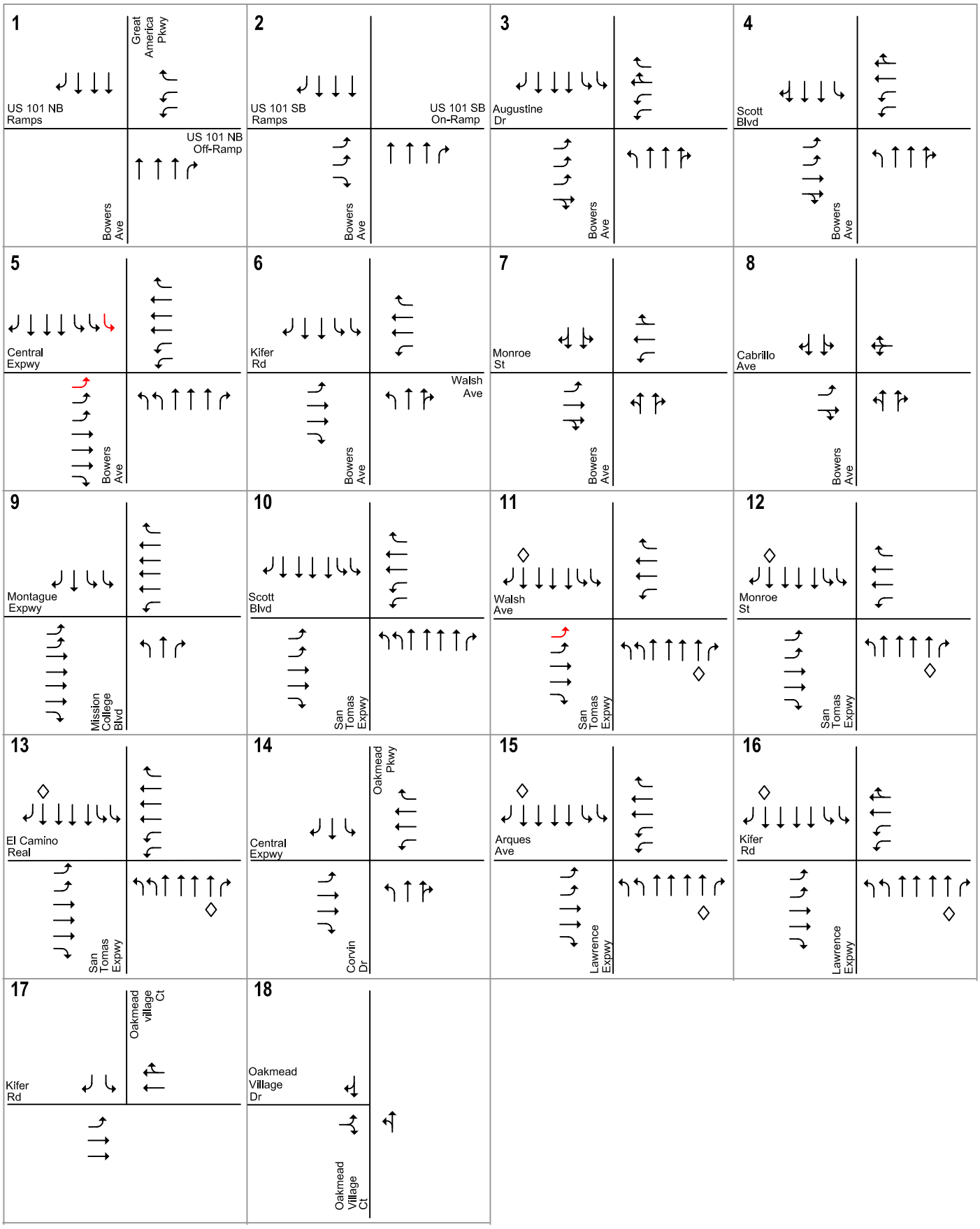
Roadway Network Under Background Conditions

The roadway network under background conditions was assumed to be the same as the existing roadway network, with the exception of the following intersection improvements. The improvements were identified as mitigation measures to be completed by Phases 1, 2, and 3 of the City Place development. Figure 10 shows the lane configurations at the study intersections under background conditions.

- Bowers Avenue and Central Expressway – Addition of a third southbound left-turn lane and third eastbound left-turn lane.
- San Tomas Expressway and Walsh Avenue – Addition of a second eastbound left-turn lane.

Background Traffic Volumes

Background traffic volumes for the study intersections (see Figure 11) were estimated by adding to the existing traffic volumes the trips generated by nearby approved projects that have not been constructed or occupied. Lists of approved projects were obtained from the Cities of Santa Clara and Sunnyvale. Hexagon considered both the location and size of the approved projects in order to eliminate those that were too far away or too small to affect traffic conditions of the selected study intersections. The approved projects considered for the study are listed in Appendix D. Notable approved projects in the area that are included in the background conditions traffic volumes include the City Place development, Phases 1, 2, and 3 as identified in the project's EIR, the NVIDIA office project on San Tomas Expressway, and the Santa Clara Square project on Augustine Drive, which is now partially constructed. In addition, traffic generated by Phase 1 of the approved North San Jose Development Policy also was included in the background traffic volumes.



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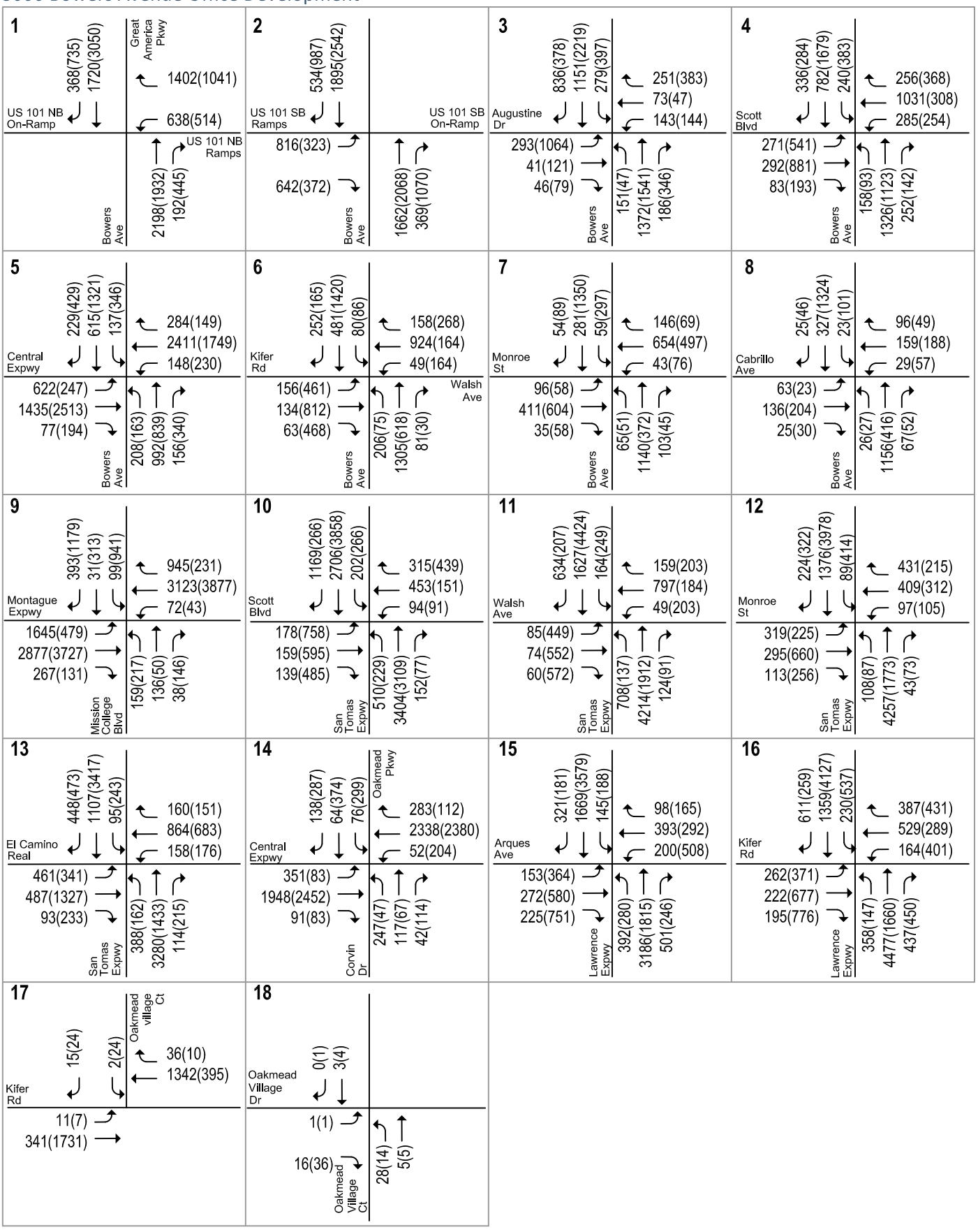
◇ = HOV Lane

→ = Improvement

Figure 10
Background No Project Lane Configurations



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XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 11
Background Traffic Volumes

Vehicle trips from the approved projects were obtained from the City of Santa Clara's TRAFFIX network, which was updated with the latest list of approved projects or projects' TIA/environmental document (initial study or EIR), if available. For projects without a traffic study, trip estimates were developed using rates published in the *Trip Generation Manual*. The estimated trips were assigned to the study intersections according to distributions identified in the development traffic studies, if available, or knowledge of the study area. A tabular summary of approved trips and background traffic volumes at each study intersection is contained in Appendix B.

Background Intersection Levels of Service

The results of the intersection level of service analysis show that the following study intersections would operate at an unacceptable level of service (LOS E or worse for locally controlled intersections and LOS F for CMP and expressway intersections) during at least one peak hour under background conditions (see Table 8).

7. Bowers Avenue and Monroe Street (AM and PM peak hours)
9. Mission College Boulevard and Montague Expressway (AM and PM peak hours)
11. San Tomas Expressway and Walsh Avenue (AM and PM peak hours)
13. San Tomas Expressway and El Camino Real (AM and PM peak hours)
15. Lawrence Expressway and Arques Avenue (PM peak hour)
16. Lawrence Expressway and Kifer Road (AM and PM peak hours)

All other study intersections would operate at acceptable levels during both the AM and PM peak hours of traffic. The intersection levels of service calculation sheets are included in Appendix C.

Table 8
Background Intersection Levels of Service

ID	Intersection (Jurisdiction)	Existing Control	LOS Standard	Peak Hour	Existing Avg. Delay[1]	Existing LOS	Background Avg. Delay[1]	Background LOS
1	Great America Pkwy/US 101 (North)*	Signal	E	AM	9.1	A	11.7	B+
	(Santa Clara)			PM	10	A	11.8	B+
2	Bowers Av and US 101 (South)*	Signal	E	AM	13.4	B	14.7	B
	(Santa Clara)			PM	7.6	A	7.6	A
3	Bowers Av and Augustine Dr	Signal	D	AM	21.3	C+	29.7	C
	(Santa Clara)			PM	33.2	C-	48.7	D
4	Bowers Av and Scott Bl*	Signal	E	AM	39.6	D	61.9	E
	(Santa Clara)			PM	33.5	C-	48.5	D
5	Bowers Av and Central Exp*	Signal	E	AM	56	E+	59.4	E+
	(Santa Clara)			PM	53.8	D-	61.3	E
6	Bowers Av and Walsh Av	Signal	D	AM	29.8	C	36.2	D+
	(Santa Clara)			PM	30.1	C	39.6	D
7	Bowers Av and Monroe St	Signal	D	AM	32.7	C-	**55.8**	**E+**
	(Santa Clara)			PM	33.9	C-	**57.3**	**E+**
8	Bowers Av and Cabrillo Av	Signal	D	AM	24.8	C	30.0	C
	(Santa Clara)			PM	29.5	C	36.3	D+
9	Mission College Bl and Montague Exp*	Signal	E	AM	65.8	E	**119.9**	**F**
	(Santa Clara)			PM	66.7	E	**141.9**	**F**
10	San Tomas Exp and Scott Bl*	Signal	E	AM	29.5	C	40.0	D
	(Santa Clara)			PM	50.7	D	66.1	E
11	San Tomas Exp and Walsh Av	Signal	E	AM	51.4	D-	**106.5**	**F**
	(Santa Clara)			PM	63.4	E	**100.0**	**F**
12	San Tomas Exp and Monroe St*	Signal	E	AM	39.5	D	67.9	E
	(Santa Clara)			PM	38.5	D+	41.7	D
13	San Tomas Exp and El Camino Real*	Signal	E	AM	72.6	E	**96.7**	**F**
	(Santa Clara)			PM	71.3	E	**97.1**	**F**
14	Oakmead Pkwy and Central Exp*	Signal	E	AM	52.9	D-	70.4	E
	(Sunnyvale)			PM	45.2	D	65.0	E
15	Lawrence Exp and Arques Av*	Signal	E	AM	39.2	D	44.9	D
	(Sunnyvale)			PM	71.6	E	**114.4**	**F**
16	Lawrence Exp and Kifer Rd	Signal	E	AM	54.2	D-	**110.9**	**F**
	(Santa Clara)			PM	101.6	F	**148.0**	**F**
17	Oakmead Village Ct and Kifer Rd	TWSC	-	AM	24.7	C	29.3	D
	(Santa Clara)			PM	17.5	B	20.3	C
18	Oakmead Village Ct/Oakmead Village Dr	TWSC	-	AM	8.4	A	8.4	A
	(Santa Clara)			PM	8.5	A	8.5	A

Notes:
* Denotes VTA CMP intersection
- TWSC = two-way stop-controlled intersection
1. Overall weighted average control delay (seconds per vehicle) is reported for signalized intersections. Worst movement delay (seconds per vehicle) is reported for stop-controlled intersections.
Bold indicates a substandard level of service.

5.
Background Plus Project Conditions

This chapter describes background plus project traffic conditions. Background plus project conditions were evaluated relative to background conditions in order to determine potential adverse effects of the project traffic on intersection operations.

Roadway Network Under Background Plus Project Conditions

The roadway network under background plus project conditions would be the same as the background roadway network as described in Chapter 4.

At the Oakmead Village Court/Oakmead Village Drive intersection, the project would add a driveway to the intersection, opposite to Oakmead Village Drive. It was assumed that the intersection would be stop controlled for the eastbound traffic on Oakmead Village Drive and the westbound traffic on the project driveway.

Project Trip Estimates

The estimated project trip generation, distribution and assignment are the same under background plus project conditions as previously described under existing plus project conditions (see Chapter 3).

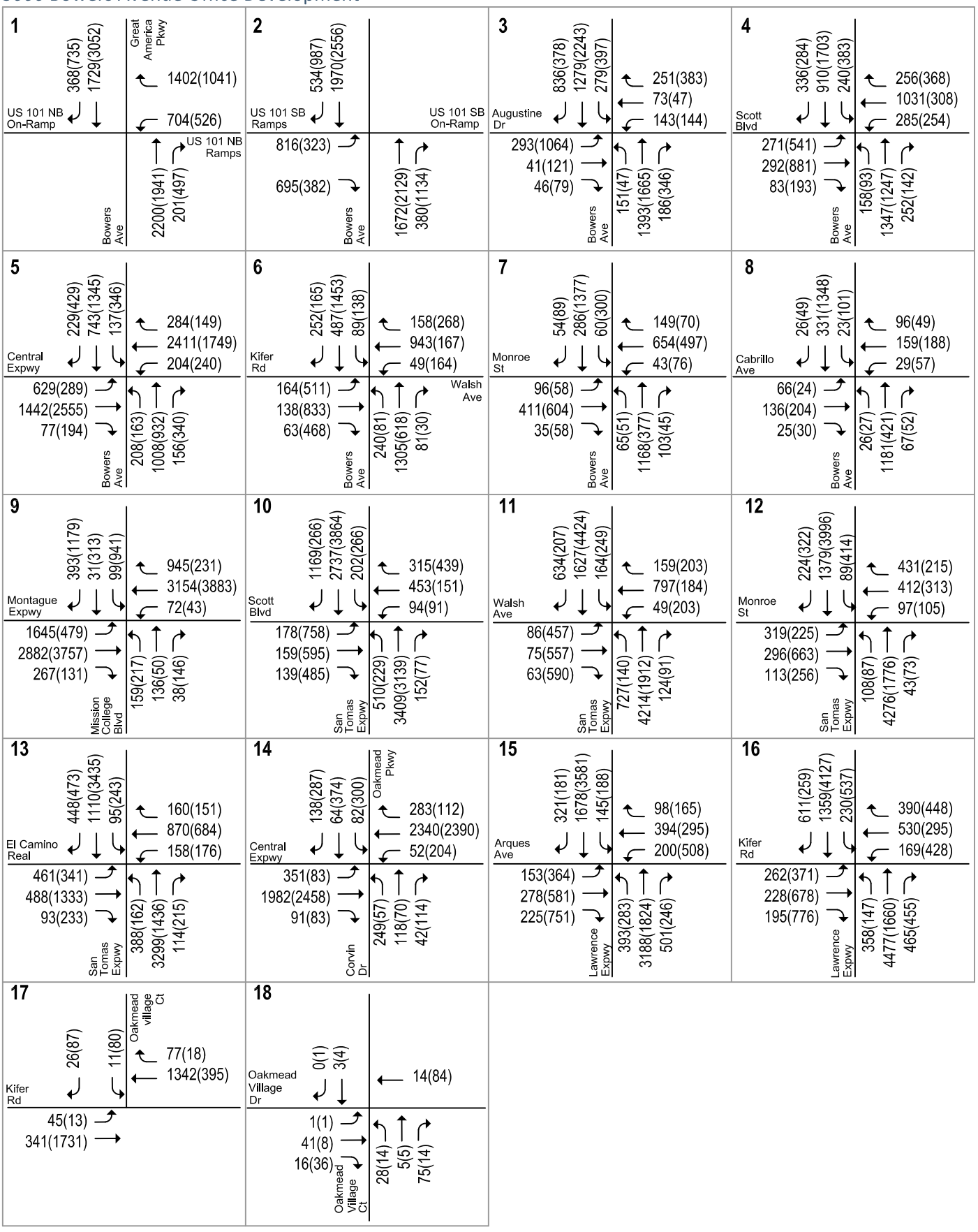
Background Plus Project Traffic Volumes

Project trips were added to background traffic volumes to obtain background plus project traffic volumes (see Figure 12).

Background Plus Project Intersection Levels of Service

The results of the intersection level of service analysis (see Table 9) show that the San Tomas Expressway/Walsh Avenue intersection would be adversely affected by the proposed project during the PM peak hour under background plus project conditions. The adverse effect and recommended improvements to address the deficiency are described in the next section.

The project would not have an adverse effect at all other signalized study intersections. The unsignalized study intersections would continue to operate at an acceptable level of service and would not be adversely affected by the project traffic. The level of service calculation sheets are included in Appendix C.



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XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 12
Background Plus Project Traffic Volumes

Table 9
Background Plus Project Intersection Levels of Service

ID	Intersection (Jurisdiction)	Control	LOS Standard	Peak Hour	Background Avg. Delay[1]	Background LOS	Background+Project Avg. Delay[1]	Background+Project LOS	Incr. In Crit. Delay	Incr. In Crit. V/C
1	Great America Pkwy/US 101 (North)*	Signal	E	AM	11.7	B+	12.7	B	1.0	0.023
	(Santa Clara)			PM	11.8	B+	12.0	B	0.3	0.004
2	Bowers Av and US 101 (South)*	Signal	E	AM	14.7	B	14.6	B	0.0	0.014
	(Santa Clara)			PM	7.6	A	7.6	A	0.0	0.003
3	Bowers Av and Augustine Dr	Signal	D	AM	29.7	C	29.5	C	0.0	0.000
	(Santa Clara)			PM	48.7	D	51.0	D	4.8	0.026
4	Bowers Av and Scott Bl*	Signal	E	AM	61.9	E	63.3	E	1.6	0.004
	(Santa Clara)			PM	48.5	D	50.6	D	3.8	0.025
5	Bowers Av and Central Exp*	Signal	E	AM	59.4	E+	60.4	E	0.3	0.005
	(Santa Clara)			PM	61.3	E	62.8	E	1.7	0.016
6	Bowers Av and Walsh Av	Signal	D	AM	36.2	D+	38.1	D+	2.2	0.015
	(Santa Clara)			PM	39.6	D	40.7	D	4.1	0.028
7	Bowers Av and Monroe St	Signal	D	AM	**55.8**	**E+**	**58.8**	**E+**	3.4	0.014
	(Santa Clara)			PM	**57.3**	**E+**	**60.0**	**E**	3.0	0.012
8	Bowers Av and Cabrillo Av	Signal	D	AM	30.0	C	30.2	C	0.3	0.010
	(Santa Clara)			PM	36.3	D+	36.8	D+	0.6	0.010
9	Mission College Bl and Montague Exp*	Signal	E	AM	**119.9**	**F**	**121.1**	**F**	0.0	0.000
	(Santa Clara)			PM	**141.9**	**F**	**142.5**	**F**	0.5	0.001
10	San Tomas Exp and Scott Bl*	Signal	E	AM	40.0	D	40.0	D	0.0	0.000
	(Santa Clara)			PM	66.1	E	66.3	E	0.3	0.001
11	San Tomas Exp and Walsh Av	Signal	E	AM	**106.5**	**F**	**109.1**	**F**	6.7	0.007
	(Santa Clara)			PM	**100.0**	**F**	**103.9**	**F**	**6.4**	**0.011**
12	San Tomas Exp and Monroe St*	Signal	E	AM	67.9	E	69.0	E	1.7	0.004
	(Santa Clara)			PM	41.7	D	41.8	D	0.1	0.003
13	San Tomas Exp and El Camino Real*	Signal	E	AM	**96.7**	**F**	**97.9**	**F**	1.9	0.005
	(Santa Clara)			PM	**97.1**	**F**	**98.1**	**F**	1.8	0.004
14	Oakmead Pkwy and Central Exp*	Signal	E	AM	70.4	E	70.8	E	0.3	0.002
	(Sunnyvale)			PM	65.0	E	65.4	E	0.6	0.002
15	Lawrence Exp and Arques Av*	Signal	E	AM	44.9	D	44.9	D	0.0	0.001
	(Sunnyvale)			PM	**114.4**	**F**	**114.5**	**F**	0.2	0.000
16	Lawrence Exp and Kifer Rd	Signal	E	AM	**110.9**	**F**	**110.9**	**F**	0.7	0.001
	(Santa Clara)			PM	**148.0**	**F**	**149.2**	**F**	3.4	0.009
17	Oakmead Village Ct and Kifer Rd	TWSC	-	AM	29.3	D	32.9	D	N/A	
	(Santa Clara)			PM	20.3	C	26.0	D		
18	Oakmead Village Ct/Oakmead Village Dr	TWSC	-	AM	8.4	A	10.0	A	N/A	
	(Santa Clara)			PM	8.5	A	10.1	B		

Notes:
* Denotes VTA CMP intersection
- TWSC = two-way stop-controlled intersection
1. Overall weighted average control delay (seconds per vehicle) is reported for signalized intersections. Worst movement delay (seconds per vehicle) is reported for stop-controlled intersections.
Bold indicates a substandard level of service.
Outline to address the project adverse effect

Adverse Effects and Recommended Improvements

This section discusses the adverse effects identified under background plus project conditions and proposed improvements to address the deficiencies. Adverse effects on intersection operations do not constitute significant impacts under CEQA.

The recommended improvements listed below were developed based on information from the City Place Santa Clara Project EIR, dated April 2016.

In addition to physical improvements recommended to resolve deficiencies at affected intersections, the project would include TDM measures that could reduce the vehicle trips below the level documented in this report. The City of Santa Clara's Climate Action Plan requires a 20 percent reduction in vehicle miles traveled for high density residential developments and high intensity office/R&D developments north of Caltrain, of which 10 percent must come from TDM. A sensitivity analysis was conducted to determine if a 10 percent reduction in project vehicle trips due to TDM would avoid any of the adverse effects at study intersections.

San Tomas Expressway and Walsh Avenue

Adverse Effect: This County expressway intersection would operate at an unacceptable LOS F under background conditions. The addition of project traffic would cause the intersection's average critical-movement delay to increase by 6.4 seconds and the critical v/c to increase by 0.011 during the PM peak hour. Based on City of Santa Clara adverse effect definitions, this constitutes an adverse effect.

Improvement: Implementation of the required TDM measures would reduce the vehicle trips associated with the project. However, a sensitivity analysis shows that a 10 percent TDM trip reduction would not be sufficient to avoid the adverse effect on intersection operations. Therefore, the below improvement would be required.

This intersection was identified to operate deficiently with the addition of traffic associated with the City Place development under background conditions. The improvement (addition of a second eastbound left-turn lane) to mitigate the project impact was reflected under background conditions (see Chapter 4) because the City Place developer would be fully responsible for the cost and construction of the improvement at the intersection under Phase 2 of the development. However, although the planned improvements are projected to improve operating conditions at the intersection, the intersection would continue to operate deficiently under background conditions. The City Place EIR identified the improvement as only partial mitigation to its impact, and the impact was identified to be significant and unavoidable.

The necessary improvement to improve the intersection's operating conditions to acceptable levels consists of the addition of a fourth southbound through lane. This improvement, however, would require the widening of San Tomas Expressway, which is not feasible due to right-of-way constraints, or converting the existing HOV lane to a mixed-flow lane. Thus, to address the adverse effect at this intersection, the County has identified the San Tomas Expressway trail project between Homestead Road and Stevens Creek Boulevard. This project is contained within the Measure B Expressway Program. Based on the trail completed for the section north of Homestead Road, it is expected the trail would be an off-road paved trail that runs on the west side of San Tomas Expressway. The trail would require removal of trees and landscaping. The project should provide fair-share funding towards this improvement. Although the improvement would not reduce the vehicle delay at the intersection, it would address the adverse effect by paying a fair share towards improvements to the pedestrian or bicycle facilities in the local transportation network.

6. Cumulative Conditions

This chapter describes the roadway traffic operations under cumulative no project conditions and cumulative plus project conditions. Cumulative traffic volumes reflect traffic generated by the approved developments described in Chapter 4 and developments that are in the pipeline but are not yet approved (pending developments). The chapter includes the procedures used to determine cumulative traffic volumes and a description of the resulting traffic conditions and any adverse effects caused by the project. The analysis of cumulative conditions is required by the CMP.

Roadway Network under Cumulative Conditions

The roadway network under cumulative conditions was assumed to be the same as the background roadway network.

Cumulative Traffic Volumes

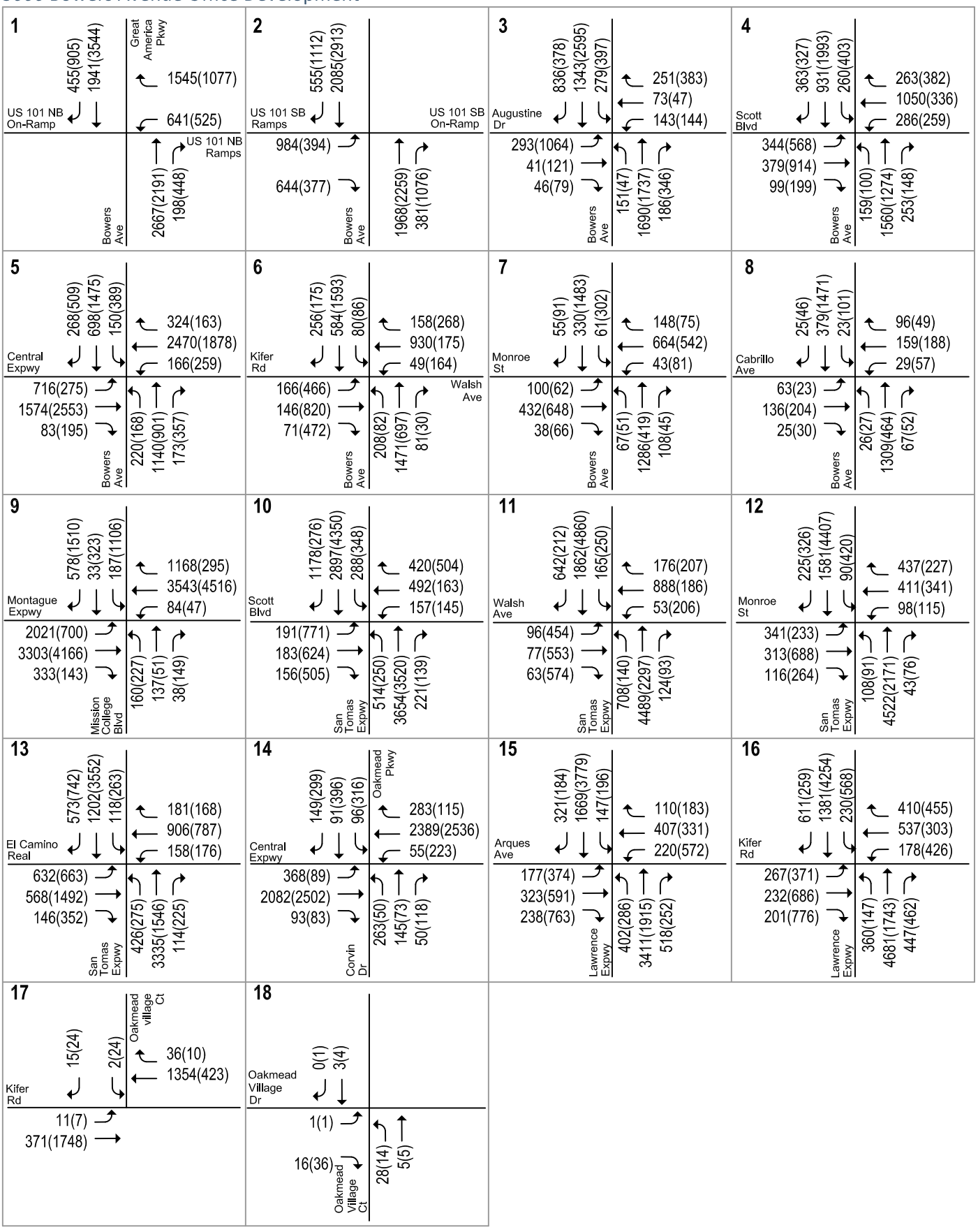
Traffic volumes under cumulative no project conditions (see Figure 13) were estimated by adding the trips from proposed but not yet approved (pending) developments to the background traffic volumes described in Chapter 4. Lists of pending projects were obtained from the Cities of Santa Clara and Sunnyvale. Cumulative conditions also include trips associated with development of Phase 2 of the approved North San Jose Development Policy. The pending projects considered for the study are listed in Appendix D. Vehicle trips from the pending projects were estimated using the methods described in Chapter 4 for trips estimates of the approved projects.

The trips generated by the project (see Chapter 3) were then added to the cumulative no project traffic volumes to yield cumulative plus project traffic volumes (see Figure 14). A tabular summary of pending trips and cumulative traffic volumes at each study intersection is contained in Appendix B.

Cumulative Intersection Levels of Service Analysis

The results of the intersection level of service analysis (see Table 10) show that the following intersections would operate at unacceptable levels of service under cumulative conditions, both with and without the project.

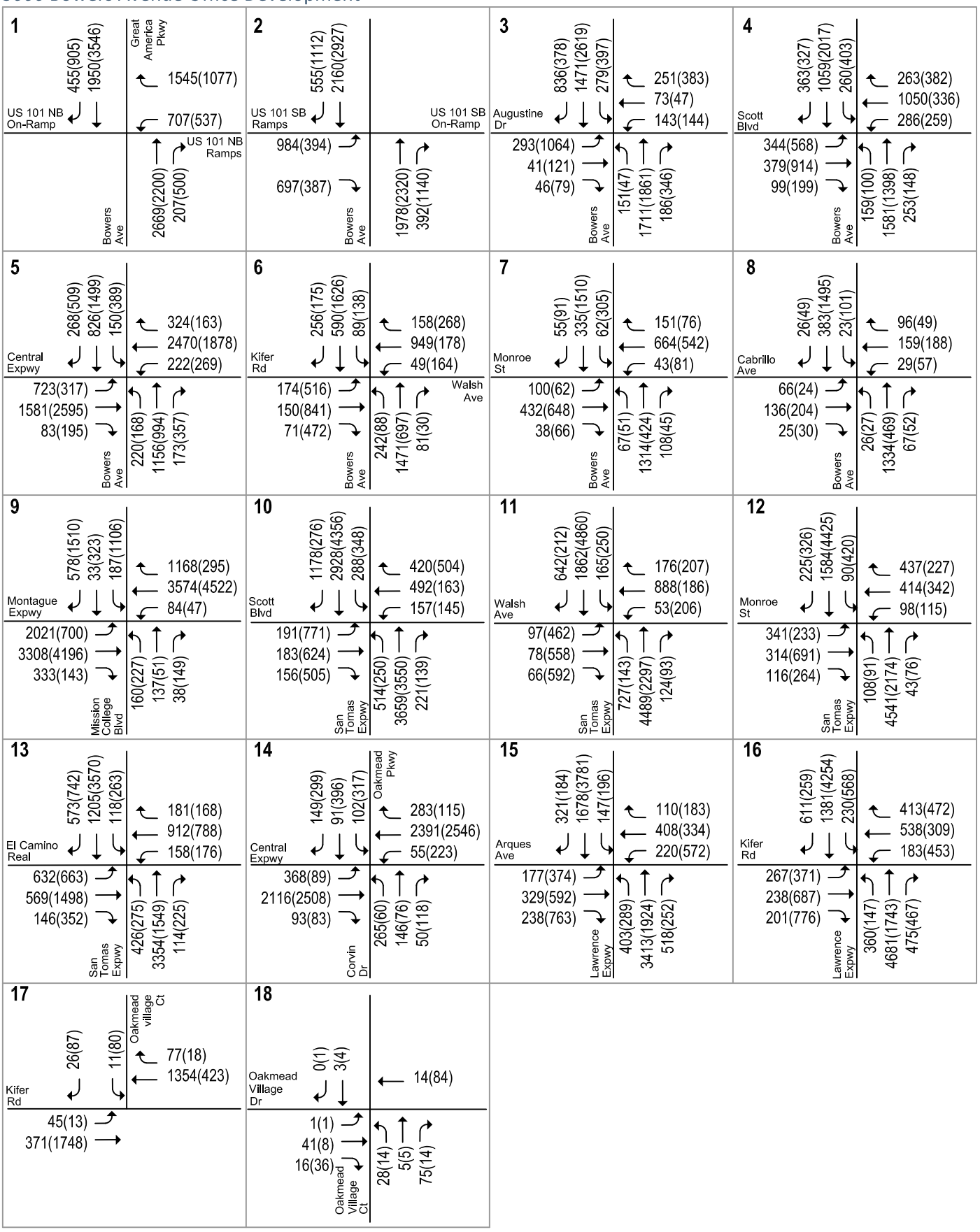
3. Bowers Avenue and Augustine Drive (PM peak hour)
7. Bowers Avenue and Monroe Street (AM and PM peak hours)
9. Mission College Boulevard and Montague Expressway (AM and PM peak hours)
10. San Tomas Expressway and Scott Boulevard (PM peak hour)
11. San Tomas Expressway and Walsh Avenue (AM and PM peak hours)



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 13
Cumulative No Project Traffic Volumes



LEGEND

XX(XX) = AM(PM) Peak-Hour Traffic Volumes

Figure 14
Cumulative Plus Project Traffic Volumes

Table 10
Cumulative plus Project Levels of Service

ID	Intersection (Jurisdiction)	Control	LOS Standard	Peak Hour	Cumulative Avg. Delay[1]	Cumulative LOS	Cumulative+Project Avg. Delay[1]	Cumulative+Project LOS	Cumulative+Project Incr. In Crit. Delay	Cumulative+Project Incr. In Crit. V/C
1	Great America Pkwy/US 101 (North)*	Signal	E	AM	11.4	B+	12.5	B	1.2	0.023
	(Santa Clara)			PM	12.6	B	12.9	B	0.4	0.004
2	Bowers Av and US 101 (South)*	Signal	E	AM	17.1	B	17.0	B	0.2	0.014
	(Santa Clara)			PM	9.0	A	9.0	A	0.0	0.003
3	Bowers Av and Augustine Dr	Signal	D	AM	29.3	C	29.2	C	0.0	0.000
	(Santa Clara)			PM	**58.4**	**E+**	**62.5**	**E**	1.4	0.005
4	Bowers Av and Scott Bl*	Signal	E	AM	78.6	E-	**80.5**	**F**	**2.1**	**0.004**
	(Santa Clara)			PM	59.2	E+	61.9	E	5.8	0.025
5	Bowers Av and Central Exp*	Signal	E	AM	63.2	E	64.5	E	0.7	0.005
	(Santa Clara)			PM	65.7	E	67.9	E	2.9	0.016
6	Bowers Av and Walsh Av	Signal	D	AM	42.9	D	45.7	D	3.7	0.015
	(Santa Clara)			PM	44.6	D	46.7	D	6.7	0.028
7	Bowers Av and Monroe St	Signal	D	AM	**76.1**	**E-**	**80.2**	**F**	**4.6**	**0.014**
	(Santa Clara)			PM	**79.5**	**E-**	**83.3**	**F**	**4.2**	**0.012**
8	Bowers Av and Cabrillo Av	Signal	D	AM	32.9	C-	33.5	C-	0.6	0.010
	(Santa Clara)			PM	40.9	D	41.9	D	1.1	0.010
9	Mission College Bl and Montague Exp*	Signal	E	AM	**181.2**	**F**	**182.5**	**F**	0.0	0.000
	(Santa Clara)			PM	**233.7**	**F**	**234.6**	**F**	0.5	0.001
10	San Tomas Exp and Scott Bl*	Signal	E	AM	43.3	D	43.3	D	0.0	0.000
	(Santa Clara)			PM	**92.7**	**F**	**93.4**	**F**	0.5	0.001
11	San Tomas Exp and Walsh Av	Signal	E	AM	**122.8**	**F**	**125.2**	**F**	0.0	0.000
	(Santa Clara)			PM	**116.0**	**F**	**119.8**	**F**	**6.3**	**0.011**
12	San Tomas Exp and Monroe St*	Signal	E	AM	68.7	E	69.5	E	1.2	0.003
	(Santa Clara)			PM	45.8	D	46.1	D	0.4	0.003
13	San Tomas Exp and El Camino Real*	Signal	E	AM	**112.2**	**F**	**113.3**	**F**	1.7	0.005
	(Santa Clara)			PM	**129.4**	**F**	**130.4**	**F**	1.8	0.004
14	Oakmead Pkwy and Central Exp*	Signal	E	AM	76.7	E-	77.2	E-	0.3	0.002
	(Sunnyvale)			PM	73.6	E	74.1	E	0.5	0.002
15	Lawrence Exp and Arques Av*	Signal	E	AM	48.1	D	48.2	D	0.0	0.001
	(Sunnyvale)			PM	**130.2**	**F**	**130.3**	**F**	0.2	0.000
16	Lawrence Exp and Kifer Rd	Signal	E	AM	**125.3**	**F**	**125.4**	**F**	0.7	0.001
	(Santa Clara)			PM	**154.8**	**F**	**156.2**	**F**	2.8	0.009
17	Oakmead Village Ct and Kifer Rd	TWSC	-	AM	29.8	D	33.5	D	N/A	
	(Santa Clara)			PM	20.8	C	26.8	D		
18	Oakmead Village Ct/Oakmead Village Dr	TWSC	-	AM	8.4	A	10.0	A	N/A	
	(Santa Clara)			PM	8.5	A	10.0	B		

Notes:
* Denotes VTA CMP intersection
- TWSC = two-way stop-controlled intersection
1. Overall weighted average control delay (seconds per vehicle) is reported for signalized intersections. Worst movement delay (seconds per vehicle) is reported for stop-controlled intersections.
Bold indicates a substandard level of service.
Outline to address the project adverse effect

13. San Tomas Expressway and El Camino Real (AM and PM peak hours)
15. Lawrence Expressway and Arques Avenue (PM peak hour)
16. Lawrence Expressway and Kifer Road (AM and PM peak hours)

Additionally, with the project trips, the Bowers Avenue/Scott Boulevard (#4) would degrade from an acceptable LOS E to an unacceptable LOS F during the AM peak hour.

Based on the applicable level of service standards and adverse effect criteria, the intersections listed below would be adversely affected by the proposed project under cumulative plus project conditions.

4. Bowers Avenue and Scott Boulevard (AM peak hour)
7. Bowers Avenue and Monroe Street (AM and PM peak hours)
11. San Tomas Expressway and Walsh Avenue (PM peak hour)

The adverse effects and recommended improvements to address the deficiencies are described below.

The project would not have an adverse effect at all other signalized study intersections. The unsignalized study intersections would continue to operate at an acceptable level of service and would not be adversely affected by the project traffic. The level of service calculation sheets are included in Appendix C.

Adverse Effects and Recommended Improvements

Under cumulative conditions, two additional study intersections (Bowers Avenue/Scott Boulevard and Bowers Avenue/Monroe Street), in addition to the San Tomas Expressway/Walsh Avenue intersection described above under background plus project conditions in Chapter 5, would be adversely affected by the project. The adverse effects and recommended improvements to address the intersection deficiencies at the Bowers Avenue/Scott Boulevard and Bowers Avenue/Monroe Street intersections are described below. The recommended improvements for the San Tomas Expressway/Walsh Avenue intersection are the same as under background plus project conditions described in Chapter 5.

The project will include TDM measures to achieve a 10 percent reduction in VMT per the City's Climate Action Plan. A sensitivity analysis was conducted to determine if a reduction in project vehicle trips due to TDM would avoid any of the adverse effects at any study intersections.

The recommended improvements listed below was developed based on information from the City Place Santa Clara Project EIR, dated April 2016.

Bowers Avenue and Scott Boulevard

Adverse Effect: This CMP intersection would degrade from an acceptable LOS E to an unacceptable LOS F during the AM peak hour with the addition of project traffic. Based on City of Santa Clara adverse effect definitions, this constitutes an adverse effect.

Improvement: Implementation of the required TDM measures could reduce the vehicle trips associated with the project. However, a sensitivity analysis shows that a 10 percent TDM trip reduction would not be sufficient to avoid the adverse effect on intersection operations. Therefore, the below improvement would be required.

This intersection was identified to operate deficiently with the addition of traffic associated with the City Place development under cumulative conditions. The City Place EIR identified a fair-share contribution towards the following improvement to mitigate the project impact.

- Addition of a second southbound left-turn lane.

With implementation of a second southbound left-turn lane, the intersection is projected to operate at an acceptable LOS E during the AM peak-hour under cumulative plus project conditions. The City Place EIR indicated the improvement would occur within the existing right of way. Therefore, the project should provide fair-share funding towards the planned second southbound left-turn lane.

Bowers Avenue and Monroe Street

Adverse Effect: This City of Santa Clara intersection would operate at an unacceptable LOS E under cumulative no project conditions. The addition of project traffic would cause the intersection's average critical-movement delay to increase by 4.6 and 4.1 seconds and the critical v/c to increase by 0.014 and 0.012 during the AM and PM peak hours, respectively. Based on City of Santa Clara adverse effect definitions, this constitutes an adverse effect.

Improvement: Implementation of the required TDM measures could reduce the vehicle trips associated with the project. However, a sensitivity analysis shows that a 10 percent TDM trip reduction would not be sufficient to avoid the adverse effect on intersection operations. Therefore, the below improvement would be required.

This intersection was identified to operate deficiently with the addition of traffic associated with the City Place development under background conditions. The City Place EIR identified the following improvements to mitigate the project impact. The City Place developer would be fully responsible for the cost and construction of the improvements at the intersection. The City Place EIR identified the mitigation measure to be implemented under Phase 8 of the development in the project's Mitigation, Monitoring, and Reporting Program (MMRP).

- Addition of northbound and southbound left-turn lanes. Modification of the northbound and southbound signal phases from split to protected left-turn phases.

With implementation of the above improvements, the intersection levels of service are projected to improve to an acceptable LOS D and C during the AM and PM peak hours, respectively. The City Place EIR indicated the improvement would occur within the existing right of way. Therefore, the project should provide fair-share funding towards the improvements.

San Tomas Expressway and Walsh Avenue

Improvement: The improvements to address the project adverse effect are the same as under background plus project conditions.

7.
Other Transportation Issues

This chapter presents other transportation issues associated with the project, including:

- Freeway ramp traffic operations
- Vehicle queuing analysis
- Traffic operations at unsignalized intersections
- Site access and circulation
- Effects on pedestrians, bicycles, and transit facilities
- Parking

Unlike the level of service methodology, which is adopted by the City Council, the analyses in this chapter are based on professional judgment in accordance with the standards and methods employed by the traffic engineering community. Although operational issues are not considered CEQA impacts, they do describe traffic conditions that are relevant to describing the project environment.

Freeway Ramp Traffic Operations

A freeway ramp operations analysis was performed to identify the effects of project traffic on the vehicle queues at the metered on-ramp and the signal-controlled off-ramp. Ramp operations at the study ramps were based on field observations during the AM and PM peak hours of traffic. It should be noted that the evaluation of freeway ramps is not required based on the VTA's *Transportation Impact Analysis Guidelines*, nor are there adopted methodologies and impact criteria for the analysis of freeway ramps.

The US 101/Bowers Avenue/Great America Parkway interchange provides access to the freeway system from the project site. Therefore, a freeway ramp traffic operations analysis was conducted for the following ramps:

- US 101 southbound diagonal on-ramp from northbound Bowers Avenue
- US 101 northbound diagonal off-ramp to southbound Great America Parkway/Bowers Avenue

The US 101 northbound loop on-ramp from northbound Bowers Avenue is not metered during the AM or PM commute periods, and the US 101 southbound diagonal off-ramp to southbound Bowers Avenue is not controlled by a traffic signal. Therefore, the ramps were not included in the analysis.

US 101 Southbound On-Ramp from Northbound Bowers Avenue

The on-ramp has one mixed-flow lane and one HOV lane. Each lane has 1,175 feet of storage capacity, which can accommodate approximately 47 vehicles in each lane. The analysis of the freeway

on-ramp operations focused on queue length and wait time in the mixed-flow lane, because the queue and delay for vehicles in the HOV lane are significantly shorter than in the mixed-flow lane.

Field observations showed that while there were vehicles queued at the meter, there were no vehicle queuing issues (i.e. the vehicle queue did not extend to northbound Bowers Avenue). The observed queue length ranged from 12 to 28 vehicles in the mixed-flow lane and was no more than 7 vehicles in the HOV lane. The wait time for the maximum vehicle queue on the ramp was approximately 3 minutes and 22 seconds (see Table 11).

The project would add 64 new trips in the PM peak hour to the ramp and result in a slight increase in the queue length (2 vehicles), and wait times at the ramp (11 seconds). Under background plus project conditions, the vehicle queue with the project traffic would still be accommodated within the on-ramp.

US 101 Northbound Off-Ramp to Southbound Great America Parkway/Bowers Avenue

During the AM and PM peak hours, the vehicle queues in the two left-turn lanes on the off-ramp had no issues clearing the intersection at Great America Parkway within one signal cycle. The AM peak hour had a longer queue with vehicle queues no more than 6 vehicles. The vehicle queues were well contained in the left-turn lanes, which can accommodate approximately 19 vehicles per lane. The project would add 66 and 12 trips to the ramp during the AM and PM peak hours, respectively. The vehicles queueing analysis (Table 11) shows under background plus project conditions, the vehicle queue with the project traffic would still be accommodated within the left-turn lanes on the off-ramp.

Vehicle Queuing Analysis

The analysis of intersection levels of service was supplemented with a vehicle queuing analysis for left-turn lanes at intersections where the project would add a substantial number of left turns. This analysis provides a basis for estimating future storage requirements at the intersections under existing, background, and project conditions. Vehicle queues were estimated using a Poisson probability distribution, described in Chapter 1. The following left-turn movements were selected for evaluation:

- Great America Parkway and US 101 NB Off-Ramp – Westbound left turn
- Bowers Avenue and Central Expressway – Eastbound and westbound left turn
- Bowers Avenue and Kifer Road – Northbound, southbound, and eastbound left turn
- Oakmead Village Court and Kifer Road – Southbound and eastbound left turn

The results of the queuing analysis (see Table 12) show that the estimated eastbound left-turn vehicle queue currently exceeds and would continue to exceed the left-turn pocket at the Bowers Avenue/Kifer Road intersection in the PM peak hour under background conditions, both with and without the project. The queuing analysis for the movement is discussed below.

Eastbound Left Turn at Bowers Avenue and Kifer Road

The existing storage capacity for the eastbound left-turn lane on Kifer Road is approximately 350 feet, or 14 vehicles. The left-turn lane becomes a center turn lane that provides access for commercial developments on both sides of the street. During the PM peak hour, the maximum vehicle queue extends past the storage pocket to the center turn lane under existing conditions. The vehicle queue length is approximately two thirds of the length between Oakmead Village Court and Bowers Avenue (750 feet) and extends past the driveways to the adjacent businesses. The maximum vehicle queue occasionally took two signal cycles to clear the intersection.

Table 11
Metered Freeway On-Ramp Analysis

Freeway Ramp	Peak Hour	On-Ramp Storage (veh)	Existing			Background			Background Plus Project				
			Volume (veh)	Queue Length[2] (veh)	Wait Time[3] (min:sec)	Volume	Queue Length[4] (veh)	Wait Time[3] (min:sec)	Project Trips	Volume	% Increase[5]	Queue Length[4] (veh)	Wait Time[3] (min:sec)
US 101 SB On-Ramp from NB Bowers Ave	PM	47	789	28	03:22	958	34	04:05	64	1,022	7%	36	04:19

Notes:
1. Existing queue length represents the queued vehicles in the mixed-flow lane observed during the peak-hour period in November 2019.
2. Wait time was estimated based on the queue length and measured metering rate for the mixed-flow lane.
3. Queue lengths for background and background plus project conditions were estimated based on the ratio of background volume to existing volume and the ratio of background plus project volume to existing volume.
4. Percent increase was calculated from background to background plus project conditions.

Table 12
Left-Turn Storage Queuing Analysis

Intersection	Great America/ US 101 NB		Bowers Ave/ Central Expwy				Bowers Ave/ Kifer Rd						Oakmead Village Ct/ Kifer Rd			
Movement	WB LT	WB LT	EB LT	WB LT	EB LT	WB LT	NB LT	SB LT	EB LT	NB LT	SB LT	EB LT	SB LT	EB LT	SB LT	EB LT
Peak Hour Period	AM	PM	AM	AM	PM	PM	AM	AM	AM	PM	PM	PM	AM	AM	PM	PM
Existing																
Delay[1] (sec)	78	110	190	190	190	190	120	120	120	120	120	120	24.7	12.2	17.5	7.8
Lanes	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1
Volume (vph)	388	367	443	128	135	161	189	59	106	40	74	385	2	11	24	7
Volume (vphpl)	194	184	222	64	68	81	189	30	106	40	37	385	2	11	24	7
95th% Queue (veh/ln)	8	7	18	7	7	8	11	3	7	3	3	19	0	0	1	0
95th% Queue[2] (ft/ln)	200	175	450	175	175	200	275	75	175	75	75	475	0	0	25	0
Storage (ft)	475	475	475	425	475	425	325	225	350	325	225	350	200	100	200	100
Adequate (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	***N***	Y	Y	Y	Y
Background																
Delay[1] (sec)	78	110	190	190	190	190	120	120	120	120	120	120	29.3	13.3	20.3	8.2
Lanes	2	2	3	2	3	2	1	2	1	1	2	1	1	1	1	1
Volume (vph)	534	491	740	151	276	229	206	80	156	75	86	461	2	11	24	7
Volume (vphpl)	267	246	247	76	92	115	206	40	156	75	43	461	2	11	24	7
95th% Queue (veh/ln)	10	9	19	8	9	10	11	3	9	5	4	22	0	0	1	0
95th% Queue[2] (ft/ln)	250	225	475	200	225	250	275	75	225	125	100	550	0	0	25	0
Storage (ft/ ln)	475	475	475	425	475	425	325	225	350	325	225	350	200	100	200	100
Adequate (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	***N***	Y	Y	Y	Y
Background Plus Project																
Delay[1] (sec)	78	110	190	190	190	190	120	120	120	120	120	120	32.9	14.5	26.0	8.2
Lanes	2	2	3	2	3	2	1	2	1	1	2	1	1	1	1	1
Volume (vph)	600	503	747	207	318	239	240	89	164	81	138	511	11	45	80	13
Volume (vphpl)	300	252	249	104	106	120	240	45	164	81	69	511	11	45	80	13
95th% Queue (veh/ln)	11	9	19	0	10	0	13	4	10	6	5	24	1	1	2	0
95th% Queue[2] (ft/ln)	275	225	475	0	250	0	325	100	250	150	125	600	25	25	50	0
Storage (ft/ ln)	475	475	475	425	475	425	325	225	350	325	225	350	200	100	200	100
Adequate (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	***N***	Y	Y	Y	Y

Notes:
NB = northbound; SB = southbound; EB = eastbound; WB = westbound.
1. Vehicle queue calculations based on cycle length for signalized intersections and average delay for unsignalized intersections.
2. Assumes 25 feet per vehicle queued.

The maximum vehicle queue would increase by 3 and 5 vehicles under background and background plus project conditions, respectively, which would continue to extend past the driveways to the adjacent businesses between Oakmead Village Court and Bowers Avenue. The maximum vehicle queue would not extend to Oakmead Village Court. Therefore, it would not affect the southbound left-turn traffic on Oakmead Village Court. Thus, no improvements are recommended at this intersection's left-turn pocket.

Traffic Operations at Unsignalized Intersections

The study evaluated two unsignalized intersections: Oakmead Village Court/Kifer Road and Oakmead Village Court/Oakmead Village Drive. The Oakmead Village Court/Kifer Road intersection is a T-intersection and is stop controlled for the southbound approach on Oakmead Village Court. The Oakmead Village Court/Oakmead Village Drive intersection is assumed to be stop controlled on the eastbound and westbound approaches on Oakmead Village Drive and the project driveway, respectively.

The level of service analysis (see Chapters 2 to 6) shows that the eastbound and westbound movements of the Oakmead Village Court/Oakmead Village Drive/project driveway intersection would operate adequately (LOS B or better) with short delay under all project conditions. At the Oakmead Village Court/Kifer Road intersection, the worst movement (southbound left turn) would also operate adequately (LOS D or better) under all project conditions. Although the left-turn vehicles may experience some delay when waiting for a gap to turn on eastbound Kifer Road, field observations show that there are sufficient gaps for the left-turn vehicles to turn on eastbound Kifer Road due to the platooning effect between the downtown and upstream signals when a group of vehicles moves closely between two intersections between two intersections and creates gaps in the traffic flow between groups of vehicles. The queuing analysis shows (see Table 12) that the southbound left-turn vehicle queue is expected to be short (2 vehicles) and would not block driveways. Thus, no improvements are recommended at these two intersections.

Site Access and Circulation

A review of the project site plan was performed to determine if adequate site access and on-site circulation are provided and to identify any access or circulation issues that should be improved. This review is based on the site plan, dated March 12, 2020 (see Figure 2).

Site Access

Vehicle access to the site would be provided via a right-in/right-out only driveway on Bowers Avenue and one full-access driveway and one exit-only driveway on Oakmead Village Court. The northern driveway on Oakmead Village Court would provide full access and would be located at the Oakmead Village Court/Oakmead Village Drive intersection opposite Oakmead Village Drive. The southern driveway on Oakmead Village Court would be exit only from the parking garage.

The driveway on Bowers Avenue and the driveway at Oakmead Village Drive would provide direct access to surface parking spaces next to each office building. The driveways would also connect to the parking garage at the end of the drive aisle in the surface parking areas.

Driveway Design

The two-way project driveways would be 24 to 30 feet wide and the one-way driveway would be 12 feet wide. According to the City of Santa Clara Municipal Code, Chapter 18.74 (Parking Regulations), two-way driveways providing access to all properties other than residential should be a minimum width of 22 feet and a maximum width of 30 feet, and one-way driveways should be a minimum width of 14 feet.

The two-way driveways would satisfy City driveway design standards. However, the one-way driveway would be 2 feet narrower than the City's minimum width requirement.

Recommendation: The exit-only driveway (southern driveway) on Oakmead Village Court at the parking garage should be widened to meet the City's minimum width requirement of 14 feet.

Sight Distance at Project Driveways

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

For the driveways on Oakmead Village Court, which has a posted speed limit of 25 mph, the Caltrans stopping sight distance is 200 feet (based on a design speed of 30 mph). Thus, a driver must be able to see 200 feet on both directions of Oakmead Village Court to locate a sufficient gap to turn out of the driveways. Similarly, the driveway on Bowers Avenue requires a stopping sight distance of 300 feet, based on a design speed of 40 mph.

According to the site plan, the landscape plan shows street trees would be added along the project frontage on both Oakmead Village Court and Bowers Avenue. The type and location of the street trees would be determined by the City at the implementation stage. Note that street trees have a high canopy and would not obstruct the view of drivers exiting the project driveways.

The right-turn only driveway on Bowers Avenue would be located 250 feet south of Central Expressway. However, because no roadway curve or no-street parking is present on Bowers Avenue that would not obstruct the vision of exiting drivers, vehicles exiting the driveway would be able to see approaching traffic on Central Expressway with an adequate sight distance (greater than 300 feet) for the southbound through traffic. Vehicles turning from Central Expressway to southbound Bowers Avenue are expected to travel with lower speed while making turns. The Caltrans stopping sight distance is 200 feet based on a travel speed of 30 mph. Therefore, the sight distance (250 feet) for traffic turning from Central Expressway is adequate.

There is a horizontal curve on Oakmead Village Court between the two project driveways. The sight distance at the north driveway for the northbound traffic from the curve is approximately 210 feet, which is adequate sight distance for both the outbound and inbound vehicles at the driveway. However, the sight distance at the south driveway for the southbound traffic from the curve is approximately 150 feet, which is shorter than the Caltrans stopping sight distance is 200 feet. The sight distance is measured between the driveway, through the back of the sidewalks, and the travel lane and did not considered the sight distance through the project site as landscaping on the site could block the view of exiting drivers. To ensure a minimum of 200 feet of clear sight distance from the south driveway, the on-site landscaping would need to be kept low.

Recommendation: The on-site landscaping along Oakmead Village Court between two driveways should be kept low to ensure a minimum of 200 feet of clear sight distance from the south driveway. The City requires that no visual obstructions over 3 feet in height are allowed within a driver's sight triangle near driveways.

Additionally, on-street parking is present on Oakmead Village Court along the project frontage and could obstruct the vision of exiting drivers if there were cars parked next the driveways. Therefore, red curbs should be painted next to the project driveways to avoid issues associated with on-street parking vehicles obstructing the vision of exiting drivers.

Recommendation: The curb segments next to the project driveways on Oakmead Village Court should be painted red for 15 feet to prohibit parking and ensure adequate sight distance for outbound traffic.

Traffic Operations at Project Driveways

The estimated trips at the project driveways are shown on Figure 15. At the driveway on Bowers Avenue, because vehicles can only make right turns, there would be minimal delay for inbound traffic. For outbound traffic, some on-site vehicle queuing could occur due to a combination of the inherent unpredictability of vehicle arrivals at the driveway and the random occurrence of gaps in traffic along Bowers Avenue, but the queue is not expected to affect the on-site circulation.

For the driveway at the Oakmead Village Court/Oakmead Village Drive intersection, due to the low traffic volume and travel speed on Oakmead Village Court and Oakmead Village Drive, no operational issues related to vehicle queueing and/or vehicle delay are expected to occur at the driveway. The intersection level of service analysis shows that that the eastbound and westbound movements of the intersection would operate adequately (LOS B or better) with short delay under all project conditions.

The south driveway on Oakmead Village Court would be outbound only. Due to the low traffic volume and travel speed on Oakmead Village Court, no operational issues related to vehicle queueing and/or vehicle delay are expected to occur at the driveway.

Figure 15 also shows that a small amount of the project traffic on Bowers Avenue to the south and Walsh Avenue to the west may access the parking garage via the Carl's Jr driveway on Kifer Road. It is expected the amount of the cut-through traffic would be low because the driveway is close to the Kifer Road/Bowers Avenue intersection and may not be easy for the outbound traffic to make left turns due to the eastbound queues on Kifer Road, and the south driveway on Oakmead Village Court would provide more direct access for the inbound traffic to the upper levels of the parking garage due to the location of the garage ramp. Therefore, the cut-through traffic is not expected to affect the driveway operations at the Carl's Jr driveway.

On-Site Circulation

The site plan shows a new parking garage in the southwest portion of the project site, and additional surface parking areas between the parking garage and the driveways on Bowers Avenue and at Oakmead Village Drive. The project would provide 90-degree parking throughout the surface parking areas and within the proposed parking garage. All surface drive aisles are shown on the site plan to be 30 feet wide, with 18-foot long parking stalls along one side of the drive aisle. Parking spaces within the parking structure are shown to be 18 feet long with 25-foot drive aisles. According to the City of Santa Clara Municipal Code, Chapter 18.74, standard parking spaces must be 18 feet long and 9 feet wide (10 feet wide if they are next to a wall). The proposed drive aisle width, in combination with the parking dimensions, would provide sufficient room for vehicles to back out of the 90-degree parking stalls.

Two access points to the parking garage are shown along the north side of the garage, connecting to the driveway at Oakmead Village Drive, and at the southeast corner of the garage, connecting to the driveway at Bowers Avenue. Additionally, vehicles could exit the garage via the driveway on Oakmead Village Court. The site plan shows that all five parking levels would be accessible via all garage entrances.

The layout of the site plan allows for access to both the site and parking garage from various directions, and adequate on-site circulation (no dead-end drive aisles are present) is provided. Being able to access the parking garage from any access point results in equal usage of all available access points and eliminates the need for project traffic to concentrate at one location.

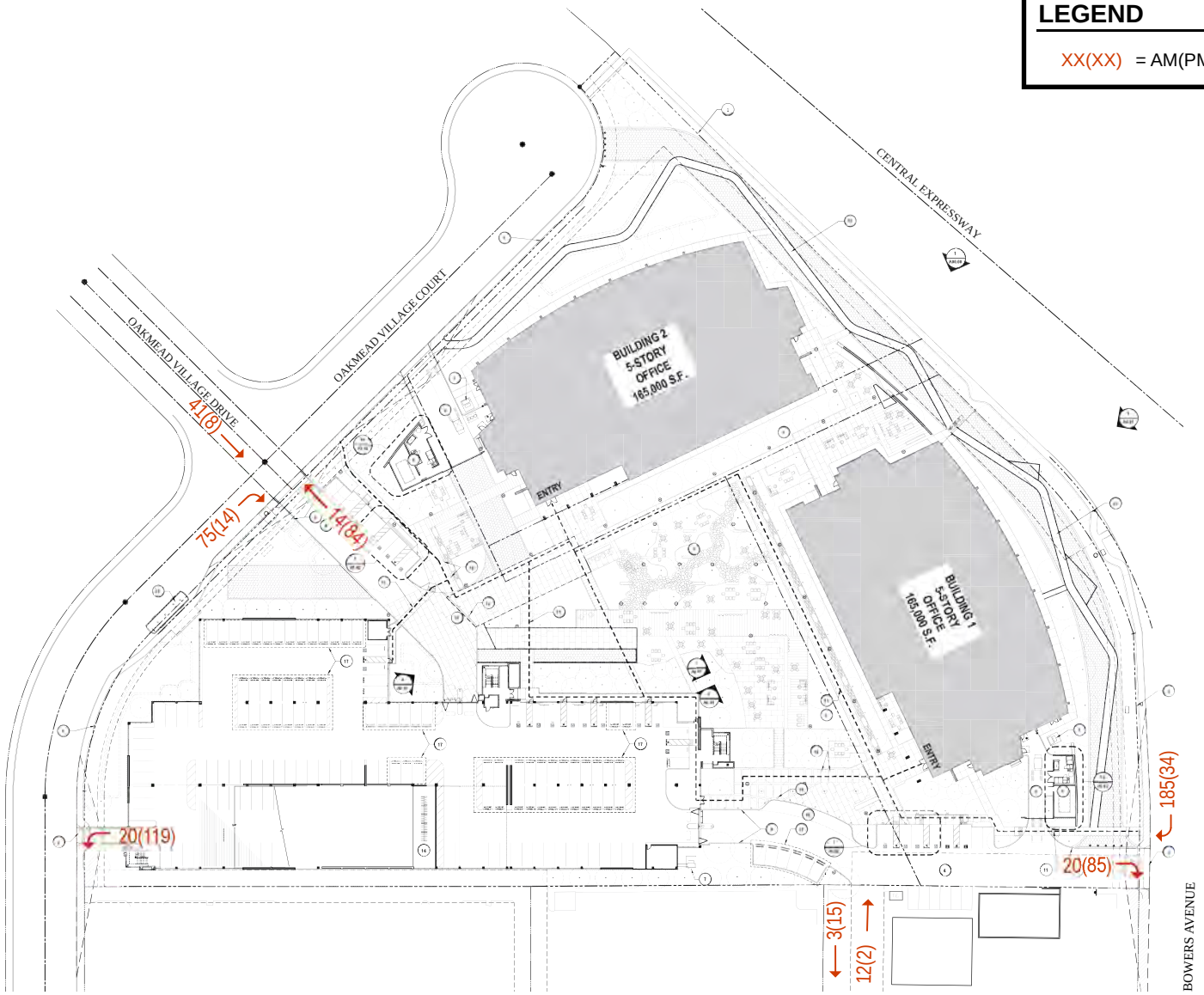


Figure 15
Project Trips at Driveways

The site plan shows two on-site and one off-site loading zones for dropping off and picking up passengers. Each on-site loading zone would be located in the surface parking area next to each building and accessed via the Bowers Avenue driveway and the driveway at Oakmead Village Drive. The off-site loading zone would be located on Oakmead Village Court near the driveway at the Oakmead Village Court/Oakmead Village Drive intersection. For the on-site loading zones, it is expected that vehicles would need to drive through the parking garage to either access or exit the loading zones. For the loading zone on Oakmead Village Court, vehicles would exit the site by making U-turns in the cul-de-sac at the north end of Oakmead Village Court. As described above under Sight Distance at Project Driveways, the vehicles/shuttles stopping in the off-site loading zone would not obstruct the sight distance of the outbound and inbound vehicles at the Oakmead Village Court/Oakmead Village Drive intersection.

Emergency Vehicle and Truck Access and Circulation

Emergency vehicles would access the project site from Bowers Avenue and Oakmead Village Court via the Bowers Avenue driveway, the driveway on Oakmead Village Court at Oakmead Village Drive, and the truck access driveway on Oakmead Village Court north of Oakmead Village Drive. A 26-foot wide fire access path would be provided along the project boundary on Central Expressway and Bowers Avenue between the Bowers Avenue driveway and the Oakmead Village Court cul-de-sac. Therefore, based on the driveway and fire access lane widths, the project would provide adequate access and circulation for fire trucks/emergency vehicles.

The site plan shows truck access to both office buildings, with access to the first building (building closest to Bowers Avenue) off of the driveway on Bowers Avenue, and access to the second building off of an exclusive driveway along Oakmead Village Court, north of Oakmead Village Drive, connecting directly to the second building. Truck access was reviewed for the truck types WB-40 and SU-30, which represent small semi-trailer trucks, emergency vehicles, garbage trucks, and small to medium delivery vehicles. Large trucks accessing loading zones would need to back in and might have some off tracking into oncoming travel lanes. However, traffic volumes on-site and on Oakmead Village Court would be relatively low, and encroachment of heavy vehicles on opposing traffic direction would not create operational problems.

Pedestrian Access and Circulation

The project would construct, at a minimum, new 5-foot wide sidewalks along the project frontages on Central Expressway and Oakmead Village Court. With the new sidewalks, the project should ensure that the curb ramp at the southwest corner of the Bower Avenue/Central Expressway intersection is built to ADA standards along with the curb ramps at the southwest porkchop island at the intersection. The sidewalks and ADA curb ramps would facilitate pedestrian movements between the project site and surrounding points of interest, such as bus stops. Within the site, pedestrian paths are shown throughout the project site, providing connections between sidewalks on the adjacent streets, the proposed buildings, parking garage, and other amenities on-site. Therefore, pedestrian access to all proposed facilities within the project site would be adequate.

Recommendation: With the new sidewalks along the project frontages on Central Expressway, the project should ensure that the curb ramp at the southwest corner of the Bower Avenue/Central Expressway intersection is built to ADA standards along with the curb ramps at the southwest porkchop island at the intersection.

Effects on Pedestrians, Bicycles, and Transit Facilties

Pedestrian Facilities

New pedestrian traffic potentially could be generated by the project. Although the project site is surrounded primarily by office/employment land uses, various bus stops are located along Bowers Avenue and Kifer Road, within a reasonable walking distance.

The project would construct, at a minimum, new 5-foot wide sidewalks along the project frontages on Central Expressway and Oakmead Village Court. The sidewalks along with ADA curb ramps would facilitate pedestrian movements between the project site and nearby bus stops. With the existing and proposed pedestrian facilities within and in the vicinity of the project site, pedestrian access to and from the project site would be adequate.

Bicycle Facilities

The project could increase the demand on bicycle facilities in the vicinity of the project site. Assuming bicycle trips would comprise one to two percent of the total project-generated trips (according to the 2015 Bicycle Plan Update), the project would generate up to eight new bicycle trips during the peak hours. The potential demand could be served by the various bicycle facilities available in the immediate vicinity of the project site. Therefore, the potential increase in bicycle trips by the project would not have an adverse effect on the existing bicycle facilities in the study area and would not require new off-site bicycle facilities.

Transit Services

Due to the proximity of bus stops to the project site, it is assumed that some employees of the project would utilize the existing transit services. Assuming a commute hour transit mode share of 2 percent (as recommended by VTA guidelines), the project would generate up to 8 new transit riders during the peak hours. Given that the project site is served by two local bus routes and two ACE shuttle routes, an average of two new transit riders would access each of the available bus routes during the peak-hours. Therefore, it is anticipated that the projected transit riders associated with the project could be accommodated by the existing transit services.

An evaluation of the effects of project traffic on transit vehicle delay also was completed. The analysis was completed for all transit routes that travel through the study intersections utilizing information presented in the preceding chapter under the intersection level of service analysis. The results of the transit delay analysis are presented in Table 13. The analysis shows that for most routes, the traffic associated with the project would increase delay to transit vehicles by 15 seconds or less per vehicle. The VTA has not established policies or significance criteria related to transit vehicle delay. Thus, this data is presented for informational purposes only.

Parking

The parking analysis for the proposed office development is based on the City of Santa Clara Municipal Code (Section 18.74.020) and the *VTA Countywide Bicycle Plan Technical Guidelines*.

Vehicle Parking

The City of Santa Clara requires general office developments to provide one parking stall for every 300 s.f. of office space. Based on the standard, the project would be required to provide 1,100 on-site parking spaces. However, the City's Climate Action Plan states that the project must achieve a minimum 20 percent reduction in VMT with at least 10 percent reduction through the implementation of a TDM plan. It was assumed that the TDM plan would also reduce the parking demand by 10 percent.

Therefore, the project would be required to provide a total of 990 on-site parking spaces with a TDM plan.

The project would provide 978 vehicle parking spaces, which is 122 spaces (or 11 percent) fewer than the required number of spaces without the trip reduction from a TDM plan. With the assumed 10 percent trip reduction from a TDM plan, the proposed parking spaces would be 12 spaces fewer than the required number of spaces.

Recommendation: The project would require City approval for any proposed reduction in the required parking spaces.

Table 13
Transit Vehicle Delay in Study Area

Bus Route	Study Area Street(s)	Direction	Projected Change in Transit Vehicle Delay (sec/veh) AM	PM
20	Great America Pkwy/Bowers Ave, Arques Ave	Eastbound	0.8	9.6
		Westbound	4.6	-2.7
21	Monroe St	Eastbound	0.3	3.7
		Westbound	3.9	1.4
22	El Camino Real	Eastbound	0.0	0.2
		Westbound	0.3	0.0
57	Bowers Ave	Northbound	8.7	12.1
		Southbound	15.0	6.2
59	Mission College Blvd, Montague Expwy/ San Tomas Expwy, Scott Blvd	Northbound	0.0	0.0
		Southbound	0.0	0.0
522	El Camino Real	Eastbound	0.0	0.2
		Westbound	0.3	0.0
ACE Gray	Great America Pkwy/Bowers Ave, Arques Ave, Kifer Rd	Outbound	4.8	
		Inbound		10.2
ACE Yellow	Mission College Blvd, Montague Expwy/ San Tomas Expwy, Scott Blvd, Walsh Ave, Bowers Ave	Outbound	2.2	
		Inbound		4.2

Note:
Projected increase in transit delay based on a comparison of background vs. background plus project intersection movement delays calculated by TRAFFIX.

Americans With Disabilities Act Compliance

The Americans with Disabilities Act (ADA) requires developments to provide 19 accessible parking spaces for developments providing 951 to 1,000 parking spaces. Accessible parking spaces shall be at least 8 feet wide and shall be located on the shortest accessible route of travel from adjacent parking to an accessible entrance. In addition, one in every 6 accessible spaces, but no less than one, shall be served by an access aisle at least 8 feet wide and shall be designated as “van accessible”. It should be noted that the accessible parking spaces are not additional parking spaces but are part of the minimum parking spaces required.

Based on the above ADA requirements and the City of Santa Clara parking requirements, the project must provide a total of 20 accessible parking spaces, with a minimum of 4 of the 21 spaces designated as van accessible spaces. The site plan shows a total of 20 accessible parking spaces (with 4 of them

designated as van accessible) being proposed within the project site. Therefore, the proposed number of accessible parking spaces satisfies ADA parking requirements.

Bicycle Parking

The bicycle parking spaces were evaluated based on the requirements in the VTA Bicycle Technical Guidelines. VTA guidelines state that office developments are required to provide one bike space for each 6,000 square feet, with 75% as Class I (long-term) parking and 25% as Class II (short-term) parking. Based on VTA's guidelines, the project would be required to provide 28 bicycle parking spaces for each office building, with 21 long-term spaces and 7 short-term spaces. For the site with two buildings, the would be required to provide 56 bicycle parking spaces, with 42 long-term spaces and 14 short-term spaces.

As shown on the site plans, the project would provide 50 long-term bicycle parking spaces and 8 short-term bicycle parking spaces for a total of 58 bicycle parking spaces. The proposed number of bicycle parking spaces exceeds the required number of bicycle parking spaces, but the number of short-term parking spaces is 6 spaces fewer than the required number of spaces.

HEXAGON TRANSPORTATION CONSULTANTS, INC.

3000 Bowers Avenue Office Project

Transportation Demand Management Plan

Prepared for:

David J. Powers & Associates, Inc.

June 21, 2021

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1. Introduction

This transportation demand management (TDM) plan has been prepared for the proposed office development project located at 3000 Bowers Avenue in Santa Clara, California. TDM is a combination of services, incentives, facilities, and actions that reduce single-occupant vehicle (SOV) trips to help relieve traffic congestion, parking demand, and air pollution problems. The purpose of this TDM plan is to propose effective and appropriate TDM measures that will satisfy the City's Climate Action Plan (CAP) requirements for the reduction of vehicle miles traveled (VMT).

The CAP establishes different VMT reduction requirements by transportation district and General Plan land use designation. The project site is designated as high-density office and R&D use in the City's General Plan and is located in the north of Caltrain transportation district. In accordance with the goals established by the CAP, the project is required to reduce VMT by at least 20 percent, including at least a 10 percent reduction from TDM.

This TDM plan includes a broad range of measures designed to reduce the VMT by the office use. The amount by which the project's design, land use, location, and TDM measures would reduce VMT has been estimated using the Bay Area Air Quality Management District (BAAQMD)'s TDM Tool. This tool implements the steps and calculations documented in the California Air Pollution Control Officers Association (CAPCOA) August 2010 report, *Quantifying Greenhouse Gas Mitigation Measures*. Based on this tool's projections, the project could meet the City's VMT reduction goals.

Project Description

The project site is bounded by Central Expressway to the north, Bowers Avenue to the east, Kifer Road to the south, and Oakmead Village Court to the west (see Figure 1). The project would construct two new office buildings totalling 330,000 square feet and a vehicle parking structure on a currently vacant site (see Figure 2).

Vehicle access to the site would be provided via a right-turn only driveway on Bowers Avenue and two full-access driveways on Oakmead Village Court. The northern driveway on Oakmead Village Court would be at the Oakmead Village Court/Oakmead Village Drive intersection opposite Oakmead Village Drive. The project would provide 978 surface and garage parking spaces.

The project would construct new 5-foot wide sidewalks along the project frontages on Central Expressway and Oakmead Village Court. The sidewalks would facilitate pedestrian movements between the project site and surrounding points of interest, such as bus stops.

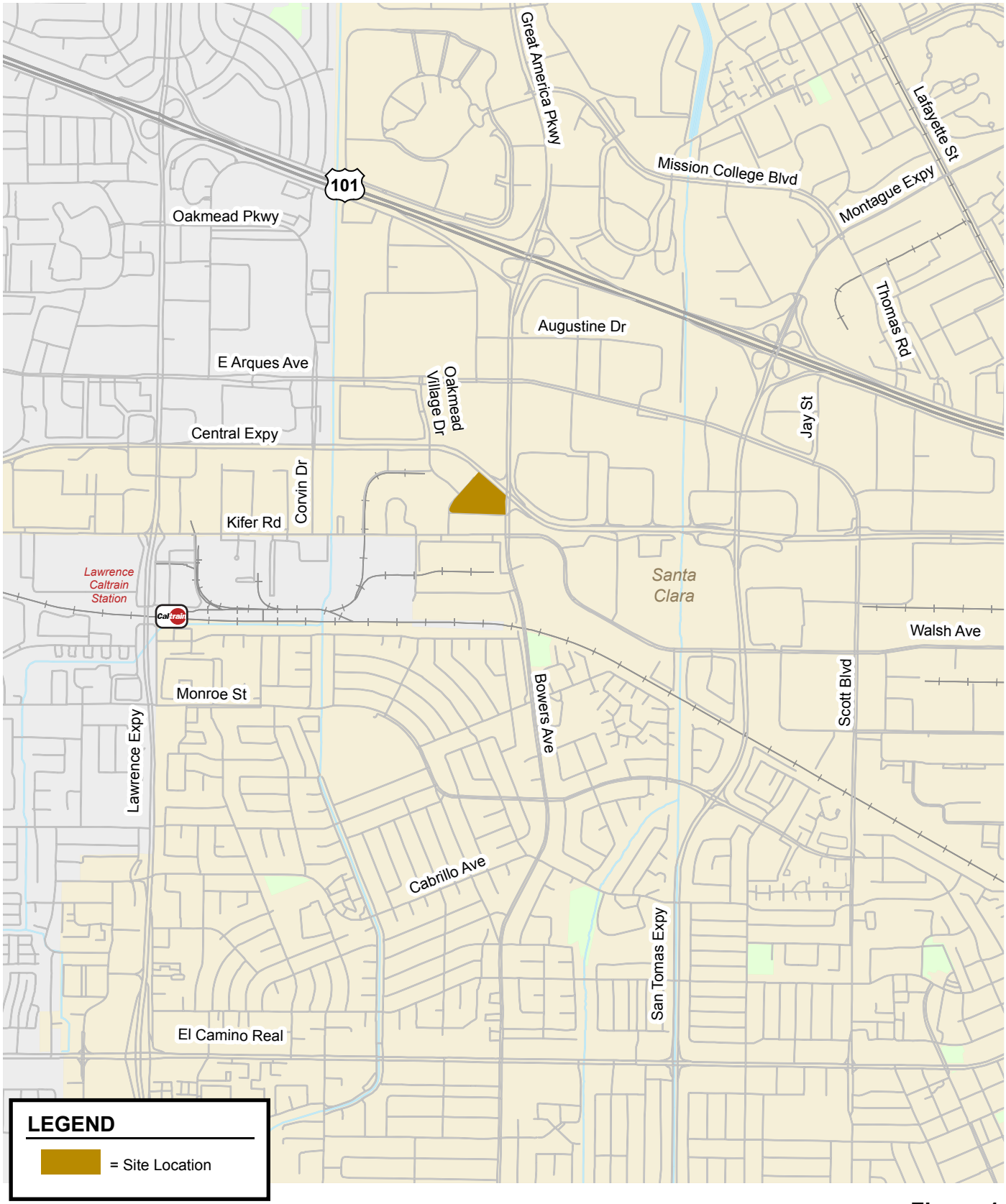


Figure 1
Site Location

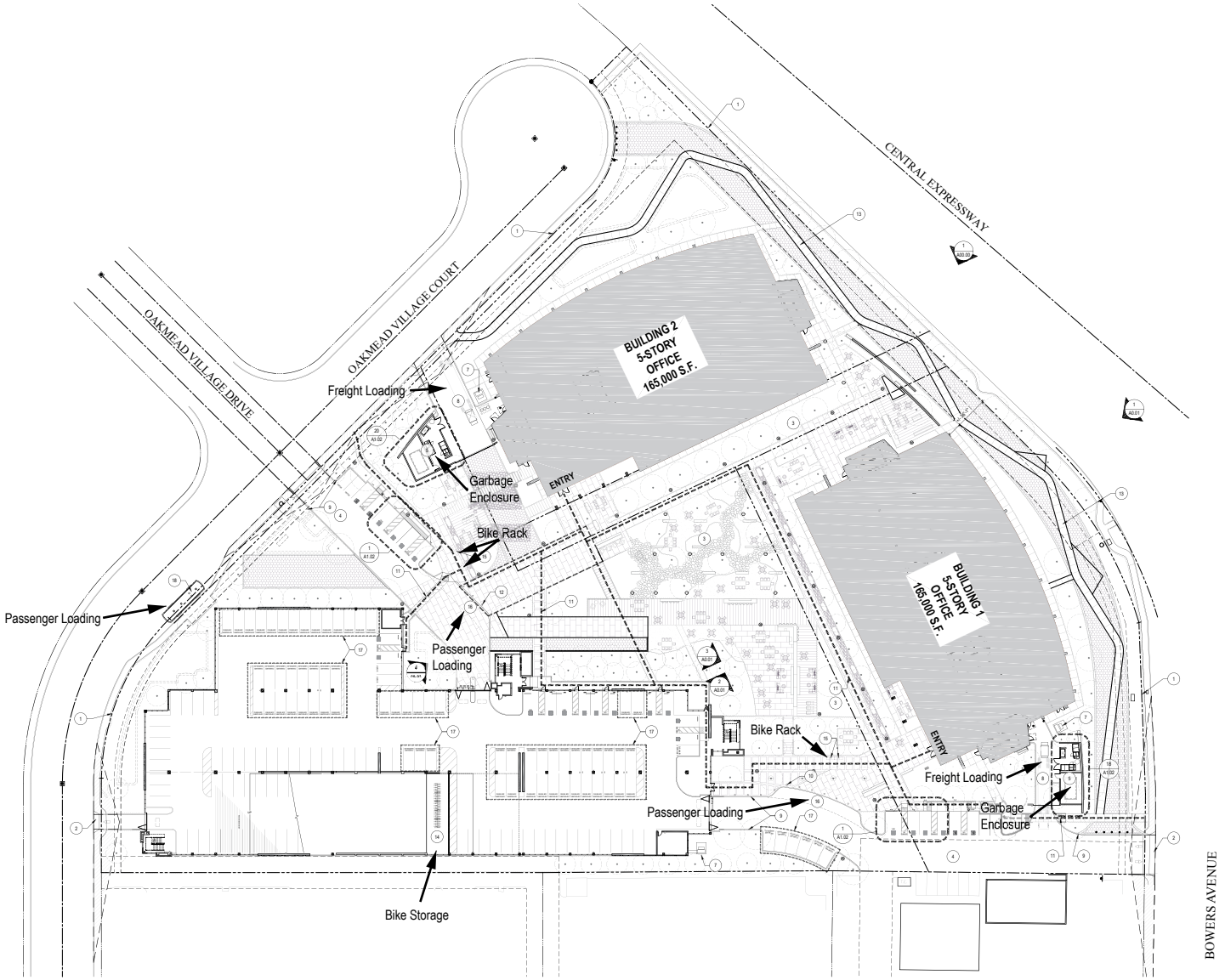


Figure 2
Site Plan

NORTH
Not to Scale

2. Transportation Facilities and Services

Transportation facilities and services that support sustainable modes of transportation for the project include high-occupancy vehicle (HOV) lanes, pedestrian facilities, bicycle facilities, VTA bus routes, VTA shuttles to ACE commuter rail service, and Caltrain shuttles to Caltrain rail service. This chapter describes the existing facilities and services near the project site.

Roadway Network

Access to the project site is provided via the project's driveways on Bowers Avenue and Oakmead Village Court. Major roadways that connect to the site in the project vicinity include Central Expressway and Kifer Road. Regional access to the project site is provided via US 101. These roads are described below.

US 101 is an eight-lane freeway with three mixed-flow lanes and one high-occupancy vehicle (HOV) lane in each direction in the vicinity of the site. It extends north through San Francisco and south through Gilroy. Regional access to the project site is provided via its interchange with Bowers Avenue.

Central Expressway is a six-lane east-west expressway that begins at De La Cruz Boulevard in San Jose and extends westward to San Antonio Road where it transitions into Alma Street in Mountain View. East of San Tomas Expressway, Central Expressway has HOV lanes. It has a posted speed limit of 50 miles per hour (mph). Central Expressway provides access to and from the project site via Bowers Avenue and Oakmead Village Drive.

Bowers Avenue is a six-lane north-south street, north of Kifer Road and a four-lane street, south of Kifer Road. It transitions from Great America Parkway north of US 101 and extends southerly to El Camino Real, where it transitions into Kiely Boulevard. Bowers Avenue has a speed limit of 35 mph. Bike lanes exist along most of Bowers Avenue, except along the project frontage between Central Expressway and Kifer Road. Bowers Avenue provides direct access to the project site via a right-turn only driveway.

Kifer Road is a four-lane east-west street with left-turn pockets provided at intersections and a center turn lane provided between intersections. It runs between Fair Oaks Avenue in Sunnyvale and Bowers Avenue, where it transitions into Walsh Avenue. Kifer Road has a speed limit of 35 mph. Bike lanes exist west of Uranium Road. It provides access to the project site via its intersection with Oakmead Village Court.

Oakmead Village Court is a two-lane north-south street that runs from Kifer Road to south of Central Expressway, along the west project site boundary, where it terminates in a cul-de-sac. Oakmead Village Court has a speed limit of 25 mph. Oakmead Village Court provides direct access to the project

site via two driveways. One of the driveways would intersect with Oakmead Village Drive, which provides access to and from eastbound Central Expressway.

HOV Lanes

High-occupancy vehicles (HOV) lanes, also known as diamond or carpool lanes, restrict use to vehicles with two or more occupants (carpool, vanpool, and buses), motorcycles, and ILEVs (subcategory of clean-fuel vehicles that have essentially no fuel vapor emissions) during the morning (5:00 AM to 9:00 AM) and evening (3:00 PM to 7:00 PM) commute periods. As noted above, HOV lanes are present on US 101 and Central Expressway. HOV lanes are also found on portions of the following south bay roadways that project employees might use: Lawrence Expressway, San Tomas Expressway, SR 85, SR 87, I-280, and I-880.

HOV lanes serve as a significant incentive to employees to form or join a carpool or vanpool for their journey to work. CMP data indicate that HOV lanes generally are less congested than mixed-flow lanes and allow users to reduce their travel time.

Pedestrian Facilities

Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals at signalized intersections. In the project vicinity Bowers Avenue and Walsh Avenue have sidewalks on the both sides of the street. Sidewalks do not exist along most of Oakmead Village Court, except at the southwest corner of the Oakmead Village Court/Oakmead Village Drive intersection. Kifer Road has sidewalks along the northern side of the street between Oakmead Village Court and Bowers Avenue and on both sides of the street west of Uranium Road. Sidewalks are present along the north side of Central Expressway between Oakmead Village Drive and the San Tomas Aquino Creek Trail.

Crosswalks are provided on all approaches of all signalized intersections in the vicinity of the project site, with the exception of the east leg of the Oakmead Parkway/Corvin Drive and Central Expressway intersection. All of the crosswalks at the nearby signalized intersections include pedestrian signal heads and push buttons. Sidewalks and crosswalks in the project vicinity provide adequate access to the nearby transit facilities.

Although there are no sidewalks on Oakmead Village Court and Central Expressway along the project frontages, the project would construct new sidewalks along the project frontages. The sidewalks would facilitate pedestrian movements between the project site and surrounding points of interest, such as bus stops.

Bicycle Facilities

The bicycle facilities that exist in the project vicinity (see Figure 3) include multi-use trails/paths (Class I bikeway), striped bike lanes (Class II bikeway), and shared bike routes (Class III bikeway).

Class I Trail or Path is an off-street path with exclusive right-of-way for non-motorized transportation used for commuting as well as recreation. The San Tomas Aquino Creek trail extends from Sunnyvale Baylands Park, north SR 237, southward to San Tomas Expressway, where it connects to the bike path along the west side of to San Tomas Expressway. The bike path extends from north of Cabrillo Avenue southward to Homestead Road. The trail can be accessed via the bike lanes on Scott Boulevard and Central Expressway.

Class II Bike Lanes are lanes on roadways designated for use by bicycles with special lane markings. Within a one-mile radius of the project site, striped bike lanes are present along the following roadway segments:

- Kifer Road, west of Uranium Road,
- Scott Boulevard/Arques Avenue, between Monroe Street and North Fair Oaks Avenue in Sunnyvale,
- Bowers Avenue/Great America Parkway, between Chromite Drive and Yerba Buena Way,
- Lakeside Drive, for the entire street,
- Oakmead Parkway, for the entire street, and
- Calabazas Boulevard, for the entire street.

Class III Bike Routes are typically designated only with signage or with painted shared lane markings (Sharrows) on a road that indicate to motorists that bicyclists may use the full travel lane. Within a one-mile radius of the project site, Sharrows are present along the following roadway segments:

- Bowers Avenue between Chromite Drive and El Camino Real and
- Chromite Drive, between Monroe Street and Bowers Avenue.

Although none of the local commercial streets near the project site (e.g. Oakmead Village Drive and Oakmead Village Court) are designated as bike routes, due to their low traffic volumes, many of them are conducive to bicycle usage.

Bicycles are also permitted on Central Expressway, Lawrence Expressway, and San Tomas Expressway. However, due to high speeds and traffic volumes, the expressways are recommended for use only by bicyclists of intermediate to advanced skills.

Figure 3
Existing Bicycle Facilities

Transit Services

Existing transit services to the project area are provided by the Santa Clara Valley Transportation Authority (VTA)'s bus service, VTA's shuttle service to the Great America Station, and Caltrain's shuttle service to the Lawrence Station. Bus and shuttle services in the project vicinity as of April 2021 are summarized in Table 1 and shown on Figure 4.

Table 1
Existing Transit Services

Route	Route Description	Weekday Hours of Operation	Headways[1] (minutes)	Nearby Bus Stop	Walking Distance from Nearest Stop to Project Site (feet)
Local Route 20	Milpitas BART and Sunnyvale Transit Center	6:15 AM - 7:50 PM	30	Scott Blvd west of Bowers Ave	2,200
Local Route 57	West Valley College - Old Ironsides Station	6:05 AM - 10:50 PM	20	Bowers Avenue south of Kifer Road	750
ACE Gray Shuttle (Route 822)[2]	Great America Station - South Sunnyvale	6:05 AM - 8:05 AM (Southbound) 3:10 PM - 5:40 PM (Northbound)	85 - 115 (2 runs southbound, 3 runs northbound)	Kifer Road west of Uranium Drive	1,850
ACE Yellow Shuttle (Route 827)[2]	Great America Station - South Santa Clara	6:05 AM - 8:05 AM (Southbound) 3:10 PM - 5:40 PM (Northbound)	85 - 116 (2 runs each direction)	Bowers Avenue north of Central Expressway	1,500

Notes:
Source: VTA Service Schedule, April 2021.
1. Headways during weekday peak periods.
2. Limited hours of operation and daily runs.

VTA Bus Service

VTA operates the Local Bus Routes 20 and 57 and the ACE Shuttle routes in the project vicinity (with bus stops within walking distance). The closest bus stops (by Route 57) are located on Bowers Avenue south of Kifer Road, approximately 750 feet from the site.

Figure 4
Existing Transit Services

Caltrain

Caltrain provides commuter rail service between San Francisco and Gilroy. The project is located approximately 1.3 miles from of the Lawrence Caltrain station, which is within reasonable biking distance from the project site. At the Lawrence Caltrain station, Caltrain provides service with 60-minute headways during the weekday commute hours. Caltrain provided two shuttle routes from the station to corporate campuses in the project vicinity during the peak commute hours. Due to Covid-19, shuttle service has been suspended.

Altamont Corridor Express (ACE) Rail Service

The Altamont Commuter Express (ACE) is a commuter rail service connecting the Central Valley with Silicon Valley via the Altamont Pass. The closest station to the project site is the Great America Station, approximately 2.6 miles to the project site. Two ACE trains operate westbound during the AM peak period and two trains operate eastbound during the PM peak period. VTA provides two ACE shuttle routes (Gray and Yellow) from the station to corporate campuses in the project vicinity. The closest shuttle stops are located on Bowers Avenue north of Central Expressway, approximately 1,500 feet from the project site.

Amtrak Capitol Corridor

Capitol Corridor is an intercity passenger rail service that operates along a 170-mile track between Silicon Valley/San Jose and the Sacramento region, with a stop at the Great America Station in the project vicinity. Capitol Corridor service operates throughout the day in both directions but has the most frequent service in the westbound direction in the morning and in the eastbound direction in the evening. There are two westbound trains arriving at the Great America Station during the AM peak period and two eastbound trains departing the Great America Station during the PM peak period. As described above, VTA provides shuttle service from the Great America Station to the project area.

3. Recommended TDM Measures

The TDM measures to be implemented for the project include design features, programs, and services that promote sustainable modes of transportation and reduce the number of vehicle trips that would be generated by the project. The main goal of this TDM plan is to provide effective measures that would reduce the vehicle trips and satisfy the City's CAP requirements for the reduction of VMT. In accordance with the goal established by the CAP, this TDM plan is expected to reduce the project's VMT by at least 10 percent. Overall, the project is required to reduce VMT by at least 20 percent when the project's density, surrounding street design, land use diversity, accessibility to major job center, transit accessibility, and neighborhood enhancement design are considered in combination with the recommended TDM measures.

Table 2 presents a summary of the measures recommended in this plan, along with an indication of who would have primary responsibility for implementing each measure. All Phase 1 measures should be implemented upon occupancy of the project. Phase 2 measures should be implemented if the project does not meet its 20 percent VMT reduction goal.

The project's VMT reduction has been estimated by the BAAQMD's TDM Tool, which provides an initial indication of a TDM Plan's likely effectiveness in various settings. After the project site has been occupied and the TDM Plan has been implemented, employee mode-share surveys and driveway counts should serve as monitoring tools to determine if the City's goal of a 20 percent VMT reduction has actually been met. If not, then then the office tenant(s) should be responsible for implementing additional measures, identified as Phase 2 measures in Table 2.

Because the project is a speculative office development with a yet unknown tenant(s), specific TDM plan components should be included in lease agreements or other instruments to ensure their implementation. All measures identified in Table 2 as the tenant(s)' responsibility or the transportation coordinator's responsibility should be explicitly referenced as such in all lease agreements. The TDM plan also is designed to allow for a certain degree of flexibility so that the ultimate tenant(s) can ensure the plan can be tailored to best suit the commute needs of their work force.

As described in the previous chapter, pedestrian, bicycle, and transit facilities are considered well connected in the project vicinity. The project is within a half-mile walking distance of bus/shuttle stops served by two VTA frequent bus routes (Routes 20 and 57), two ACE shuttle routes to the Great America Station, and two Caltrain shuttle routes to the Lawrence Station. The project is also within reasonable biking distance to the Lawrence Caltrain Station. Bike lanes are present in the immediate vicinity of the project site on Bowers Avenue and Kifer Road. Thus, it is likely that transit and bicycling can be an alternative option for employees of the office development.

Table 2
Recommended TDM Measures

TDM Measure	Phase	Implementation Responsibility
Program Marketing and Administration		
Transportation coordinator	1	Tenant(s)
Transportation information packets for new employees	1	Trans. coordinator
"Online Kiosk": online transportation information center	1	Building developer[1]
Event promotions and publications	2	Trans. coordinator
Bicycle Facilities		
Bicycle parking	1	Building developer
Showers and changing rooms	1	Building developer
Biking Resources (maps and info)	1	Available to public
Carpool and Vanpool Programs		
Preferential parking for carpools and vanpools	1	Building developer
Passenger loading zone for drop-off and pick-up	1	Building developer
On-site ridematching assistance	1	Trans. coordinator
Rideshare resources	1	Available to public
Incentives for new vanpools	1	Available to public
Reimbursement of vanpoolers' ongoing expenses	2	Tenant(s)
Transit Elements		
Pre-tax benefit for employees (Clipper Direct)	1	Tenant(s)
Employer-provided transit subsidy	2	Tenant(s)
Reimbursement of employees' Park-n-Ride expenses	2	Tenant(s)
Emergency Ride Home Program	1	Tenant(s)
Telecommute/Flexible Work Schedule	1	Building developer & Tenant(s)
Program Monitoring and Reporting		
Employee mode share surveys	1	Trans. coordinator
Annual driveway counts	1	Trans. coordinator
Annual reporting to City	1	Trans. coordinator

1. The building developer will have Initial responsibility for creating an online kiosk. After the building is occupied, the Transportation Coordinator will have ongoing responsibility for the online kiosk.

TDM Administration and Marketing

Transportation Coordinator

Experience with other TDM plans indicates that having a transportation coordinator who focuses on transportation issues and is responsible for implementing the TDM plan is key to its success. Each tenant in both office buildings should identify an employee who will serve as their transportation coordinator or TDM contact person, and that person's name and contact information should be provided to the City. If both buildings are occupied by a single tenant, then there should be one transportation coordinator for the entire site. If there are multiple tenants, then each tenant should designate someone as their transportation coordinator, but the tenants may decide to designate a

single person to serve as primary transportation coordinator for the entire site. This decision would likely depend on the number and size of the eventual tenants. If there are multiple tenants, the transportation coordinators for each employer should be responsible for communicating and coordinating with each other.

The transportation coordinator's responsibilities should include organizing and implementing the promotional programs, updating information on the online information board/kiosk, administering the emergency ride home program, providing trip planning assistance and/or ride-matching assistance to employees who are considering an alternative mode, providing information to employees about the pre-tax transit benefit (and transit subsidies, if these are also provided), and managing the annual employee survey and driveway counts. The transportation coordinator should maintain a supply of up-to-date transit schedules and route maps for VTA, Caltrain, ACE, and Capitol Corridor and be knowledgeable enough to answer employees' questions.

Transportation Information Packet for New Employees

In addition to the online information center, the transportation coordinator for each tenant should provide "hard copy" information packets to all employees when they first occupy the building. Because all information would be available online, this packet need not be a comprehensive stack of paper about all services available, which employees tend to disregard anyway. Instead, the transportation information packet would provide a quick, easy-to-read announcement of the most important features of the TDM plan for employees to know about immediately.

In addition, the packet would send a message to workers that their employer values alternative modes of transportation and takes their commitment to supporting alternative transportation options seriously. For example, it would include a flyer announcing the "online kiosk", information about the Clipper cards and pre-tax transit benefit, and a ride-matching application. Additional packets should be provided for distribution to new employees subsequently hired or transferred to the site.

"Online Kiosk": An Online Information Center

Most TDM plans have traditionally included a requirement for a kiosk or bulletin board to be created in the workplace for posting information related to alternative travel modes. Experience often shows, however, that few employees look at these kiosks after an initial period of interest. This TDM plan proposes to establish an "online kiosk" with similar information that an employee could access from their home, their desk at work, or anywhere else.

A key element of this TDM plan is to set up an attractive, up-to-date "online kiosk" with all of the site-specific information about the transportation resources available to employees. We envision a website that would include information about all the measures, services, and facilities discussed in this plan, including:

- A summary of VTA, Caltrain, ACE, and Capitol Corridor services and links to further information about their routes and schedules.
- A summary of the pre-tax transit benefits program and information about the Clipper Card and links to their website. If Phase 2 has been implemented, a summary of the transit subsidy program that has been implemented.
- A local bikeways map and information about the bike lockers on site and those nearby.
- Information about 511.org's RideMatch service and the incentive programs available to carpools and vanpools.

- Information about peer-to-peer rideshare services such as Scoop and Waze Carpool, that utilize mobile apps to match commuters
- Information about the emergency ride home program and how to use it. Information about services such as Uber, Lyft, and other on-demand transportation services should also be included.

The building developer should have responsibility for contracting with someone to initially create the website so that it is up and running as soon as tenants move in. If, however, the building is occupied by a single tenant, responsibility for establishing the website could be shifted to that tenant. More specific information can be added later to reflect any programs specific to certain employers. The transportation coordinator should be responsible for adding new information to the website (or providing it to the website designer) so that the "online kiosk" remains current and informative.

Promotional Programs

If the TDM plan does not achieve its 20 percent overall VMT reduction goal, then the transportation coordinator would need to undertake additional marketing activities to encourage employees to try an alternative mode to get to work. Although some marketing, such as the online kiosk and the transportation information packets, should be conducted immediately as Phase 1 measures, additional promotional activities would be Phase 2 measures. Such activities might include email blasts of flyers, brochures or other materials on commute alternatives, ridesharing incentive programs, and transit incentives. VTA.org and 511.org can help provide some useful marketing materials.

Bicycle Facilities

Bicycle Parking

Providing secure bicycle parking encourages bicycle commuting and increases the parking supply available to employees. As shown on the site plans, the project would provide 8 short-term bicycle parking spaces and 50 long-term bicycle parking spaces for a total of 58 bicycle parking spaces. The proposed parking spaces would meet the parking spaces recommended in the VTA Bicycle Technical Guidelines (55 spaces based on one space per 6,000 s.f.) and the requirements of the California Green Building Standards Code (50 spaces based on 5% of the proposed vehicle spaces).

The short-term spaces would be racks located near the main entrance to each of the office buildings. The long-term spaces would be in a secure bike room located on the ground floor of the parking garage. These locations are appropriate and convenient for the bike parking spaces.

Showers and Changing Rooms

The office buildings should provide showers/changing rooms for employees to use after biking or walking to the office. Having the option to shower and change clothes in the building encourages employees to bike or walk to work. The site plan indicates that the project would provide three showers/changing rooms per gender on the first floor of each building. If usage of the first-floor shower facilities is high, the building owner should install additional shower facilities on the upper floors.

Biking Resources

As part of the information available in the "online kiosk" discussed above, resources useful to cyclists should be included. For example, the local bikeways map should be posted for easy reference. The following resources are available to bicycle commuters through 511.org. These resources should be noted on the project's online information center, in order to make employees aware of them.

- Free Bike Buddy matching
- Bicycle maps
- Bicycle safety tips
- Information about taking bikes on public transit
- Location and use of bike parking at transit stations
- Information on Bike to Work Day
- Tips on selecting a bike, commute gear, and clothing
- Links to bicycle organizations

Carpool and Vanpool Programs

Preferential Parking for Carpools, Vanpools, and Low-Emission Vehicles

Allowing carpool and vanpool participants and drivers of low-emission (electric) vehicles to park near building entrances or on the first floor of a parking garage is a common TDM measure. Preferential parking spaces in "prime" locations provide a prominent visual message to employees that alternative transportation and efforts to reduce trips and greenhouse gas emissions are valued.

The project would provide a total of 978 parking spaces with 80 spaces designated for use by carpools, vanpools, and clean air or electric vehicles. The site plan shows that all of these spaces are located near the entrances of the two buildings or on the ground level of the parking structure.

Loading Zone for Passenger Drop-off and Pick-up

The site plan shows two loading zones for dropping off and picking up passengers who carpool or vanpool. One loading zone would be located on site and accessed via the Bowers Avenue driveway; the other loading zone would be located off site on Oakmead Village Court near the driveway at the Oakmead Village Court/Oakmead Village Drive intersection. These drop-off and pick-up areas would provide greater convenience for employees who rideshare with people who work at other nearby work locations, as well as those who use on-demand ride services such as Lyft and Uber.

Rideshare Resources

One of the greatest impediments to carpool and vanpool formation can be finding suitable riders with similar work schedules, origins, and destinations. Facilitated rideshare matching can overcome this obstacle by enabling commuters who are interested in ridesharing to enter their travel preferences into a database and receive a list of potential rideshare partners. The success of these programs is largely determined by the number of participants and, in turn, the number of potential matches that can be made.

The transportation coordinator should provide employees with information on 511.org's RideMatch service and other peer-to-peer rideshare programs. For example, Scoop and Waze Carpool utilize mobile apps to match commuters. The transportation coordinator should inform employees the

available rideshare resources, encourage employees to carpool, and make effort to arrange a similar work schedule for employees that can carpool if possible.

- **511 RideMatch.** The 511 RideMatch service provides an interactive, on-demand system that helps commuters find carpools, vanpools or bicycle partners. This free car and vanpool ride matching service helps commuters find others with similar routes and travel patterns with whom they may share a ride. Registered users are provided with a list of other commuters near their employment or residential ZIP code along with the closest cross street, email, phone number, and hours they are available to commute to and from work. Participants are then able to select and contact others with whom they wish to commute. The service also provides a list of existing carpools and vanpools in their employment or residential area that may have vacancies.
- **Scoop.** Scoop is an app that tries to increase carpooling by connecting riders with drivers. Scoop is aimed at filling empty seats on existing commutes. The night before going to work, a user tells the app that they are looking to either drive or ride and what time they plan on leaving. They're then automatically matched with someone on a similar route. The rider pays the driver a distance-based fee for the ride through the app. In the early afternoon the process repeats for evening commutes. In order to deal with the uncertainty of rides that are only scheduled one-way, Scoop includes a featured called Guaranteed Ride Home. If a rider cannot be matched with a driver for their return trip, Scoop will reimburse them up to $50 per month to take public transportation or a taxi home.
- **Waze Carpool.** Waze is an app that allows users to drive or ride in a carpool. Users get matched with riders on their route by requesting a ride from a driver going in the same direction. Drivers and riders split the cost of gas and drivers are reimbursed for other ride-related costs. Waze carpool allows 5 people to share a ride (1 driver and 4 riders).

On-Site Ride Matching Assistance

The transportation coordinator should provide employees/tenants with information on 511.org's RideMatch service and work with 511.org to develop a matching service limited to the future employees of the development. The transportation coordinator should create an employee home location map or work with 511.org to create this graphic to share with employees and notify employees with information about potential carpool matches.

Vanpool Incentives for New Users

The transportation coordinator should provide employees with information on the 511.org's vanpool subsidy program. The 511.org's vanpool program offers a number of incentive programs to encourage people to try carpooling and vanpooling. Most of these programs are designed to reward someone for forming or trying a carpool or vanpool and provide an award or subsidy after the first three or six months of use.

- **Vanpool Formation Incentive**: The program provides up to $350 in gas cards to new vanpools that meet certain eligibility requirements and complete three to six consecutive months of operation. The gas cards are awarded on a first-come, first-served basis, until funds are exhausted.
- **Vanpool Seat Subsidy**: The program also offers a vanpool seat subsidy in the form of gas cards. The seat subsidy will provide $100 per month, with a limit of three months per van during the program year, to help cover the fare of a lost participant. The gas cards will be offered to eligible vans on a first-come, first-served basis until the funds are exhausted.

- **Discounted Tolls**: The program offers free toll passage on seven of the Bay Area's bridges for vanpools with 11-15 people who register with 511. Additionally, the program also offers toll discounts to carpools with three or more people (two people in a two-seat vehicle) on eight of the Bay Area's bridges during peak commute hours. The discounts vary per bridge, but typically are half of the standard toll price. For example, the San Mateo – Hayward Bridge has a standard toll of $5, but for a carpool of three people (two people in a two-seat vehicle) the toll is only $2.50 Monday through Friday between 5-10 AM and 3-7 PM.

Ongoing Reimbursement of Vanpool Expenses

Since the 511 Vanpool Program mostly provides incentives for people to begin using a vanpool, but does not provide incentives for their continued operation, tenant(s) should reimburse vanpools on an ongoing basis as a Phase 2 measure. In this way, if a vanpool forms and continues to function for years, participants would have the gas costs associated with the vanpool subsidized by their employer. The employer should reimburse employees who ride in, or drive, a vanpool up to $100 per month for their gas costs. This can be done through provision of $100 gas cards to vanpoolers or through an expense reimbursement form with adequate documentation and a signed statement that the individual commutes to work in a specific vanpool.

Transit Elements

Pre-Tax Benefit for Employees (Clipper Direct Program)

The Bay Area Commuter Benefits Program took effect on March 26, 2014. This program was developed and adopted by the Bay Area Air Quality Management District (BAAQMD) and the Metropolitan Transportation Commission (MTC) to implement State Senate Bill 1339. It requires all employers in the San Francisco Bay Area with 50 or more full-time employees (employees who work 30 hours or more per week) to provide commuter benefits to their employees. One of the ways in which employers may meet this requirement is to provide a pre-tax benefit that allows employees to exclude their transit expenses from their taxable income.

This benefit should be provided via the Clipper Direct program of the Clipper card. The Clipper card is an all-in-one transit card that can be used to pay for rides on all major Bay Area transit providers, including VTA and Caltrain. Anyone can obtain a Clipper card and load cash value onto it online or at certain retail locations as a convenient way of paying for transit fares.

The Clipper Direct program is a convenient way for employers to allow employees to pay for their transit fares on a Clipper card with pre-tax dollars. By paying for transit with pre-tax dollars, the employee does not have to pay Federal income tax, California income tax, or FICA (Social Security and Medicare) contributions on the money they spend on transit fares or passes. Depending on an employee's tax bracket, this can amount to a 40% savings on the cost of commuting by transit. The employer also saves money, since they do not need to pay for FICA (Social Security and Medicare) on the pre-tax dollars that an employee spends on transit.

The Clipper Direct program is open to employers of all sizes and makes the administration of this benefit program simple. The employer must set up an account with Clipper Direct, and then an email will be sent to all employees explaining the program to them. Once an employee has signed up, they can link their existing Clipper card to their Clipper Direct account or place an order for a new Clipper card.

Subsidized Transit Passes

As a Phase 2 measure, employers of the development should provide subsidized transit passes to all employees. Paying for employees' transit passes provides an even greater financial incentive for using transit than the pre-tax benefit included as a Phase 1 measure. There are several ways for an employer to provide subsidies for their employees' transit expenses: a reimbursement program requiring monthly receipts, an online reimbursement program through Clipper Direct, Caltrain's Go Pass program, or VTA's SmartPass program.

Employers may consider annual transit pass programs (Go Pass and SmartPass), which are different from financial incentives in that an employer purchases a pass for all employees, regardless of whether they currently ride transit or not. These passes typically provide unlimited transit rides on local or regional transit providers for a low monthly fee; a fee that is lower than the individual cost to purchase a pass as a bulk discount is given. Such programs may be a more cost-effective option for employers as compared to purchasing individual passes depending on the number of employees actually taking transit.

With the VTA SmartPass program, the SmartPass is loaded on a Clipper smart card, allowing participants to also load fares from other transit agencies onto the card and use it across the San Francisco Bay Area. The SmartPass Institutional Portal allows transportation coordinators to administer the program and view usage reports.

For employers with 1 – 2999 employees, the SmartPass costs $90 per employee per year for all VTA-operated bus service except VTA express bus (2020 rate). Without the SmartPass program, the cost for an annual pass for local routes is $990 per year. With the VTA SmartPass program, an employer pays a very low rate for 100% of its employees, which gives all employees a transit pass and may encourage some people to try transit who otherwise would not.

Employers would also have the option of subsidizing the Clipper Cards of only those employees who use transit through the Clipper Direct program. Whether it makes sense to pay a deeply discounted rate for all employees regardless of whether they use transit (the Go Pass or SmartPass programs) or pay the "full fare" of those employees who actually use transit (likely to be a fairly low percentage of the total workforce at this location) will depend on what percentage of a tenant's employees use transit and whether they are using Caltrain or VTA. This can be ascertained by an employee survey, and the best way of subsidizing employees' transit expenses can be determined at the time that this Phase 2 measure is implemented.

Reimbursement of Employees' Park-and-Ride Expenses

All-day parking is available for Caltrain commuters at most Caltrain stations and can be paid for with a daily parking permit ($5.50) or a monthly parking permit ($82.50, sold only in conjunction with a Caltrain monthly pass). Although it is not anticipated that many project employees would use Caltrain, if a survey indicates sufficient interest in having Caltrain parking expenses reimbursed, then this could be implemented as an additional Phase 2 measure. This measure would provide additional financial incentive for employees to use public transportation and could be administered through the Go pass program or a program that requires employees to present appropriate documentation of their parking permit expenses for reimbursement.

Emergency Ride Home Program

The purpose of an emergency ride home program is to guarantee that employees need not worry about being stranded at work without a car in the event of illness, family emergency, or unexpected overtime if they use transit, carpool/vanpool, biking/walking as their commute mode. By reassuring commuters

who do not drive alone that they can have timely and paid transportation in the event of an emergency, this program removes one of the largest concerns expressed by most employees about using alternative modes of transportation.

Future tenant(s) should reimburse their employees who use alternative modes of transportation for taxi, Lyft, or Uber rides home in the event of an emergency. The transportation coordinator should administer the program and provide the reimbursement. Employees would need to provide an explanation of the emergency and the receipt from the taxi service or on-demand ride service for reimbursement. A limit on the number of rides that will be provided per employee per year would be reasonable.

If an employer implements the Caltrain Go Pass or VTA SmartPass program as a means of subsidizing employees' transit expenses, that program includes an emergency ride home program as one of its benefits and the employer would not need to reimburse transit users' separately for such rides.

Building Designs to Support Telecommute/Flexible Work Schedules

Flexible working schedules whereby employees work a 40-hour week in 4 days or 80 hours in 9 days are another way of reducing trips and VMT. Although it is not known what work schedules would be required or allowed by the future tenants of the development, it is reasonable to ensure that the building infrastructure supports alternative work schedules. Future tenants should consider adopting a telecommute/flexible work schedule policy so that their employees can work from home or travel outside the peak travel periods.

The project should include the following infrastructure to support its future tenants to implement an alternative work schedule:

- Heating, cooling, and ventilation systems should be available for extended schedules.
- Fiber optic wiring should be included to facilitate telecommuting.
- Security services should be provided to support extended schedules.
- Access to buildings and parking areas should be available to employees working outside of regular business hours.

TDM Plan Monitoring and Reporting

A key strategy of all TDM plans is to monitor their effectiveness with an annual mode-share survey as well as driveway vehicle counts. An employee mode-share survey should be conducted six months after building occupancy and then in another six months to assess whether the project is meeting the City's CAP goal of a 20 percent overall reduction in VMT. Surveys and driveway counts should be conducted once a year after the first full year of occupancy. Taken together, the mode-share survey and the driveway counts would provide an excellent measure of the TDM plan's effectiveness.

Note that it is not possible to differentiate through surveys or counts the reduction in VMT attributable to the project's location or density versus the reduction achieved through the implementation of TDM measures. Therefore, the monitoring program would focus on quantifying the project's overall reduction in VMT.

Employee Mode-Share Survey

Because the success of many individual TDM measures depends on where employees live, whether they need to combine the journey-to-work with dropping off or picking up children from school or day care, and many other personal factors, it is difficult to know in advance which alternative mode would be most attractive to any specific individual or which measure is most likely to encourage them to try it.

The employee mode-share survey should solicit feedback on employees' perceptions of obstacles to using an alternative mode and what additional measures would be most effective in reducing trips and VMT. VTA or the City should be able to provide examples of employee surveys used by other employers.

The survey should be designed to ascertain the percentage of workers who are using an alternative mode on a typical weekday. It should be assumed that each employee who responds to the survey saying they walk, bike, or take transit to travel to work equals two vehicle trips avoided. For carpools and vanpools, the survey should ask how many people are in the carpool or vanpool on a typical day in order to determine how many vehicle trips are avoided.

Driveway Counts

Driveway counts of vehicles entering and exiting the project should be conducted on a typical weekday (Tuesday, Wednesday or Thursday) while school is in session during the 7-10 AM and 4-7 PM peak periods. These should be conducted annually by an independent third party and funded by the property owner. The date of the surveys should not be disclosed in advance to employees. If there are multiple tenants in the buildings, the cost of conducting the counts should be shared equitably by the tenants, in proportion to the number of employees working in the buildings.

The vehicle counts conducted at the project driveways should be compared with the number of trips estimated for the project by the standard trip generation rates (in trips per 1000 square feet) published by the Institute of Transportation Engineers (ITE). For purposes of determining the percentage of VMT reduction achieved by the plan, a one percent reduction in trips would be considered equivalent to a one percent reduction in VMT. If the driveway vehicle count indicates that the project is generating at least 20 percent fewer AM and PM peak hour vehicle trips than the total expected project trips estimated from ITE rates, then it will be concluded that the project has met the goal of a 20 percent reduction in VMT.

If, however, either the employee survey indicates less than 20 percent of employees are using an alternative mode or the trip generation counts indicate that the project is generating more than 80 percent of the trips estimated by the ITE rates, then the tenant(s) will need to implement Phase 2 measures. Additional TDM measures that are likely to be most helpful should be determined by feedback provided by employees on the surveys.

Annual Report to City

The transportation coordinator should have primary responsibility for ensuring that the surveys and driveway counts are conducted annually. The results of the survey, the transportation coordinator's contact information, and the driveway counts (collectively called the Status Report) should be reported to the City of Santa Clara's TDM Program Manager annually, along with an assessment of whether the TDM measures implemented during the preceding year met the goal of a 20 percent reduction in VMT. If a 20 percent reduction in VMT has not been achieved, the report would outline additional measures that would be adopted in the coming year to achieve the goal, along with an implementation schedule by month. The annual report to the City should also include a brief summary of the TDM measures that were in place during the preceding year, with an explanation of any changes or new programs.

4. TDM Measurement Tool

The BAAQMD has prepared a spreadsheet tool that is designed to quantify by how much a TDM plan for a specific project in a specific location is likely to reduce VMT. This TDM Tool is based on the steps and calculations documented in the CAPCOA report, *Quantifying Greenhouse Gas Mitigation Measures*, published in August 2010.

The TDM Tool provides an estimate of the amount by which a project's location and land use characteristics, its site enhancements, and the measures taken to reduce commute trips will reduce VMT. Based on the TDM Tool, with the implementation of the Phase 1 TDM measures, the project will meet the goal of a 20% reduction in VMT set forth in the City's CAP for a high-density office/R&D development in the north of Caltrain transportation district.

The following discussion summarizes how the tool calculated the VMT reduction for this project and this TDM plan. It should be noted that there are some characteristics of the project (such as its destination accessibility) for which the TDM Tool gives a significant amount of credit in calculating the VMT reduction, but which are not listed as specific TDM measures in the preceding chapter. Conversely, there are some specific TDM measures (such as TDM marketing) that are given very little or no credit by the TDM Tool. As such, the VMT reduction calculated by the tool should be regarded as a preliminary estimate for the TDM plan but should not be used as a monitoring tool after the project site is occupied. The best way to monitor the success of any TDM plan is with employee and guest/customer surveys and driveway counts that provide actual data on the trip-making patterns of the project site. However, the TDM Tool does provide a useful indicator prior to implementation of a TDM plan as to whether it is likely to achieve a certain VMT reduction target.

The VMT reduction calculated by the BAAQMD TDM Tool is based on the following factors:

- **Density.** Based on the size of the proposed buildings (330,000 s.f.), the size of the project site (7.19 acres), and a typical factor of 4 employees per 1,000 square feet, it is estimated that the project would have 1,320 employees or 184 jobs per acre. The proposed office buildings would be much denser than the typical ITE development, as measured by the number of jobs per acre. The rationale for assuming that greater density will promote a reduction in VMT is that high density land uses make it easier for someone to find others with whom to carpool and vanpool. Denser development also has the potential to support enhanced transit services because there are more potential transit riders per square mile. High density areas also tend to be more pedestrian friendly than low density areas, in that distances to restaurants or retail uses are more likely to be short enough to be walked or biked rather than requiring a car. We note that there are a restaurant and a large grocery store within reasonable walking distance of the project site.

- **Transit Accessibility.** The TDM Tool compares the transit mode share for this site to that of a typical suburban ITE development. The project site benefits from frequent bus service by Routes 20 and 57 and is served by four other shuttle routes to Caltrain and ACE Stations. The closest Caltrain station is 1.3 miles away, which is not particularly close but is closer than some suburban office parks may be to a major transit station. Therefore, the project has higher transit accessibility than a typical suburban ITE development.
- **Pedestrian Network.** The project would improve the pedestrian facilities by constructing new sidewalks along its frontage on Central Expressway and Oakmead Village Court. Within the site, the project would provide pedestrian walkways between buildings. The walkways would also connect pedestrians from the adjacent intersections/sidewalks to the project buildings. The TDM Tool gives the project credit for improving the pedestrian accommodations on-site and off-site.
- **TDM Program with Monitoring and Reporting Requirements.** The TDM Tool provides more credit to TDM programs that include a performance standard (such as a trip reduction goal or VMT reduction goal) and requirements for monitoring and reporting than those that do not. The rationale for this is that if the properties are required to monitor their results and report those results to a City or other authority and if there is a specific target to be achieved, they will take their responsibilities to implement the TDM programs more seriously.
- **Marketing Program for the TDM Plan.** The transportation coordinator of each tenant will be responsible for providing information about all resources and programs included in the TDM plan to employees, and distributing new employee information packets to employees when they start work at the site. The transportation coordinator will be available to answer questions and provide additional information to tenants as needed. The TDM Tool provides credit for this level of marketing activity.
- **Ridesharing Program**. The TDM tool also gives credit for ridesharing programs that provide preferential parking for carpools and vanpools, that include a passenger loading zone where ridesharing participants can wait comfortably for their ride and where they can be conveniently dropped off, and that provide ride-matching assistance and/or a link to websites for coordinating rides. This TDM plan includes all of these features. In addition, the TDM plan includes an emergency ride home program that would reimburse carpoolers and vanpoolers for rides home in the event of an emergency.

The BAAQMD TDM Tool has a rather complicated method of calculating a plan's total VMT reduction that is designed to ensure that similar measures are not double counted and to account for whether a project is located in an urban or suburban setting. As noted above, the TDM Tool estimates that the above Phase 1 measures will meet the goal of a 20 percent reduction in VMT with over a 10 percent reduction in VMT due to implementation of a TDM program. The VMT reduction estimated by the TDM Tool is included in Appendix A.

Appendix A

BAAQMD TDM Tool Outputs

Input Page

General Inputs

suburban center	Project Location
-	Total Project Unmitigated VMT
100%	Percentage of work related VMT[1]

Land Use / Location Strategies

yes	Implementing strategy?	
184	# of ...	jobs per job acre
Density		
Design		
Diversity		
Destination Accessibility		
yes	Implementing strategy?	
1.3	distance (in miles) to transit station	
Transit Accessibility		
Below Market Rate (BMR) Housing		

Neighborhood / Site Enhancements Strategies

yes	Implementing strategy?
within project and connecting off-site	extent of pedestrian accommodations
Pedestrian Network	
Traffic Calming	
NEV Network	
Carshare Program	

Parking Policy / Pricing Strategies

Transit System Improvements Strategies

yes	Implementing strategy?
100%	percentage of employees eligible
CTR Program - Required	
CTR Program - Voluntary	
Transit Fare Subsidy	
Employee Parking Cash-Out	

Workplace Parking Pricing		
	yes	Implementing strategy?
	10%	percentage of employees participating
	9-day/80-hour work week	strategy implemented
Alternative Work Schedules and Telecommute Program		
	yes	Implementing strategy?
	100%	percentage of employees eligible
CTR Marketing		
Employer Sponsored Vanpool/Shuttle		
	yes	Implementing strategy?
	100%	percentage of employees eligible
Ride-Share Program		
School Pool		
School Bus		

Commute Trip Reduction (CTR) Programs Strategies

1. 22% work trips represents a mixed-used site (SF Bay Area Travel Survey). See Assumptions Tab for more detail

Global Max Reduction (all VMT):
20.0%
or
0

Cross-Category Max Reduction (all VMT):
11.8%
or
0

Max Reduction (all VMT):
15.0%
or
0

Land Use/ Location	Neighborhood/ Site Enhancements	Parking Policy/ Pricing	Transit System Improvements	Commute Trip Reduction (CTR) Progams (assuming mixed-use development)
Category Reduction (all VMT): 10.0%	Category Reduction (all VMT): 2.0%	Category Reduction (all VMT): 0.0%	Category Reduction (all VMT): 0.0%	Category Reduction (work VMT): 25%
Density 30.0%	**Pedestrian Network** 2.0%	**Parking Supply Limits** 0.0%	**Network Expansion** 0.0%	**CTR Program - Required** (work VMT) 21.0%
Design 0.0%	**Traffic Calming** 0.0%	**Unbundled Parking Costs** 0.0%	**Service Frequency/Speed** 0.0%	**CTR Program - Voluntary** (work VMT) 0.0%
Diversity 0.0%	**NEV Network** 0.0%	**On-Street Market Pricing** 0.0%	**Bus Rapid Transit** 0.0%	**Transit Fare Subsidy** (work VMT) 0.0%
Destination Accessibility 0.0%	**Car Share Program** 0.0%			**Employee Parking Cash-Out** (work VMT) 0.0%
Transit Accessibility 3.4%				**Workplace Parking Pricing** (work VMT) 0.0%
BMR Housing 0.0%				**Alternative Work Schedules and Telecommute Program** (work VMT) 0.7%
				CTR Marketing (work VMT) 4.0%
				Employer-Sponsored Vanpool/Shuttle (work VMT) 0.0%
				Ride Share Program (work VMT) 10.0%
				School Pool (school VMT) 0.0%
				School Bus (school VMT) 0.0%

4.17-3 Non-CEQA Transportation Effects

The following discussion is included for informational purposes in accordance with the City's level of service (LOS) standards.

4.17.3.1 *Project Trip Generation*

Traffic trips generated by the proposed project were estimated using the "General Office Building" rates per the Institute of Traffic Engineers (ITE) *Trip Generation Manual, 10th Edition.* The City's 2013 CAP requires the project to achieve a 20 percent reduction in VMT; half of which (a 10 percent reduction) must occur through implementation of a TDM Plan. The project's TDM program achieves the City's 10 percent VMT reduction standard. The project trip estimates include a five percent reduction for TDM.[1] A summary of project trip generation estimates is shown in Table 4.17-2, below.

Table 4.17-2: Project Trip Generation Estimates

Land Use	Daily Trips	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Proposed Project – General Office	3,214	329	54	383	61	319	380
TDM Reduction (5 percent)	-161	-16	-3	-19	-3	-16	-19
Net Project Trips	**3,053**	**313**	**72**	**364**	**58**	**303**	**361**

* ITE Trip Generation Manual, 10th Edition, 2017 [General Office (710)]

4.17.3.2 *City of Santa Clara LOS Methodology and Guidelines*

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

The correlation between average delay and level of service is shown in Table 4.17-3.

[1] Although implementation of the TDM program would result in a 10 percent reduction of project vehicle trips, the Local Transportation Analysis (LTAs) completed in June 2021 for the project based on Santa Clara Valley Transportation Authority (VTA) guidelines. The guidelines only allow for LTAs to account for a five percent reduction in trips. Therefore, since implementation of the TDM plan would result in a 10 percent reduction, Table 4.17-2 (which accounts for a five percent reduction in trips), provides a conservative estimate for trips generated by the project.

Table 4.17-3: Signalized Intersection Level of Service Definitions		
Level of Service	***Description of Operations***	***Average Control Delay (seconds/vehicle)***
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	Up to 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	10.1 to 20.0
C	Operation with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 35.0
D	The influence of congestion becomes more noticeable. Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes of such delay levels.	Greater than 80.0
Source: Transportation Research Board, 2000 Highway Capacity Manual. (Washington, D.C., 2000)		

Signalized Intersections

The Cities of Santa Clara and Sunnyvale evaluate level of service at signalized intersections based on the 2000 *Highway Capacity Manual (HCM)* level of service methodology. TRAFFIX software was used to determine intersection levels of service based on the HCM method. This HCM method evaluates signalized intersection operations on the basis of average control delay time for all vehicles at the intersection. Since TRAFFIX is approved by VTA as the level of service analysis software for CMP signalized intersections, the Cities of Santa Clara and Sunnyvale apply the CMP defaults values for the analysis parameters. TRAFFIX software was used to analyze intersection operations and to identify deficiencies based on the increases in critical-movement delay and the volume-to-capacity ratio (v/c) between no-project and project scenarios.

The Cities of Santa Clara and Sunnyvale have set forth LOS D as the minimum standard, except on CMP and expressway facilities within Santa Clara and roadways considered "regionally significant" within Sunnyvale, which have a standard of LOS E. In the study area, the Sunnyvale intersections along Central Expressway are considered regionally significant.

Unsignalized Intersections

The City of Santa Clara does not have a level of service standard for unsignalized intersections. The unsignalized study intersections evaluated in this Initial Study were analyzed for operational purposes.

Intersection Deficiency Criteria

A local transportation analysis was completed to evaluate the project's consistency with the level of service standards set forth in the City's General Plan and to identify feasible improvements to reduce deficiencies at intersections. Such deficiencies on intersection operations do not constitute significant impacts under CEQA.

Signalized Intersections

According to the Cities of Santa Clara and Sunnyvale and CMP level of service standards, a development would cause deficiencies to traffic conditions at a signalized intersection if for either peak hour, either of the following conditions occurs:

- Cause the level of service at any local intersection to degrade from an acceptable LOS D or better under background conditions to an unacceptable LOS E or F under background plus project conditions; or
- At any local intersection that is already an unacceptable LOS E or F under background conditions, cause the critical-movement delay at the intersection to increase by four or more seconds and volume-to-capacity ratio (V/C) to increase by 0.01 or more.

The exception to the above criteria is if the addition of project traffic reduces the amount of average control delay for critical movements, i.e., the change in average control delay for critical movements are negative. In this case, the threshold would be if the project increases the critical v/c value by 0.01 or more.

Although deficiencies to intersection operations do not constitute significant impacts under CEQA, the City may require project applicants to implement improvements to address deficiencies in the local transportation network. Deficiencies at signalized intersections can be addressed by one of the following approaches:

- Construct or pay a fair share towards improvements to the subject intersection or proximate to the intersection to increase overall capacity (e.g., traffic signal modifications, construction of additional turn lanes); or
- Construct or pay a fair share towards improvements to the pedestrian or bicycle facilities within the intersection or proximate to the intersection; or
- Construct or pay a fair share towards improved access to transit or transit facility proximate to the intersection; or
- Implement transportation demand management (TDM) measures that will reduce the project traffic at the intersection and improve the deficiency.

Unsignalized Intersections

The City of Santa Clara has not established criteria to define deficiencies for unsignalized intersections. The determination of appropriate improvements to unsignalized intersections typically includes a qualitative and quantitative analysis of movement delay, movement traffic volumes, intersection safety, and need for signalization. For this reason, deficiencies, and the associated improvements to unsignalized intersections are frequently determined on the basis of professional judgment.

For the purposes of this Initial Study, the following criteria were used to determine if the project would result in deficiencies to traffic conditions at an unsignalized intersection:

- The addition of project traffic causes the average intersection delay for all-way stop-controlled or the worst movement/approach for side-street stop-controlled intersections to degrade to LOS F, and

- The intersection satisfies the California Manual of Uniform Traffic Control Devices (CA MUTCD) peak hour volume signal warrant.

4.17.3.3 *Intersection Level of Service Analysis*

Level of Service Study Intersections

The traffic operations and level of service analysis includes an analysis of AM and PM peak hour traffic conditions for 16 signalized intersections and two unsignalized intersections. The study intersections are identified in Figure 4.17-3 and Table 4.17-3.

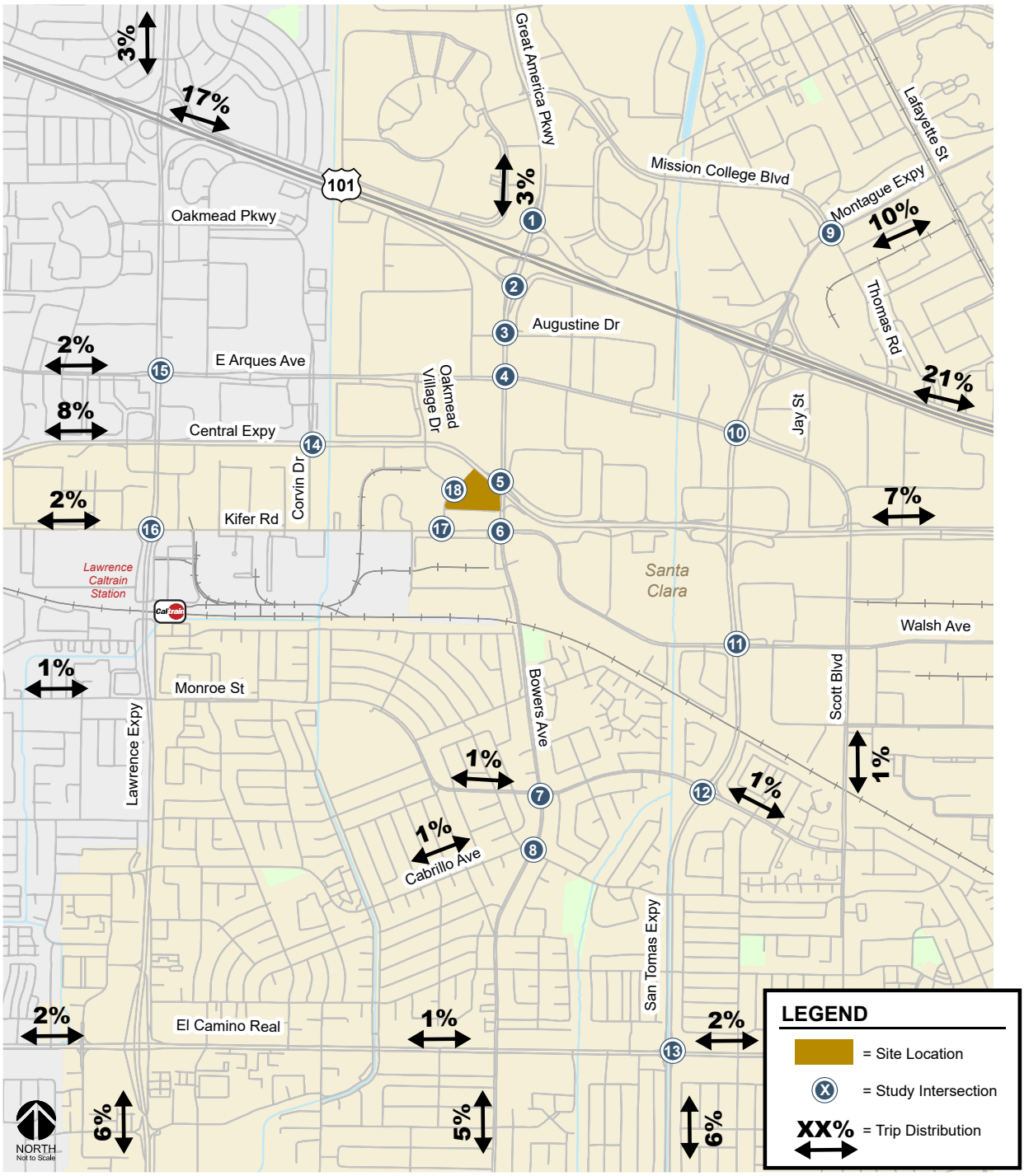
Traffic conditions at all of the study intersections were analyzed for the weekday AM and PM peak hours. The weekday AM peak hour of traffic is generally between 7:00 AM and 9:00 AM and the weekday PM peak hour is typically between 4:00 PM and 6:00 PM. It is during these periods that the most congested traffic conditions occur on a typical weekday. Traffic conditions were evaluated for the conditions described below:

- **Existing Conditions.** Existing AM and PM peak hour traffic volumes were obtained from new turning-movement counts conducted in October 2019,[2] previously completed traffic studies, and the latest available CMP database.
- **Existing Plus Project Conditions.** Existing plus project conditions represent existing traffic volumes with the addition of traffic generated by the project.
- **Background Conditions.** Background traffic volumes were estimated by adding to existing peak hour volumes the projected volumes from approved but not yet constructed developments in the study area. The added traffic from approved but not yet constructed developments was based on the list of approved projects provided by the Cities of Santa Clara and Sunnyvale, which include traffic generated by Phases 1-3 of the City Place

[2] The current traffic conditions do not reflect normal conditions due to the COVID-19 pandemic. October 2019 traffic counts were used, as these reflect pre-pandemic (or normal) traffic conditions.

development. Traffic generated by Phase 1 of the North San José Development Policy also was included in the background traffic volumes.

- **Background Plus Project Conditions.** Background plus project conditions were estimated by adding to the background traffic volumes the new traffic estimated to be generated by the project.
- **Cumulative No Project Conditions.** Cumulative conditions represent future traffic volumes on the planned roadway network that would result from traffic growth projected to occur due to the approved developments and other proposed but not yet approved (pending) developments in the study area. The added traffic from pending developments was based on the lists of pending projects provided by the Cities of Santa Clara and Sunnyvale. Traffic generated by Phase 2 of the North San José Development Policy also was included in the cumulative traffic volumes.
- **Cumulative Plus Project Conditions.** Cumulative plus project traffic volumes were estimated by adding the new traffic generated by the project.



Source: Hexagon Transportation Consultants, Inc.

STUDY INTERSECTIONS AND TRIP DISTRIBUTION | FIGURE 4.17-3

Existing Plus Project Conditions

The following signalized study intersection operates at an unacceptable level of service (LOS E or worse for locally controlled intersections and LOS F for CMP and expressway intersections) during one of the peak hours analyzed under existing conditions:

- Lawrence Expressway and Kifer Road (PM peak hour)

All other study intersections operate at acceptable level of service under existing conditions. The results of the existing plus project conditions analysis are summarized in Table 4.17-4 below.

Table 4.17-4: Study Intersections Level of Service – Existing Plus Project Conditions

No.	Intersection	Peak Hour	Existing		Existing Plus Project		Incr. In Crit. Delay	Incr. In Crit. V/C
			Avg. Delay	LOS	Avg. Delay	LOS		
1	Great America Parkway/US 101 (North) (SC)	AM	9.1	A	10.3	B+	1.1	0.023
		PM	10.0	A	10.3	B+	0.3	0.004
2	Bowers Avenue and US 101 (South)* (SC)	AM	13.4	B	13.1	B	-0.1	0.014
		PM	7.6	A	7.5	A	0.0	0.003
3	Bowers Avenue and Augustine Drive (SC)	AM	21.3	C+	20.8	C+	0.0	0.000
		PM	33.2	C-	33.2	C-	0.0	0.000
4	Bowers Avenue and Scott Boulevard* (SC)	AM	39.6	D	40.0	D	0.2	0.004
		PM	33.5	C	33.7	C-	0.0	0.005
5	Bowers Avenue and Central Expressway (SC)	AM	56.0	E+	56.8	E+	1.2	0.008
		PM	53.8	D-	55.0	D-	1.0	0.016
6	Bowers Avenue and Walsh Avenue (SC)	AM	29.8	C	30.6	C	0.9	0.015
		PM	30.1	C	30.2	C	-0.5	0.040
7	Bowers Avenue and Monroe Street (SC)	AM	32.7	C-	33.1	C-	0.5	0.014
		PM	33.9	C-	34.2	C-	0.4	0.012
8	Bowers Avenue and Cabrillo Avenue (SC)	AM	24.8	C	24.9	C	0.1	0.010
		PM	29.5	C	29.6	C	0.1	0.010
9	Mission College Boulevard and Montague Expressway (SC)	AM	65.8	E	66.0	E	0.3	0.004
		PM	66.7	E	66.7	E	0.0	0.001
10	San Tomas Expressway and Scott Boulevard* (SC)	AM	29.5	C	29.4	C	0.0	0.001
		PM	50.7	D	50.7	D	0.0	0.001
11	San Tomas Expressway and Walsh Avenue (SC)	AM	51.4	D-	53.1	D-	4.4	0.007
		PM	63.4	E	65.6	E	6.3	-0.040
12	San Tomas Expressway and Monroe Street* (SC)	AM	39.5	D	39.9	D	0.0	0.001
		PM	38.5	D+	38.5	D+	0.1	0.003
13	San Tomas Expressway and El Camino Real* (SC)	AM	72.6	E	73.3	E	0.1	0.002
		PM	71.3	E	71.9	E	1.0	0.004

Table 4.17-4: Study Intersections Level of Service – Existing Plus Project Conditions								
No.	**Intersection**	**Peak Hour**	**Existing**		**Existing Plus Project**		**Incr. In Crit. Delay**	**Incr. In Crit. V/C**
			Avg. Delay	**LOS**	**Avg. Delay**	**LOS**		
14	Oakmead Parkway and Central Expressway (Sunnyvale)	AM PM	52.9 45.2	D- D	53.2 45.4	D- D	0.2 0.2	0.002 0.002
15	Lawrence Expressway and Arques Avenue* (Sunnyvale)	AM PM	39.2 71.6	D E	39.3 71.6	D E	0.0 0.0	0.001 0.000
16	Lawrence Expressway and Kifer Road (SC)	AM PM	54.2 **101.6**	D- **F**	54.2 **102.0**	D- **F**	0.4 0.9	0.001 0.009
17	Oakmead Village Court and Kifer Road (SC)	AM PM	24.7 17.5	C B	27.2 21.2	D C	N/A	
18	Oakmead Village Court and Oakmead Village Drive (SC)	AM PM	8.4 8.5	A A	10.0 10.1	A B	N/A	

Notes: * = A VTA Congestion Management Program (CMP) intersection
(SC) City of Santa Clara
Bold indicates unacceptable LOS.
Intersections 17. Oakmead Village Court and Kifer Road and 18. Oakmead Village Court/ Oakmead Village Drive in Santa Clara are unsignalized and do not require a LOS evaluation.

According to the analysis, the following intersection would continue to operate at an unacceptable LOS under existing plus project conditions:

- Lawrence Expressway and Kifer Road (PM Peak Hour)

The results show that one intersection operating at LOS F under existing conditions would continue to operate at LOS F under existing plus project conditions. However, the added project traffic would not result in deficiencies to the operation of this intersection because the project traffic would not cause an increase in critical-movement delay of four or more seconds or an increase in critical V/C of one percent or more. All other intersections would operate at an acceptable level of service.[3]

Background Plus Project Conditions

Roadway Network Under Background Plus Project Conditions

The roadway network under background conditions (and background plus project conditions) was assumed to be the same as the existing roadway network, with the exception of the following

[3] There are few intersections for which the average delay under existing plus project conditions is shown to be less than existing conditions. The decrease in average delay is due to the intersection delay being based on a weighted average of all intersection movements. The addition of project traffic to movements with delays lower than the average intersection delay can result in a reduction in the average delay for the entire intersection.

intersection improvements. The improvements were identified as mitigation measures to be completed by Phases 1, 2, and 3 of the City Place development.

- Bowers Avenue and Central Expressway – Addition of a third southbound left-turn lane and third eastbound left-turn lane.
- San Tomas Expressway and Walsh Avenue – Addition of a second eastbound left-turn lane.

Background Plus Project Traffic Volumes

Project trips were added to background traffic volumes to obtain background plus project traffic volumes. Background traffic volumes for the study intersections were estimated by adding to the existing traffic volumes the trips generated by nearby approved projects that have not been constructed or occupied. Lists of approved projects were obtained from the Cities of Santa Clara and Sunnyvale. The approved projects considered for the Initial Study are listed in Appendix D of the traffic study. Notable approved projects in the area that are included in the background conditions traffic volumes include the City Place development, Phases 1, 2, and 3, the NVIDIA office project on the west side of San Tomas Expressway, and the Santa Clara Square project on Augustine Drive, which is now partially constructed. In addition, traffic generated by Phase 1 of the approved North San José Development Policy also was included in the background traffic volumes.

Signalized Intersections

The following signalized study intersections would operate at an unacceptable level of service (LOS E or worse for locally controlled intersections and LOS F for CMP and expressway intersections) during at least one of the peak hours analyzed under background conditions:

- No. 7. Bowers Avenue and Monroe Street (AM and PM peak hours)
- No. 9. Mission College Boulevard and Montague Expressway* (AM and PM peak hours)
- No. 11. San Tomas Expressway and Walsh Avenue (AM and PM peak hours)
- No. 13. San Tomas Expressway and El Camino Real* (AM and PM peak hours)
- No. 15. Lawrence Expressway and Arques Avenue* (PM peak hour)
- No. 16. Lawrence Expressway and Kifer Road (AM and PM peak hours)

The remaining study signalized intersections would operate at an acceptable level of service under background conditions.

The LOS of the study intersections was calculated under background plus project conditions by adding project trips to the background conditions. The results of the background plus project conditions analysis are summarized in Table 4.17-5.

Table 4.17-4: Study Intersections Level of Service – Background Plus Project Conditions								
No.	**Intersection**	**Peak Hour**	**Background**		**Background Plus Project**			
			Delay	**LOS**	**Delay**	**LOS**	**Increase Critical Delay**	**Increase V/C**
1	Great America Parkway/US 101 (North) (SC)	AM PM	11.7 11.8	B+ B+	12.7 12.0	B B	1.0 0.3	0.023 0.004
2	Bowers Avenue and US 101 (South)* (SC)	AM PM	14.7 7.6	B A	14.6 7.6	B A	0.0 0.0	0.0014 0.003
3	Bowers Avenue and Augustine Drive (SC)	AM PM	29.7 48.7	C D	29.5 51.0	C D	0.0 4.8	0.000 0.0026
4	Bowers Avenue and Scott Boulevard* (SC)	AM PM	61.9 48.5	E D	63.3 50.6	E D	1.6 3.8	0.004 0.025
5	Bowers Avenue and Central Expressway (SC)	AM PM	59.4 61.3	E+ E	60.4 62.8	E E	0.3 1.7	0.005 0.016
6	Bowers Avenue and Walsh Avenue (SC)	AM PM	36.2 39.6	D+ D	38.1 40.7	D+ D	2.2 4.1	0.015 0.028
7	Bowers Avenue and Monroe Street (SC)	AM PM	**55.8** **57.3**	**E+** **E+**	**58.8** **60.0**	**E+** **E**	3.4 3.0	0.014 0.012
8	Bowers Avenue and Cabrillo Avenue (SC)	AM PM	30.0 36.3	C D+	30.2 36.8	C D+	0.3 0.6	0.010 0.010
9	Mission College Boulevard and Montague Expressway* (SC)	AM PM	**119.9** **141.9**	**F** **F**	**121.1** **142.5**	**F** **F**	0.0 0.5	0.000 0.001
10	San Tomas Expressway and Scott Boulevard* (SC)	AM PM	40.0 66.1	D E	40.0 66.3	D E	0.0 0.3	0.000 0.001
11	San Tomas Expressway and Walsh Avenue (SC)	AM PM	**106.5** **100.0**	**F** **F**	**109.1** **103.9**	**F** **F**	6.7 **6.4**	0.007 **0.011**
12	San Tomas Expressway and Monroe Street* (SC)	AM PM	67.9 41.7	E D	69.0 41.8	E D	1.7 0.1	0.004 0.003
13	San Tomas Expressway and El Camino Real* (SC)	AM PM	**96.7** **97.1**	**F** **F**	**97.9** **98.1**	**F** **F**	1.9 1.8	0.005 0.004
14	Oakmead Parkway and Central Expressway (Sunnyvale)	AM PM	70.4 65.0	E E	70.8 65.4	E E	0.3 0.6	0.002 0.002
15	Lawrence Expressway and Arques Avenue* (Sunnyvale)	AM PM	44.9 **114.4**	D **F**	44.9 **114.5**	D **F**	0.0 0.2	0.001 0.000
16	Lawrence Expressway and Kifer Road (SC)	AM PM	**110.9** **148.0**	**F** **F**	**110.9** **149.2**	**F** **F**	0.7 3.4	0.001 0.009

Table 4.17-4: Study Intersections Level of Service – Background Plus Project Conditions								
No.	**Intersection**	**Peak Hour**	**Background**		**Background Plus Project**			
			Delay	**LOS**	**Delay**	**LOS**	**Increase Critical Delay**	**Increase V/C**
17	Oakmead Village Court and Kifer Road (SC)	AM PM	29.3 20.3	D C	32.9 26.0	D D	N/A N/A	N/A N/A
18	Oakmead Village Court and Oakmead Village Drive (SC)	AM PM	8.4 8.5	A A	10.0 10.1	A B	N/A N/A	N/A N/A
Notes: * = A VTA Congestion Management Program (CMP) intersection (SC) City of Santa Clara, (SJ) City of San José, (SV) City of Sunnyvale **Bold** indicates unacceptable LOS. **Bold** and boxed indicates a significant project adverse effectimpact.								

The results of the intersection level of service analysis show that operation of the San Tomas Expressway/Walsh Avenue intersection would be diminished by the proposed project during the PM peak hour under background plus project conditions. The deficiencies and recommended improvements to address the deficiencies at the identified intersections (with project traffic) are described below.

The project would not alter the operations of any other signalized study intersections. The unsignalized study intersections would continue to operate at an acceptable level of service.

San Tomas Expressway and Walsh Avenue

Deficiency: The San Tomas Expressway and Walsh Avenue intersection would operate at an unacceptable LOS F during the PM peak hour under background conditions. The addition of project traffic would cause the intersection's average critical-movement delay to increase by 6.4 seconds and the critical v/c to increase by 0.011 during the PM peak hour. Based on City of Santa Clara's criteria, this constitutes a deficiency at this intersection.

Implementation of the required TDM measures would reduce the vehicle trips associated with the project. However, a sensitivity analysis shows that a 10 percent TDM trip reduction would not be sufficient to avoid deficiencies at intersections. Therefore, the below improvement would be required.

To improve the San Tomas Expressway and Walsh Avenue intersection's operating conditions to acceptable levels, the addition of a fourth southbound through lane would be necessary. This improvement, however, would require the widening of San Tomas Expressway, which is not feasible due to right-of-way constraints.

Condition of Approval

- The project applicant shall provide fair share funding towards the San Tomas Expressway trail project (the County's Measure B Expressway Program),[4] between Homestead Road and Stevens Creek Boulevard.

Based on the City's criteria to address adverse impacts to intersections, deficiencies at signalized intersections can be addressed by making a fair share contribution towards improvements to the pedestrian or bicycle facilities at the affected intersection or proximate to the intersection. Although the San Tomas Expressway trail improvement would not reduce the vehicle delay at the intersection, it would address the deficiency by paying a fair share towards improvements to the pedestrian or bicycle facilities in the local transportation network.

Based on the trail completed for the section north of Homestead Road, it is expected that the remainder of the trail would be an off-road paved trail that runs on the west side of San Tomas Expressway. The trail would require removal of trees and landscaping. Any environmental impacts associated with tree removal was identified as a part of the environmental review completed for the trail project.

Cumulative Conditions Plus Project Conditions

Roadway Network Under Cumulative Conditions

The roadway network under cumulative conditions was assumed to be the same as the background roadway network.

Cumulative Plus Project Traffic Volumes

Traffic volumes under cumulative no project conditions were estimated by adding the trips from proposed but not yet approved developments to the background traffic volumes. Cumulative conditions also include trips associated with development of Phase 2 of the approved North San José Development Policy. Trips generated by the project were then added to the cumulative no project traffic volumes to yield cumulative plus project traffic volumes.

Signalized Intersections

The following signalized study intersections would operate at an unacceptable LOS F under cumulative conditions, during at least one of the peak hours analyzed under cumulative conditions:

- No.3 Bowers Avenue and Augustine Drive (PM peak hour)
- No. 7. Bowers Avenue and Monroe Street (AM and PM peak hours)
- No. 9. Mission College Boulevard and Montague Expressway (AM and PM peak hours)
- No. 10. San Tomas Expressway and Scott Boulevard (PM peak hour)

[4] Santa Clara County Parks. Santa Clara County Existing and Proposed Regional Trail Connections. Accessed May 12, 2021. https://sccparks.maps.arcgis.com/apps/PanelsLegend/index.html?appid=12160dc4b49348c395c46fa1ad20d795.

- No. 11. San Tomas Expressway and Walsh Avenue (AM and PM peak hours)
- No. 13. San Tomas Expressway and El Camino Real* (AM and PM peak hours)
- No. 15. Lawrence Expressway and Arques Avenue (PM peak hour)
- No. 16. Lawrence Expressway and Kifer Road (AM and PM peak hours)

The remaining study signalized intersections would operate at an acceptable level of service under cumulative conditions.

The results of the cumulative plus project conditions analysis are summarized in Table 4.17-6.

Table 4.17-6: Study Intersections Level of Service – Cumulative Plus Project Conditions										
No.	**Intersection**	**Peak Hour**	**Existing**		**Cumulative**		**Cumulative Plus Project**			
			Delay	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Increase Critical Delay**	**Increase V/C**
1	Great America Parkway/US 101* (North) (SC)	AM	9.1	A	11.4	B+	12.5	B	1.2	0.023
		PM	10.0	A	12.6	B	12.9	B	0.4	0.004
2	Bowers Avenue and US 101 (South)* (SC)	AM	13.4	B	17.1	B	17.0	B	0.2	0.0014
		PM	7.6	A	9.0	A	9.0	A	0.0	0.003
3	Bowers Avenue and Augustine Drive (SC)	AM	21.3	C+	29.3	C	29.2	C	0.0	0.000
		PM	33.2	C-	**58.4**	**E+**	**62.5**	**E**	1.4	0.005
4	Bowers Avenue and Scott Boulevard* (SC)	AM	39.6	D	78.6	E	**80.5**	**F**	**2.1**	**0.004**
		PM	33.5	C-	59.2	E+	61.9	E	5.8	0.025
5	Bowers Avenue and Central Expressway* (SC)	AM	56.0	E+	63.2	E	64.5	E	0.7	0.005
		PM	53.8	D-	65.7	E	67.9	E	2.9	0.016
6	Bowers Avenue and Walsh Avenue (SC)	AM	29.8	C	42.9	D	45.7	D	3.7	0.015
		PM	30.1	C	44.6	D	46.7	D	6.7	0.028
7	Bowers Avenue and Monroe Street (SC)	AM	32.7	C-	**76.1**	**E-**	**80.2**	**F**	**4.6**	**0.014**
		PM	33.9	C-	**79.5**	**E-**	**83.3**	**F**	**4.2**	**0.012**
8	Bowers Avenue and Cabrillo Avenue (SC)	AM	24.8	C	32.9	C-	33.5	C-	0.6	0.010
		PM	29.5	C	40.9	D	41.9	D	1.1	0.010
9	Mission College Boulevard and Montague Expressway* (SC)	AM	65.8	E	**181.2**	**F**	**182.5**	**F**	0.0	0.000
		PM	66.7	E	**233.7**	**F**	**234.6**	**F**	0.5	0.001
10	San Tomas Expressway and Scott Boulevard* (SC)	AM	29.5	C	43.3	D	43.3	D	0.0	0.000
		PM	50.7	D	**92.7**	F	**93.4**	**F**	0.5	0.001
11	San Tomas Expressway and Walsh Avenue (SC)	AM	51.4	D-	**122.8**	**F**	**125.2**	**F**	0.0	0.000
		PM	63.4	E	**116.0**	**F**	**119.8**	**F**	**6.3**	**0.011**
12	San Tomas Expressway and Monroe Street* (SC)	AM	39.9	D	68.7	E	69.5	E	1.2	0.003
		PM	38.5	D+	45.8	D	46.1	D	0.4	0.003

Table 4.17-6: Study Intersections Level of Service – Cumulative Plus Project Conditions										
No.	**Intersection**	**Peak Hour**	**Existing**		**Cumulative**		**Cumulative Plus Project**			
			Delay	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Increase Critical Delay**	**Increase V/C**
13	San Tomas Expressway and El Camino Real* (SC)	AM	72.6	E	**112.2**	**F**	**113.3**	**F**	1.7	0.005
		PM	71.3	E	**129.4**	**F**	**130.4**	**F**	1.8	0.004
14	Oakmead Parkway and Central Expressway* (Sunnyvale)	AM	52.9	D-	76.7	E-	77.2	E-	0.3	0.002
		PM	45.2	D	73.6	E	74.1	E	0.5	0.002
15	Lawrence Expressway and Arques Avenue* (Sunnyvale)	AM	39.2	D	48.1	D	48.2	D	0.0	0.001
		PM	71.6	E	**130.2**	**F**	**130.3**	**F**	0.2	0.000
16	Lawrence Expressway and Kifer Road (SC)	AM	54.2	D-	**125.3**	**F**	**125.4**	**F**	0.7	0.001
		PM	**101.6**	**F**	**154.8**	**F**	**156.2**	**F**	2.8	0.009
17	Oakmead Village Court and Kifer Road (SC)	AM	24.7	C	29.8	D	33.5	D	N/A	N/A
		PM	17.5	B	20.8	C	26.8	D	N/A	N/A
18	Oakmead Village Court and Oakmead Village Drive (SC)	AM	8.4	A	8.4	A	10.0	A	N/A	N/A
		PM	8.5	A	8.5	A	10.0	B	N/A	N/A

Notes: * = A VTA Congestion Management Program (CMP) intersection
(SC) City of Santa Clara, (SJ) City of San José, (SV) City of Sunnyvale
Bold indicates unacceptable LOS.
Bold and boxed indicates an adverse project effect.

With the addition of project trips, the Bowers Avenue and Scott Boulevard intersection operations would degrade from an acceptable LOS E to an unacceptable LOS F during the AM peak hour (under cumulative plus project conditions).

Based on the City's acceptable LOS standards and deficiency criteria, the following intersections would result in deficiencies under cumulative plus project conditions:

- No. 4. Bowers Avenue and Scott Boulevard (AM peak hour)
- No. 7. Bowers Avenue and Monroe Street (AM and PM peak hours)
- San Tomas Expressway and Walsh Avenue (PM peak hour)

All other signalized intersections would not result in deficiencies with the addition of project trips. The unsignalized study intersections would continue to operate at an acceptable LOS and would not result in deficiencies with the addition of project traffic.

Bowers Avenue and Scott Boulevard

Deficiency: The level of service at the Bowers Avenue and Scott Boulevard intersection would degrade from an acceptable LOS E to an unacceptable LOS F during the AM peak hour with the addition of project traffic. Based on the City of Santa Clara's criteria, this constitutes a deficiency at this intersection.

Implementation of the required TDM measures would reduce the vehicle trips associated with the project. However, a sensitivity analysis showed that a 10 percent TDM trip reduction would not be sufficient to avoid the deficiency at this intersection. Therefore, the below improvement would be required.

Condition of Approval

- The project applicant shall make a fair share contribution towards the addition of the planned (under the City Place project) second southbound left-turn lane.

With the addition of a second left-turn lane, the Bowers Avenue and Scott Boulevard intersection is projected to operate at an acceptable LOS E during the AM peak hour under cumulative plus project conditions. As discussed in the City Place EIR, this improvement would occur within the existing right of way and, therefore, would not result in any physical effects on the environment.

Bowers Avenue and Monroe Street

Deficiency: The Bowers Avenue and Monroe Street intersection would operate at an unacceptable LOS E under cumulative no project conditions. The addition of project traffic would cause the intersection's average critical-movement delay to increase by 4.6 and 4.1 seconds and the critical v/c to increase by 0.014 and 0.012 during the AM and PM peak hours, respectively. Based on the City of Santa Clara's criteria, this constitutes a deficiency at this intersection.

Implementation of the required TDM measures would reduce the vehicle trips associated with the project. However, a sensitivity analysis showed that a 10 percent TDM trip reduction would not be sufficient to avoid the deficiency at this intersection. Therefore, the below improvement would be required.

Condition of Approval

- The project applicant shall make a fair share contribution towards the planned (as a part of the City Place project) addition of northbound and southbound left-turn lanes at the Bowers and Monroe Street intersection. This includes modification of the northbound and southbound signal phases from split to protected left-turn phases.

With implementation of this improvement, the intersection LOS is projected to improve to an acceptable LOS D and C during the AM and PM peak hours, respectively. Based on the City Place EIR, the improvements would occur within the existing right-of-way. Therefore, these improvements would not result in any physical effects on the environment.

San Tomas Expressway and Walsh Avenue

Deficiency: The San Tomas Expressway and Walsh Avenue intersection would operate at an unacceptable LOS F under cumulative no project conditions. The addition of project traffic would cause the intersection's average critical-movement delay to increase by 6.3 seconds and the critical v/c to increase by 0.011 during the PM peak hour. Based on the City of Santa Clara's criteria, this constitutes a deficiency at this intersection.

Condition of Approval: Refer to condition of approval under background plus project conditions for the San Tomas Expressway/Walsh Avenue intersection.

Freeway Segment Analysis

Freeway segments were analyzed during AM and PM peak hours to calculate the amount of project traffic projected to be added to the nearby freeways. Project trips were assigned to the HOV lanes in proportion to existing HOV use. The CMP specifies that a mixed-flow lane capacity of 2,300 vehicles per hour per lane (vphpl) be used for segments six lanes or wider in both directions and a capacity of 2,200 vphpl be used for segments with less than six lanes. Therefore, the three lanes on US 101 freeway segments near the project site have a capacity of 6,900 vph in each direction. Using the VTA's one percent of segment capacity threshold, a freeway level of service analysis would be needed if the project adds 69 or more peak hour trips. Based on the results the peak hour freeway segment results, the greatest number of project trips in any direction on the subject freeway segments would be no more than 66 trips during the AM and PM peak hours. Since the number of project trips on the freeway segments would be less than the one percent threshold, the project would not cause a substantial increase in traffic on the freeway segments in the study area, and a freeway level of service analysis is not warranted.