I. TRANSPORTATION AND CIRCULATION

This section presents the results of the Transportation Impact Analysis (TIA), included as Appendix B in this EIR,[1] conducted for the proposed project by Fehr & Peers. The evaluation of environmental effects presented in this section focuses on the potential transportation and circulation impacts of the project on all aspects of the transportation system, including vehicle traffic circulation, transit use, bicycle circulation, and pedestrian circulation. Mitigation measures to reduce or eliminate potentially significant impacts of the project are identified, as warranted. This section and the TIA were prepared following the guidelines of the City of Cupertino and the Santa Clara Valley Transportation Authority (VTA), the congestion management agency for Santa Clara County. For a summarized version of this analysis, please refer to Chapter II, Summary. For additional detail, please refer to the TIA in Appendix B.

1. Setting

The scope of the transportation analysis, the methods used in the analysis, the existing transportation and circulation system, and an analysis of future (without the project) transportation and circulation conditions are documented in this setting section. Please refer to Chapter III, Project Description, for information about existing conditions on the project site and a description of the physical and operational features of the project.

a. Scope of Study. This study was conducted according to the requirements of the City of Cupertino and the Santa Clara VTA. The basis of analysis for traffic conditions is peak hour level of service for key intersections and freeway segments in the study area. The peak hours are defined as the one hour with the highest traffic volumes between 6:30 a.m. and 9:30 a.m. and the one hour with the highest traffic volumes between 4:00 p.m. and 7:00 p.m. on weekdays. These peak hours are identified as the AM and PM peak hours, respectively.

(1) Roadway Intersections Studied. The 52 roadway intersections,[2] listed on the following page and shown on Figure V.I-1, were selected in consultation with City of Cupertino staff and based on VTA's 10-trip-per-lane guideline, which indicates that intersections should be evaluated if a proposed project would add 10 or more peak hour vehicles per lane to any intersection movement. The intersections are those most likely to be affected by the proposed project. The agency whose level of service standard applies to each intersection is noted.[3]

[1] Fehr & Peers, 2013. *Apple Campus 2 Transportation Impact Analysis*.

[2] For purposes of ease of reference, directional prefixes (i.e., north/south, east/west) are not used in roadway names in this section.

[3] Freeway and freeway ramp intersections are under Caltrans jurisdiction. However, VTA, the Congestion Management Agency for Santa Clara County, is responsible for monitoring most Caltrans facilities within the County and VTA's LOS standards are typically used for evaluation of potential transportation impacts on Caltrans facilities.

1. Stevens Creek Boulevard/SR 85 Ramps (west) (CUP/CMP)
2. Stevens Creek Boulevard/SR 85 Ramps (east) (CUP/CMP)
3. Stevens Creek Boulevard/Stelling Road (CUP/CMP)
4. Sunnyvale-Saratoga Road/Fremont Avenue (SUN/CMP)
5. De Anza Boulevard/Homestead Road (CUP/CMP)
6. De Anza Boulevard/I-280 Ramps (north) (CUP/CMP)
7. De Anza Boulevard/I-280 Ramps (south) (CUP/CMP)
8. De Anza Boulevard/Stevens Creek Boulevard (CUP/CMP)
9. De Anza Boulevard/McClellan Road (CUP)
10. De Anza Boulevard/Bollinger Road (CUP/CMP)
11. De Anza Boulevard/SR 85 Ramps (north) (CUP/CMP)
12. De Anza Boulevard/SR 85 Ramps (south) (CUP/CMP)
13. Homestead Road/Blaney Road (CUP)
14. Wolfe Road/El Camino Real (SUN/CMP)
15. Wolfe Road/Fremont Avenue (SUN)
16. Wolfe Road/Marion Way (SUN)
17. Wolfe Road/Inverness Avenue (SUN)
18. Wolfe Road/Homestead Road (CUP)
19. Wolfe Road/Project Access (CUP)
20. Wolfe Road/Pruneridge Avenue (CUP)
21. Wolfe Road/I-280 Ramps (north) (CUP/CMP)
22. Wolfe Road/I-280 Ramps (south) (CUP/CMP)
23. Wolfe Road/Vallco Parkway (CUP)
24. Wolfe Road/Stevens Creek Boulevard (CUP/CMP)
25. Miller Road/Bollinger Road (SJ)
26. Stevens Creek Boulevard/Finch Avenue (CUP)
27. Tantau Avenue/Homestead Road (CUP)
28. Tantau Avenue/Pruneridge Avenue (CUP)
29. Tantau Avenue/ Project Access (CUP)
30. Tantau Avenue/Tandem Drive (CUP)
31. Tantau Avenue/Vallco Parkway (CUP)
32. Tantau Avenue/Stevens Creek Boulevard (CUP)
33. Lawrence Expressway Ramps/El Camino Real (west) (CMP/EX)
34. Lawrence Expressway/Homestead Road (CMP/EX)
35. Lawrence Expressway/Pruneridge Avenue (EX)
36. Stevens Creek Boulevard/Calvert Drive/I-280 Ramps (west) (CMP/SC)
37. Stevens Creek Boulevard/I-280 Ramps (east) (SJ)
38. Stevens Creek Boulevard/Agilent Driveway (SJ)
39. Stevens Creek Boulevard/Lawrence Expressway Ramps (west) (CMP/EX)
40. Stevens Creek Boulevard/Lawrence Expressway Ramps (east) (CMP/EX)
41. Lawrence Expressway/I-280 Southbound Ramps (CMP/EX)
42. Lawrence Expressway/Mitty Way (EX)
43. Lawrence Expressway/Bollinger Road (CMP/EX)
44. Lawrence Expressway/Doyle Road (EX)
45. Lawrence Expressway/Prospect Road (CMP/EX)
46. Lawrence Expressway/Saratoga Avenue (CMP/EX)
47. Saratoga Avenue/Cox Avenue (SARA)
48. Saratoga Avenue/SR 85 Ramps (north) (CT)
49. Saratoga Avenue/SR 85 Ramps (south) (CT)
50. San Tomas Expressway/Homestead Road (CMP/EX)
51. Saratoga Avenue/Stevens Creek Boulevard (SJ/CMP)
52. Stevens Creek Boulevard/San Tomas Expressway (SJ/CMP)

CMP = Congestion Management Program Intersection
EX = County of Santa Clara Intersection (Expressway System)
CT = Caltrans
CUP = City of Cupertino Intersection
SUN = City of Sunnyvale Intersection
SJ = City of San Jose Intersection
SC = City of Santa Clara Intersection
SARA = City of Saratoga Intersection

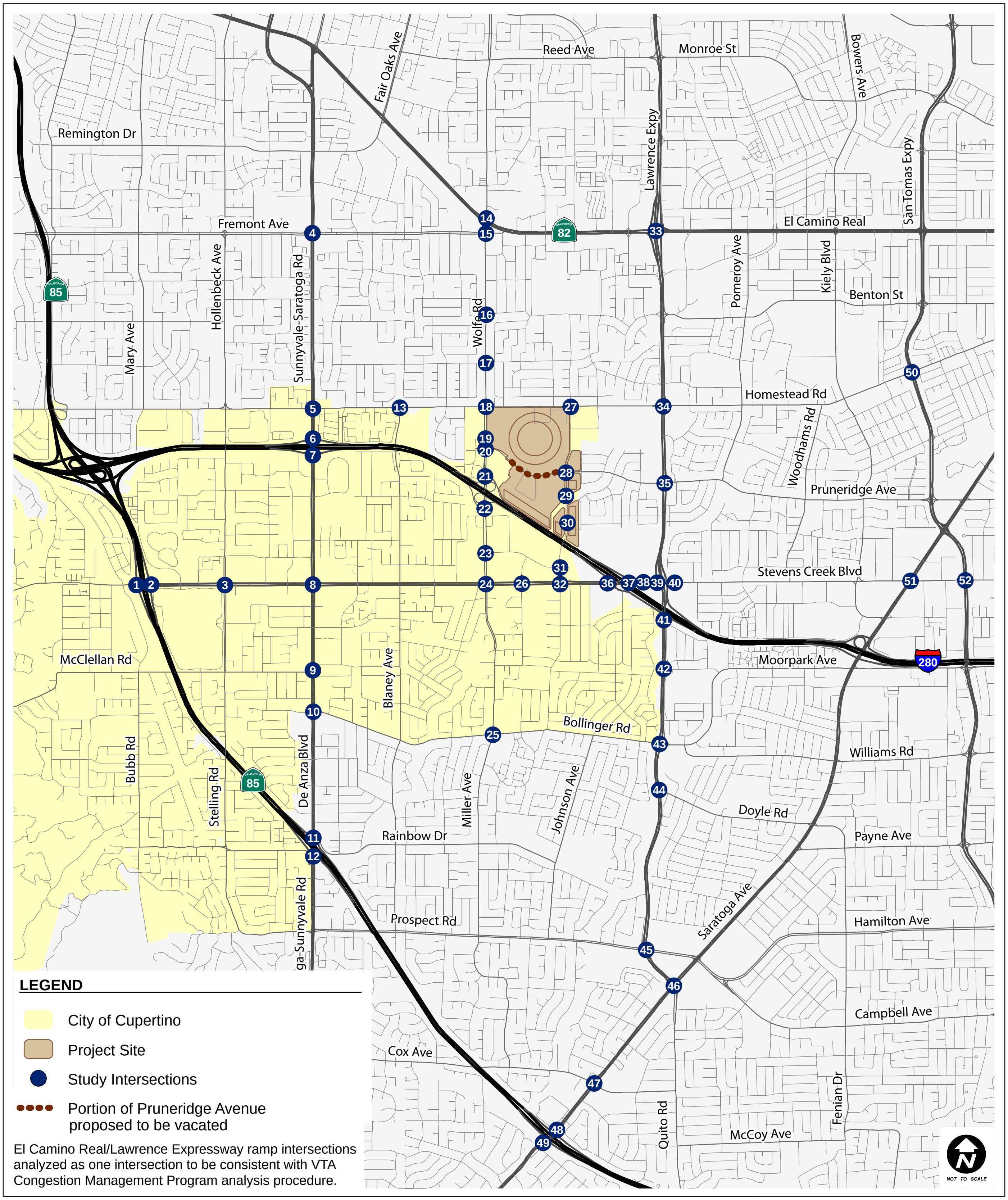

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FIGURE V.I-1

NOT TO SCALE

Apple Campus 2 Project EIR

Campus Location and Study Locations

SOURCE: FEHR & PEERS, MARCH 4, 2013.

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(2) Freeway Segments Studied. This transportation analysis also evaluates the operations of 12 freeway segments, listed below.

I-280 (Northbound and Southbound):

- Winchester Boulevard to Saratoga Avenue
- Saratoga Avenue to Lawrence Expressway
- Lawrence Expressway to Wolfe Road
- Wolfe Road to De Anza Boulevard
- De Anza Boulevard to SR 85
- SR 85 to Foothill Expressway

SR 85 (Northbound and Southbound):

- Winchester Boulevard to Saratoga Avenue
- Saratoga Avenue to De Anza Boulevard
- De Anza to Stevens Creek Boulevard
- Stevens Creek Boulevard to I-280
- I-280 to West Homestead Road
- West Homestead Road to West Fremont Avenue

(3) Study Scenarios. The potential effects of the proposed project on the study intersections were evaluated during the AM and PM peak hours for the following six scenarios. Note that for every "Plus Project" scenario, the net addition of the project comprises trips associated with 9,356 new employees and the roadway modifications proposed as part of the project (including the closure of Pruneridge Avenue).

- **Scenario 1: Existing Conditions:** Existing volumes obtained from counts and existing lane configurations, intersection controls, and signal operations determined during field visits primarily in May 2011. Under Existing Conditions approximately 4,844 employees occupy the project site.[4]
- **Scenario 2: Existing Plus Project Conditions:** Scenario 1 volumes and transportation system plus traffic generated by the proposed project (i.e., a net increase of 9,356 employees, taking into account existing employees on the site) and roadway system modifications proposed as part of the project, including those designed to accommodate the proposed closure of Pruneridge Avenue.
- **Scenario 3: Background No Project Conditions:** Existing volumes plus traffic from "approved but not yet built or occupied" developments. This scenario assumes the current occupancy level of approximately 4,844 employees on the project site.
- **Scenario 4: Background Plus Project Conditions:** Scenario 3 volumes and transportation system assumptions plus net-added traffic generated by the proposed project and roadway system modifications proposed as part of the project.
- **Scenario 5: Cumulative No Project Conditions:** Background No Project volumes (Scenario 3) plus traffic from pending developments in the area. Local and regional transportation improvements that are planned and funded and reasonably foreseeable to be constructed by the year 2020 (Cupertino's current General Plan buildout year) were also included. Similar to Scenario 3, this scenario assumes that 4,844 employees occupy the project site.

[4] The EIR authors identified the number of employees (4,844) occupying the site under Existing Conditions based on the best available information gathered in the months prior to publication of the NOP in August 2011. It should be noted that VTA allows trips associated with the full development potential of a project site to be counted when calculating baseline conditions. (VTA, 2009. *Transportation Impact Analysis Guidelines.* March.). The methodology of assuming the employment level at the time of the August 2011 NOP represents a more cautious approach to analyzing project impacts and is the basis of the analysis in this section.

- **Scenario 6: Cumulative Plus Project Conditions:** Scenario 5 volumes and transportation system assumptions plus net-added traffic generated by the proposed project from Scenario 4 and roadway system modifications proposed as part of the project.

b. Methods. The methods used to evaluate existing and projected traffic conditions are described in the following section. This discussion includes descriptions of the data requirements, analysis methods, and applicable level of service standards.

(1) Data. Intersection lane configurations, pedestrian and bicycle facilities, and public transit routes and facility locations were identified from field visits, the City's *Bicycle Transportation Plan*, and VTA's website. Intersection turning movement volumes were obtained from counts conducted in May 2011. Signal timing plans were obtained from the City of Cupertino. Freeway segment densities were obtained from the VTA's 2011 *CMP Monitoring and Conformance Report*.

(2) Analysis Methodologies and Level of Service Standards. The operations of roadway facilities are described with the term "Level of Service." Level of Service (LOS) is a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. Six levels are defined ranging from LOS A (the best, free-flowing operating conditions) to LOS F (the worst, most congested operating conditions). LOS E represents "at-capacity" operations. When traffic volumes exceed the capacity, stop-and-go conditions result, and operations are designated as LOS F.

Signalized Intersections. Based on the VTA's Level of Service Analysis Guidelines[5] and Transportation Impact Analysis Guidelines,[4] the method described in Chapter 16 of the 2000 *Highway Capacity Manual* (HCM) (Special Report 209, Transportation Research Board),[6] with adjustments to account for conditions in Santa Clara County, was used to conduct the level of service calculations for the study intersections. This level of service method, which is approved by the City of Cupertino, surrounding local jurisdictions, and VTA, analyzes a signalized intersection's operation based on average control delay per vehicle. Control delay includes the initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay for signalized intersections is calculated using TRAFFIX analysis software and is correlated to a LOS designation as shown in Table V.I-1.

[5] Santa Clara Valley Transportation Authority. 2003. *Traffic Level of Service Guidelines*, Congestion Management Program. Adopted January 1995. Updated June 2003.

[4] Santa Clara Valley Transportation Authority. 2009. *Transportation Impact Analysis Guidelines*, Congestion Management Program. Adopted May 1998. Updated March 2009.

[5] Transportation Research Board, 2000. *Chapter 16 Highway Capacity Manual* (HCM), Special Report 209.

Table V.I-1: Signalized Intersection Level of Service Definitions Using Average Control Vehicular Delay

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	≤ 10.0
B+ B B-	Operations with low delay occurring with good progression and/or short cycle lengths.	10.1 to 12.0 12.1 to 18.0 18.1 to 20.0
C+ C C-	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 23.0 23.1 to 32.0 32.1 to 35.0
D+ D D-	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and 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-	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	55.1 to 60.0 60.1 to 75.0 75.1 to 80.0
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	> 80.0

Source: *Transportation Impact Analysis Guidelines*, VTA Congestion Management Program, March 2009; *Highway Capacity Manual*, Transportation Research Board, 2000.

Signalized intersection operations and impacts are evaluated based on the appropriate jurisdiction's LOS standards (i.e., minimum threshold for acceptable operations), which are summarized in Table V.I-2.

Table V.I-2: Intersection LOS Standards

Jurisdiction	Impact Significance Threshold
City of Cupertino	LOS D for all City controlled signalized intersections, except at the Stevens Creek Boulevard/De Anza Boulevard, Stevens Creek Boulevard/Stelling Road, and the De Anza Boulevard/Bollinger Road intersections. The threshold for these three intersections is LOS E+ operations (with no more than 60 seconds of weighted average control delay).
City of Santa Clara	LOS D for all City controlled signalized intersections, except designated CMP intersections (LOS E threshold).
Caltrans	LOS C for all Caltrans controlled signalized intersections.
City of Sunnyvale	LOS D for all City controlled signalized intersections, except for CMP intersections and regionally significant roadways, which include El Camino Real and Sunnyvale-Saratoga Road. The threshold for the intersections along these regionally significant corridors is LOS E.
VTA	LOS E for all Santa Clara County CMP intersections, though the City of Cupertino and City of San Jose use their own standards (outlined in this table) for CMP intersections within their boundaries.
Santa Clara County	LOS E for all Santa Clara County expressway intersections.
City of San Jose	LOS D for all City controlled intersections, except intersections in the Downtown San Jose area and intersections on the protected intersection list. No study intersections fall into these exception categories.
City of Saratoga	LOS D for all City controlled intersections, except designated CMP intersections (LOS E threshold) and Caltrans intersections (LOS C).

Source: Fehr & Peers, April 2012.

For VTA Congestion Management Program (CMP) study intersections, the cities of Cupertino and San Jose rely on their adopted LOS standards, while all other jurisdictions discussed in this report evaluate impacts at CMP intersections based on VTA's LOS standards. Figure V.I-2 illustrates the LOS standards applied to each of the study intersections.

Freeway Segments. Freeway segments are evaluated using VTA's analysis procedure, which is based on the density of the traffic flow using methods described in the *2000 HCM*. Density is expressed in passenger cars per mile per lane. The VTA Congestion Management Program ranges of densities for freeway segment levels of service are shown in Table V.I-3. The LOS standard for freeway segments is LOS E.

Table V.I-3: Freeway Segment Level of Service Definitions

Level of Service	Density (passenger cars per mile per lane)
A	≤ 11
B	11.1 to 18.0
C	18.1 to 26.0
D	26.1 to 46.0
E	46.1 to 58.0
F	> 58.0

Sources: *Traffic Level of Service Analysis Guidelines*, VTA Congestion Management Program, June 2003; *Highway Capacity Manual*, Transportation Research Board, 2000, VTA *Transportation Impact Analysis Guidelines*, March 2009.

c. Existing Transportation Setting. The project site is generally bounded by Homestead Road to the north; Tantau Avenue to the east; Interstate 280 (I-280) to the south; and Wolfe Road to the west.[7] The project includes closure of Pruneridge Avenue between Tantau Avenue and The Hamptons apartment community located about 700 feet east of the Wolfe Road/Pruneridge Avenue intersection. Figure V.I-1 illustrates the site location and its relationship to the surrounding road system, including the study intersections. The following section describes the transportation system in the area, including key roadway, pedestrian, bicycle, and transit facilities.

(1) Existing Roadway Network. Regional access to the project site is provided by I-280, State Route 85 (SR 85) and Lawrence Expressway. The following streets provide local access to the project site: Pruneridge Avenue, Wolfe Road-Miller Avenue, Tantau Avenue, Homestead Road, De Anza Boulevard, and Stevens Creek Boulevard. A description of key roadways follows (a more detailed description of the existing roadway network can be found in Appendix B of this EIR):

- **I-280** is located immediately south of the project site and provides regional freeway access between the cities of San Francisco and San Jose. Near the project site, I-280 is a north-south freeway with three mixed-flow lanes and one high occupancy vehicle (HOV) lane in each direction. HOV lanes, also known as diamond or carpool lanes, have restricted use to vehicles with two or more persons (carpools, vanpools, and buses) or motorcycles during the morning (5:00 a.m. to 9:00 a.m.) and evening (3:00 p.m. to 7:00 p.m.) commute periods. Auxiliary lanes, lanes running from a freeway entrance ramp to a subsequent freeway exit ramp that assist in weaving and merging movements, are provided along I-280 from Winchester Boulevard to SR 85, with the exception of the segment between Wolfe Road and De Anza Boulevard. An extended merge lane is provided for the Wolfe Road on-ramp to northbound I-280, and an extended deceleration lane is provided for the De Anza Boulevard off-ramp from northbound I-280. Site access to/from I-280 is provided via its interchanges with De Anza Boulevard, Wolfe Road, Stevens Creek Boulevard, and Lawrence Expressway. Near the project site I-280 has an average daily traffic (ADT) volume of approximately 158,000 vehicles.

[7] For purposes of ease of reference, directional prefixes (i.e., north/south, east/west) are not used in roadway names in this section.

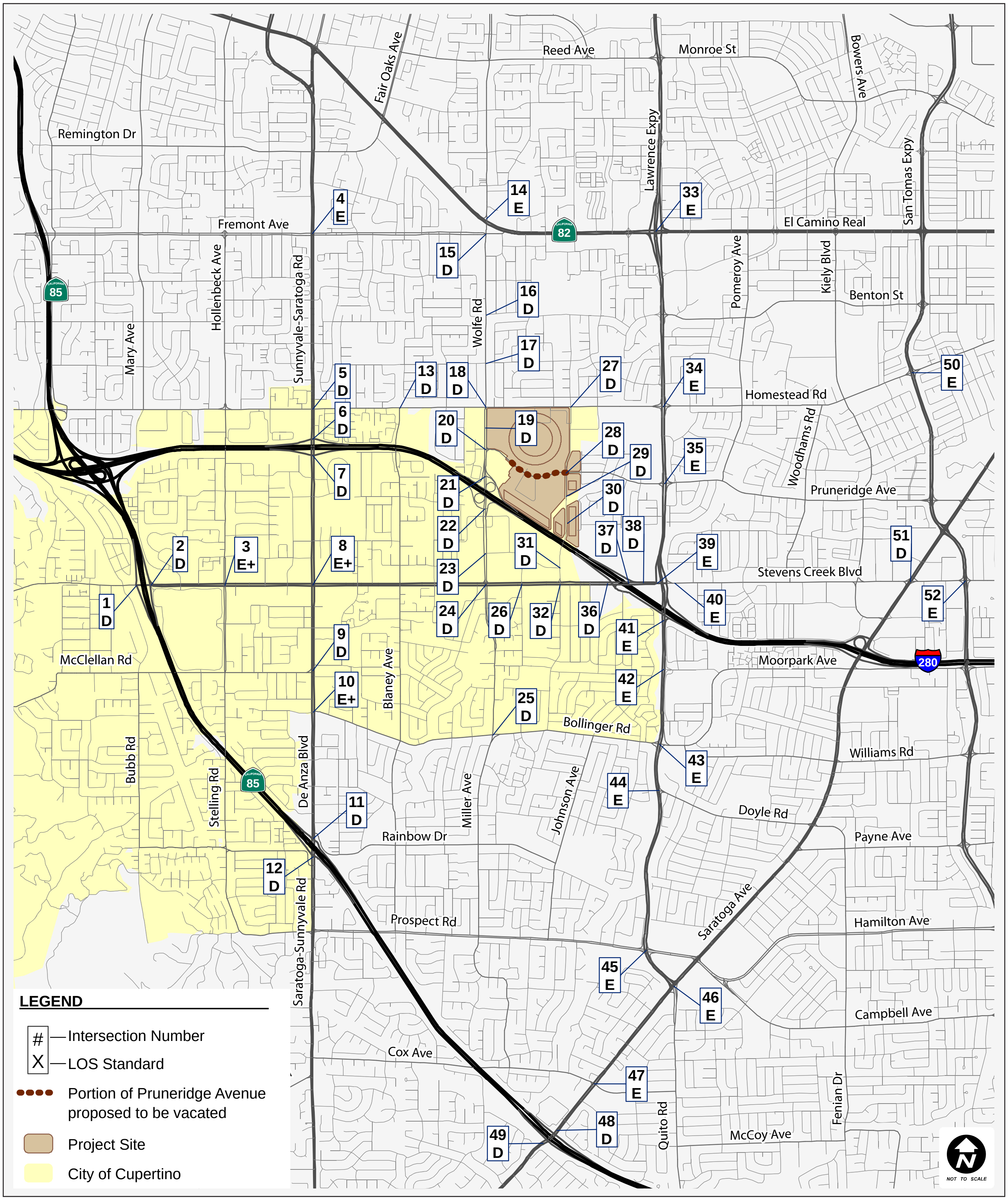

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FIGURE V.I-2

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Apple Campus 2 Project EIR

Intersection LOS Standards

SOURCE: FEHR & PEERS, MARCH 4, 2013.

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- **SR 85** extends north through Mountain View to US 101 and south through south San Jose on the west side of the Santa Clara Valley. Near the project site, the ADT on SR 85 is approximately 128,000 vehicles. The freeway has two mixed-flow lanes and one HOV lane in each direction. Interchanges with I-280, Stevens Creek Boulevard, De Anza Boulevard, and Saratoga Avenue provide access to the project site.
- **Lawrence Expressway** is a limited-access north-south facility operated by Santa Clara County that travels between SR 237 near Moffett Field in the north and Saratoga Avenue/ Quito Road at the border between the cities of San Jose and Saratoga to the south. It is a six-lane facility south of I-280. North of I-280, Lawrence Expressway is an eight-lane facility with the right-most lane in each direction restricted to HOVs during the commute hours. Lawrence Expressway provides local access to the site via intersections at Homestead Road, Pruneridge Avenue, and Stevens Creek Boulevard. Near the project site, the ADT on Lawrence Expressway is about 65,000 vehicles.
- **Pruneridge Avenue** runs between Wolfe Road in the west near the project site and Winchester Boulevard in the east. This street is identified as a minor collector in the City of Cupertino and a minor arterial in the City of Santa Clara per the Cities' General Plans. Pruneridge Avenue bisects the project site and provides the site with access to the rest of the roadway network. Through the project site Pruneridge Avenue is a four-lane roadway. East of Tantau Avenue, the City of Santa Clara recently completed a "road diet" project on Pruneridge Avenue and reduced the travel lanes from four to two lanes with a two-way left-turn lane and bicycle lanes. As part of the project description, Pruneridge Avenue is proposed to be closed between Tantau Avenue and The Hamptons, an apartment complex located at the south-east corner of the Wolfe Road/Pruneridge Avenue intersection. Pruneridge Avenue between Wolfe Road and Tantau Avenue has an ADT of approximately 9,500 vehicles.
- **Wolfe Road** is a four-to-six-lane north-south roadway that forms the western border of the proposed project site. North of Stevens Creek Boulevard the roadway is designated as an arterial in the City of Cupertino General Plan; south of Stevens Creek Boulevard, it is designated as a major collector. It extends north to the City of Sunnyvale and south to the City of Saratoga. North of Stevens Creek Boulevard the roadway is called Wolfe Road and south of Stevens Creek Boulevard it is called Miller Avenue. Wolfe Road provides the project site with access to I-280 by a partial cloverleaf interchange approximately 0.15 miles south of the Pruneridge Avenue/Wolfe Road intersection and has an ADT of approximately 44,900 vehicles.
- **Tantau Avenue** is a two-lane, north-south minor collector that extends from Bollinger Road in the south to Homestead Road in the north. Tantau Avenue forms the eastern border of the project site. There is no direct connection between Tantau Avenue and I-280, but connections to I-280 can be made via Stevens Creek Boulevard. North of Stevens Creek Boulevard, Tantau Avenue has an ADT of about 7,000 vehicles.

- **Homestead Road** is a four-lane, east-west arterial that extends from Foothill Expressway in the west to Lafayette Street in the east (adjacent to Santa Clara University). Homestead Road runs along the northern border of the project site and has an ADT of approximately 21,000 vehicles.

- **Vallco Parkway** is a short (less than 0.5 mile) six-lane, east-west roadway that provides a connection between Wolfe Road and Tantau Avenue. Vallco Parkway has an approximate ADT of 4,000 vehicles. Entitled development projects, including JC Penney, Rose Bowl, and Main Street, are located along Vallco Parkway. The lane configuration of Vallco Parkway will be modified in conjunction with these development projects to four travel lanes with some on-street parking. The road currently has one signalized intersection at Perimeter Road. With the new development projects, two additional traffic lights will be added: one at Finch Avenue (Main Street) and the other at the new entrance to the Main Street garage between Finch and Tantau Avenues. Parallel on-street parking is approved along the frontage of the Rose Bowl project (currently under construction) and the JC Penney parking garage between Wolfe Road and Perimeter Road. Angled parking has also been approved along the frontage of the Main Street project between Perimeter Road and Tantau Avenue on the south side of Vallco Parkway. However, no on-street parking exists along the north side of Vallco Parkway between Tantau Avenue and Perimeter Road.

- **De Anza Boulevard** is an eight-lane, north-south arterial that runs from the City of Sunnyvale in the north (where it is called Sunnyvale-Saratoga Road north of Homestead Road) to the City of Saratoga (where it is called Saratoga-Sunnyvale Road south of Prospect Road). De Anza Boulevard has an ADT of approximately 55,600 vehicles near I-280.

- **Stevens Creek Boulevard** is an east-west six-lane divided arterial that connects western Cupertino to downtown San Jose (via West San Carlos Street). Stevens Creek Boulevard provides access to SR 85, I-280 and Lawrence Expressway via interchanges. The roadway connects all of the north-south facilities described above. Near the project site, Stevens Creek Boulevard has an ADT of about 25,000 vehicles.

(2) Pedestrian Facilities. Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals. Adjacent to and within the project site, sidewalks are provided on both sides of Pruneridge Avenue, Wolfe Road, Homestead Road, and Tantau Avenue. All of the major roadways in the study area have at least one sidewalk, with the exception of the I-280 and SR 85 freeways. There are gaps in the sidewalk along the west side of Tantau Avenue near the project site and for a short segment on the south side of Pruneridge Avenue near the intersection with Tantau Avenue. Raised sidewalks approximately 10 feet in width are provided on the Tantau Avenue bridge over Calabazas Creek. The sidewalks on Tantau Avenue immediately north and south of the bridge are approximately 5 feet wide.

At the Wolfe Road/I-280 interchanges, all east-west pedestrian movements are prohibited; east-west crossings are allowed at the Vallco Parkway/Wolfe Road and Pruneridge Avenue/Wolfe Road intersection (approximately 0.60 miles separate the two crossings). Crossing the freeway on-ramps is challenging for pedestrians as vehicles enter the on-ramps at high speeds. At the Pruneridge Avenue/ Wolfe Road intersection, no east-west pedestrian crossings are allowed across the southern leg of the intersection. North-south pedestrian movements are prohibited along the east legs of the Finch Avenue/Stevens Creek Boulevard and Tantau Avenue/Stevens Creek Boulevard intersections.

(3) Bicycle Facilities. Bikeway planning and design in California typically relies on guidelines and design standards established by the California Department of Transportation (Caltrans) in the *Highway Design Manual* (Chapter 1000: Bikeway Planning and Design).[8] There are three distinct types of bikeway facilities, as described below.

- *Class I Bikeways (Bike Paths)* provide a completely separate right-of-way and are designated for the exclusive use of bicycles and pedestrians with vehicle and pedestrian cross-flow minimized. In general, bike paths serve corridors not served by streets and highways or where sufficient right-of-way exists to allow such facilities to be constructed away from the influence of parallel streets and vehicle conflicts.
- *Class II Bikeways (Bike Lanes)* are lanes for bicyclists generally adjacent to the outer vehicle travel lanes. These lanes have special lane markings, pavement legends, and signage. Bicycle lanes are generally 5 feet wide. Adjacent vehicle parking and vehicle/ pedestrian cross-flow are permitted.
- *Class III Bikeways (Bike Routes)* are designated by signs or pavement markings for shared use with pedestrians or motor vehicles, but have no separated bike right-of-way or lane striping. Bike routes serve either to: a) provide continuity to other bicycle facilities, or b) designate preferred routes through high demand corridors.

The *VTA Bicycle Technical Guidelines*[9] recommend that Caltrans standards regarding bicycle facility dimensions be used as a minimum and provide supplemental information and guidance on when and how to better accommodate the many types of bicyclists.

Figure V.I-3 shows the location of the existing and proposed bicycle facilities within the project study area (not including bicycle facilities proposed as part of the project).

Near the project site, bicycle lanes (Class II) are provided on Pruneridge Avenue, Homestead Road, Wolfe Road, Tantau Avenue, Vallco Parkway, and Stevens Creek Boulevard. There is a discontinuity in the Class II facility along Wolfe Road at the I-280 overcrossing. A Class III bike route exists on Tantau Avenue south of Stevens Creek Boulevard to Barnhart Avenue. There is a discontinuity in the Miller Avenue bike lane between Stevens Creek Boulevard and Calle De Barcelona. Additionally, bicycle facilities do not exist on Stevens Creek Boulevard east of Cronin Drive.

Bicycle facilities comprising bicycle lanes (Class II) and bicycle routes (Class III) connect the Apple Campus 2 site to the Lawrence Caltrain station. Continuous bicycle lanes connect the Apple Campus 2 site to Apple's Infinite Loop campus via Homestead Road and De Anza Boulevard, both of which have high traffic volumes and speeds, which generally discourage bicyclists.

In 2011 the City of Cupertino adopted its *Bicycle Transportation Plan*, which illustrates Cupertino's current bicycle network, identifies gaps in the network, and proposes improvement projects to address the identified gaps.

[8] Caltrans, 2012. *Highway Design Manual*. May 12.

[9] Santa Clara Valley Transportation Authority. 2007. Bicycle Technical Guidelines: A Guide for Local Agencies in the Planning, Design and Maintenance of Bicycle Facilities and Bicycle-Friendly Roadways. Adopted September 2, 1999, Revision 1 adopted December 12. 2007.

VTA adopted the *Santa Clara Countywide Bicycle Plan* (CBP). The CBP guides the development of major bicycle facilities in the County by identifying Cross County Bicycle Corridors and other bicycle projects of countywide or intercity significance. Several of the Cross County Bicycle Corridors travel through the study area, including routes along Pruneridge Avenue, Stevens Creek Boulevard, Wolfe Road/Miller Avenue, and Tantau Avenue.

Pedestrian and bicycle volumes were collected during the peak morning and evening commute periods at all study intersections between May 4 and May 24, 2011. Pedestrian and bicycle volumes in the study network immediately adjacent to the project site are shown on Figure V.I-4. There is moderate bicycle use along Tantau Avenue during the PM peak hour; most other bicycle facilities have only a few users. Pedestrian volumes are generally low in the area; however areas of higher pedestrian activity exist near the Vallco Shopping Center, along Stevens Creek Boulevard, and along Tantau Avenue south of the I-280 overcrossing. Pedestrians tend to cross at marked crossings at most intersections.

To supplement the peak period pedestrian and bicycle intersection counts, additional counts were collected on Pruneridge Avenue halfway between Wolfe Road and Tantau Drive between 8:00 a.m. and 5:00 p.m. on a Tuesday and a Saturday. The counts are summarized in Table V.I-4.

No additional data were collected by Fehr & Peers for this analysis to ascertain to what degree the pedestrians and bicyclists were traveling through the project site, or traveling to the existing uses along Pruneridge Avenue; based on observations most of the weekday (Tuesday) pedestrian volumes appeared to be related to the existing uses at the project site.

Table V.I-4: Existing Pedestrian and Bicycle Counts on Pruneridge Avenue

Day[a]	Pedestrians	Bicyclists
Saturday	91	6
Tuesday	308	28

[a] Counts collected between 8:00 a.m. and 5:00 p.m.

Source: Fehr & Peers, 2012.

(4) Existing Transit Service. Existing transit service to the project site and vicinity (not including private transit provided by Apple) comprises VTA bus routes, VTA light rail transit (LRT) service, Caltrain commuter rail service, and Altamont Commuter Express (ACE) commuter rail service. Figure V.I-5 shows the existing transit services near the project site, which are described in detail below and summarized in Table V.I-5.

Included in the table are the origin and destination, distance to closest stop, the operating hours, the headways, and the average peak load factor for each bus route and rail line. The average peak load factor is a measure of resource utilization. It compares the average peak number of passengers aboard at any time during the peak period to the supply of seats on each bus. For all-day service, the average peak load factor for the entire day for those bus stops that serve the project site is identified.

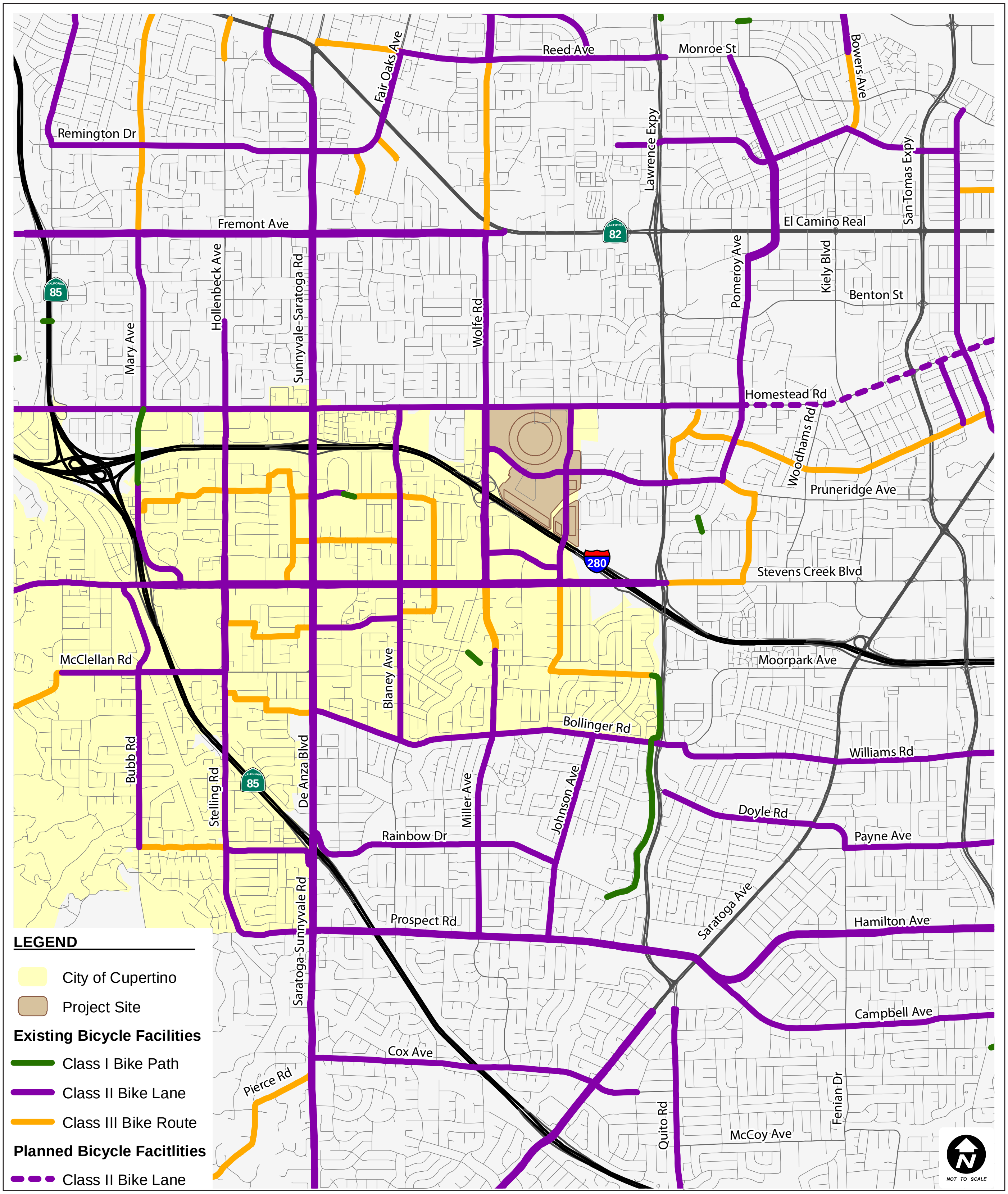

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FIGURE V.I-3

NOT TO SCALE

Apple Campus 2 Project EIR

Existing and Proposed Bicycle Facilities

SOURCE: FEHR & PEERS, MARCH 4, 2013.

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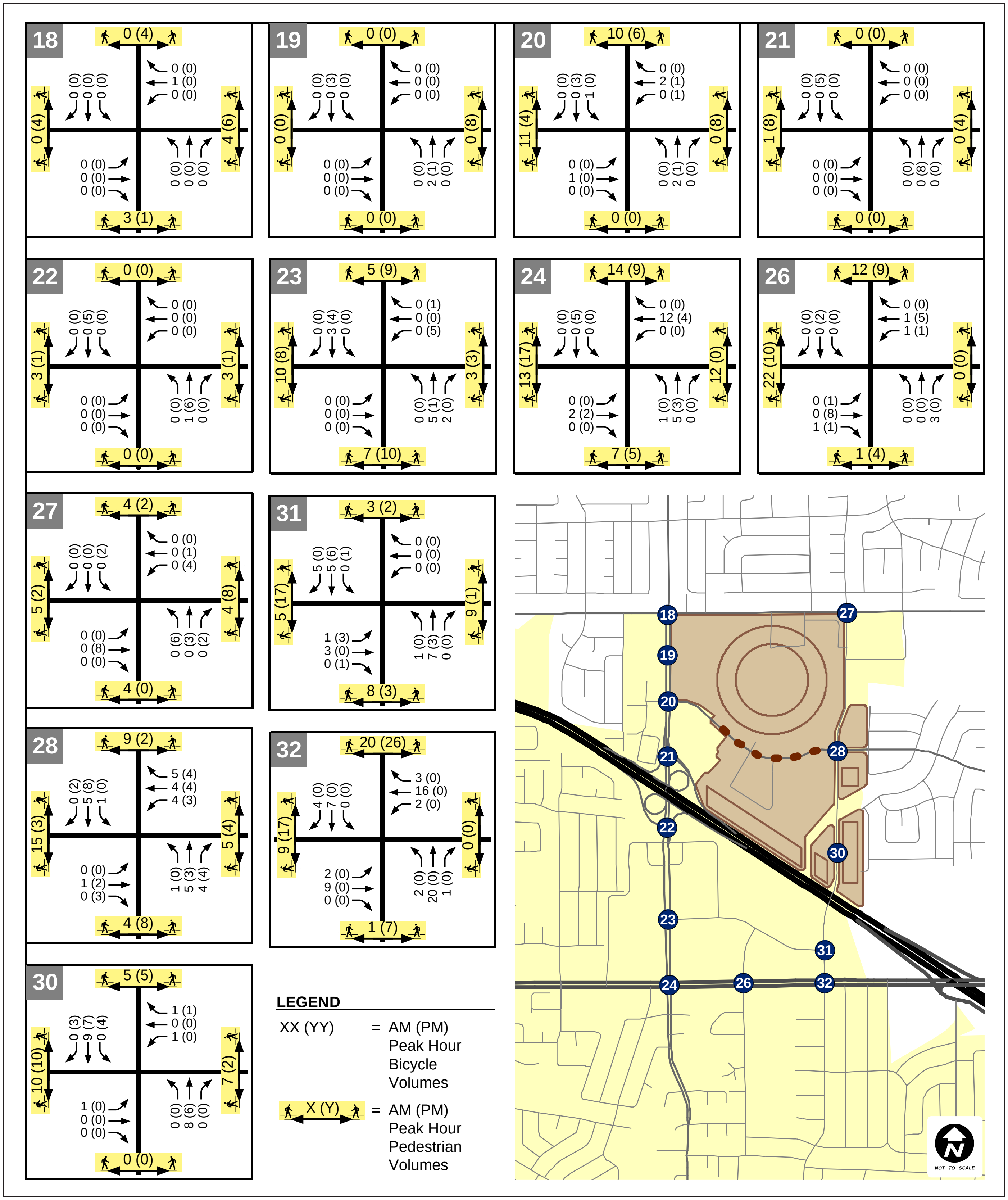

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FIGURE V.I-4

NOT TO SCALE

Apple Campus 2 Project EIR

Existing Bicycle and Pedestrian Turning Movement Volumes in Project Vicinity

SOURCE: FEHR & PEERS, MARCH 4, 2013.

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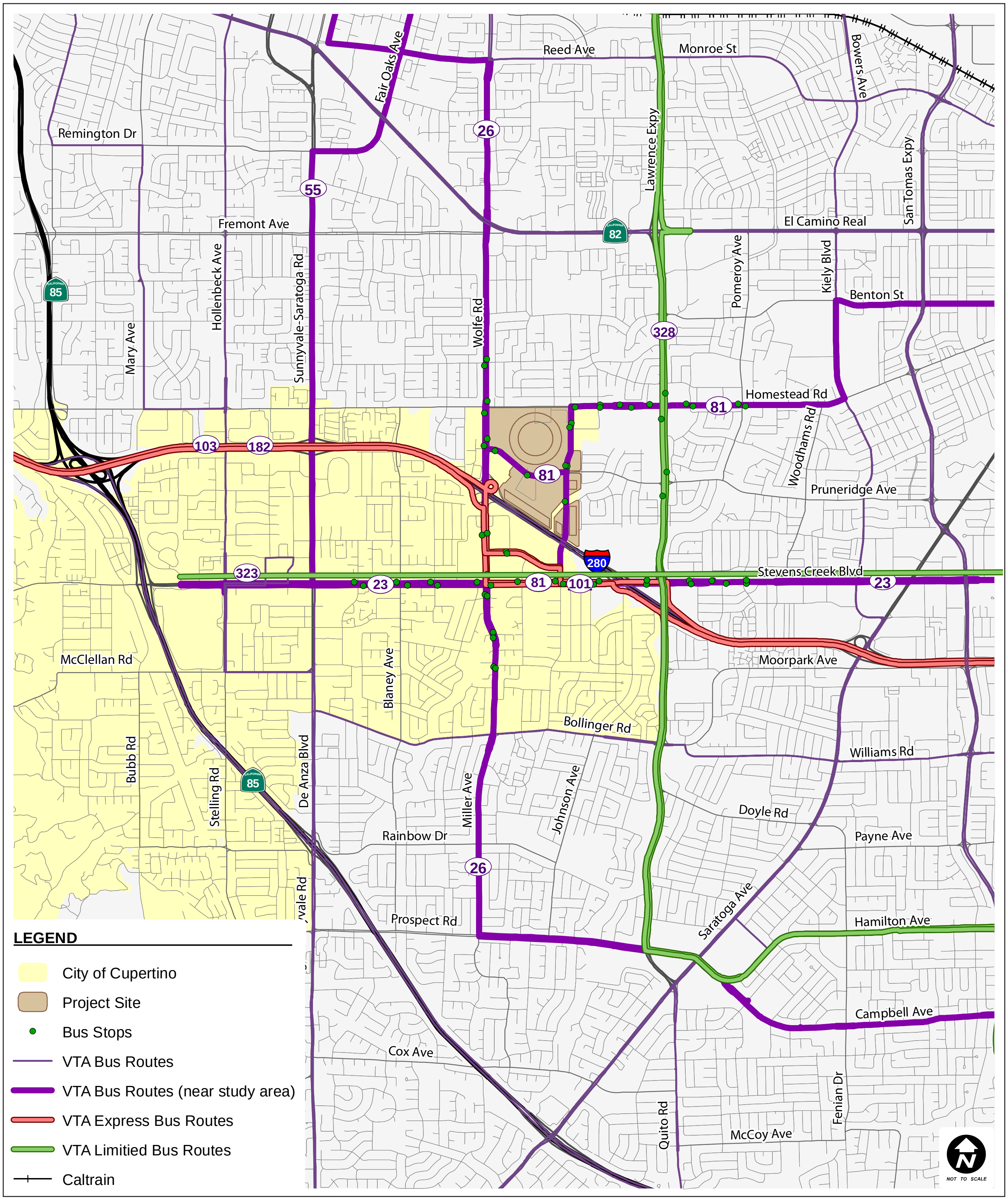

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FIGURE V.I-5

NOT TO SCALE

Apple Campus 2 Project EIR

Existing Transit Facilities

SOURCE: FEHR & PEERS, MARCH 4, 2013.

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Table V.I-5: Existing Transit Service Summary

Route	From	To	Distance to Closest Stop[a]	Weekdays: Average Peak Load Factor[b]	Weekdays: Operating Hours	Weekdays: Peak Headway[c] (minutes)	Saturdays: Operating Hours	Saturdays: Headway[c] (minutes)
Bus Service (VTA)								
23	De Anza College	Alum Rock Transit Center	0.35	0.32	5:23 a.m. - 1:02 a.m.	12	5:40 a.m. - 1:04 a.m.	15-30
26	Eastridge Transit Center	Lockheed Transit Center	0.05	0.27	5:23 a.m. - 11:49 p.m.	30	6:28 a.m. - 10:53 p.m.	30
55	De Anza College	Great America	2.05	0.16	5:37 a.m. - 11:08 p.m.	15	7:53 a.m. - 9:05 p.m.	30-60
81	San Jose State University	Vallco Shopping Mall	0.10	0.07	6:25 a.m. - 8:50 p.m.	30	9:30 a.m. - 4:52 p.m.	60
101	Camden and SR 85	Palo Alto	0.55	0.23	6:16 a.m. - 7:16 a.m. 4:42 p.m. - 6:00 p.m.	1 NB Run –AM 1 SB Run – PM	No Service	
182	Palo Alto	IBM/Bailey Avenue	0.75	0.07	7:02 a.m. - 8:33 a.m. 4:51 p.m. - 6:35 p.m.	2 SB Runs –AM 2 NB Runs –PM	No Service	
323	De Anza College	Downtown San Jose	0.90	N/A4	6:05 a– 7:23 p	15	No Service	
328	Almaden Expwy and Camden	Lockheed Transit Center	0.65	0.09	6:00 a.m. - 7:02 a.m. 5:06 p.m. - 6:09 p.m.	1 NB Run –AM 1 SB Run –PM	No Service	
Commuter Rail Service								
Caltrain	San Francisco	San Jose – Diridon	3.00	N/A	4:30 a.m. - 1:30 a.m.	35 (local)/ 30 (express)	7:00 a.m. - 1:30 a.m.	60
ACE	Stockton	San Jose – Diridon	5.40	N/A	4:20 a.m. - 8:50 a.m. 3:35 a.m. - 7:45 p.m.	3 WB Runs –AM 3 EB Runs –PM	No Service	

Notes:
[a] Distance in miles from nearest stop to nearest Apple Campus 2 access point.
[b] Average peak load factor is the ratio of the average peak number of on-board passengers aboard during the peak period to supply of seats.
[c] Headways are defined as the time interval between two transit vehicles traveling in the same direction over the same route.
AM = Morning commute period
PM = Evening commute period
Source: VTA, August 2012.

VTA Local Bus Routes. The project site is located near the Vallco Shopping Center, which functions as a hub for VTA local and express bus service.

- *Bus Route 23* provides service between De Anza College and the Alum Rock Transit Center via downtown San Jose and operates on Stevens Creek Boulevard, West San Carlos Street, East Santa Clara Street, and Alum Rock Avenue. Bus stops for Route 23 are provided at Stevens Creek Boulevard/Wolfe Road-Miller Avenue and Stevens Creek Boulevard/Tantau

Avenue, which provide connections to Routes 26 and 81. Route 23 is augmented by limited stop service (Route 323) between Downtown San Jose and De Anza College.

- *Bus Route 26* provides service between the Eastridge Mall and Lockheed Martin/Moffett Park Transit Centers and operates on Wolfe Road and Miller Avenue near the project site. Route 26 follows major arterials and travels through Sunnyvale, Cupertino, San Jose, and Campbell. Bus stops for Route 26 are provided at Wolfe Road/Homestead Road, Wolfe Road/Pruneridge Avenue, and Wolfe Road/Vallco Center.
- *Bus Route 81* operates on Stevens Creek Boulevard, Wolfe Road, Pruneridge Avenue (eastbound only), Tantau Avenue (southbound only between Pruneridge and Stevens Creek) and Homestead Road near the project site. It provides service between Vallco Shopping Center in the west and San Jose State University in the east via Park Avenue, West San Carlos Street, and San Jose Diridon Station. Connections to other bus lines (including express lines) can be made at the route's western terminus at Vallco Shopping Center. The proposed project would necessitate a rerouting of Route 81 to eliminate travel along Pruneridge Avenue between Wolfe Road and Tantau Avenue.
- *Bus Route 55* operates on De Anza Boulevard and Sunnyvale-Saratoga Road between De Anza College and Great America. This route provides direct access to the Sunnyvale Caltrain station. With a short transfer along VTA Light Rail at Great America, the route provides access to the Altamont Commuter Express (ACE) train service, as well as Amtrak Capitol Corridor service.

VTA Express and Limited Stop Bus Routes. The VTA also operates several express bus routes and limited-stop bus routes throughout the project area.

- *Bus Route 101* is an express bus route that operates on I-280, Stevens Creek Boulevard, and Lawrence Expressway; it connects the Park & Ride lot at the Camden Avenue interchange along SR 85 to Palo Alto. The route stops at Stevens Creek Boulevard/Finch Avenue near the project site.
- *Bus Route 182* is an express bus route that operates on I-280, Wolfe Road, Vallco Parkway, and Stevens Creek Boulevard; it connects the Park & Ride lot at El Camino Real and Page Mill Road in Palo Alto with the IBM Santa Teresa Facility at Bailey Avenue.
- *Bus Route 328* is a limited stop bus route that operates on Lawrence Expressway near the project site; it connects south San Jose (near Almaden Expressway) to the Lockheed Martin Transit Center.
- *Bus Route 323* is a limited stop bus route that parallels Route 23 along Stevens Creek Boulevard and West San Carlos Street from De Anza College to Downtown San Jose. A stop is provided in both directions near the project site at Stevens Creek Boulevard/Wolfe Road-Miller Avenue.

VTA Light Rail Transit Service. VTA Light Rail Transit (LRT) is a light rail service operating through the cities of San Jose, Santa Clara, Sunnyvale, Campbell, and Mountain View with over 60 stops along the 42-mile system. Apple shuttles provide service at the following stations during commute hours, which are served by VTA's two main light rail lines (901 and 902): Blossom Hill, Downtown Campbell, Downtown Mountain View, and San Jose Diridon station.

Commuter Rail Service. As part of Apple's Transportation Demand Management Program (described in more depth in the next section), Apple runs shuttles to and from the Mountain View Caltrain Station and Great America Altamont Commuter Express (ACE) Train station, making these two commuter rail options more attractive for employees.

- *Caltrain* is a commuter heavy rail service that runs from downtown San Francisco (4th and King Streets) to downtown San Jose (Diridon Station), with a limited number of commute period trains running farther south to Gilroy. During commute periods, Caltrain offers express service ("Baby Bullet") between downtown San Jose and San Francisco, which allows the trip between San Francisco and San Jose to be made in one hour. This service stops at a limited number of stations, including the Mountain View and Sunnyvale stations. Apple provides a daily shuttle service that directly links each of the stations to its Cupertino offices. Currently, Baby Bullet service is provided both in the northbound and southbound direction during the morning and evening commute periods at the Mountain View Caltrain station. Baby Bullet trains only serve the Sunnyvale Caltrain station in the northbound direction during the morning peak and in the southbound direction during the evening peak, meaning commuters who live in cities north of Sunnyvale could not utilize Baby Bullet service at the Sunnyvale Caltrain station to access Apple Campus 2 during typical commute hours.
- *Altamont Commuter Express (ACE)* is a commuter heavy rail service that runs from Stockton to downtown San Jose (Diridon Station) via Livermore and Fremont and provides an alternative to driving over the Sunol Grade (I-680). ACE has a stop located at the Great America rail station in the City of Santa Clara. Apple provides shuttle service that directly links this station to its Cupertino campuses. Service on ACE is only offered during commute periods, with three trains inbound to San Jose during the AM peak period and three trains outbound to Stockton during the PM peak period.

Apple Shuttle Service and Bicycle Access to Rail Stations. As part of Apple's Transportation Demand Management Program (described in more depth in the next section and Table V.I-6), Apple runs shuttles to and from the Caltrain stations at Mountain View, Sunnyvale, Lawrence, and San Jose, as well as the Great America Altamont Commuter Express (ACE) train station, making these commuter rail options more attractive for employees. Otherwise accessing the Apple Campus 2 site from a Caltrain station would require a connecting VTA bus or bicycle, since no Caltrain station is within comfortable walking distance of Apple Campus 2. Direct transit bus connections from Caltrain include the following:

- From Lawrence Station: VTA Route 32, connecting to Route 26, a 53-minute trip.
- From Sunnyvale Station: VTA Route 26, a 40-minute trip.
- From Santa Clara Station (weekday): VTA Route 552, connecting to Route 26, a 33-minute trip.

Although there is a fair amount of transit service within the vicinity of Apple Campus 2, there are no easy public transit transfers to existing high capacity transit corridors such as Caltrain commuter rail and various bus lines along El Camino Real. Express transit services typically operate in directions that inhibit travel using solely public transit to Apple Campus 2 from residential areas along the Peninsula. Furthermore, the poor walkability of the streets around the project site, due to high traffic volumes, discourages people from walking longer distances to transit stops or stations.

To make some of these Caltrain stations more accessible, Apple provides daily shuttle service to the Lawrence and Sunnyvale stations. The travel time on Apple shuttles between these Caltrain stations and Apple Campus 2 is approximately 15 to 20 minutes.

Most commuting bicyclists travel at a rate of about nine to 10 miles per hour, meaning the Lawrence, Sunnyvale, and Santa Clara Caltrain stations are located about an 18, 23, and 28-minute bicycle ride away from Apple Campus 2, respectively. Only the Lawrence Caltrain station has continuous bicycle infrastructure that connects it to Apple Campus 2 in the form of Class II lanes along Wolfe Road, Reed Avenue, and Aster Avenue.

(5) Existing Apple Transportation Demand Management (TDM) Program. Apple currently provides a variety of Transportation Demand Management (TDM) measures at its existing facilities to reduce the number of employee trips by single-occupant vehicle (SOV) to and from work either directly or by providing support services to remove obstacles to commuting by other modes. The TDM program is administered by Apple's Commute Alternatives Department. Table V.I-6 summarizes the TDM strategies that Apple currently employs at the Infinite Loop, De Anza, and Mariani buildings; this analysis assumes and Apple confirms that these TDM strategies would also be incorporated at Apple Campus 2. For the purpose of this EIR, and to ensure that the project's potential effects on the local and regional transportation system are fully and cautiously evaluated (and in recognition that specific TDM expansion measures are being refined by Apple), an expanded TDM Program (beyond the measures that are currently being provided, along with the current mode share results) is not assumed to be part of the project.

The mode split data collected in 2011 by Fehr & Peers at the Infinite Loop campus and the buildings south of Mariani Avenue[10] shows that approximately 72 percent of peak period trips are by single occupant vehicles (SOV). Carpools (private vehicles carrying two or more passengers) make up approximately 10 percent of peak period trips. Transit or Apple Shuttle trips comprise approximately 12 percent of peak period trips (of these trips, the vast majority – approximately 90 percent – are made using the Apple Shuttle system). Bicycle and walk trips make up the remainder (6 percent) of the trips. The Journey to Work data from the 2000 U.S. Census for employment locations in the City of Cupertino shows that SOVs comprise nearly 83 percent of trips. Thus Apple's 2011 TDM participation rate of 28 percent compared to the City's overall non-SOV commute rate of 17 percent.

Apple offers the Commute Alternatives program, including the Apple Shuttle system, which provides Wi-Fi-enabled commuter coaches and shuttles that carry employees between their neighborhoods and the Apple campus free of charge to employees. The current system consists of 75- or 50-seat buses and 19-seat shuttles, which provide over 200 service runs from different parts of the Bay Area to Apple's headquarters in Cupertino. There are 55 pick-up locations around the Bay Area with service starting as early as 6:00 a.m. and ending as late as 9:00 p.m.

Apple also provides enhanced mobility around the Cupertino campus by offering on-demand shuttle service, shared bicycles, and short-term car rentals. Cafes, shuttle stops, and bike share stalls are strategically located within walking distance of large employee activity centers.

[10] Fehr & Peers, 2011. *Apple Headquarters Campus Transportation Study*.

Table V.I-6: Apple's Existing TDM Strategies

Strategy	Description
Outreach to Commuters	
Website	Extensive web-presence detailing alternative transportation options including carpool, commuter rail, light rail, Apple shuttles, bus options and bicycling. Website is often one of most visited sites on Apple intranet
TDM Coordination	Commute Alternatives Department administers the TDM program and engages employees to maximize use of TDM program. Commute Program engages employees at New Employee orientation, through the website, and at regularly scheduled events throughout the year.
Marketing	In addition to regular communications and homepage marketing, the Apple Commute Alternatives Department participates in alternative transportation events such as Bike to Work Day, Best Workplace for Commuters, and Bike Friendly Workplace
Carpool Matching	Carpool matching service on commute alternative website
Bicycle Route Matching	Service on commuting website that matches bicycling commuters with common bike routes and bike buddies. Map is interactive and enables employees to connect via email to plan group commute rides.
Mass Transit Options	
Apple Shuttle	Private coach shuttles transporting employees to the Apple campus from various destinations in San Francisco, the East Bay, and the South Bay. Local shuttles for employees in Silicon Valley, intercampus and lunchtime shuttles are also available for the local area.
Mass Transit Shuttle Link	Private shuttle vans transport employees to the Apple campus from various commuter and light rail stations, including BART, Caltrain, ACE, and VTA light rail.
Apple Shuttle iPhone App	Downloadable iPhone application provides schedule and stop information for all Apple shuttles
Transit Subsidy	$100/month available to all employees for public transit fare purchases
Encouraging Bicycling	
Bicycle Subsidy	$20/month available to all employees who do not use the public transit subsidy
Bicycle Racks	Bicycle racks in excess of standard levels at most facilities to support cycle commuting and encourage new participation
Bicycle Lockers	148 secure bicycle lockers – some lockers are first-come, first-served, while others are reserved for riders who commute by bicycle three or more days per week
Bicycle Showers	Showers are provided throughout the buildings on campus
Bicycle Pumps	Bicycle pumps are provided throughout the campus
Bicycle Sharing Program	Program provides employees with over 300 campus bicycles and free bicycle helmets
Other	
Priority Parking	Dedicated parking for carpools and electric vehicles close to building entrances
Electric Vehicle Charging	Charging stations provided on-site
Car Share Program	Six vehicles on-site for rent at $7/hour. Membership discounts available to other car-share entities to further encourage car-free lifestyle.
Guaranteed Ride Home	Apple provides cab vouchers to transit and carpool users to use for emergencies
Flexible Work Schedules	Apple employees can adjust their work start and end times so that their commutes occur during non-peak times of the roadway system
On-Site Services	Cafeterias, coffee bars, fitness center, hair-cuts, ATM, dry cleaning, postal service kiosks, etc. are provided on site.

Source: Apple, February 2013; Fehr & Peers, May 2013.

(6) Existing Intersection Volumes and Lane Configurations. The existing operations of the study intersections were evaluated for the highest one-hour volume during the weekday morning peak commute period (6:30 a.m. to 9:30 a.m.) and evening peak commute period (4:00 p.m. to 7:00 p.m.). AM and PM peak-hour intersection turning movement counts were conducted primarily in May 2011. The traffic count sheets as well as the existing AM and PM peak-hour turning movement volumes, lane configurations, and traffic control devices at the study intersections are included in Appendix B of this EIR.

(7) Existing Intersection LOS. The results of the LOS analysis using the TRAFFIX software program for Existing Conditions are graphically shown on Figure V.I-6. Appendix B contains the corresponding calculation sheets as well as a detailed LOS summary table. The results of the LOS calculations indicate that all but one of the study intersections operate at acceptable service levels during the AM and PM peak periods based on the LOS standards summarized in Table V.I-2, which are generally LOS D or better for City intersections and LOS E or better for CMP and regionally significant intersections. The #52 Stevens Creek Boulevard/San Tomas Expressway intersection (CMP) currently operates at LOS F during the PM peak hour.

In addition, Fehr & Peers conducted field observations of the study intersections during the morning and evening peak hours in May 2011. In most cases, the intersections were observed to operate at the calculated levels of service for each peak hour. High traffic volumes that caused long queues and congestion were observed on individual approaches to the following intersections. Please refer to Appendix B for additional detail.

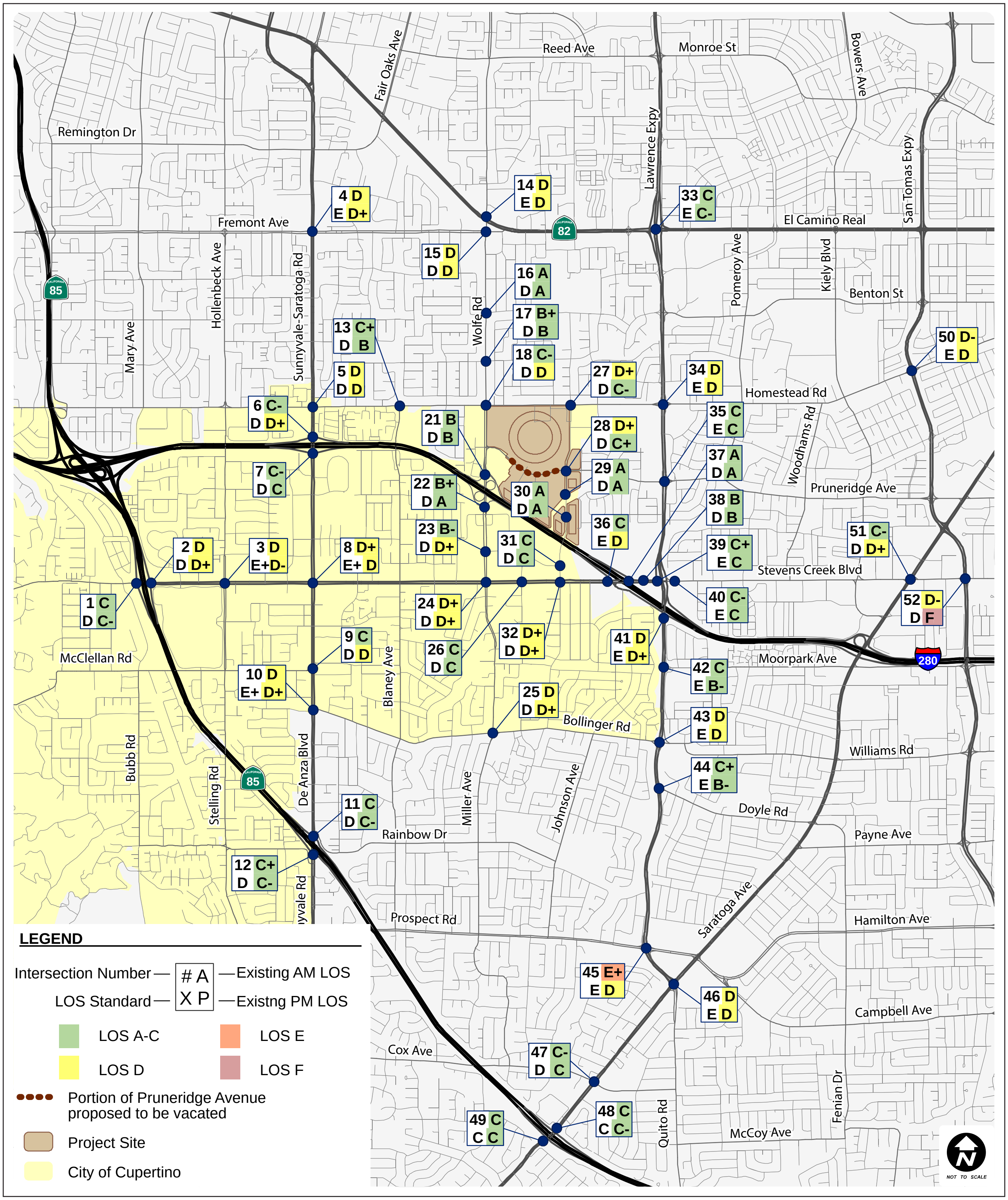
- De Anza Boulevard/Homestead Road (#5)
- De Anza Boulevard/I-280 Ramps (north) (#6)
- De Anza Boulevard/I-280 Ramps (south) (#7)
- Wolfe Road/El Camino Real (#14)
- Wolfe Road/Fremont Avenue (#15)
- Wolfe Road/Homestead Road (#18)
- Wolfe Road/I-280 Ramps (north) (#21)
- Wolfe Road/I-280 Ramps (south) (#22)
- Lawrence Expressway/I-280 Southbound Ramps (#41)
- Stevens Creek Boulevard/San Tomas Expressway (#52)

(8) Existing Freeway Segment LOS. According to VTA's *Transportation Impact Analysis* Guidelines[11] a freeway segment analysis should be included if the project meets one of the following requirements:

1. The proposed development project is expected to add traffic equal to at least 1.0 percent of a freeway segment's capacity.
2. The proposed development project is adjacent to one of the freeway segment's access or egress points.
3. Based on engineering judgment, Lead Agency staff determines that the freeway segment should be included in the analysis.

Based on these requirements, 12 freeway segments were selected for evaluation.

[11] Santa Clara Valley Transportation Authority, 2009. *Transportation Impact Analysis Guidelines.*



LSA

FIGURE V.I-6

NOT TO SCALE

Apple Campus 2 Project EIR

Existing Intersection LOS Results

SOURCE: FEHR & PEERS, MAY, 2013.

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Table V.I-7 contains the existing freeway segment levels of service for the mixed-flow and HOV lanes based on the segment densities reported in the VTA's *2011 CMP Monitoring and Conformance Report,* which is the most recent report available as of June 2012.[12] The following mixed-flow freeway segments operate at LOS F and therefore exceed VTA's LOS E standard during the specified peak hour:

- I-280, Northbound, SR 85 to Foothill Expressway (AM peak hour)
- I-280, Southbound, Foothill Expressway to SR 85 (PM peak hour)
- I-280, Southbound, SR 85 to De Anza Boulevard (PM peak hour)
- I-280, Southbound, De Anza Boulevard to Wolfe Road (PM peak hour)
- I-280, Northbound, Lawrence Expressway/Stevens Creek Boulevard to Wolfe Road (AM peak hour)
- I-280, Southbound, Wolfe Road to Lawrence Expressway/Stevens Creek Boulevard (PM peak hour)
- I-280, Northbound, Saratoga Avenue to Lawrence Expressway/Stevens Creek Boulevard (AM peak hour)
- I-280, Southbound, Lawrence Expressway/Stevens Creek Boulevard to Saratoga Avenue (PM peak hour)
- I-280, Northbound, Winchester Boulevard to Saratoga Avenue (AM peak hour)
- SR 85, Northbound, Winchester Boulevard to Saratoga Avenue (AM peak hour)
- SR 85, Southbound, De Anza Boulevard to Saratoga Avenue (PM peak hour)
- SR 85, Southbound, Stevens Creek Boulevard to De Anza Boulevard (PM peak hour)
- SR 85, Northbound, Stevens Creek Boulevard to I-280 (AM peak hour)
- SR 85, Southbound, I-280 to Stevens Creek Boulevard (PM peak hour)
- SR 85, Northbound, I-280 to West Homestead Road (AM peak hour)
- SR 85, Northbound, West Homestead Road to Fremont Avenue (AM peak hour)

In addition, the following HOV lane segment exceed VTA's LOS E standard during the specified peak hour:

- SR 85, Northbound, I-280 to West Homestead Road (AM peak hour).

All other freeway segments operate at acceptable LOS E or better during both peak periods.

[12] Santa Clara Valley Transportation Authority, 2011. *CMP Monitoring and Conformance Report.* June.

Table V.I-7: Existing Freeway Segment Levels of Service

Freeway Segment	Direction[a]	Peak Hour[b]	Lanes		Density[c]		LOS[d]	
			Mixed	HOV	Mixed	HOV	Mixed	HOV
Interstate 280								
I-280 – Foothill Expressway to SR 85	NB	AM	3	1	**62**	42	**F**	D
		PM	3	1	24	11	C	A
	SB	AM	3	1	26	15	C	B
		PM	3	1	**70**	18	**F**	B
I-280 – SR 85 to De Anza Boulevard	NB	AM	3	1	57	32	E	D
		PM	3	1	29	10	D	A
	SB	AM	3	1	24	9	C	A
		PM	3	1	**81**	25	**F**	C
I-280 – De Anza Boulevard to Wolfe Road	NB	AM	3	1	57	50	E	E
		PM	3	1	31	9	D	A
	SB	AM	3	1	29	18	D	B
		PM	3	1	**97**	33	**F**	D
I-280 – Wolfe Road to Lawrence Expressway/ Stevens Creek Boulevard	NB	AM	3	1	**62**	56	**F**	E
		PM	3	1	32	10	D	A
	SB	AM	3	1	25	12	C	B
		PM	3	1	**63**	39	**F**	D
I-280 – Lawrence Expressway/Stevens Creek Boulevard to Saratoga Avenue	NB	AM	3	1	**67**	58	**F**	E
		PM	3	1	29	7	D	A
	SB	AM	3	1	28	9	D	A
		PM	3	1	**77**	32	**F**	D
I-280 – Saratoga Avenue to Winchester Boulevard	NB	AM	3	1	**76**	43	**F**	D
		PM	3	1	34	11	D	A
	SB	AM	3	1	36	10	D	A
		PM	3	1	51	29	E	D
State Route 85								
SR 85 – Winchester Boulevard to Saratoga Avenue	NB	AM	2	1	**69**	46	**F**	D
		PM	2	1	27	8	D	A
	SB	AM	2	1	30	4	D	A
		PM	2	1	54	29	E	D
SR 85 – Saratoga Avenue to De Anza Boulevard	NB	AM	2	1	32	31	D	D
		PM	2	1	21	7	C	A
	SB	AM	2	1	23	6	C	A
		PM	2	1	**65**	26	**F**	C
SR 85 – De Anza Boulevard to Stevens Creek Boulevard	NB	AM	2	1	47	21	E	C
		PM	2	1	18	8	C	A
	SB	AM	2	1	19	6	C	A
		PM	2	1	**94**	31	**F**	D
SR 85 – Stevens Creek Boulevard to I-280	NB	AM	2	1	**109**	21	**F**	C
		PM	2	1	19	8	C	A
	SB	AM	3	1	15	9	B	A
		PM	3	1	**85**	29	**F**	D
SR 85 – I-280 to West Homestead Road	NB	AM	2	1	**94**	**60**	**F**	**F**
		PM	2	1	15	9	B	A
	SB	AM	2	1	14	7	B	A
		PM	2	1	25	29	C	D
SR 85 – West Homestead Road to West Fremont Avenue	NB	AM	2	1	**89**	41	**F**	D
		PM	2	1	26	5	C	A
	SB	AM	2	1	25	9	C	A
		PM	2	1	53	21	E	C

Notes:

[a] NB = northbound; SB = southbound

[b] AM = morning peak hour; PM = afternoon peak hour

[c] Measured in passenger cars per mile per lane

[d] LOS = level of service

Bold font indicates unacceptable operations based on VTA's LOS E Standard.

Source: *2011 Monitoring and Conformance Report*, VTA, May 2012.

(9) Background No Project Conditions. Background No Project Conditions are defined as conditions immediately prior to completion of the project in 2016 (the projected completion date). Traffic volumes for Background No Project Conditions comprise existing traffic plus traffic generated by approved but not yet built or occupied developments in the area.

(10) Background No Project Approved Projects and Traffic Volumes. Staff from the City of Cupertino provided a list of approved but not yet built or not occupied development projects in Cupertino. Projects in the cities of Sunnyvale, Santa Clara, Saratoga, and San Jose were also considered for this analysis. Trip generation estimates for these projects were obtained from their respective traffic reports or estimated based on trip generation rates published in the Institute of Transportation Engineers *Trip Generation* (8^{th} Edition). Trips for each of the background projects were then assigned to the roadway network based on the relative locations of complementary land uses, as well as existing and estimated future travel patterns.

Appendix B of this EIR contains a list of approved projects from each City and their trip generation estimates. Major projects in the Background No Project scenario include:

- Downtown Sunnyvale Projects: 263 KSF (1,000 square feet) of commercial and office uses, 124 senior housing dwelling units, 358 apartments
- North Santa Clara Projects: 5,466 KSF of commercial and office uses, 427 KSF of community college expansion, 995 apartments and townhomes
- Rose Bowl: 204 condominiums, 60 KSF retail
- Vallco Mall: 200 KSF of vacant retail uses
- Aloft Hotel (10165 De Anza Boulevard): 123 hotel rooms
- De Anza College Expansion: 7,000 new students at Junior College
- Oaks Shopping Center: 50.9 KSF retail and office space, 122 hotel rooms
- 900 Kiely Boulevard (Santa Clara): 766 mixed dwelling units
- Main Street Cupertino: 138 KSF shopping center, 260 KSF office, 180 hotel rooms, 143 dwelling units
- Crossroads: 87.1 KSF shopping center, 8.7 KSF high turnover restaurant
- Biltmore Apartments: 80 apartments, 7 KSF restaurant
- 5403 Stevens Creek Boulevard: 375 KSF office
- Saich Way Station: 11 KSF retail, 4.2 KSF restaurant
- Valley Fair Mall Expansion: 675 KSF shopping center
- Kaiser Santa Clara: 150 KSF medical uses

The trips for each of these projects were added to the existing volumes to represent Background No Project Conditions (see Appendix B).

In addition to trips from approved projects, the City of Sunnyvale typically multiplies existing volumes by a growth factor when analyzing future year scenarios at intersections in its jurisdiction. To be consistent with its LOS analysis standards, the appropriate growth rates (2.00 percent and 1.75

percent in the AM and PM peak hours, respectively for arterials) were applied to the study intersections within the City of Sunnyvale. Using year 2011 as the base year for Existing Conditions, 5-year growth factors (to year 2016) were applied to all movements at the three study intersections in Sunnyvale. Figure C-4 in Appendix B shows the Background No Project Conditions intersection turning movement volumes used for this analysis.

(11) Background No Project Transportation Improvements. Based on information provided by the City of Cupertino, the westbound through lane at the Wolfe Road/Vallco Parkway intersection was assumed to be modified to a shared through/right-turn lane (for a total of two left-turn lanes, one shared through/right-turn lane, and one exclusive right-turn lane) under Background No Project Conditions. As part of the Main Street project in Cupertino, Vallco Parkway is proposed to be narrowed from six to four lanes; however the lane geometries at Wolfe Road and Tantau Avenue are not anticipated to change with this roadway project. No other approved and funded transportation network improvements were assumed to be constructed prior to project completion and for all other intersections the existing roadway network was used for the background analysis.

(12) Background Intersection Levels of Service. Background No Project and Background Plus Project intersection levels of service are discussed in Section 2, Impacts and Mitigation Measures.

(13) Cumulative No Project Conditions. Traffic volumes for Cumulative No Project Conditions comprise existing traffic volumes plus traffic generated by all foreseen development projects that would affect the transportation system in the study area, including approved but not yet built or occupied projects as well as pending development projects.

(14) Cumulative No Project Approved Projects and Traffic Volumes. Vehicle trips from pending development projects in the study area were added to traffic projections for Background No Project Conditions. Projects in the cities of Sunnyvale, Santa Clara, Saratoga, and San Jose were also included. Appendix B contains a list of approved and pending projects from each City and their trip generation estimates. In addition to those projects highlighted in the Background Conditions section, the following major pending developments projects were included in the analysis:

- Future Vallco Mall Expansion: 408 KSF mixed use
- Downtown Sunnyvale: 40 apartments
- 2585 & 2645 El Camino Real: 253 apartments/condos
- 3515 Monroe Street: 430 dwelling units

As discussed under Background No Project Conditions, the City of Sunnyvale typically multiplies existing volumes by a growth factor when analyzing intersections in its jurisdiction. To be consistent with their LOS analysis standards, the appropriate growth rates (2.00 percent and 1.75 percent in the AM and PM peak hours, respectively for arterials) were applied to the study intersections within the City of Sunnyvale. Using year 2011 as the base year for Existing Conditions, a 9-year growth factor (to year 2020) was applied to all movements at the three study intersections in Sunnyvale. Figure C-6 in Appendix B of this EIR, shows the Cumulative No Project intersection turning movement volumes used for this analysis.

(15) Cumulative No Project Transportation Improvements. There are no additional approved and funded transportation network improvements that were assumed to be constructed prior to the cumulative horizon year of 2020 beyond the improvements identified for Wolfe Road/Vallco Parkway under Background No Project Conditions, described above. Therefore, the Background No Project roadway network was used for the Cumulative No Project analysis.

(16) Cumulative Intersection Levels of Service. Cumulative No Project and Cumulative Plus Project intersection levels of service are discussed in Section 2, Impacts and Mitigation Measures.

2. Impacts and Mitigation Measures

This section identifies potential adverse impacts to transportation and circulation that may result from the proposed project. Significant impacts are identified according to the significance criteria identified below. The significance criteria are followed by a discussion of the project's potential impacts on the transportation and circulation system. Where warranted, mitigation measures are recommended to reduce significant impacts to a less-than-significant level or to reduce the severity of the identified significant impacts.

a. Criteria of Significance. According to the *CEQA Guidelines*, traffic increases from a project or from cumulative development are considered to be a significant impact if the associated changes to the transportation system conflict with adopted environmental plans or goals of the community, or cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system. The *CEQA Guidelines* also include general statements applicable to identifying impacts on elements of the transportation system other than private motor vehicle roadway operations.

According to the *CEQA Guidelines*, transportation impacts are considered significant if a proposed project would:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks (because the project site is not located within an airport land use plan or within two miles of an airport, this topic is not discussed further);
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

The following specific significance criteria, based on the *CEQA Guidelines* plus guidelines of the City of Cupertino and surrounding jurisdictions, were used to evaluate the effects of the project on all the analysis scenarios.

(1) Intersection Impact Criteria

Santa Clara County VTA and Santa Clara County Expressway Intersections

The LOS standard for CMP and expressway intersections is LOS E. Traffic impacts at CMP and Expressway intersections would occur when the addition of traffic associated with implementation of a project causes:

- Intersection operations to deteriorate from an acceptable level (LOS E or better) to an unacceptable level (LOS F);
- Exacerbation of unacceptable operations by increasing the average critical delay by more than 4 seconds and increasing the critical volume-to-capacity (V/C) ratio by 0.01 or more at an intersection operating at LOS F; or
- The V/C ratio to increase by 0.01 or more at an intersection with unacceptable operations (LOS F) when the change in critical delay is negative (i.e., decreases). This can occur if the critical movements change.

Most jurisdictions defer to the CMP LOS standards for CMP intersections within their boundaries; however, both the cities of Cupertino and San Jose strive to maintain their respective City standards at CMP facilities.

Caltrans Intersections

Caltrans has identified a level of service objective of C/D (i.e. on the "cusp" or threshold between level of service C and D) as the acceptable service level. Intersection impacts are defined to occur when the addition of project traffic:

- Causes operations to deteriorate from an acceptable level (LOS C) to an unacceptable level (LOS D or worse); or
- Causes the existing measure of effectiveness (average delay) to worsen at a State-operated intersection operating worse than LOS C.

City of Cupertino, Santa Clara, Sunnyvale, San Jose and Saratoga Intersections

The cities of Cupertino, Santa Clara, Sunnyvale, San Jose, and Saratoga have established LOS D as their LOS standard with the following exemptions:

- City of Cupertino: Stevens Creek Boulevard/Stelling Road (Int. #3), De Anza Boulevard/ Stevens Creek Boulevard (Int. #8), and De Anza Boulevard/Bollinger Road (Int. #10) have a LOS E+ threshold, with no more than 60 seconds of weighted average control delay.
- City of Sunnyvale: LOS E threshold for all regionally significant corridors, including El Camino Real and Sunnyvale-Saratoga Road,

- City of San Jose: Intersections within the Downtown area or on the protected intersection list are exempt from the LOS D standard. *No study intersections for the proposed project meet this exemption.*
- City of Saratoga: LOS E threshold for CMP intersections.

Traffic impacts at intersections in the above municipalities would occur when the addition of traffic associated with implementation of a project causes:

- Intersection operations (except those on designated regionally significant roads) to deteriorate from an acceptable level (LOS D or better, with LOS exceptions described above) to an unacceptable level (LOS E or LOS F);
- Operations for designated regionally significant intersections to deteriorate from an acceptable level (LOS E or better) to an unacceptable level (LOS F);
- Exacerbation of unacceptable operations by increasing the average critical delay by more than 4 seconds and increasing the critical volume-to-capacity (V/C) ratio by 0.010 or more at an intersection operating at LOS E or F (LOS F for regionally significant roads); or
- The V/C ratio to increase by 0.01 or more at an intersection with unacceptable operations (LOS E or F) when the change in critical delay is negative (i.e., decreases). This can occur if the critical movements change.

(2) Freeway Impact Criteria

The LOS standard for CMP freeway segments is LOS E. Traffic impacts on a CMP freeway segment occur when the addition of project traffic causes:

- Freeway segment operations to deteriorate from an acceptable level (LOS E or better) under Existing Conditions to an unacceptable level (LOS F); or
- An increase in traffic of more than 1 percent of the capacity of a segment that operates at LOS F under Existing Conditions.

(3) Freeway Ramp Impact Criteria

Traffic impacts on freeway off-ramps would occur when the addition of traffic associated with implementation of a project causes a hazardous condition by creating excessive queuing that extends onto the freeway mainline.

(4) Pedestrian Impact Criteria

The General Plan for the City of Cupertino identifies existing pedestrian networks and identifies improvements and/or related policies necessary to ensure that these facilities are safe and effective for City residents. Using the General Plan as a guide, significant impacts to pedestrian facilities would occur when a project or an element of a project:

- Creates a challenging condition that currently does not exist for pedestrians, or otherwise interferes with pedestrian accessibility to the site and adjoining areas;
- Creates a substantial increase in demand for pedestrian facilities where none currently exist or creates conditions that would lead to overcrowding on existing facilities;

- Conflicts with an existing or planned pedestrian facility; or
- Conflicts with policies related to pedestrian activity adopted by the City of Cupertino for its pedestrian facilities in the study area.

(5) Bicycle Impact Criteria

The General Plan and Bicycle Transportation Plan for the City of Cupertino identify existing and planned bicycle networks, and improvements and/or related policies necessary to ensure that these facilities are safe and effective for City residents. Using the General Plan as a guide, significant impacts to bicycle facilities would occur when a project or an element of a project:

- Creates a challenging condition that currently does not exist for bicyclists, or otherwise interferes with bicycle accessibility to the site and adjoining areas;
- Creates a substantial increase in demand for bicycle facilities where none currently exist or creates conditions that would lead to overcrowding on existing facilities;
- Conflicts with an existing or planned bicycle facility; or
- Conflicts with policies related to bicycle activity adopted by the City of Cupertino for bicycle facilities in the study area.

(6) Transit Impact Criteria

Significant impacts to transit service would occur if the project or any part of the project:

- Creates a substantial increase in transit demand that could not be accommodated by existing or planned transit capacity, measured by comparing the expected transit capacity with the expected demand for transit service;
- Causes a substantial increase in delay to transit vehicles;
- Reduces transit availability or interferes with existing transit users on a permanent or temporary basis; or
- Conflicts with transit policies adopted by the cities of Cupertino, Sunnyvale, San Jose, Santa Clara, Saratoga, Santa Clara County, VTA, or Caltrans for their respective facilities in the study area.

b. Impact Analysis. The following discussion describes the potential impacts of the proposed project on the transportation and circulation system.

This section presents the transportation system changes that would occur as part of the project and the method used to estimate the amount of traffic the project would add to the roadway system. The traffic estimating method incorporates three steps: 1) trip generation, 2) trip distribution, and 3) trip assignment. The first step estimates the amount of additional traffic that would be generated by the project. The second step estimates the directions of travel to and from the project site. The new trips are assigned to specific street segments and intersection turning movements during the third step. Diverted trips due to the proposed closure of Pruneridge Avenue through the site are also identified.

(1) Proposed Changes to the Transportation System. Apple would change the transportation system as part of the proposed project, as described below and in Chapter III, Project Description. The project would also include an expansion of Apple's TDM Program (see Table V.I-6). However, for the purpose of this EIR, and to ensure that the project's potential effects on the local and regional transportation system are fully and cautiously evaluated (and in recognition that specific TDM expansion measures are being refined by Apple), an expanded TDM Program (beyond the measures that are currently being provided and current trip reduction rates achieved with existing TDM measures) is not assumed to be part of the project.

Roadway Modifications. Apple proposes to widen Wolfe Road and Tantau Avenue to accommodate the increased traffic that would be generated by the project, and to narrow Pruneridge Avenue east of Tantau Avenue to match recent modifications made to Pruneridge Avenue in the City of Santa Clara. In addition, Apple proposes to widen the northbound and southbound I-280 off-ramps at Wolfe Road. These proposed roadway changes are described below.

Wolfe Road. Apple proposes to make several changes to the roadway configuration of Wolfe Road. The proposed configuration of Wolfe Road between Homestead Road and Stevens Creek Boulevard are discussed below.

<u>Homestead Road to Wolfe Road Access Point.</u> North of the proposed Wolfe Road access point into the project site, Wolfe Road consists of a southbound bike lane and three southbound through lanes, a median, three northbound through lanes, and a northbound bike lane. With implementation of the project, this segment of Wolfe Road would be widened to consist of a southbound bike lane and three southbound through lanes, two southbound left-turn lanes turning into the main project entrance, a median, and three northbound through lanes and a northbound bike lane. This proposed widening would occur entirely on the east side of the roadway, within the City-owned right-of-way, and on property owned by Apple within the project site.

<u>Wolfe Road Access Point to Pruneridge Avenue.</u> South of the proposed Wolfe Road access point and north of Pruneridge Avenue, Wolfe Road consists of a southbound bike lane, three southbound through lanes, one southbound left-turn lane turning onto Pruneridge Avenue, three northbound through lanes and a northbound bike lane. With implementation of the project, this segment of Wolfe Road would be widened to consist of a southbound bike lane, three southbound through lanes, a southbound left-turn lane turning onto Pruneridge Avenue, a 15-foot-wide median, three northbound through lanes, a northbound bike lane, and two northbound right-turn lanes turning onto the main access point. This proposed widening would occur entirely on the east side of the roadway, within the City-owned right-of-way, and on property owned by Apple within the project site.

<u>Pruneridge Avenue to I-280 Northbound Ramps.</u> South of Pruneridge Avenue to the I-280 ramps, Wolfe Road consists of a southbound bike lane and three southbound through lanes, a median, two northbound left-turn lanes turning onto Pruneridge Avenue, two northbound through lanes, a northbound bike lane, and a northbound right-turn lane turning onto Pruneridge Avenue. With implementation of the project, this segment of Wolfe Road would be widened to consist of a southbound bike lane, three southbound through lanes, a median, two northbound left-turn lanes turning onto Pruneridge Avenue, three northbound through lanes, a northbound bike lane, a fourth northbound through lane, and a shared northbound through/right-turn lane turning onto Pruneridge Avenue. This proposed widening would occur entirely on the east side of the roadway, within the City-owned right-of-way, on property owned by The Hamptons, and on property owned by Caltrans.

The proposed widening of Wolfe Road would include the removal of the triangular channelizing islands on the east side of the intersection with Pruneridge Avenue, as well as the relocation of the existing signal poles and replacement of the signal mast arms to accommodate lane realignment. The northbound bike lane would be marked on the pavement between the three northbound through lanes and the fourth northbound through lane approaching Pruneridge Avenue. A new combined sidewalk/off street bike path and landscaping would be installed to the east of the curb on the east side of Wolfe Road. The widening of Wolfe Road would require a land exchange with the owner of The Hamptons. Under the exchange agreement, the owner of The Hamptons would convey to the City approximately 11,500 square feet of land adjacent to the Wolfe Road frontage in exchange for a similar amount of land that Apple owns adjacent to The Hamptons in Ridgeview Court, and/or other compensation. A future lot line adjustment application would be filed with the City to complete the transfer of land, if the land exchange is agreed to under the exchange agreement.

<u>I-280 Overcrossing.</u> On the I-280 overcrossing, Wolfe Road consists of a southbound shoulder stripe, two southbound through lanes, a median, two northbound through lanes, and a northbound shoulder stripe. With the implementation of the project, the southbound and northbound shoulder stripes would be modified to standard bike lanes. The vehicular travel lanes in each direction of travel and the median would remain the same. Apple proposes to add a northbound through lane starting north of the I-280 northbound loop-on ramp; however this northbound through lane would not require widening of the overcrossing.

The project would include no roadway changes between I-280 and Stevens Creek Boulevard along Wolfe Road. Other changes that would be required by the widening of Wolfe Road include the closure of the existing project site driveway and northbound bus turnout located on the east side of Wolfe Road along the project site, north of the Pruneridge Avenue intersection, and the construction of a new bus turnout near the main project entrance. In addition, utilities would be relocated.

Homestead Road. Homestead Road, mid-way between Wolfe Road and Tantau Avenue, generally consists of one bike lane and two through lanes in each direction with a continuous two-way left-turn lane. With implementation of the project, the continuous two-way left-turn lane would be replaced with a 10-foot-wide median, but the bike lane and two through lanes in each direction would be retained. In addition, a pull-out for shuttle buses for fitness center drop offs is being proposed to the east of the driveway for the Corporate Fitness Center.

Tantau Avenue. Apple also proposes to make several changes to the roadway configuration of Tantau Avenue adjacent to the project site. In addition, a pull-out for private passenger vehicles and a separate pull-out for public transit buses would be added in each direction (one set would be located between Homestead Road and Pruneridge Avenue and one set would be located between Calabazas Creek and I-280) along Tantau Avenue. These pull-outs are not intended for use by Apple's shuttle buses.

<u>North of Pruneridge Avenue.</u> Tantau Avenue between Pruneridge Avenue and Homestead Road consists of one bike lane and one through lane in each direction, with a continuous two-way left-turn lane to provide left-turn access into and from the adjacent properties. With implementation of the project, this segment of Tantau Avenue (which would be near the proposed Transit Center) would be modified to include a southbound bike lane, a southbound through lane, a 14-foot-wide median, a northbound through lane, and a northbound bike lane. The median would have cuts to allow left turn movements into and out of the Transit Center and to provide access to the driveways located

on the east side of Tantau Avenue. No additional right-of-way would be required, as the shared turn lane would be removed and the southbound and northbound through lanes would be reduced from 14 feet in width to 12.5 feet in width.

South of Pruneridge Avenue. Tantau Avenue immediately south of Pruneridge Avenue consists of one bike lane and one through lane in each direction, with a continuous two-way left-turn lane to provide left-turn access into and from the adjacent properties. With implementation of the project, this segment of Tantau Avenue would be modified to include a southbound bike lane, a southbound through lane, an 11-foot-wide median, a northbound through lane, a northbound bike lane, and a northbound right-turn lane onto Pruneridge Avenue.

North of the Proposed Secondary Employee Access. Tantau Avenue immediately north of the proposed secondary employee access consists of one bike lane and one through lane in each direction, with a shared center turn lane to provide left-turn access into and from the adjacent properties. With implementation of the project, this segment of Tantau Avenue would be widened to include a southbound bike lane, two southbound through lanes, a southbound left-turn lane (to the Phase 2 buildings north of Calabazas Creek), one northbound through lane, and one northbound bike lane. This proposed widening would occur entirely within the City-owned right-of-way, and on property owned by Apple within the project site.

Over Calabazas Creek. Tantau Avenue between the secondary employee entrance to the main campus and the employee entrance to the Phase 2 buildings east of Tantau Avenue and south of Calabazas Creek, consists of one bike lane and one through lane in each direction, with a shared center turn lane to provide left-turn access into and from the adjacent properties. With implementation of the project, this segment of Tantau Avenue would be modified to include an off-street pedestrian/ bike path in each direction, two southbound through lanes, two northbound left-turn lanes into the main campus, and one northbound shared through/right-turn lane (to the Phase 2 buildings north of Calabazas Creek).

North of the Signalized Phase 2 Entrance, South of Calabazas Creek. The segment of Tantau Avenue, between the employee entrance to the Phase 2 buildings east of Tantau Avenue, south of Calabazas Creek, and the signalized Phase 2 entrance south of the creek, consists of one bike lane and one through lane in each direction, with a shared center turn lane to provide left-turn access into and from the adjacent properties. With implementation of the project, this segment of Tantau Avenue would be widened to consist of one southbound bike lane, one southbound shared through/right-turn lane, one southbound through lane, one southbound left-turn lane (to the Phase 2 buildings south of Calabazas Creek), two northbound through lanes ,and one northbound bike lane. This proposed widening would occur entirely within the City-owned right-of-way, and on property owned by Apple within the project site.

South of the Signalized Phase 2 Entrance, South of Calabazas Creek. The segment of Tantau Avenue, immediately south of the signalized Phase 2 entrance south of Calabazas Creek, consists of one bike lane and one through lane in each direction, and a northbound left-turn lane. With implementation of the project, this segment of Tantau Avenue would be widened to consist of a southbound bike lane, two southbound through lanes, one northbound left-turn lane (to the Phase 2 buildings south of Calabazas Creek), one northbound through lane, a northbound shared through/right-turn lane to the Phase 2 buildings south of Calabazas Creek, and a northbound bike lane. This proposed widening would occur entirely within the City-owned right-of-way, and on property owned by Apple within the project site.

Over I-280. The Tantau Avenue bridge over I-280 consists of one bike lane, two through lanes in each direction, and a sidewalk on the east side of the street. With implementation of the project, this segment of Tantau Avenue would be modified to include a bike lane, two through lanes, and sidewalks on both sides of the bridge.

Pruneridge Avenue. Apple also proposes to make the following changes to Pruneridge Avenue as part of the project.

Between Wolfe Road and Tantau Avenue. Pruneridge Avenue would terminate approximately 700 feet east of Wolfe Road. The remaining segment of Pruneridge Avenue within the project site, up to the intersection with Tantau Avenue, would be vacated. The segment that would provide access to The Hamptons currently consists of one eastbound bike lane, two eastbound through lanes, and a continuous two-way left-turn lane, two westbound through lanes, one westbound bike lane. With implementation of the project, this section of Pruneridge Avenue would be reduced to one through lane and a bike lane in each direction.

At the intersection of Wolfe Road and Pruneridge Avenue, there is currently an eastbound bike lane, two eastbound through lanes, two westbound left turn lanes, one westbound bike lane, one westbound through lane, and one westbound right turn lane. This configuration would be modified to one eastbound bike lane, one eastbound through lane, a westbound left turn lane, a westbound bike lane and a westbound shared through/right-turn lane.

East of Tantau Avenue. As noted above, Apple proposes to remove the west leg of Pruneridge Avenue at its intersection with Tantau Avenue. The removal would require modifications to signal poles, mast arms, and signal heads, and reconfiguration of the east leg of Pruneridge Avenue at the intersection. The east leg of Pruneridge Avenue consists of a westbound bike lane, two westbound through lanes, a westbound left-turn lane onto Tantau Avenue, two eastbound through lanes, and one eastbound bike lane. The east leg of Pruneridge Avenue would be narrowed to include a westbound right-turn lane, a westbound bike lane, a westbound left-turn lane, a 13-foot-wide median, an eastbound through lane, and an eastbound bike lane. These changes would be made to connect to the roadway modifications made by the City of Santa Clara to the east of the City of Cupertino boundary along Pruneridge Avenue.

Freeway Ramps. To reduce the impact of increased traffic volumes exiting I-280, Apple proposes to widen both the northbound and southbound I-280 off-ramps at Wolfe Road to accommodate two lanes on the ramps, starting from the freeway main line. Further, Apple proposes to add a lane on the northbound I-280 off ramp approach to Wolfe Road. This proposed widening would require approval by Caltrans. Because Caltrans approval of the proposed widening cannot be guaranteed by the City of Cupertino (the lead agency), the widening is not assumed as part of the traffic analysis in this section.

Figures III-17a through III-17f show the proposed changes to roads around the site.

Transit Infrastructure Modifications. Other changes to transit facilities that would result from the project include the closure of the existing driveway and bus turnout located on the east side of Wolfe Road, north of the Pruneridge Avenue intersection, and the construction of a new bus turnout north of the main project entrance. On the west side of Wolfe Road, there are currently two bus stops between Pruneridge Avenue and Homestead Road. With implementation of this project, these bus stops would be consolidated into one location, north of Pruneridge Avenue, between the two existing bus stops. In addition, new bus turnouts would be provided on Tantau Avenue between Homestead Road and Vallco Parkway. Specifically, new bus turnouts would be provided on Tantau Avenue in the southbound direction just south of Homestead Road and in both directions of travel just south of Pruneridge Avenue. In addition, two pull-outs for private and transit passenger vehicles would be added in each direction along Tantau Avenue (one set would be located between Homestead Road and Pruneridge Avenue and one set would be located between Calabazas Creek and I-280).

Bicycle and Pedestrian Infrastructure Modifications. The project would include the changes to the bike and pedestrian environment on roadways surrounding the project site listed below. These changes would be implemented adjacent to property owned by Apple, in coordination with other adjacent property owners, consistent with existing development, financial, and other public improvement obligations, and in accordance with approved plans. Figure III-19 shows the existing and proposed bike and pedestrian environment in the vicinity of the site. Figures III-20a through III-20f provide detailed plans of bike facilities along the roadways surrounding the project site.

Tantau Avenue

- Provide a fully landscaped median from north of Calabazas Creek to Homestead Road (where space permits).
- Provide fully detached sidewalks on both sides of Tantau Avenue between I-280 and Homestead Road, except where determined to be infeasible by the City (due to property owner objections or other issues).
- Provide fully detached sidewalks on both sides of Tantau Avenue between the I-280 bridge and Vallco Parkway.
- Provide sidewalks and bicycle lanes on both sides of the Tantau Avenue bridge across I-280 (currently there is a sidewalk only on one side).
- Restripe and/or provide enhanced colored bike lanes on both sides of the street.
- Link sidewalks along Tantau Avenue and Vallco Parkway, from Calabazas Creek at Tantau Avenue to Calabazas Creek at Vallco Parkway, using specialty paving, signage, and/or other way-finding features. This change would provide an alternate to a planned route along Calabazas Creek.
- Reduce the number of curb cuts and left-turn lanes.
- Create a distinctive entry to the project site from Tantau Avenue, with architectural elements and landscaping.
- Provide enhanced paving, pedestrian-scale lighting, and enhanced fencing on the 1-280 overpass on Tantau Avenue, subject to City and Caltrans approval.

Wolfe Road

- Replace existing fully detached sidewalks where they currently exist and provide fully detached sidewalks where such sidewalks are missing, from I-280 to Homestead Road (where permitted by existing trees and topography).
- Establish a northbound off-street bike path, in addition to an on-street bike lane from approximately 250 feet south of the Pruneridge Avenue/Wolfe Road intersection to the main employee entrance.
- Enhance the landscape buffer along the street.
- Restripe and/or provide colored bike lanes on both sides of the street.
- Provide enhancements at the Wolfe Road overpass over I-280, including: enhanced paving, guardrails, pedestrian-scale lighting, and decorative fencing, subject to City and Caltrans approval.

Homestead Road

- Reduce the number of curb cuts and left-turn lanes.
- Provide entry/exit points for employee bike and pedestrian access to the project site.
- Restripe and/or provide colored bike lanes on both sides of the street.
- Provide intersection markings to facilitate bicycle left turns from westbound Homestead Road to southbound Tantau Avenue.
- Provide a planted median.

Vallco Parkway:

- Provide fully detached sidewalks between Tantau Avenue and Wolfe Road along the northern side of the street.
- Restripe and/or provide enhanced bike lanes on both sides of the street.
- Coordinate with the City and existing landowners on road markings, signage, crosswalk enhancements, and median relocation.
- Continue the alternate creek trail route to Calabazas Creek, with special planting, signage, and fencing where the creek intersects Vallco Parkway.

One major component of the proposed project is the closure of Pruneridge Avenue between Tantau Avenue and The Hamptons apartment community, located at the southeast corner of the Wolfe Road/Pruneridge Avenue intersection. This closure would eliminate an approximately 0.5-mile segment of Pruneridge Avenue to public access. Following is a description of the intersection geometries at the Wolfe Road and Tantau Avenue intersections with Pruneridge Avenue to account for the roadway closure.

Pruneridge Avenue between Wolfe Road and Tantau Avenue is currently a four-lane roadway with Class II bike lanes and sidewalks. With the proposed closure, only the 700 feet east of Wolfe Road would remain open to provide public access to The Hampton apartment community. Based on counts collected at the Hampton's driveway, the apartment complex generates approximate 140 AM and 160

PM peak-hour trips. The traffic related to the apartment complex does not warrant a four-lane facility; thus the remaining 700 feet of Pruneridge Avenue is proposed to be narrowed to two travel lanes plus sidewalks and Class II bike lanes. Bicyclists and pedestrians exiting the project site to Wolfe Road could use Pruneridge Avenue via the visitor lot exit located opposite The Hamptons' driveway.

With the closure of Pruneridge Avenue west of Tantau Avenue, the roadway geometries on Tantau Avenue would be modified to eliminate the southbound right-turn lane and the northbound left-turn lane. In addition, the east leg of Pruneridge Avenue would be narrowed to one travel lane in each direction to align with the roadway narrowing project implemented in the City of Santa Clara. The westbound approach of the Tantau Avenue/Pruneridge Avenue intersection would be modified to have one right-turn lane and one left-turn lane, eliminating the eastbound through lane on Pruneridge Avenue.

(2) Trip Generation Estimates. To estimate the number of added vehicle trips due to the proposed project, trip generation rates derived from traffic counts collected at Apple's existing Infinite Loop and Mariani campus in Cupertino (referred to as the Infinite Loop campus in the remainder of this section) were used. The Institute of Transportation Engineers (ITE) recommends that local data for similar uses be used if possible.

Apple-Specific Trip Generation Rates. In May 2011, Fehr & Peers collected trip generation data at Apple's Infinite Loop campus and the buildings south of Mariani Avenue. This was accomplished by conducting driveway counts at all seven driveways, which produced trip rates based on the number of daily trips, AM peak hour trips, and PM peak hour trips per 1,000 square feet of building space and per employee. In May 2011, the Infinite Loop campus and the buildings south of Mariani Avenue contained 4,199 employees and 1,165,967 square feet of building space, yielding an employee density of 3.60 employees per 1,000 square feet. This density is lower than the proposed employee density for the proposed project (4.15 employees per 1,000 square feet). Therefore trip rates based on employees were used in this analysis, rather than employee density, to ensure that potential impacts are not under-estimated. A detailed memorandum outlining the data collected at the existing Apple campus and a comparison of the rates by employee and building space is included in Appendix G of Appendix B.

Apple's trip generation rates are 3.59, 0.32, and 0.33 trips per employee for the daily, AM peak hour, and PM peak hour periods, respectively. These rates were applied to the proposed project to estimate the proposed project's trip generation.

Net New Trips. At buildout and full occupancy, the proposed project is expected to contain 14,200 employees on-site, compared to approximately 4,844 employees that work at the site today (of the project site's existing employee capacity of 9,800). The analysis determines the number of new trips by using the existing employee base, not the employee capacity if buildings on the site were fully occupied. To estimate net new trips for the project scenarios, Fehr & Peers subtracted the number of vehicle trips generated by the existing uses from the number of trips estimated for the 14,200 employees. Fehr & Peers collected driveway counts at the project site to determine the site's existing trip generation and applied the Apple-specific trip generation rates to estimate trip generation for the projected 14,200 employees. As shown in Table V.I-8, the project is estimated to generate 35,106 net new daily vehicle trips, 3,274 net new AM peak hour trips (2,890 inbound and 384 outbound trips), and 3,099 net new PM peak hour trips (796 inbound and 2,303 outbound trips).

Table V.I-8: Trip Generation

Land Use	Employees	Daily		AM Peak Hour				PM Peak Hour			
		Rate[a]	Trips	Rate[a]	In	Out	Total	Rate[a]	In	Out	Total
Proposed Apple Campus 2[b]	14,200	3.59	50,978	0.32	3,953	591	4,544	0.33	1,031	3,655	4,686
Existing Uses On-Site[c]	4,844	3.28	(15,872)[d]	0.26	(1,063)	(207)	(1,270)	0.38	(235)	(1,352)	(1,587)
New Vehicle Trips		**–**	**35,106**	**–**	**2,890**	**384**	**3,274**	**–**	**796**	**2,303**	**3,099**

Notes:
[a] Rate per employee
[b] Trip generation estimates for the proposed campus were developed based on trip rates derived from surveys at Infinite Loop campus and the buildings south of Mariani Avenue by Fehr & Peers, May 2011.
[c] Trip generation estimates for the existing site were developed based on project site driveway counts conducted in August 2011 and factored up to estimate May 2011 values.
[d] Daily trips estimated based on AM and PM peak hour trips representing 18 percent of daily trips.

Source: *Apple Headquarters Campus Transportation Study,* Fehr & Peers, July 2011.

TDM Reductions. The Santa Clara Valley VTA is the congestion management agency for Santa Clara County. In VTA's *Transportation Impact Analysis Guidelines* (updated March 2009), reductions in the number of trips generated by a project can be applied for projects with qualifying TDM programs. The trip generation rates used in this transportation analysis account for existing TDM participation and the resulting mode split of approximately 28 percent shuttle use, carpooling, and bicycling. Although Apple is contemplating the expansion of its current TDM Program to reduce the number of single vehicle occupancy trips (beyond the expansion proposed to serve new employees), the specifics of the added elements are currently under development. Therefore this analysis does not include additional trip reductions due to the proposed expansion of the TDM Program.

Diverted Trips Due to the Closure of Pruneridge Avenue. With the closure, vehicles currently traveling on Pruneridge Avenue between Wolfe Road and Tantau Avenue would be required to detour around the project site. The detour path along Wolfe Road, Homestead Road, and Tantau Avenue is approximately 1.1 miles in length and represents a 0.6-mile detour (1.1-mile new path minus the 0.5-mile existing path). There are generally three types of trips that would be diverted with the proposed closure:

- Through trips with no destination on Pruneridge Avenue between Wolfe Road and Tantau Avenue would be diverted around the project site.
- Trips accessing the project site would be diverted to proposed new driveways on Wolfe Road and Tantau Avenue.
- Trips traveling to and from the east to The Hamptons apartment community would be diverted since existing trips from the west would not be affected by the road closure.

To estimate the number of diverted vehicles for each of the three trip types, Fehr & Peers conducted origin and destination (OD) surveys[13] in August 2011 at the intersections of Wolfe Road/Pruneridge Avenue and Tantau Avenue/Pruneridge Avenue. Fehr & Peers also conducted counts at The Hamptons apartment community driveway in November 2011 to determine the trip generation and distribution characteristics of the apartment complex so that the apartment's trips to/from the east could be re-assigned. The OD survey results were used to determine the percentage of vehicles that travel on Pruneridge Avenue through the project site versus those that access the existing office uses north and south of Pruneridge Avenue. This analysis showed that approximately 60 percent (after taking into account trips from The Hamptons apartment community) of the vehicles on Pruneridge Avenue travel through the site and would be diverted to alternate routes with the proposed road closure. The remaining 40 percent of the trips access the existing office uses and would be re-assigned to the proposed project driveways.[14]

Trip Distribution and Assignment. The distribution of project trips on the roadway system is primarily based on the relative distribution of existing Apple employee residence locations, as many employees would be traveling between their homes and the proposed project during the AM and PM peak hours. Apple provided Fehr & Peers with information regarding the residence locations of its employees at the Infinite Loop campus and the buildings south of Mariani Avenue. It is assumed that the proposed project would have a similar distribution of employee residence locations, as the characteristics of the Apple Campus 2 employees would likely mirror those of employees at the Infinite Loop campus and the buildings south of Mariani Avenue. The employee residence information was thus used as the basis for the trip distribution pattern. The resulting trip distribution pattern is shown on Figure V.I-7.

The project trips were assigned to the roadway network based on the trip distribution pattern discussed above. Figure C-2 in Appendix B shows the AM and PM peak-hour project trips assigned to each turning movement at the study intersections.

Existing Plus Project Conditions. The operations of the study intersections and freeway segments under Existing Plus Project Conditions are discussed below.

Existing Plus Project Traffic Volumes. As presented in the trip generation table (Table V.I-8), the project is estimated to generate 3,274 net new AM peak hour trips and 3,099 net new PM peak hour trips. The net new trips (Figure C-2 in Appendix B) were added to the Existing Conditions traffic volumes (Figure C-1 in Appendix B) to develop traffic volumes for Existing Plus Project Conditions. The resulting volumes are shown on Figure C-3 in Appendix B.

Existing Plus Project Roadway Improvements. The roadway changes proposed as part of the project and discussed above are included under Existing Plus Project Conditions. These include modifications to the Wolfe Road intersections with the #21 I-280 Northbound ramp, #20 Pruneridge

[13] Origin-Destination surveys can be used to estimate the amount of through traffic in a particular area. They involve recording the license plates of vehicles at the entrances and exits and matching the plates to determine the number and percentage of vehicles traversing the area.

[14] The remaining 40 percent of trips include Apple and Hewlett Packard (HP) employees. For the purpose of this analysis it was assumed that HP employees traveling to and from the site would be replaced by Apple employees as the project develops.

Avenue, and #19 Wolfe Road/Project Access driveway, as well as modifications to the #28 Tantau Avenue/Pruneridge Avenue, #29 Tantau Avenue/Project Access, and #30 Tantau Avenue/Tandem intersections. For all other intersections the existing roadway network was used to analyze Existing Plus Project Conditions.

Existing Plus Project Intersection Levels of Service. Intersection levels of service were calculated with the net new traffic added by the proposed project to evaluate the operating conditions of the intersections and to identify potential impacts to the roadway system. The results of the LOS analysis for Existing Plus Project Conditions are graphically shown on Figure V.I-8. The corresponding calculation sheets are in Appendix B of Appendix B. Appendix D (Table D-2) of Appendix B contains a detailed LOS summary table, and Appendix C of Appendix B includes a figure (Figure C-3) with the intersection lane configurations, signal timings, and peak-hour turning movement volumes used to calculate the levels of service for the key intersections.

Table V.I-9 identifies the LOS of intersections that would operate unacceptably under Existing Plus Project Conditions. The results for Existing Conditions are included for comparison purposes, along with the projected increases in critical delay and critical volume-to-capacity (V/C) ratio. Critical delay represents the delay associated with the critical movements of the intersection, or the movements that require the most "green time" and have the greatest effect on overall intersection operations. The changes in critical delay and critical V/C ratio between Existing and Existing Plus Project Conditions are used to identify significant impacts.

The results of the LOS calculations indicate that all study intersections would operate at acceptable service levels (generally LOS D or better for City intersections and LOS E or better for CMP and regionally significant intersections) under Existing Plus Project Conditions, with the exception of the following locations:[15]

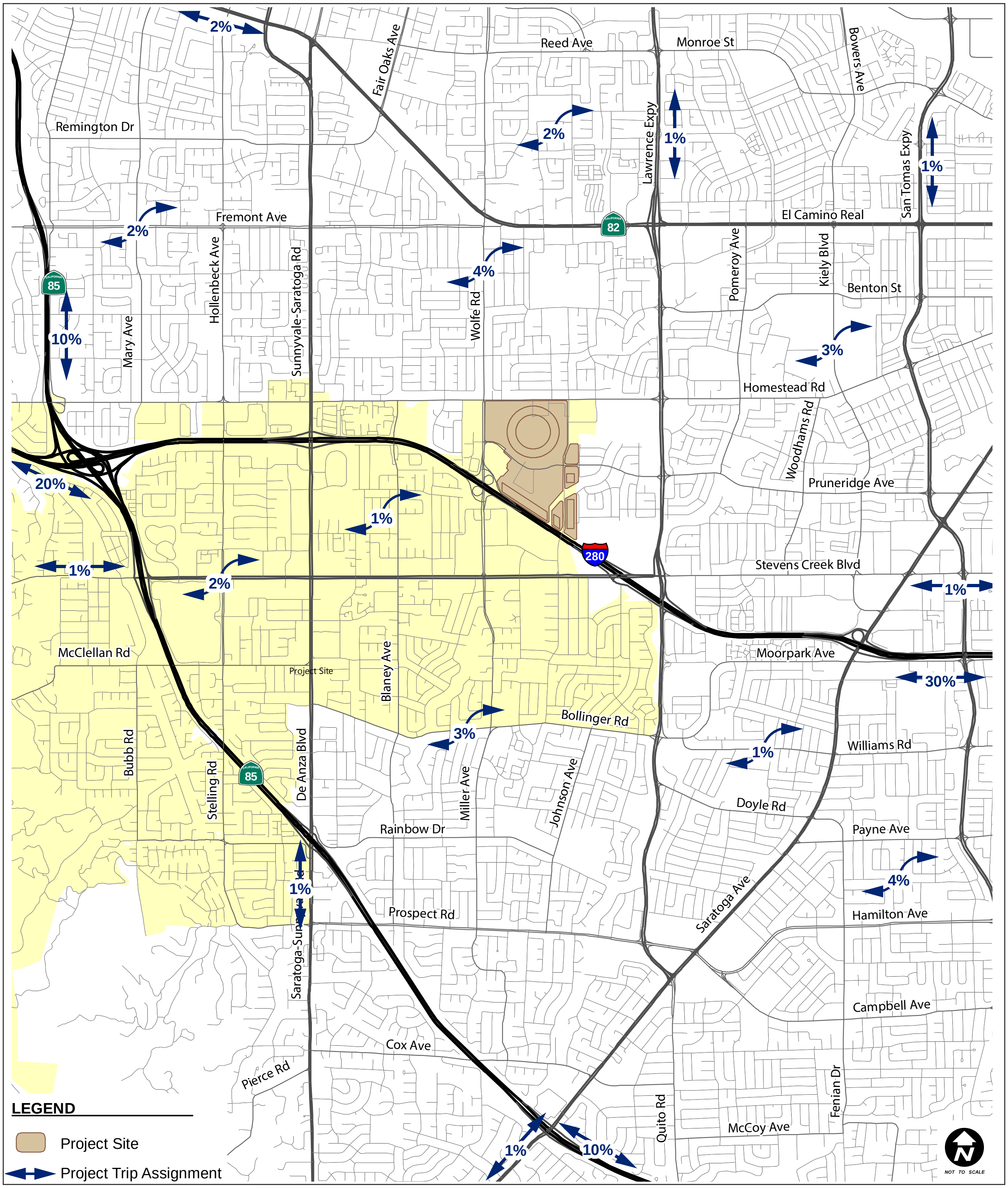
Int. 21. Wolfe Road/I-280 Northbound Ramp (Cupertino): the addition of project traffic would degrade intersection operations from acceptable LOS B to unacceptable LOS E during the AM peak hour.

Int. 31. Tantau Avenue/Vallco Parkway (Cupertino): the addition of project traffic would degrade intersection operations from acceptable LOS C to unacceptable LOS E+ during the AM peak hour.

Int. 36. Stevens Creek Boulevard/Calvert Drive/I-280 Ramps (west) (CMP): the addition of project traffic would degrade intersection operations from acceptable LOS D to unacceptable LOS F during the PM peak hour.

Int. 52. Stevens Creek Boulevard/San Tomas Expressway (CMP): the addition of project traffic would exacerbate unacceptable LOS F operations during the PM peak hour

[15] Parentheses indicate the jurisdiction within which the LOS impacts are assessed.



LSA

FIGURE V.I-7

NOT TO SCALE

Apple Campus 2 Project EIR

Project Trip Distribution

SOURCE: FEHR & PEERS, MARCH 4, 2013.

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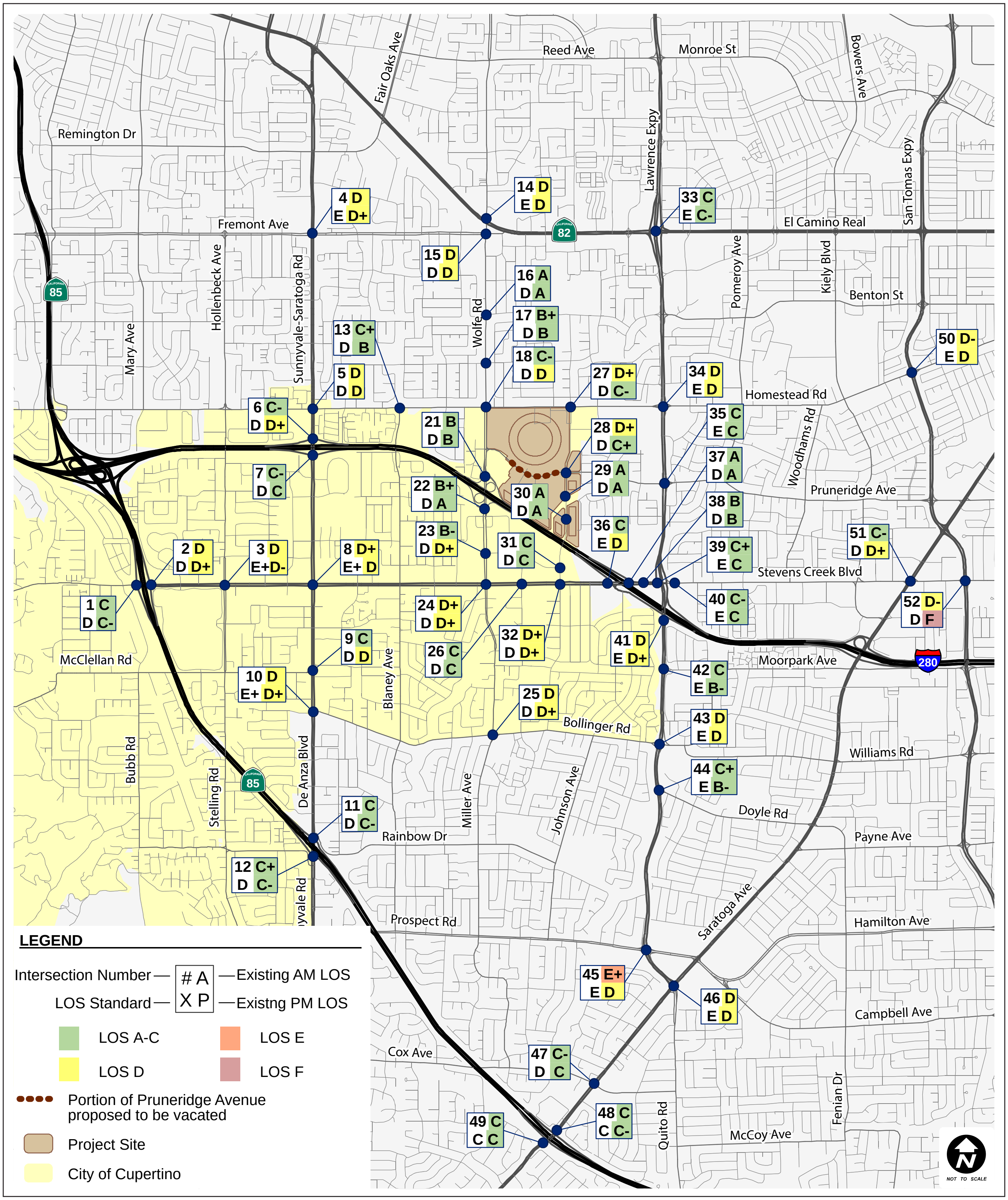

LSA

FIGURE V.I-8

NOT TO SCALE

Apple Campus 2 Project EIR

Existing Plus Project Intersection LOS Results

SOURCE: FEHR & PEERS, MAY, 2013.

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Table V.I-9: Levels of Service for Intersections Operating Unacceptably under Existing Plus Project Conditions

Intersection		Peak Hour[a]	Jurisdiction[b]	Inter-section Control	Existing Conditions		Existing Plus Project Conditions			
					Delay[c]	LOS[d]	Delay[c]	LOS[d]	Change in Crit. V/C[e]	Change in Crit. Delay[f]
21	Wolfe Road/I-280 Northbound Ramp	AM PM	CUP	Signal	12.8 13.4	B B	**61.7** 26.0	**E** C	**+0.376** +0.124	**+69.7** +16.5
31	Tantau Avenue/ Vallco Parkway[g]	AM PM	CUP	Signal	24.1 27.8	C C	**55.1** 23.5	**E+** C	**+0.454** +0.149	**+48.8** -6.1
36	Stevens Creek Boulevard/Calvert Drive/I-280 Ramps (West)	AM PM	CMP	Signal	27.6 44.1	C D	27.1 **85.5**	C **F**	+0.116 **+0.207**	-3.9 **+78.5**
52	Stevens Creek Boulevard/San Tomas Expressway	AM PM	CMP	Signal	51.2 **80.5**	D- **F**	51.5 **82.0**	D- **F**	+0.004 **+0.007**	+0.5 **+2.8**

Notes:

[a] AM = morning peak hour; PM = afternoon peak hour

[b] Intersection Jurisdictions: CUP = City of Cupertino Intersection (LOS D threshold); CMP = CMP Intersection (LOS E threshold)

[c] Whole intersection weighted average control delay expressed in seconds per vehicle

[d] LOS = Level of Service

[e] Change in the critical volume-to-capacity ratio (V/C) between Existing and Existing Plus Project Conditions

[f] Change in critical movement delay between Existing and Existing Plus Project Conditions

[g] It should be noted that the delay would improve during the PM peak hour due to the project proposed improvement on the eastbound approach of the intersection (convert eastbound through lane to shared left-turn/through lane).

Bold indicates unacceptable intersection operations. **Bold and highlighted** indicates significant impacts.

Source: Fehr & Peers, May 2013.

The addition of project traffic would exacerbate unacceptable LOS F operations at the intersection of Stevens Creek Boulevard/San Tomas Expressway in the PM peak hour under Existing Plus Project Conditions. However, the critical delay is not projected to increase by more than 4 seconds (2.8 seconds) and the critical V/C ratio is not projected to increase by more than 0.01 (0.007) between the Existing and Existing Plus Project scenarios; therefore the project is considered to have a less-than-significant impact at the Stevens Creek Boulevard/San Tomas Expressway intersection based on VTA's impact criteria.

The proposed project would result in significant intersection impacts under Existing plus Project Conditions, as discussed below.

The project would exacerbate unacceptable conditions or cause unacceptable operating conditions at the following intersections, and these changes would be considered a significant impact.

- Int. 21. Wolfe Road/I-280 Northbound Ramps (Cupertino)
- Int. 31. Tantau Avenue/Vallco Parkway (Cupertino)
- Int. 36. Stevens Creek Boulevard/Calvert Drive/I-280 Ramps (west) (CMP)

Impact TRANS-1: Under Existing plus Project Conditions, completion of the proposed project would cause intersection #21 Wolfe Road/I-280 Northbound Ramps to operate at an unacceptable level (change from LOS B to LOS E) during the AM peak hour based on City of Cupertino LOS standards. (S)

Mitigation Measure TRANS-1: As part of the project, the project sponsor would construct an additional westbound lane at intersection #21 Wolfe Road/I-280 Northbound Ramps to provide for dual left-turn and dual right-turn lanes. With the additional lane, the intersection would operate at acceptable LOS B (17.1 seconds) during the AM peak hour. However, the off-ramp intersection is under Caltrans jurisdiction. Therefore, neither the project sponsor nor the City of Cupertino can ensure the implementation of the proposed mitigation measure; thus the impact is considered significant and unavoidable. (SU)

Impact TRANS-2: Under Existing plus Project Conditions, completion of the proposed project would cause intersection #31 Tantau Avenue/Vallco Parkway to operate at an unacceptable level (change from LOS C to LOS E+) during the AM peak hour based on City of Cupertino LOS impact thresholds. (S)

Mitigation Measure TRANS-2: At intersection #31 Tantau Avenue/Vallco Parkway, the project sponsor shall construct an exclusive northbound through lane (for a total of one left-turn lane, one through lane, and one shared through/right-turn lane), and a receiving lane on the north side of the intersection which would improve intersection operations to acceptable LOS C (26.1 seconds).

The proposed mitigation measure could have secondary impacts to the trees along the east side of Tantau Avenue. The roadway would need to be widened to the east, to provide for a bike lane to the right of the travel lane and the sidewalk adjacent to the bike lane. Secondary impacts associated with the removal of trees that are protected under the City of Cupertino's Tree Protection Ordinance could occur with the identified mitigation measure. Impacts BIO-1 and BIO-3 in Section V.D, Biological Resources in DEIR addresses these potential secondary impacts. (LTS)

Impact TRANS-3: Under Existing plus Project Conditions, completion of the proposed project would cause intersection #36 Stevens Creek Boulevard/Calvert Drive/I-280 Ramps (west) to operate at an unacceptable level (change from LOS D to LOS F) during the PM peak hour based on CMP guideline. (S)

Mitigation Measure TRANS-3: At intersection #36 Stevens Creek Boulevard/Calvert Drive/I-280 Ramps (west), the project sponsor shall construct an exclusive eastbound right-turn lane (for a total of three through lanes and one right-turn lane) and provide an eastbound right-turn overlap phase. This would improve intersection operations to acceptable LOS E+. To accommodate the added lane the existing buffer between the roadway and sidewalk would need to be eliminated and the sidewalk pushed closer to the existing fence on the south side of Stevens Creek Boulevard. This mitigation measure would also require relocation of an existing streetlight, fire hydrant, and utility pole.

This intersection is a CMP intersection and is located within the City of Santa Clara. It is also under Caltrans jurisdiction. The project sponsor would be required to coordinate with the City of Santa Clara and Caltrans to construct the identified physical improvement at the Stevens Creek Boulevard/Calvert Drive/I-280 Ramp (west) intersection. Since this intersection is outside of the City of Cupertino's jurisdiction, the City cannot guarantee that the improvement would be constructed. For this reason the impact would remain significant and unavoidable. (SU)

Existing Plus Project Freeway Segment Levels of Service. Freeway segments of I-280 and SR 85 were analyzed during the AM and PM peak hours to assess the amount of project traffic projected to be added and the effects on freeway operations. All of the study segments have HOV lanes, also known as carpool or diamond lanes. However, no project trips were assigned to the HOV lanes on the I-280 segments immediately adjacent to the Wolfe Road ramps or to the SR 85 segments immediately adjacent to the I-280 interchange, since project trips would have merged into the mixed-flow lanes in these segments to access Wolfe Road or I-280 interchanges, respectively. Project trips were assigned to HOV lanes in all other freeway segments (with HOV lanes) based on the percentage of total freeway volume in the HOV lanes as measured by the VTA in its 2011 *Monitoring and Conformance Report*. The HOV percentages generally range between 5 percent and 40 percent, although a maximum HOV allocation of 15 percent was applied based on VTA guidelines.

Table V.I-10 presents the estimated number of trips added to the freeway segments under Existing Plus Project Conditions, the estimated vehicle densities, and the resulting levels of service. The same mainline and HOV freeway segments identified to operate at unacceptable LOS F under Existing Conditions are projected to continue to operate deficiently with the addition of project traffic. The addition of project traffic is estimated to deteriorate the level of service from an acceptable service level to unacceptable LOS F on the northbound I-280 HOV segment between Lawrence Expressway/ Stevens Creek Boulevard and Saratoga Avenue during the AM peak hour. The project's percentage impact, or added project volume as a percent of the segment's capacity, is also shown in Table V.I-10. The project would result in a significant impact to segments operating at LOS F if its added traffic is 1 percent or more of that segment's capacity.

The project would add greater than 1 percent of traffic to ten mixed flow segments and one HOV freeway segment operating at LOS F, and therefore this impact would be significant.

Table V.I-10: Existing Plus Project Freeway Segment Levels of Service

Freeway Segment	Direction[a]	Peak Hour[b]	Capacity (vph)[c]	Existing Conditions Density[d]	Existing Conditions LOS[e]	Existing Plus Project Conditions Trips[f]	Existing Plus Project Conditions Density	Existing Plus Project Conditions LOS	Existing Plus Project Conditions % Impact[g]
Mixed-Flow Lanes									
I-280 – Foothill Expressway to SR 85	NB	AM	6,900	**62**	**F**	**107**	**63**	**F**	**1.55**
		PM		24	C	439	26	C	6.36
	SB	AM	6,900	26	C	534	29	D	7.74
		PM		**70**	**F**	**178**	**72**	**F**	**2.58**
I-280 – SR 85 to De Anza Boulevard	NB	AM	6,900	57	E	136	58	E	1.97
		PM		29	D	672	32	D	9.74
	SB	AM	6,900	24	C	831	28	D	12.04
		PM		**81**	**F**	**245**	**85**	**F**	**3.55**
I-280 – De Anza Boulevard to Wolfe Road	NB	AM	6,900	57	E	135	58	E	1.96
		PM		31	D	705	35	D	10.22
	SB	AM	6,900	29	D	850	33	D	12.32
		PM		**97**	**F**	**269**	**103**	**F**	**3.90**
I-280 – Wolfe Road to Lawrence Expressway/ Stevens Creek Boulevard	NB	AM	6,900	**62**	**F**	**382**	**66**	**F**	**5.54**
		PM		32	D	106	33	D	1.54
	SB	AM	6,900	25	C	67	25	C	0.97
		PM		**63**	**F**	**411**	**67**	**F**	**5.96**
I-280 – Lawrence Expressway/Stevens Creek Boulevard to Saratoga Avenue	NB	AM	6,900	**67**	**F**	**785**	**76**	**F**	**11.38**
		PM		29	D	225	30	D	3.26
	SB	AM	6,900	28	D	100	29	D	1.45
		PM		**77**	**F**	**623**	**86**	**F**	**9.03**
I-280 – Saratoga Avenue to Winchester Boulevard	NB	AM	6,900	**76**	**F**	**728**	**87**	**F**	**10.55**
		PM		34	D	247	35	D	3.58
	SB	AM	6,900	36	D	94	37	D	1.36
		PM		51	E	578	56	E	8.38
SR 85 - Winchester Boulevard to Saratoga Avenue	NB	AM	4,600	**69**	**F**	**240**	**74**	**F**	**5.22**
		PM		27	D	62	27	D	1.35
	SB	AM	4,600	30	D	29	30	D	0.63
		PM		54	E	190	57	E	4.13
SR 85 –Saratoga Avenue to De Anza Boulevard	NB	AM	4,600	32	D	48	32	D	1.04
		PM		21	C	12	21	C	0.26
	SB	AM	4,600	23	C	5	23	C	0.11
		PM		**65**	**F**	**38**	**66**	**F**	**0.83**
SR 85 –De Anza Boulevard to Stevens Creek Boulevard	NB	AM	4,600	47	E	0	47	E	0.00
		PM		18	B	0	18	B	0.00
	SB	AM	4,600	19	C	0	19	C	0.00
		PM		**94**	**F**	0	**94**	**F**	0.00
SR 85 –Stevens Creek Boulevard to I-280	NB	AM	4,600	**109**	**F**	**28**	**110**	**F**	**0.61**
		PM		19	C	7	19	C	0.15
	SB	AM	6,900	15	B	3	12	B	0.04
		PM		**85**	**F**	**22**	**68**	**F**	**0.32**
SR 85 –I-280 to West Homestead Road	NB	AM	4,600	**94**	**F**	**31**	**114**	**F**	**0.67**
		PM		15	B	223	20	C	4.85
	SB	AM	4,600	14	B	282	16	B	6.13
		PM		25	C	72	26	C	1.57
SR 85 –West Homestead Road to West Fremont Avenue	NB	AM	4,600	**89**	**F**	**26**	**90**	**F**	**0.57**
		PM		26	C	202	28	D	4.39
	SB	AM	4,600	25	C	240	27	D	5.22
		PM		53	E	61	54	E	1.33

Table V.I-10: Existing Plus Project Freeway Segment Levels of Service

Freeway Segment	Direction[a]	Peak Hour[b]	Capacity (vph)[c]	Existing Conditions Density[d]	Existing Conditions LOS[e]	Existing Plus Project Conditions Trips[f]	Existing Plus Project Conditions Density	Existing Plus Project Conditions LOS	Existing Plus Project Conditions % Impact[g]
High-Occupancy Vehicle (HOV) Lanes									
I-280 – Foothill Expressway to SR 85	NB	AM	1,650	42	D	19	42	D	1.15
		PM		11	A	71	12	B	4.30
	SB	AM	1,650	15	B	94	16	B	5.70
		PM		18	B	31	18	B	1.88
I-280 – SR 85 to De Anza Boulevard	NB	AM	1,650	32	D	24	32	D	1.45
		PM		10	A	83	11	A	5.03
	SB	AM	1,650	9	A	106	11	A	6.42
		PM		25	C	43	26	C	2.61
I-280 – De Anza Boulevard to Wolfe Road	NB	AM	1,650	50	E	0	50	E	0.00
		PM		9	A	0	9	A	0.00
	SB	AM	1,650	18	B	0	18	B	0.00
		PM		33	D	0	33	D	0.00
I-280 – Wolfe Road to Lawrence Expressway/ Stevens Creek Boulevard	NB	AM	1,650	56	E	0	56	E	0.00
		PM		10	A	0	10	A	0.00
	SB	AM	1,650	12	B	0	12	B	0.00
		PM		39	D	0	39	D	0.00
I-280 – Lawrence Expressway/Stevens Creek Boulevard to Saratoga Avenue	NB	AM	1,650	58	E	**139**	**62**	**F**	**8.42**
		PM		7	A	20	7	A	1.21
	SB	AM	1,650	9	A	11	9	A	0.67
		PM		32	D	110	34	D	6.67
I-280 – Saratoga Avenue to Winchester Boulevard	NB	AM	1,650	43	D	128	46	D	7.76
		PM		11	A	30	11	A	1.82
	SB	AM	1,650	10	A	10	10	A	0.61
		PM		29	D	102	30	D	6.18
SR 85 – Winchester Boulevard to Saratoga Avenue	NB	AM	1,650	46	D	42	47	E	2.55
		PM		8	A	10	8	A	0.61
	SB	AM	1,650	4	A	2	4	A	0.12
		PM		29	D	33	29	D	2.00
SR 85 – Saratoga Avenue to De Anza Boulevard	NB	AM	1,650	31	D	8	31	D	0.48
		PM		7	A	2	7	A	0.12
	SB	AM	1,650	6	A	1	6	A	0.06
		PM		26	C	7	26	C	0.42
SR 85 –De Anza Boulevard to Stevens Creek Boulevard	NB	AM	1,650	21	C	0	21	C	0.00
		PM		8	A	0	8	A	0.00
	SB	AM	1,650	6	A	0	6	A	0.00
		PM		31	D	0	31	D	0.00
SR 85 – Stevens Creek Boulevard to I-280	NB	AM	1,650	21	C	0	21	C	0.00
		PM		8	A	0	8	A	0.00
	SB	AM	1,650	9	A	0	9	A	0.00
		PM		29	D	0	29	D	0.00
SR 85 – I-280 and West Homestead Road	NB	AM	1,650	**60**	**F**	**0**	**60**	**F**	**0.00**
		PM		9	A	0	9	A	0.00
	SB	AM	1,650	7	A	0	7	A	0.00
		PM		29	D	0	29	D	0.00
SR 85 – West Homestead Road to West Fremont Avenue	NB	AM	1,650	41	D	5	41	D	0.30
		PM		5	A	21	5	A	1.27
	SB	AM	1,650	9	A	42	10	A	2.55%
		PM		21	C	11	21	C	0.67%

Notes:
[a] NB = northbound; SB = southbound
[b] AM = morning peak hour; PM = afternoon peak hour
[c] vph = vehicles per hour
[d] Measured in passenger cars per mile per lane
[e] LOS = level of service.
[f] Project trips added to individual freeway segments
[g] Percent impact on mixed flow lanes determined by dividing the number of project trips by the freeway segment's capacity
Bold indicates unacceptable operations based on VTA's LOS E Standard. **Bold and highlighted** text indicates significant impacts.

Source: *2011 Monitoring and Conformance Report*, VTA, May 2012.

Impact TRANS-22: Completion of the proposed project would add substantial amounts of traffic to the following ten mixed flow segments and one HOV freeway segment operating at LOS F:

- **I-280, Northbound, SR 85 to Foothill Expressway**
- **I-280, Southbound, Foothill Expressway to SR 85**
- **I-280, Southbound, SR 85 to De Anza Boulevard**
- **I-280, Southbound, De Anza Boulevard to Wolfe Road**
- **I-280, Northbound, Lawrence Expressway/Stevens Creek Boulevard to Wolfe Road**
- **I-280, Southbound, Wolfe Road to Lawrence Expressway/Stevens Creek Boulevard**
- **I-280, Northbound, Saratoga Avenue to Lawrence Expressway/Stevens Creek Boulevard**
- **I-280, Southbound, Lawrence Expressway/Stevens Creek Boulevard to Saratoga Avenue**
- **I-280, Northbound, Winchester Boulevard to Saratoga Avenue**
- **SR 85, Northbound, Winchester Boulevard to Saratoga Avenue**
- **I-280, HOV Northbound, Lawrence Expressway/Stevens Creek Boulevard to Saratoga Avenue**

These freeway segments would be impacted under the Existing Plus Project Conditions based on CMP guidelines. (S)

Mitigation Measure TRANS-22: The project sponsor shall pay a $536,000 fair share contribution towards two planned transportation projects identified in VTA's *Valley Transportation Plan 2035 (VTP 2035)*[16] that would improve traffic operations of the impacted freeway segments and provide added transportation capacity on parallel facilities: (1) SR 85 Express Lane project (converting the existing HOV lane to a toll lane to allow single occupant vehicles to drive in the HOV lane for a fee) between Mountain View and San Jose and (2) the Bus Rapid Transit (BRT) station on Stevens Creek Boulevard at Wolfe Road and De Anza Boulevard. The fair share contribution amount was calculated in consultation with VTA staff based on the project's contribution to project growth on the impacted freeway segment.

It is unlikely that the Express Lane or BRT project would be implemented prior to project completion and that these improvements would reduce the impact to a less-than-significant level. In addition, the City has no control over the implementation of these mitigation measures; therefore the impact to the freeway segments would remain significant and unavoidable. (SU)

[16] The Valley Transportation Plan is a long-range vision for transportation in Santa Clara County. The VTA is responsible for preparing and updating the VTP. The VTP 2035 identifies the programs, projects, and policies VTA would like to pursue over the lifetime of the plan. It connects projects with anticipated funds and lays out a framework for the development and maintenance of the transportation system over the next 25 years.

Background Plus Project Conditions. The operations of the study intersections under Background Plus Project Conditions are discussed below.

Background Plus Project Traffic Volumes. Under Background Plus Project Conditions, the project would generate the same number of trips as under Existing Conditions. As discussed in the Trip Generation Table (Table V.I-8), the project is estimated to generate 35,106 net new daily vehicle trips, 3,274 net new AM peak hour trips, and 3,099 net new PM peak hour trips. The net new trips (Figure C-2 in Appendix B) from the projected 14,200 employees were added to the Background Conditions traffic projections (Figure C-4 of Appendix B) to develop traffic volumes for Background Plus Project Conditions. The resulting volumes are shown on Figure C-5 in Appendix B.

Background Intersection Levels of Service. The results of the LOS analysis for Background No Project and Background Plus Project Conditions are graphically shown on Figure V.I-9.

Appendix B of Appendix B contains the corresponding calculation sheets. A detailed LOS summary table (Table D-3) is in Appendix D of Appendix B, and a figure (Figure C-5 of Appendix B) detailing the intersection lane configurations, signal timings, and peak-hour turning movement volumes used to calculate the levels of service for the key intersections during each peak hour is in Appendix C of Appendix B.

The results of the LOS calculations indicate that all study intersections would operate at acceptable service levels (generally LOS D or better for City intersections and LOS E or better for CMP and regionally significant intersections) under Background Plus Project Conditions, with the exception of the following locations as shown in Table V.I-11:

- Int. 3. Stevens Creek Boulevard/Stelling Road (Cupertino): the addition of project traffic would exacerbate unacceptable LOS E operations during the PM peak hour.
- Int. 5. De Anza Boulevard/Homestead Road (Cupertino): the addition of project traffic would exacerbate unacceptable LOS E operations during the PM peak hour.
- Int. 9. De Anza Boulevard/McClellan Road (Cupertino): the addition of project traffic would exacerbate unacceptable LOS E+ operations during the PM peak hour.
- Int. 21. Wolfe Road/I-280 Northbound Ramps (Cupertino): the addition of project traffic would degrade intersection operations from acceptable LOS B to unacceptable LOS E during the AM peak hour.
- Int. 27. Tantau Avenue/Homestead Road (Cupertino): the addition of project traffic would degrade intersection operations from acceptable LOS D+ to unacceptable LOS E during the AM peak hour.
- Int. 31. Tantau Avenue/Vallco Parkway (Cupertino): the addition of project traffic would degrade intersection operations from acceptable LOS C to unacceptable LOS E+ during the AM peak hour.
- Int. 32. Tantau Avenue/Stevens Creek Boulevard (Cupertino): the addition of project traffic would degrade intersection operations from acceptable LOS D to unacceptable LOS E- during the PM peak hour.
- Int. 36. Stevens Creek Boulevard/Calvert Drive/I-280 Ramps (west) (Santa Clara): the addition of project traffic would exacerbate unacceptable LOS F operations during the PM peak hour.

Int. 40. Stevens Creek Boulevard/Lawrence Expressway (CMP): the addition of project traffic would degrade intersection operations from acceptable LOS D to unacceptable LOS F during the AM peak hour.

Int. 41. Lawrence Expressway/I-280 Southbound Ramps (CMP): the addition of project traffic would degrade intersection operations from acceptable LOS E to unacceptable LOS F during the PM peak hour.

Int. 52. Stevens Creek Boulevard/San Tomas Expressway (CMP): the addition of project traffic would exacerbate unacceptable LOS F operations during the PM peak hour.

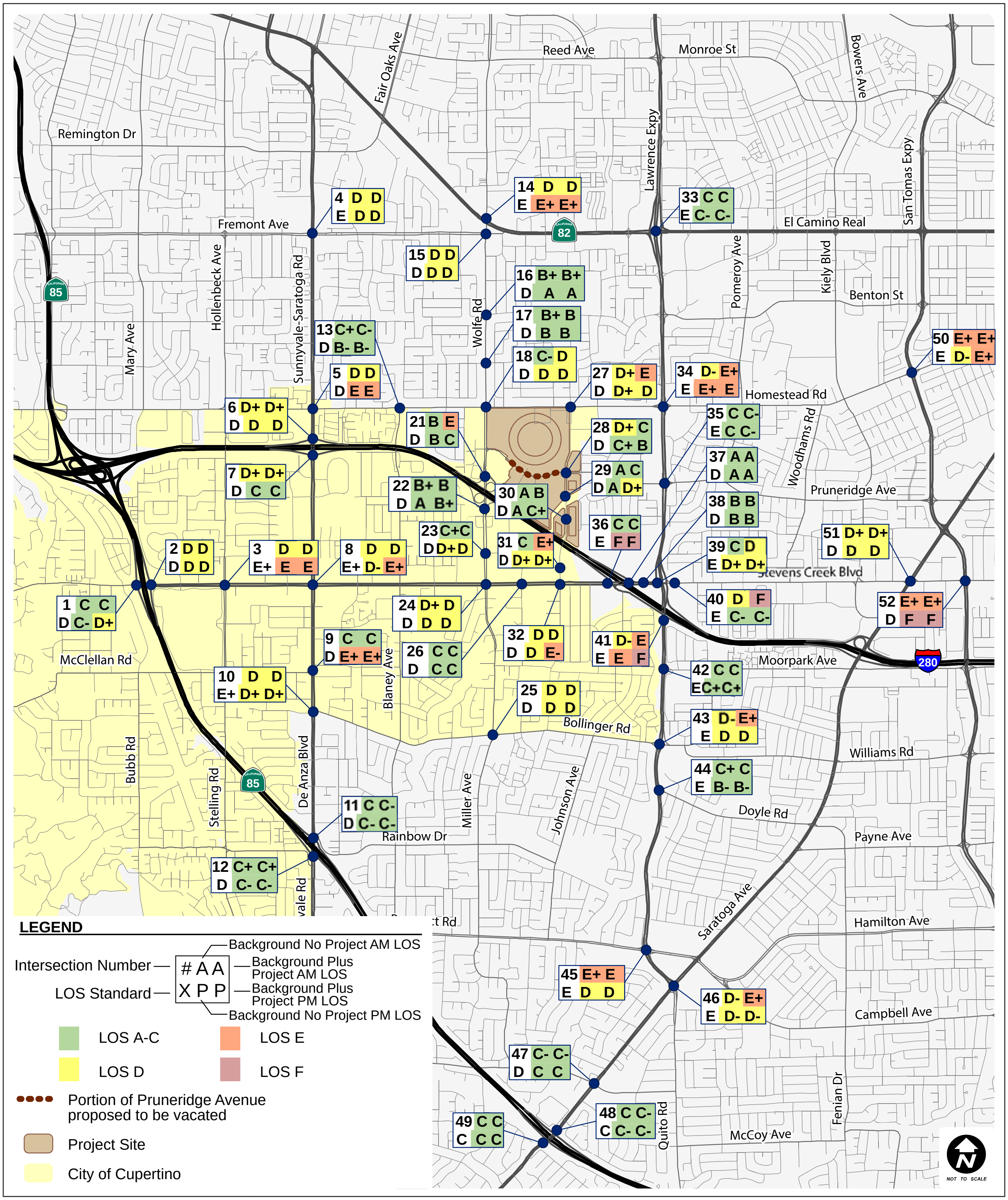
Table V.I-11: Levels of Service for Intersections Operating Unacceptably under Background Plus Project Conditions

Intersection		Peak Hour[a]	Jurisdiction[b]	Inter-section Control	Background Conditions		Background Plus Project Conditions			
					Delay[c]	LOS[d]	Delay[c]	LOS[d]	Change in Crit. V/C[e]	Change in Crit. Delay[f]
3	Stevens Creek Boulevard/Stelling Road	AM PM	CUP	Signal	44.3 **62.2**	D **E**	44.4 **62.7**	D **E**	+0.002 **+0.005**	+0.1 **+0.8**
5	De Anza Boulevard/ Homestead Road	AM PM	CUP	Signal	45.6 **61.3**	D **E**	46.5 **64.1**	D **E**	+0.002 **+0.014**	+0.2 **+4.0**
9	De Anza Boulevard/ McClellan Road	AM PM	CUP	Signal	31.1 **58.5**	C **E+**	31.2 **59.8**	C **E+**	+0.020 **+0.012**	+0.3 **+2.0**
21	Wolfe Road/I-280 Northbound Ramps	AM PM	CUP	Signal	13.2 15.3	B B	**68.9** 31.1	**E** C	**+0.389** +0.093	**+81.2** +19.9
27	Tantau Avenue/ Homestead Road	AM PM	CUP	Signal	36.3 36.9	D+ D+	**64.7** 49.9	**E** D	**+0.350** +0.204	**+37.8** +13.9
31	Tantau Avenue/ Vallco Parkway	AM PM	CUP	Signal	28.7 35.3	C D+	**56.8** 35.3	**E+** D+	**+0.453** +0.170	**+49.1** +0.8
32	Tantau Avenue/ Stevens Creek Boulevard	AM PM	CUP	Signal	41.4 49.0	D D	48.1 **75.6**	D **E-**	+0.135 **+0.148**	+10.6 **+41.9**
36	Stevens Creek Boulevard/Calvert Drive/I-280 Ramps (West)	AM PM	CMP	Signal	28.1 **92.7**	C **F**	29.0 **148.6**	C **F**	+0.144 **+0.216**	+3.1 **+105.7**
40	Stevens Creek Blvd/ Lawrence Ex Ramps (East)	AM PM	CMP	Signal	42.2 32.0	D C-	**80.5** 33.9	**F** C-	**+0.188** +0.043	**+51.3** +1.2
41	Lawrence Expressway/ I-280 Southbound Ramps	AM PM	CMP	Signal	54.1 73.0	D- E	74.7 **138.6**	E **F**	+0.084 **+0.155**	+26.4 **+68.0**
52	Stevens Creek Boulevard/San Tomas Expressway	AM PM	CMP	Signal	55.8 **101.6**	E+ **F**	56.5 **102.9**	E+ **F**	+0.006 **+0.005**	+1.0 **+2.4**

Notes:
[a] AM = morning peak hour; PM = afternoon peak hour
[b] Intersection Jurisdictions: CUP = City of Cupertino Intersection (LOS D threshold); CMP = CMP Intersection (LOS E threshold)
[c] Whole intersection weighted average control delay expressed in seconds per vehicle
[d] LOS = Level of Service
[e] Change in the critical volume-to-capacity ratio (V/C) between Background and Background Plus Project Conditions
[f] Change in critical movement delay between Background and Background Plus Project Conditions

Bold indicates unacceptable intersection operations. **Bold and highlighted** indicates significant impacts.

Source: Fehr & Peers, May 2013.



LSA

FIGURE V.I-9

NOT TO SCALE

Apple Campus 2 Project EIR
Background No Project and
Background Plus Project Intersection LOS Results

SOURCE: FEHR & PEERS, MAY, 2013.

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The critical delay is not projected to increase by more than 4 seconds and the critical V/C ratio is not projected to increase by more than 0.01 between the Background and Background Plus Project scenarios at the #3 Stevens Creek Boulevard/Stelling Road, #9 De Anza Boulevard/McClellan Road, and #52 Stevens Creek Boulevard/San Tomas Expressway intersections based on Cupertino's and VTA's impact criteria. Therefore the project is considered to have a less-than-significant impact at these intersections.

The project would exacerbate unacceptable conditions or cause unacceptable operating conditions at the following intersections, and these changes would be considered a significant impact.

- Int. 5. De Anza Boulevard/Homestead Road (Cupertino)
- Int. 21. Wolfe Road/I-280 Northbound Ramps (Cupertino)
- Int. 27. Tantau Avenue/Homestead Road (Cupertino)
- Int. 31. Tantau Avenue/Vallco Parkway (Cupertino)
- Int. 32. Tantau Avenue/Stevens Creek Boulevard (Cupertino)
- Int. 36. Stevens Creek Boulevard/Calvert Drive/I-280 Ramps (west) (CMP)
- Int. 40. Stevens Creek Boulevard/Lawrence Expressway Ramps (east) (CMP)
- Int. 41. Lawrence Expressway/I-280 Southbound Ramps (CMP)

The proposed project would result in significant intersection impacts under Background plus Project Conditions as discussed below.

Impact TRANS-4: Under Background Plus Project Conditions, completion of the proposed project would exacerbate unacceptable operations of intersection #5 De Anza Boulevard/ Homestead Road during the PM peak hour based on City of Cupertino LOS impact thresholds. (S)

Mitigation Measure TRANS-4: At intersection #5 De Anza Boulevard/Homestead Road the project sponsor shall construct an exclusive southbound right-turn lane (for a total of two left-turn lanes, three through lanes, and one right-turn lane) which would improve intersection operations to LOS E+. Although still considered an unacceptable LOS based on Cupertino's standards, this mitigation measure would improve operations over Background No Project Conditions.

With the mitigation measure identified above, secondary impacts associated with the removal of trees could occur. Trees are protected under the City of Cupertino's Tree Protection Ordinance. Impacts BIO-1 and BIO-3 in Section V.D, Biological Resources addresses these potential secondary impacts related to potential tree removal. (LTS)

<u>Impact TRANS-5</u>: Under Background plus Project Conditions, completion of the proposed project would cause intersection #21 Wolfe Road/I-280 Northbound Ramps to operate at an unacceptable level (change from LOS B to LOS E) during the AM peak hour based on City of Cupertino LOS impact thresholds. (S)

> <u>Mitigation Measure TRANS-5</u>: At intersection #21 Wolfe Road/I-280 Northbound Ramps, the project sponsor shall implement Mitigation Measure TRANS-1 (provide dual left- and right-turn lanes on the off-ramp), which would improve intersection operations to acceptable LOS B (18.0 seconds). However, the off-ramp intersection is under Caltrans jurisdiction. Therefore, neither the applicant nor the City of Cupertino can ensure the implementation of the proposed mitigation measure; thus the impact is considered significant and unavoidable. (SU)

<u>Impact TRANS-6</u>: Under Background plus Project Conditions, completion of the proposed project would cause intersection #27 Tantau Avenue/Homestead Road to operate at an unacceptable level (change from LOS D+ to LOS E) during the AM peak hour based on City of Cupertino LOS impact thresholds. (S)

> <u>Mitigation Measure TRANS-6</u>: At intersection #27 Tantau Avenue/Homestead Road the project sponsor shall construct an exclusive right-turn lane from eastbound Homestead Road to southbound Tantau Avenue (for a total of one eastbound left-turn lane, two eastbound through lanes, and one eastbound right-turn lane), which would improve intersection operations to acceptable LOS D- (52.6 seconds).
>
> With the mitigation measure identified above, secondary impacts associated with the removal of trees could occur. Trees are protected under the City of Cupertino's Tree Protection Ordinance. Impacts BIO-1 and BIO-3 in Section V.D, Biological Resources addresses these potential secondary impacts related to potential tree removal. (LTS)

<u>Impact TRANS-7</u>: Under Background plus Project Conditions, completion of the proposed project would cause intersection #31 Tantau Avenue/Vallco Parkway to operate at an unacceptable level (change from LOS C to LOS E+) during the AM peak hour based on City of Cupertino LOS impact thresholds. (S)

> <u>Mitigation Measure TRANS-7</u>: At intersection #31 Tantau Avenue/Vallco Parkway, the project sponsor shall implement Mitigation Measure TRANS-2 (add exclusive northbound through lane), which would improve intersection operations to acceptable LOS C (28.7 seconds). (LTS)

<u>Impact TRANS-8</u>: Under Background plus Project Conditions, completion of the proposed project would cause intersection #32 Tantau Avenue/Stevens Creek Boulevard to operate at an unacceptable level (change from LOS D to LOS E-) during the PM peak hour based on City of Cupertino LOS impact thresholds. (S)

> <u>Mitigation MeasureTRANS-8</u>: At intersection #32 Tantau Avenue/Stevens Creek Boulevard, the project sponsor shall construct a 100-foot exclusive southbound right-turn lane (for a total of two southbound left-turn lanes and one southbound right-turn lane), with associated improvements in the right-of-way, which would improve intersection operations to acceptable LOS D (46.8 seconds). (LTS)

Impact TRANS-9: Under Background plus Project Conditions, completion of the proposed project would exacerbate unacceptable operations of intersection #36 Stevens Creek Boulevard/ Calvert Drive/I-280 Ramps (west) during the PM peak hour based on CMP guidelines. (S)

Mitigation Measure TRANS-9a: At intersection #36 Stevens Creek Boulevard/Calvert Drive/I-280 Ramps (west), the project sponsor shall implement Mitigation Measure TRANS-3 (add exclusive eastbound right-turn lane), which would improve intersection operations to 112.2 seconds (LOS F). However, the Stevens Creek Boulevard/Calvert Drive/I-280 Ramps (west) intersection would continue to operate unacceptably. Providing a second right-turn lane would improve intersection operations to LOS E with 63.0 seconds of delay. However, there are right-of-way constraints that render a second right-turn lane infeasible, since there would be less than 7 feet of right-of-way available between the fence and curb on the south side of Steven Creek after implementation of Mitigation Measure TRANS-3. At minimum, 11 feet of right-of-way are needed to accommodate a second right-turn lane.

Mitigation Measure TRANS-9b: The project sponsor shall expand the TDM program to reduce the severity of the impact per the *TDM Program Expansion* subsection. Increasing the TDM participation and associated alternative mode share from 28 percent to 34 percent would improve operations to LOS F (142.8 seconds) without implementation of TRANS-3; however it would not reduce the impact to a less-than-significant level. A robust monitoring program has been identified in the *TDM Program Expansion* subsection and shall be required to ensure that this TDM program mitigation measure is implemented and that the required trip reduction is achieved. Details of the TDM program are discussed in the *TDM Program Expansion* subsection. (SU)

Impact TRANS-10: Under Background plus Project Conditions, completion of the proposed project would cause operations of intersection #40 Stevens Creek Boulevard/Lawrence Expressway Ramps (east) to operate at an unacceptable level (change from LOS D to LOS F) during the AM peak hour based on CMP guidelines. (S)

Mitigation Measure TRANS-10: At intersection #40 Stevens Creek Boulevard/Lawrence Expressway (east) the project sponsor shall construct a northbound left-turn lane (for a total of two exclusive left-turn lanes, one shared left-turn/through lane, and shared through/right-turn lane) from northbound Lawrence Expressway to westbound Stevens Creek Boulevard. This mitigation would improve intersection operations to LOS D (49.7 seconds). This improvement is physically feasible; however, it would require the construction of a retaining wall and modifications to the eastbound approach to accommodate the additional left-turn lane.

This intersection is a CMP intersection located within the City of Santa Clara. The project sponsor would be required to coordinate with VTA, City of Santa Clara, County of Santa Clara, and other responsible agencies to construct the identified physical improvement at the Stevens Creek Boulevard/Lawrence Expressway Ramps (east) intersection. Since this intersection is outside of the City of Cupertino's jurisdiction, the City cannot guarantee that the improvement would be constructed. For this reason the impact would remain significant and unavoidable. (SU)

Impact TRANS-11: Under Background plus Project Conditions, completion of the proposed project would cause operations of intersection #41 Lawrence Expressway/I-280 Southbound Ramps to operate at an unacceptable level (change from LOS E to LOS F) during the PM peak hour based on CMP guidelines. (S)

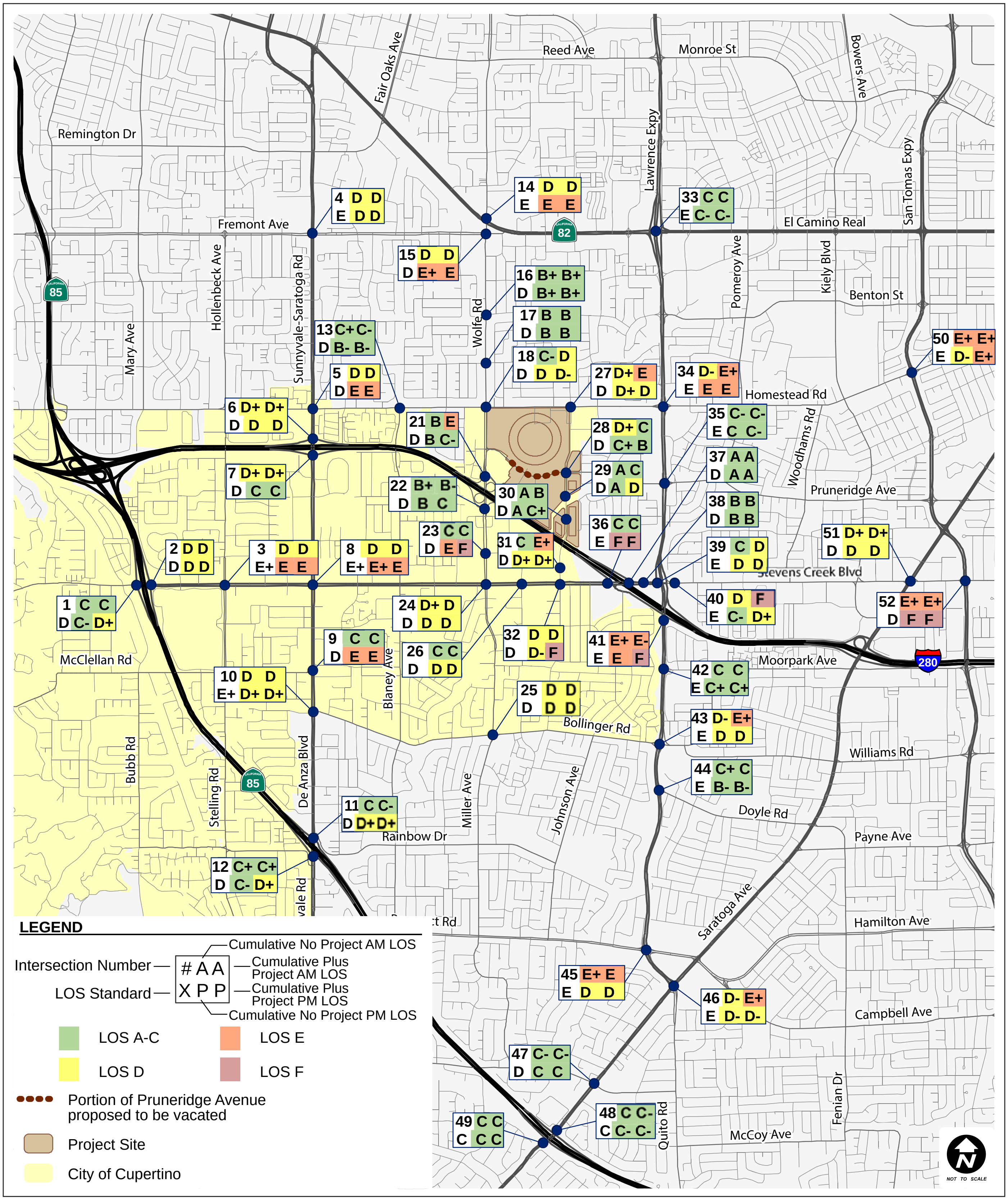
Mitigation Measure TRANS-11: At intersection #41 Lawrence Expressway/I-280 Southbound Ramps, the project sponsor shall construct an exclusive eastbound through lane (for a total of one shared left-turn/through lane, one through lane, and one right-turn lane), which would improve intersection operations to acceptable LOS E+ (56.9 seconds). The mitigation measure would require the construction of a new retaining wall along I-280, since Calvert Road would need to be curved to properly align with two receiving lanes at the on-ramp. There is existing right-of-way to accommodate this mitigation measure. However, the measure would require widening the existing bridge that crosses the creek running parallel to the west side of Lawrence Expressway. Any widening of the bridge shall be designed to avoid impacts to the creek channel and riparian vegetation.

This intersection is a CMP intersection on a County expressway and portions are likely within Caltrans right-of-way. The project sponsor would be required to coordinate with VTA, the County of Santa Clara, and other responsible agencies to construct the identified physical improvement at the Lawrence Expressway/I-280 Ramps intersection. Since this intersection is outside of the City of Cupertino's jurisdiction, the City cannot guarantee that it would be constructed. For this reason the impact would remain significant and unavoidable. (SU)

Cumulative Plus Project Conditions. The operations of the study intersections under Cumulative Plus Project Conditions are discussed below.

Cumulative Plus Project Traffic Volumes. Under Cumulative Plus Project Conditions the project would generate the same number of trips as under Existing and Background Conditions. The net new trips (Figure C-2 in Appendix B) were added to the Cumulative traffic projections (Figure C-6 in Appendix B) to develop traffic volumes for Cumulative Plus Project Conditions. The resulting volumes are shown on Figure C-7 in Appendix B.

Cumulative Intersection Levels of Service. The results of the LOS analysis for Cumulative No Project and Cumulative Plus Project Conditions are graphically shown on Figure V.I-10. Appendix B contains the corresponding calculation sheets. Table D-4 in Appendix B is a detailed LOS summary table, and Figure C-7 in Appendix B presents the intersection lane configurations, signal timings, and peak-hour turning movement volumes used to calculate the levels of service for the key intersections during each peak hour.



LSA

FIGURE V.I-10

NOT TO SCALE

Apple Campus 2 Project EIR

Cumulative No Project and Cumulative Plus Project Intersection LOS Results

SOURCE: FEHR & PEERS, MAY, 2013.

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The results of the LOS calculations indicate that all study intersections would operate at acceptable service levels (generally LOS D or better for City intersections and LOS E or better for CMP and regionally significant intersections) under Cumulative Plus Project Conditions, with the exception of the following locations as shown in Table V.I-12:

Int. 3. Stevens Creek Boulevard/Stelling Road (Cupertino): the addition of project traffic would exacerbate unacceptable LOS E operations during the PM peak hour.

Int. 5. De Anza Boulevard/Homestead Road (Cupertino): the addition of project traffic would exacerbate unacceptable LOS E operations during the PM peak hour.

Int. 8. De Anza Boulevard/Stevens Creek Boulevard (Cupertino): the addition of project traffic would degrade intersection operations from acceptable LOS E+ to unacceptable LOS E during the PM peak hour.

Int. 9. De Anza Boulevard/McClellan Road (Cupertino): the addition of project traffic would exacerbate unacceptable LOS E operations during the PM peak hour.

Int. 15. Wolfe Road/Fremont Avenue (Sunnyvale): the addition of project traffic would exacerbate unacceptable LOS E+/E operations during the PM peak hour.

Int. 21. Wolfe Road/I-280 Northbound Ramps (Cupertino): the addition of project traffic would degrade intersection operations from acceptable LOS B to unacceptable LOS E during the AM peak hour.

Int. 23. Wolfe Road/Vallco Parkway (Cupertino): the addition of project traffic would exacerbate unacceptable LOS F operations during the PM peak hour.

Int. 27. Tantau Avenue/Homestead Road (Cupertino): the addition of project traffic would degrade intersection operations from acceptable LOS D+ to unacceptable LOS E during the AM peak hour.

Int. 31. Tantau Avenue/Vallco Parkway (Cupertino): the addition of project traffic would degrade intersection operations from acceptable LOS C to unacceptable LOS E+ during the AM peak hour.

Int. 32. Tantau Avenue/Stevens Creek Boulevard (Cupertino): the addition of project traffic would degrade intersection operations from acceptable LOS D- to unacceptable LOS F during the PM peak hour.

Int. 36. Stevens Creek Boulevard/Calvert Drive/I-280 Ramps (west) (CMP): the addition of project traffic would exacerbate unacceptable LOS F operations during the PM peak hour.

Int. 40. Stevens Creek Boulevard/Lawrence Expressway Ramps (east) (CMP): the addition of project traffic would degrade intersection operation from acceptable LOS D to unacceptable LOS F during the AM peak hour.

Int. 41. Lawrence Expressway/I-280 Southbound Ramps (CMP): the addition of project traffic would degrade intersection operation from acceptable LOS E to unacceptable LOS F during the PM peak hour.

Int. 52. Stevens Creek Boulevard/San Tomas Expressway (CMP): the addition of project traffic would exacerbate unacceptable LOS F operations during the PM peak hour.

Table V.I-12: Levels of Service for Intersections Operating Unacceptably under Cumulative Plus Project Conditions

Intersection		Peak Hour[a]	Jurisdiction[b]	Intersection Control	Cumulative Conditions		Cumulative Plus Project Conditions			
					Delay[c]	LOS[d]	Delay[c]	LOS[d]	Change in Crit. V/C[e]	Change in Crit. Delay[f]
3	Stevens Creek Boulevard/Stelling Road	AM PM	CUP	Signal	44.3 **62.2**	D **E**	44.4 **62.7**	D **E**	+0.002 **+0.005**	+0.1 **+0.8**
5	De Anza Boulevard/ Homestead Road	AM PM	CUP	Signal	45.6 **61.4**	D **E**	46.5 **64.2**	D **E**	+0.002 **+0.014**	+0.2 **+4.0**
8	De Anza Boulevard/ Stevens Creek Blvd	AM PM	CUP	Signal	40.0 58.6	D E+	40.4 **62.5**	D **E**	+0.015 **+0.047**	+0.9 **+11.3**
9	De Anza Boulevard/ McClellan Road	AM PM	CUP	Signal	31.2 **61.0**	C **E**	31.4 **62.7**	C **E**	+0.020 **+0.012**	+0.3 **+2.6**
15	Wolfe Road/ Fremont Avenue	AM PM	SUN	Signal	46.4 **58.0**	D **E+**	47.3 **60.4**	D **E**	+0.021 **+0.033**	+0.4 **+3.1**
21	Wolfe Road/I-280 Northbound Ramps	AM PM	CUP	Signal	13.3 15.7	B B	**69.9** 32.1	**E** C-	**+0.389** +0.092	**+82.7** +20.9
23	Wolfe Road/ Vallco Parkway	AM PM	CUP	Signal	25.9 **64.6**	C **E**	31.3 **93.9**	C- **F**	+0.159 **+0.117**	+6.9 **+42.7**
27	Tantau Avenue/ Homestead Road	AM PM	CUP	Signal	36.3 36.9	D+ D+	**64.7** 49.9	**E** D	**+0.350** +0.204	**+37.8** +13.9
31	Tantau Avenue/ Vallco Parkway	AM PM	CUP	Signal	28.7 35.3	C D+	**56.8** 35.4	**E+** D+	**+0.453** +0.170	**+49.1** +0.9
32	Tantau Avenue/ Stevens Creek Blvd	AM PM	CUP	Signal	41.4 52.1	D D-	48.6 **83.4**	D **F**	+0.135 **+0.148**	+11.4 **+48.0**
36	Stevens Creek Blvd/Calvert Drive/ I-280 Ramps (West)	AM PM	CMP	Signal	28.2 **98.1**	C **F**	29.3 **151.4**	C **F**	+0.144 **+0.216**	+3.4 **+106.0**
40	Stevens Creek Blvd/ Lawrence Ex Ramps (east)	AM PM	CMP	Signal	43.7 33.8	D C-	**84.6** 36.3	**F** D+	**+0.188** +0.043	**+54.8** +2.2
41	Lawrence Expressway/ I-280 SB Ramps	AM PM	CMP	Signal	55.1 74.8	E+ E	76.3 **141.7**	E- **F**	+0.084 **+0.155**	+27.1 **+68.0**
52	Stevens Creek Blvd/ San Tomas Expressway	AM PM	CMP	Signal	55.8 **101.8**	E+ **F**	56.5 **103.1**	E+ **F**	+0.006 **+0.005**	+1.0 **+2.4**

Notes:
[a] AM = morning peak hour; PM = afternoon peak hour
[b] Intersection Jurisdictions: CUP = City of Cupertino Intersection (LOS D threshold, except at #8, LOS E+); SUN = City of Sunnyvale Intersection (LOS D threshold); CMP = CMP Intersection (LOS E threshold)
[c] Whole intersection weighted average control delay expressed in seconds per vehicle
[d] LOS = Level of Service
[e] Change in the critical volume-to-capacity ratio (V/C) between Cumulative and Cumulative Plus Project Conditions
[f] Change in critical movement delay between Cumulative and Cumulative Plus Project Conditions

Bold indicates unacceptable intersection operations. **Bold and highlighted** indicates significant impacts.

Source: Fehr & Peers, May 2013.

At four intersections (intersection numbers 3, 9, 15, and 52) the critical delay during the PM peak hour is not projected to increase by more than 4 seconds and the critical V/C ratio is not projected to increase by more than 0.01 between the Cumulative and Cumulative Plus Project scenarios; therefore the project would have a less-than-significant impact at the #3 Stevens Creek Boulevard/Stelling

Road, #9 De Anza Boulevard/McClellan Road, #15 Wolfe Road/Fremont Avenue, and #52 Stevens Creek Boulevard/ San Thomas Expressway intersections based on Cupertino's, Sunnyvale's, and VTA's impact criteria.

The project would exacerbate unacceptable conditions or cause unacceptable operating conditions at the following intersections, and these changes would be considered a significant impact.

Int. 5. De Anza Boulevard/Homestead Road (Cupertino)

Int. 8. De Anza Boulevard/Stevens Creek Boulevard (Cupertino)

Int. 21. Wolfe Road/I-280 Northbound Ramps (Cupertino)

Int. 23. Wolfe Road/Vallco Parkway (Cupertino)

Int. 27. Tantau Avenue/Homestead Road (Cupertino)

Int. 31. Tantau Avenue/Vallco Parkway (Cupertino)

Int. 32. Tantau Avenue/Stevens Creek Boulevard (Cupertino)

Int. 36. Stevens Creek Boulevard/Calvert Drive/I-280 Ramps (west) (CMP)

Int. 40. Stevens Creek Boulevard/Lawrence Expressway (east) (CMP)

Int. 41. Lawrence Expressway/I-280 Southbound Ramps (CMP)

The proposed project would result in significant intersection impacts under Cumulative plus Project Conditions, as discussed below.

Impact TRANS-12: Under Cumulative plus Project Conditions, completion of the proposed project would exacerbate unacceptable operations of intersection #5 De Anza Boulevard/ Homestead Road during the PM peak hour based on City of Cupertino LOS impact thresholds. (S)

Mitigation Measure TRANS-12: At intersection #5 De Anza Boulevard/Homestead Road intersection, the project sponsor shall implement Mitigation Measure TRANS-4 (add exclusive southbound right-turn lane), which would improve intersection operations to LOS E+ (58.9 seconds). Though LOS E+ is not considered acceptable at the #5 De Anza Boulevard/ Homestead Road intersection, the LOS would improve to better operating conditions than under the Cumulative No Project scenario and the impact would be considered less than significant. (LTS)

Impact TRANS-13: Under Cumulative plus Project Conditions, completion of the proposed project would cause intersection #8 De Anza Boulevard/Stevens Creek Boulevard to operate at an unacceptable level (change from LOS E+ to LOS E) during the PM peak hour based on City of Cupertino LOS impact thresholds. (S)

Mitigation Measure TRANS-13a: At intersection #8 De Anza Boulevard/Stevens Creek Boulevard, the provision of an exclusive southbound right-turn lane (for a total of two left-turn lanes, four through lanes, and one right-turn lane) and adjusting the signal timings to accommodate the added turn lane would improve intersection operations to acceptable levels at LOS E+ with 58.9 seconds of average delay. However, this improvement is physically not feasible, since the widening of the roadway to accommodate the southbound right-turn lane would impact an underground garage belonging to the office development on the northwest corner of the De Anza Boulevard/Stevens Creek Boulevard intersection; therefore the impact at the De Anza Boulevard/Stevens Creek Boulevard intersection is considered significant and unavoidable.

Mitigation Measure TRANS-13b: The project sponsor shall expand the TDM program to reduce the severity of the impact. Increasing the TDM participation and associated alternative mode share from 28 percent to 34 percent would improve operations to LOS E (62.1 seconds); however the increase in TDM participation would not reduce the impact to a less-than-significant level. (SU)

Impact TRANS-14: Under Cumulative plus Project Conditions, completion of the proposed project would cause intersection #21 Wolfe Road/I-280 Northbound Ramps to operate at an unacceptable level (change from LOS B to LOS E) during the AM peak hour based on City of Cupertino LOS impact thresholds. (S)

Mitigation Measure TRANS-14: At intersection #21 Wolfe Road/I-280 Northbound Ramps, the project sponsor shall implement Mitigation Measure TRANS-1 (provide dual left- and right-turn lanes), which would improve intersection operations to acceptable LOS B (18.1 seconds). However, because this intersection is under Caltrans jurisdiction, the City cannot guarantee that the improvement would be constructed. For this reason, the impact would remain significant and unavoidable. (SU)

Impact TRANS-15: Under Cumulative plus Project Conditions, completion of the proposed project would exacerbate unacceptable operations of intersection #23 Wolfe Road/Vallco Parkway during the PM peak hour based on City of Cupertino LOS impact thresholds. (S)

Mitigation Measure TRANS-15: The project sponsor shall contribute a pro rata share to modify the traffic signal operations to provide an overlap phase for the westbound right-turn movement, which would provide for a green right-turn arrow while the southbound left-turn movement has its green time. Southbound U-turns shall also be prohibited. To accommodate the overlap phase the geometries at the westbound approach would be modified to provide one left-turn lane, one shared left-turn/through lane, and two right-turn lanes.

Providing a westbound overlap phase could have secondary impacts, since southbound vehicles wanting to travel northbound would have to travel to the Stevens Creek Boulevard/Wolfe Road intersection to access northbound Wolfe Road. Field observations were conducted to determine the existing percentage of vehicles making U-turns at the intersections. The field data was used to estimate the impact of diverting U-turns from Vallco Parkway to Stevens Creek Boulevard. The LOS results show that both the Wolfe Road/Vallco Parkway (42.4 seconds and LOS D) and Stevens Creek Boulevard/Wolfe Road intersections (49.9 seconds and LOS D) would operate acceptably with the proposed southbound U-turn restrictions at the Wolfe Road/Vallco Parkway intersection. The project impact would be reduced to a less-than-significant level. (LTS)

Impact TRANS-16: Under Cumulative plus Project Conditions, completion of the proposed project would cause intersection #27 Tantau Avenue/Homestead Road to operate at an unacceptable level (change from LOS D+ to LOS E) during the AM peak hour based on City of Cupertino LOS impact thresholds. (S)

Mitigation Measure TRANS-16: At intersection #27 Tantau Avenue/Homestead Road, the project sponsor shall implement Mitigation Measure TRANS-6 (add exclusive eastbound right-turn lane), which would improve intersection operations to acceptable LOS D- (52.6 seconds). (LTS)

Impact TRANS-17: Under Cumulative plus Project Conditions, the project would cause intersection #31 Tantau Avenue/Vallco Parkway to operate at an unacceptable level (change from LOS C to LOS E+) during the AM peak hour based on City of Cupertino LOS impact thresholds. (S)

Mitigation Measure TRANS-17: At intersection #31 Tantau Avenue/Vallco Parkway, the project sponsor shall implement Mitigation Measure TRANS-2 (add exclusive northbound through lane), which would improve intersection operations to LOS C (28.7 seconds). (LTS)

Impact TRANS-18: Under Cumulative plus Project Conditions, completion of the proposed project would cause intersection #32 Tantau Avenue/Stevens Creek Boulevard to operate at an unacceptable level (change from LOS D- to LOS F) during the PM peak hour based on City of Cupertino LOS impact thresholds. (S)

Mitigation Measure TRANS-18: At intersection #32 Tantau Avenue/Stevens Creek Boulevard, the project sponsor shall implement Mitigation Measure TRANS-8 (add exclusive southbound right-turn lane), which would improve intersection operations to LOS D (49.4 seconds). (LTS)

Impact TRANS-19: Under Cumulative plus Project Conditions, completion of the proposed project would exacerbate unacceptable operations of intersection #36 Stevens Creek Boulevard/ Calvert Drive/I-280 Ramps (west) during the PM peak hour based on CMP guidelines. (S)

Mitigation Measure TRANS-19a: Potential physical improvements as mitigation measures for intersection #36 Stevens Creek Boulevard/Calvert Drive/I-280 Ramps are discussed under Mitigation Measure TRANS-9a (add two exclusive eastbound right-turn lanes). However, there are right-of-way constraints that render this mitigation measure infeasible. Additionally, this intersection is within the City of Santa Clara, and the City has no control over the implementation of the mitigation measure; therefore the impact is considered significant and unavoidable.

Mitigation Measure TRANS-19b: The project sponsor shall expand the TDM program to reduce the severity of the impact (Mitigation Measure TRANS-9a). Increasing the TDM participation and associated alternative mode share from 28 percent to 34 percent would improve operations to LOS F (145.8 seconds) without implementation of Mitigation Measure TRANS-9a; however the increase in TDM participation would not reduce the impact to a less-than-significant level. (SU)

Impact TRANS-20: Under Cumulative plus Project Conditions, completion of the proposed project would cause operations of intersection #40 Stevens Creek Boulevard/Lawrence Expressway Ramps (east) to operate at an unacceptable level (change from LOS D to LOS F) during the AM peak hour based on CMP guidelines. (S)

Mitigation Measure TRANS-20: For intersection #40 Stevens Creek Boulevard/Lawrence Expressway Ramps (east), the project sponsor shall implement Mitigation Measure TRANS-10 (add exclusive northbound left-turn lane), which would improve intersection operations to LOS D- (52.3 seconds). Since this intersection is outside of the City of Cupertino's jurisdiction, the City cannot guarantee that the improvement would be constructed. For this reason the impact would remain significant and unavoidable. (SU)

Impact TRANS-21: Under Cumulative plus Project Conditions, completion of the proposed project would cause operations of intersection #41 Lawrence Expressway/I-280 Southbound Ramps to operate at an unacceptable level (change from LOS E to LOS F) during the PM peak hour based on CMP guidelines. (S)

Mitigation Measure TRANS-21: For intersection #41 Lawrence Expressway/I-280 Ramps, the project sponsor shall implement Mitigation Measure TRANS-11 (add exclusive eastbound through lane), which would improve intersection operations to acceptable LOS E+ (58.3 seconds). Since this intersection is outside of the City of Cupertino's jurisdiction, the impact would remain significant and unavoidable. (SU)

Wolfe Road and Tantau Avenue Corridor Operations Analysis. A detailed traffic operations analysis using traffic mircosimulation software (VISSIM) was conducted to assess operations on the Wolfe Road and Tantau Avenue corridors near the project site with the addition of project traffic and physical changes proposed as part of the project, including:

- Adding a new signalized intersection on Wolfe Road at the proposed new main driveway in close proximity to the existing signalized intersections at Homestead Road and Pruneridge Avenue;
- Widening Wolfe Road;
- Adding two new signalized intersections on Tantau Avenue, providing access to the main site's parking garage and the proposed Transit Center; and
- Reconfiguring Tantau Avenue, including the I-280 overcrossing.

The microsimulation analysis reflects the movement of individual vehicles on the roadway system and the effects of vehicles weaving, merging, and queuing between intersections.

Wolfe Road Evaluation. The microsimulation analysis was used to evaluate the following traffic operational questions related to the added intersection and other lane modifications on Wolfe Road:

- Would the addition of a new signalized intersection at the proposed new project driveway create major increases in delay and excessive queuing for vehicles traveling on Wolfe Road?

- What are the optimal geometries to accommodate vehicular, pedestrian, and bicycle traffic at the #19 Wolfe Road/Project Access driveway intersection and what would be the operational differences for two versus three left-turn lanes out of the site?
- Would the Wolfe Road overcrossing of I-280 need to be widened on the northbound approach to accommodate the addition of project traffic?

Effect of the Added Intersection. The effect of the added intersection to Wolfe Road traffic operations was evaluated based on the projected delays for vehicles on the Wolfe Road approaches to the intersections at Homestead Road, the Project Access and Pruneridge Avenue. (In previous sections, the average delays for the entire intersection are presented. Approach delays can be different than the total intersection delay and are not used for impact assessment.) The results are presented in Table V.I-13.

Table V.I-13: Wolfe Road VISSIM Approach Delays and Levels of Service

Intersection		Approach[b]	Delays (LOS)[a]	
			AM Peak 15-Minutes[b]	PM Peak 15-Minutes
18	Wolfe Road/Homestead Road	Northbound Southbound	30 (C) 68 (E)	71 (E) 138 (F)
19	Wolfe Road/Project Access	Northbound Southbound Westbound	13 (B) 24 (C) 34 (C)	17 (B) 19 (C) 861 (F)
20	Wolfe Road/Pruneridge Avenue	Northbound Southbound	43 (C) 4 (A)	39 (D) 10 (B)

Notes:
[a] Approach weighted average control delay expressed in seconds per vehicle. Delay is presented for worst 15 minutes. LOS = Level of Service based on control delay as presented in HCM 2000.
[b] In previous chapters, the average delay for the entire intersection is presented. For the purpose of this analysis select approach delays are presented, which include the average delay for all vehicles on the specified intersection approach. Approach delays can be different than the total intersection delay and are not used for impact assessment.
Source: Fehr & Peers, May 2013.

The intersection approaches on Wolfe Road would operate acceptably with the exception of the southbound approach at the #18 Wolfe Road/Homestead Road intersection during the highest 15-minute period during the PM peak hour.[17] The Wolfe Road approaches at the #19 Wolfe Road/Project Access intersection would operate at LOS C or better.

VISSIM also provides animations of the traffic operation analysis results. The animations show that with the roadway improvements included as part of the project and effective signal coordination, queues would extend between intersections but would not affect or block adjacent intersections. Therefore, the new signalized #19 Wolfe Road/Project Access intersection can be accommodated in the Wolfe Road corridor.

Lane Geometrics at the #19 Wolfe Road/Project Access Intersection. The VISSIM analysis was also used to determine the optimal vehicular lane geometrics at the #19 Wolfe Road/Project Access intersection to accommodate the project's vehicular traffic, while balancing the needs and safety of

[17] Individual intersection leg approach delays can still operate at unacceptable LOS, while an acceptable overall intersection delay is maintained.

through traffic on Wolfe Road, bicyclists, and pedestrians. This analysis included an evaluation of the tradeoffs between providing three left-turns out of the driveway (as proposed) or providing two left-turn lanes.

There are safety, as well as operational implications associated with three left-turn lanes that are different from two left-turn lanes. With three left-turn lanes, there could be substantially more "weaving" conflicts as vehicles turning left from the project driveway onto southbound Wolfe Road attempt to merge within a short distance to access the I-280 freeway ramps, as described below. Since a majority of the drivers using the Wolfe Road driveway (approximately 85 percent) are projected to enter the I-280 northbound and southbound on-ramps, queues in the two right-most left-turn lanes would be longer. The shorter queue in the left-most left-turn lane would encourage drivers – even though their ultimate destination is one of the freeway on ramps – to enter this lane due to a shorter wait to exit the campus. These drivers may attempt to weave and merge immediately after turning to align themselves in the correct lane to enter the freeway. In some cases, these drivers would need to make a two-lane lane change within 550 feet (the distance between the driveway and the location on southbound Wolfe Road where the right side lane becomes an exit only lane) to access the I-280 northbound on-ramp, potentially impacting the safety of drivers in all lanes. There are no effective ways to fully mitigate this potential behavior while still retaining three lanes out of the site. Therefore the proposed project would pose a safety concern on Wolfe Road because there would be a short distance in which drivers would have to merge and align into the correct lanes to enter the freeway upon exiting the campus.

The provision of three left-turn lanes would also have adverse effects on Wolfe Road corridor operations. Several metrics were used to evaluate the operational impacts of the two lane configurations, including approach delays, percent of demand served, travel times, and total delays.[18] The analysis focuses on PM peak hour operations, since this is when the demand for the westbound left-turn movement out of the project site is the highest. The results are summarized in Table V.I-14.

With the three-lane option, traffic would be able to leave the Apple campus and enter Wolfe Road at a faster rate and with higher vehicle concentrations. This would create more vehicular delay for drivers travelling southbound on Wolfe Road, as demonstrated by the higher delays at the intersections and the higher travel time. With three left-turn lanes (compared to two left-turn lanes), the delay during the PM peak hour on Wolfe Road for non-Apple traffic would increase by 45 percent, from approximately 145 seconds (2.5 minutes) to 210 seconds (3.5 minutes), for a total increase in delay of approximately 44 hours. Additionally, the higher volumes on southbound Wolfe Road would slow the rate of vehicles exiting northbound I-280 to Wolfe Road, causing higher delays for those vehicles and creating a greater potential for vehicle queues to extend onto the freeway mainline.

In addition, pedestrian crossing distances would be greater with the three-lane configuration. Long crossing distances tend to discourage pedestrian access and the provision of three left-turn lanes would tend to exacerbate poor conditions for pedestrians in the area, which are characterized by busy, high-volume roadways, large blocks (with few east/west crossings), and complex intersection geometries.

[18] "Total delay" refers to the combined delay experienced by all drivers at a specific approach during the peak hour.

Table V.I-14: Travel Metric Comparisons of Two Versus Three Left-Turn Lanes on Wolfe Road Driveway During the PM Peak Hour

Item[a]	2 Left-Turn Lanes	3 Left-Turn Lanes	Difference[b]
Pedestrian Crossing Distance Across Project Driveway at #19 Wolfe Road/Project Access	63 feet	75 feet	+ 12 feet
Average Delay during Peak 15 Minutes for Exiting (Westbound) Vehicles at #19 Wolfe Road/Project Access Intersection	913 seconds/vehicle	532 seconds/vehicle	- 381 seconds/vehicle
Percent of Demand Served for Vehicles Exiting (Westbound) at #19 Wolfe Road/Project Access Intersection	66%	84%[c]	+ 18 percentage points
Average Delay for Southbound Approach at #19 Wolfe Road/Project Access[d]	15 seconds/vehicle	23 seconds/vehicle	+ 8 seconds/vehicle
Average Delay for Southbound Approach at #20 Wolfe Road/ Pruneridge Avenue[d]	9 seconds/vehicle	12 seconds/vehicle	+ 3 seconds/vehicle
Average Delay for Southbound Approach at #21 Wolfe Road/I-280 Ramps (north)[d]	9 seconds/vehicle	23 seconds/vehicle	+ 14 seconds/vehicle
Average Delay for Northbound Approach at #19 Wolfe Road/Project Access Intersection[d]	16 seconds/vehicle	17 seconds/vehicle	+ 1 second/vehicle
Average Delay for Northbound Approach at #20 Wolfe Road/ Pruneridge Avenue[d]	38 seconds/vehicle	39 seconds/vehicle	+ 1 second/vehicle
Average Delay for Northbound Approach at #21 Wolfe Road/I-280 Ramps (north)[d]	5 seconds/vehicle	5 seconds/vehicle	0 seconds/vehicle
Average Delay for Westbound Approach at #21 Wolfe Road/I-280 Ramps (north)[e]	47 seconds/vehicle	118 seconds/vehicle	+ 71 seconds/vehicle
Travel Time for Vehicles Exiting Site from the Garage to Travel to the Northbound I-280 On-Ramp	14:49	9:33	- 5:16
Travel Time for Vehicles Traveling South on Wolfe Road to Travel to the Southbound I-280 On-Ramp (from end of Queue at Main Driveway)	2:25	3:31	+1:06
Total Vehicle Hours of Delay for Exiting (Westbound) Vehicles at #19 Wolfe Road/Project Access Intersection	365 hours	213 hours	- 152 hours
Total Vehicle Hours of Delay for Non-Apple vehicles Traveling South on Wolfe Road	97 hours	141 hours	+ 44 hours

Notes:

[a] Delay information is presented for worst 15 minutes, while travel time information presented is for average travel time over entire hour.

[b] Difference between 2 and 3 left-turn lanes expressed as 3 left-turn results minus 2 left-turn results.

[c] Not 100% because downstream congestion due to added traffic has spillback effect.

[d] In previous sections, the average delay for the total intersection has been presented. For the purpose of this analysis select approach delays are presented, which include the average delay for vehicles on a specific intersection approach. Approach delays can be different than the total intersection delay and are not used for impact assessment.

Source: Fehr & Peers, May 2013.

With the two-lane configuration the travel time for vehicles leaving the project site during the PM peak hour would be approximately 55 percent higher and change from about 9.5 minutes to nearly 15 minutes, which would result in a total increase in delay of 152 hours. However, Apple employees would be expected to adjust their schedules to leave during less congested time periods, so that the actual delays may be lower. Plus, the project sponsor could implement measures to manage exiting traffic flows, thus further reducing the delay for vehicles leaving the project site. The volume of vehicles turning left with only two left turns would be lower during each traffic signal cycle, resulting in less of an impact to the corridor operations on Wolfe Road.

Therefore, a two-lane configuration would mitigate the potential for unsafe vehicle movements out of the site and on Wolfe Road. In addition, it would result in fewer overall delays along the Wolfe Road corridor and lower delays and queue spillback at the I-280 northbound off-ramp compared to the three-lane option. Furthermore, it would improve pedestrian comfort and access in the area through the provision of shorter crossing distances.

Impact TRANS-23: Based on City of Cupertino standards, the design of the project with three left-turn lanes on the Wolfe Road driveway approach would cause a substantial increase in conflicts due to vehicles weaving on Wolfe Road between the driveway and the I-280 ramps in order to merge and align into the correct lanes to enter the freeway upon exiting the campus. (SU)

Mitigation Measure TRANS-23: At the main project driveway on Wolfe Road, the project sponsor shall reduce the number of left turn lanes from three to two. This would reduce the weaving on southbound Wolfe Road between the driveway and the I-280 northbound on-ramp since there would be, at most, a one-lane lane change in order for drivers to align themselves to the correct lane. (LTS)

I-280 Overcrossing. The Wolfe Road overcrossing of I-280 has two travel lanes in each direction for a total of four travel lanes. The project would add a considerable amount of traffic to the overcrossing, particularly in the northbound direction during the morning peak period and the southbound direction in the evening peak period. A large percentage (over 30 percent) of the project traffic is projected to come from the north on I-280. In the morning this traffic would use the I-280 southbound off-ramp at Wolfe Road and make a left-turn to access the project site via the I-280 overcrossing. In the PM peak hour, the vehicles returning to northbound I-280 would not use the overcrossing, since the I-280 northbound on-ramp is located before (north of) the overcrossing. The VISSIM analysis was used to determine whether the four-lane overcrossing could accommodate the added project traffic. The results showed that there would be added vehicular delay and queuing with project traffic; however, excessive queuing and delays would not occur.

The VISSIM model was used to assess the changes in traffic operations with the addition of a third northbound lane on the overcrossing. The results showed that the third lane would not improve operations appreciably because more than half of the northbound traffic would be entering the project driveway and therefore would use the two right-most lanes; only a small percentage of the traffic would use the third lane. Therefore, it was determined that the overpass with four travel lanes would be sufficient to accommodate the projected growth on the Wolfe Road I-280 overcrossing.

In addition, the VISSIM model was used to assess the changes in traffic operations with the addition of a third southbound lane. During the PM peak period, the southbound I-280 loop on-ramp from southbound Wolfe Road was assumed to be metered at a metering rate close to the maximum rate allowed by Caltrans.[19] With this assumption, the VISSIM model showed some queuing on south-bound Wolfe Road at the overcrossing; however queues were not observed to extend more than halfway on the overcrossing and were not observed to occur frequently.

Tantau Avenue Evaluation. The project would construct two new signalized intersections on Tantau Avenue. The primary new signal would be the second major project driveway (#29), located approximately 700 feet south of the existing #28 Tantau Avenue/Pruneridge Avenue intersection. Additionally, a signal is proposed at the egress point to the Transit Center north of the Pruneridge Avenue intersection (#28). The VISSIM analysis was used to evaluate two questions related to the Tantau Avenue corridor:

- How would the addition of the new signalized intersections on Tantau Avenue affect operations of the corridor?
- How would the changes in lane-drops/additions affect corridor operations?

The VISSIM microsimulation results to these two items are discussed below.

Added Signalized Intersections. The results of the VISSIM analysis show that Tantau Avenue would operate acceptably with the added intersections.

Tantau Avenue/Vallco Parkway Intersection. A significant amount of queuing would occur in the southbound direction with the existing geometries at the #31 Tantau Avenue/Vallco Parkway intersection. Adding a right-turn lane on southbound Tantau Avenue at Vallco Parkway would reduce vehicle congestion and queuing on southbound Tantau Avenue. Table V.I-15 summarizes the travel time results without and with the recommended improvement for southbound vehicles from the Tantau Avenue main campus driveway to Vallco Parkway.

Table V.I-15: PM Peak Hour Travel Times on Southbound Tantau Avenue

Southbound Tantau Avenue Geometries at Vallco Parkway (#31)	
Shared Through/Right-Turn Lane	**Dedicated Right-Turn Lane**
8:24	4:21

Notes:

[a] Travel time from Tantau Avenue main campus driveway to west of Tantau Avenue/Vallco Parkway intersection.

Source: Fehr & Peers, May 2013.

There would be a substantial increase in travel time and delays without the addition of a dedicated southbound right-turn lane at the #31 Tantau Avenue/Vallco Parkway intersection.

[19] Ramp metering rates are established based on the combination of freeway operations and queue spill-back onto local streets. Generally, if queues are detected on local streets, the metering rates are increased to contain the queues on the ramps themselves and to minimize impacts to the local streets.

Impact TRANS-24: Completion of the proposed project would cause excessive vehicle queues on the southbound Tantau Avenue at Vallco Parkway based on City of Cupertino standards. (S)

Mitigation Measure TRANS-24: The project sponsor shall provide a dedicated southbound right-turn lane at the Tantau Avenue/Vallco Parkway intersection. (LTS)

Tantau Avenue/Pruneridge Avenue Intersection. As proposed, the northbound approach at the #28 Tantau Avenue/Pruneridge Avenue intersection would have one through lane and one approximately 100-foot right-turn pocket. During the PM peak hour an even number of vehicles are projected to use both the through and right-turn lanes (approximately 600 vehicles each). Though the model shows that this intersection generally operates well, queues do occasionally spill back to the #29 Tantau/Project Access intersection. As a condition of approval it is recommended that the northbound right-turn pocket be extended to the #29 Tantau Avenue/Project Access intersection to provide for better operations along the Tantau Avenue corridor.

Condition of Approval CA-TRANS-1: Apple shall extend the northbound right-turn pocket at #28 Tantau Avenue/Pruneridge Avenue to the #29 Tantau Avenue/Project Access intersection (approximately 600 feet) to provide for improved operations along the Tantau Avenue corridor.

Evaluation of Freeway Ramps. The VISSIM simulation analysis was also conducted to evaluate impacts of the project on the operations of I-280/Wolfe Road on and off-ramps. The addition of project traffic would cause excessive queuing on the Wolfe Road/I-280 off-ramps that would extend onto the freeway mainline.

Impact TRANS-25: As part of the project, the project sponsor would widen the northbound I-280 off-ramp at Wolfe Road to accommodate two lanes and reduce excessive queue spillback onto the freeway. If Caltrans does not approve this improvement, excessive queue spillback would occur (City of Cupertino). (S)

Mitigation Measure TRANS-25: The project sponsor shall widen the northbound I-280 off-ramp at Wolfe Road to accommodate two lanes. The project sponsor would need to work with City staff, VTA, and Caltrans to plan, design and construct the widening with all funding provided by the project sponsor. The off-ramp is under Caltrans jurisdiction. Therefore, the City of Cupertino cannot ensure the implementation of the proposed mitigation measure; thus the impact is considered significant and unavoidable. (SU)

Impact TRANS-26: As part of the project, the project sponsor would widen the southbound I-280 off-ramp at Wolfe Road to accommodate two lanes and reduce excessive queue spillback onto the freeway. If Caltrans does not approve this improvement, excessive queue spillback would occur (City of Cupertino). (S)

Mitigation Measure TRANS-26: The project sponsor shall widen the southbound I-280 off-ramp at Wolfe Road to accommodate two lanes. The project sponsor would need to work with City staff, VTA, and Caltrans to plan, design, and construct the widening with all funding provided by the project sponsor. Widening of the freeway off-ramp to accommodate a second off-ramp lane and shoulder would likely require the removal of existing landscaping in front of the soundwall. The feasibility of this mitigation measure cannot be assured and the off-ramp is under Caltrans jurisdiction. Therefore, the City of Cupertino cannot ensure the implementation of the proposed mitigation measure and the impact is considered significant and unavoidable. (SU)

Evaluation of Adjacent Driveway Conditions. The Cupertino Village has a driveway on Wolfe Road that is directly north of/adjacent to the new project driveway intersection. Vehicles exiting the driveway might try to maneuver across the three southbound through lanes to access the left-turn lanes to turn into the project site or make a U-turn, resulting in hazardous conditions for vehicles. Additionally, during the peak commute periods, the southbound traffic volumes are high and may create queues that effectively block driveway access, which could potentially lead to impatient drivers merging into traffic when there are insufficient gaps. This driveway should be restricted to right turns in only or closed due to its proximity to the new signalized intersection.

Impact TRANS-27: The proposed location of the project driveway intersection on Wolfe Road and the associated congestion would result in hazards for vehicles exiting the southernmost Wolfe Road driveway to the Cupertino Village shopping center (City of Cupertino and CEQA). (S)

Mitigation Measure TRANS-27: The southernmost driveway to the Cupertino Village should be closed or restricted to right-turns in only. With this mitigation the impact would be less-than-significant. (LTS)

Evaluation of Pedestrian Facilities. The project would provide new facilities around and in the immediate vicinity of the project site to improve pedestrian access. The main pedestrian improvements include enhancing or adding detached sidewalks (separated from the roadway by landscaping) at:

- South side of Homestead Road between Wolfe Road and Tantau Avenue.
- West side of Tantau Avenue between Homestead Road and Vallco Parkway.
- North side of Vallco Parkway between Tantau Avenue and Wolfe Road.
- East side of Wolfe Road between Vallco Parkway and Homestead Road.

In addition, the project would modify the Wolfe Road I-280 overcrossing to enhance pedestrian crossings at the freeway interchange. The project improvements at the Tantau Avenue overcrossing will make it a better location for pedestrians to cross I-280.

Aspects of the project that would adversely affect pedestrian circulation include:

- Proposed widening of Wolfe Road and Tantau Avenue to accommodate project vehicle trips
- Added intersections where project vehicles would enter the project site from Wolfe Road and Tantau Avenue
- Closure of Pruneridge Avenue

Potential impacts related to pedestrian conditions are discussed below.

#19 Wolfe Road/Project Access Intersection. The project would add a new signalized intersection on Wolfe Road to accommodate the main driveway. The intersection lane configuration changes that would be implemented as part of the project include two northbound right-turn lanes into the project site. During the morning peak hour approximately 1,640 vehicles are projected to make this movement into the project site; the flow of right-turn vehicles is projected to be steady throughout the peak hour. There would be a crosswalk across the east leg of the Wolfe Road/Project Access intersection, and pedestrians would have a pedestrian phase to cross the project driveway at the same time as the northbound through- and right-turn movements. However it would be difficult for pedestrians to cross the dual right-turn lanes, since they would need to rely on vehicles yielding to them. In addition, the double right-turn lanes increase the chance of multiple threat collisions, where a pedestrian enters the traffic lane in front of a stopped right-turning vehicle in the outside lane and is struck by another right-turning vehicle in the inside turn lane because the stopped vehicle blocks the line of sight between the pedestrian and the driver of the striking vehicle.

Ideally, a separate pedestrian phase would be provided (i.e., pedestrians would get a green light and all conflicting vehicle movements a red light) to allow pedestrians to cross the east leg of the intersection. However, this separate phase would have secondary effects on vehicles as it would lead to additional congestion and queues in an already-congested corridor. Alternatively, a leading pedestrian phase (i.e., pedestrians would get a pedestrian walk indication several seconds before the vehicle traffic) should be provided to allow pedestrians to enter the crosswalk before turning vehicles.

A single right-turn lane into the site would have fewer pedestrian impacts. However, the volume of vehicles projected to turn right into the site from Wolfe Road would exceed that capacity of a single right-turn lane. Alternatively, if the site had additional driveways on Wolfe Road and/or Homestead Road, the project traffic volumes would be more dispersed among the driveways and single right-turn lanes could be sufficient to accommodate driveway access. However, the provision of multiple driveways would not meet the project's objective of creating a secure campus and were therefore excluded in the project design recommendations.

The project would widen Wolfe Road to accommodate its added traffic. The added lanes would increase the pedestrian crossing distance of Wolfe Road on the north leg of the Project Access (#19) intersection (where there currently is no crosswalk) and the south leg of the Pruneridge Avenue (#20) intersection (where there currently is a crosswalk). Pedestrians would need to cross a total of eight vehicle lanes and two bike lanes on the north leg of the Project Access (#19) intersection and ten vehicle lanes and two bike lanes on the south leg of the Pruneridge Avenue (#20) intersection on Wolfe Road. Pedestrian refuge islands between the northbound through and right-turn lanes would allow pedestrians to cross the intersection in stages. However, they would increase the overall pedestrian crossing distance at an already large intersection and therefore were not included in the intersection design.

Additionally, the project includes two inbound (eastbound) lanes, a median, and four outbound (westbound) lanes, for a total of six lanes on the east leg of the #19 Wolfe Road/Project Access intersection. The six lanes would increase the crossing distance and the exposure of pedestrians to vehicular traffic as compared with the current configuration at Pruneridge Avenue. The new #19 Wolfe Road/Project Access intersection, along with the double right-turn lanes into the site, would interfere with pedestrian accessibility to the site and adjoining areas.

Impact TRANS-28: The provision of two northbound inbound right-turn lanes and six lanes on the east leg of the Wolfe Road/Project Access intersection with the associated high traffic volumes would interfere with pedestrian accessibility to the site and adjoining areas (City of Cupertino). (S)

> Mitigation Measure TRANS-28: To lessen the impact the project sponsor shall install a "Yield to Peds" sign that is activated by a pedestrian push button. Additionally, the project shall install a high visibility crosswalk (i.e., with ladder striping) at the east leg of the Wolfe Road/Project Access intersection to help make the crosswalk more prominent. These treatments would lessen the impact, but would not mitigate the impact to a less-than-significant level as pedestrian access would still be impeded. (SU)

Tantau Avenue/Access Intersection Crosswalks. The project would add a new signalized intersection on Tantau Avenue (#29) to accommodate access to the main project site. The intersection would have crosswalks across the north, east, and west legs of the intersection. A crosswalk across the south leg is not provided, because under standard signal operations, pedestrians crossing the south leg on Tantau Avenue would have a walk phase at the same time as the eastbound vehicular traffic. The eastbound approach is proposed to have two right-turn lanes; therefore the chance of multiple threat collisions (as discussed above) would be increased. The alternative pedestrian path via the crosswalk at the north leg of the intersection provides sufficient access for pedestrians across Tantau Avenue at the Project Access Driveway.

Pedestrian Access to the Project Site. As proposed, the project site would contain a security fence surrounding a portion of the campus. Pedestrian access for employees would be accommodated at:

- Wolfe Road at the west entrance;
- Homestead Road at the Corporate Fitness Center;
- Tantau Avenue, 20 feet north of the Transit Center; and
- Tantau Avenue at the intersection of Tantau Avenue and Pruneridge Avenue.

Pedestrian access to the Phase 2 buildings would be shared with vehicular traffic at the following locations: signalized driveway entrance on Tantau Avenue south of Calabazas Creek; and three driveways east of Tantau Avenue.

Therefore the site would have adequate pedestrian access and no mitigation measures are required.

Pruneridge Avenue Geometries at Wolfe Road and Tantau Avenue. With the closure of Pruneridge Avenue just east of The Hamptons' driveway, the roadway geometries on Pruneridge Avenue at the Wolfe Road intersection (#20) would be modified. Specifically, Pruneridge Avenue would be narrowed to provide one eastbound lane and in the westbound direction one left-turn lane plus one shared through/right-turn lane. Bike lanes would be provided in both the eastbound and westbound directions. Currently Pruneridge Avenue has six travel lanes and two bike lanes. The proposed modifications would reduce the pedestrian crossing distance from six to three vehicle travel lanes.

The roadway geometries at the Tantau Avenue/Pruneridge Avenue intersection (#28) would be modified to eliminate the southbound right-turn lane and the northbound left-turn lane. Additionally, the east leg of Pruneridge Avenue would have one right-turn lane and one left-turn lane, eliminating the westbound through lane on Pruneridge Avenue. With the elimination of the through lane, Pruneridge Avenue would be narrowed from four lanes to three lanes at the intersection, reducing the pedestrian crossing distance. Pedestrian access impacts between Wolfe Road and Tantau Avenue due to the proposed closure of Pruneridge Avenue are discussed in a later section.

Tantau Avenue Uncontrolled Crosswalks. The project would provide two new crosswalks on Tantau Avenue: (1) near Forge Drive just north of the Transit Center and (2) just south of the Transit Center. These crosswalks would be at uncontrolled locations (i.e., there are no stop signs or signals) and vehicles frequently do not stop at uncontrolled crossings even though they are legally required to yield to pedestrians. Apple is proposing to install enhanced crosswalks (which include high visibility crosswalks, pedestrian activated rapid rectangular flashing beacons (RRFB), high visibility striping or pavement treatment) to help make the crosswalks more prominent. To provide adequate pedestrian amenities Apple, as a condition of approval, should be required to install the enhanced crosswalks.

I-280 Ramp Intersections at Wolfe Road Crosswalks. There are six I-280 ramps at Wolfe Road; they include:

- Northbound I-280 Diagonal On-Ramp from southbound Wolfe Road
- Northbound I-280 Loop On-Ramp from northbound Wolfe Road
- Northbound I-280 Off-Ramp
- Southbound I-280 Diagonal On-Ramp from northbound Wolfe Road
- Southbound I-280 Loop On-Ramp from southbound Wolfe Road
- Southbound I-280 Off-Ramp

For all six locations, the crosswalks at the ramps are marked with two white parallel lines (standard crosswalk markings); however the existing crosswalk markings are faded and with the added congestion in the Wolfe Road corridor due to project traffic, it is recommended that the ramp crosswalks be improved and incorporate the design elements outlined below:

- To minimize crossing distances for pedestrians, the crosswalk should be placed perpendicular to freeway on-ramps
- Provide high visibility ladder striping crosswalks
- Provide directional curb ramps for all crosswalks
- Provide advanced yield limit lines at multi-lane crosswalks (off-ramp locations), per the discussion below.

Additional treatments would also be needed at the southbound I-280 loop on-ramp from southbound Wolfe Road where visibility of and for pedestrians is poor. Additional measures to improve the sight distance to an industry standard of 250 feet for a 35 mph roadway include:

- Replace existing fence on overcrossing with one that has better transparency;

- Trim and maintain vegetation on northwest corner of the Wolfe Road/I-280 southbound loop on-ramp;
- Improve the ramp to relocate the crosswalks and move it further north along the ramp; and
- Add pavement legend to indicate pedestrian crossing.

Impact TRANS-29: The increased traffic volume at the I-280 ramps with Wolfe Road would create a challenging condition for pedestrians that currently does not exist (City of Cupertino). (S)

Mitigation Measure TRANS-29: To enhance the pedestrian environment and lessen the pedestrian impact at the six I-280 ramps with Wolfe Road, the project sponsor shall provide enhanced crosswalks at all ramp crosswalks. Additionally, for the I-280 southbound loop on-ramp, the project sponsor shall design, construct, and fund the following to improve the sight distance to an industry standard of 250 feet for a 35 mph roadway include:

- Replacing existing fence on overcrossing with one that has better transparency;
- Trimming and maintaining vegetation on northwest corner of the Wolfe Road/I-280 southbound loop on-ramp;
- Redesigning the ramp to move the crosswalk further north; and
- Adding a pavement legend to indicate pedestrian crossing.

The treatments would lessen the impact, but would not mitigate the impact to a less-than-significant level, as the increased vehicular volumes would still exist. Further, the feasibility of this mitigation measure cannot be assured as the on-ramp is under Caltrans jurisdiction. Therefore, the City of Cupertino cannot ensure the implementation of the mitigation measure. (SU)

Evaluation of Bicycle Facilities. Similar to the pedestrian enhancements, the project would provide several new facilities around and in the immediate vicinity of the project site to improve bicycle access. The main bicycle improvements would be located along Wolfe Road and Tantau Avenue between Homestead Road and Vallco Parkway as well as the north side of Vallco Parkway between Wolfe Road and Tantau Avenue. The bicycle improvements include:

- Adding or providing buffered bike lanes;
- Installing intersection crossing markings through major intersections along Wolfe Road;
- Installing striped green bike lanes through critical areas of potential vehicular conflict; and
- Installing bike boxes and/or two-stage turn queue boxes for:
  - Southbound left-turns from Wolfe Road onto eastbound Pruneridge Avenue;
  - Westbound left-turns from Pruneridge Avenue onto southbound Tantau Avenue; and
  - Northbound left-turns from Tantau Avenue into the Tantau Security Reception opposite Pruneridge Avenue.

In addition, the project would modify the Wolfe Road and Tantau Avenue I-280 overcrossings to enhance bicycle crossings at the freeway interchange. The proposed project would maintain all existing bicycle facilities in the study area, with the exception of the bike lanes on Pruneridge Avenue. Bicycle access impacts due to the closure of Pruneridge Avenue are discussed in a later section. The proposed bicycle enhancements are considered adequate; no other mitigation measures are required.

Evaluation of Transit Facilities. Apple would provide its own shuttle service to facilitate employee travel throughout the Bay Area. With the proposed TDM Program, Apple's shuttle service would likely expand. However, there are several public transit lines that serve the project area, which would likely experience increased transit ridership with the proposed project.

The existing load factors (average number of riders per trip) for Bus Routes 23, 26, 55, 81, 101, 182, and 328 were provided by VTA. Buses have capacities of 38 seats. VTA Bus Route 23 between De Anza College and the Alum Rock Transit Center has the highest average peak load factor among all the bus routes that serve the project site. The average load factor for the bus stops for Bus Route 23 near the project site is 0.32, which means about 32 percent of the bus seats are taken or about 25 seats are available. For all other bus routes the load factors are 0.27 or lower (27 or more available seats) or lower.

Based on data collected at Apple's existing Infinite Loop campus and the buildings south of Mariani Avenue, approximately 1.5 percent of existing commute trips to Apple are made using public transit. Assuming a similar commute trend for the proposed project, approximately 138 employees (9,156 added employees x 1.5 percent) are expected to use public transit to access the site at project buildout. Assuming that all bus riders would sit (as opposed to stand) during their trip, the proposed project would generate demand for the equivalent of four buses (138 employees/38 seats). The bus routes serving the site currently have a total of 143 available seats (143 available seats is the actual sum of available seats for Routes 26 and 81 during PM peak hour) and therefore available capacity to accommodate the added passenger load. In the near term, the transit service within the immediate project area has additional available capacity, and additional trips generated by the proposed project could be accommodated by existing bus service. Therefore, the project would have a less-than-significant impact on VTA bus routes in the project vicinity.

The project is not anticipated to have a significant impact on other transit facilities and services, such as Caltrain, since the anticipated project-related ridership would be low and the distance between the project site and those transit facilities is relatively high.

Facilities to Support Increased Transit Ridership. The project, by increasing employment, could induce transit demand and increase ridership of VTA's Bus Route 26 and other bus routes around the project site. In addition, congestion on local streets could slow transit service. Currently there is a bus stop for Route 26 on northbound Wolfe Road just north of Pruneridge Avenue, where the new main driveway would be located. The project would relocate the bus stop north of the proposed driveway approximately 200 feet north of its current location. A bus stop for Route 26 is provided in the southbound direction near the north-west corner of the #20 Wolfe Road/Pruneridge Avenue intersection and also at the south-west corner of the #18 Wolfe Road/Homestead Road intersection. Currently, both bus stops include an exposed bench, but no other transit amenities. With this project, these bus stops would be consolidated into one bus stop, north of Pruneridge Avenue, between the two existing bus stops.

Existing transit stops in the project area typically exhibit only the minimum amount of amenities required by VTA standards. As these stops are also used by Apple Transit vehicles, adding amenities would benefit the community as well as Apple employees. Potential amenities include:

- Specialized sign poles;
- Illuminated signs including line numbers and shuttle services;
- Passenger shelters;
- Benches;
- Trash receptacles;
- Real-time information panels;
- Schedule, fare, and service information;
- Lighting; and
- Landscaping.

These amenities would increase the attractiveness of both VTA transit and Apple Transit within the surrounding community, helping reduce vehicle trips to and through the area. VTA has expressed a desire for these types of amenities at stops near the proposed campus site, particularly considering the projected number of employees working at Apple Campus 2. Amenities such as shelters, effective lighting, and benches that complement the surrounding architecture and landscape would be consistent with VTA desires and plans to improve street frontages in the project area and mitigate the effects of the increased delays to transit operations on Wolfe Road and other roadways with transit service.

Impact TRANS-30: The added traffic on Wolfe Road and around the project site would result in increased congestion and could induce transit demand and increase transit ridership in the area, which currently has minimal transit stop amenities (VTA). (S)

> Mitigation Measure TRANS-30: The project sponsor shall upgrade transit stops along Wolfe Road between Stevens Creek Boulevard and Homestead Road, on Vallco Parkway between Wolfe Road and Tantau Avenue, on Tantau Avenue between Stevens Creek Boulevard and Homestead Road, and on Homestead Road between Tantau Avenue and Wolfe Road. (LTS)

Evaluation of Pruneridge Avenue Closure. The proposed closure of Pruneridge Avenue between Wolfe Road and Tantau Avenue would have significant impacts on pedestrian, bicycle, and transit access because it would interfere with accessibility for these travel modes and eliminate existing pedestrian and bicycle facilities. The closure would eliminate an approximately 0.5-mile segment of Pruneridge Avenue to public access. Pruneridge Avenue is a collector road that parallels Homestead Road and Stevens Creek Boulevard and that provides an alternative east-west connection between Cupertino and San Jose. While the bicycle and pedestrian counts show relatively low rates of non-motorized travel along Pruneridge Avenue, the closure of the street would create impacts to the general connectivity of the area, forcing bicyclists and pedestrians to use streets with higher vehicular traffic volumes and higher average speeds, and could, therefore, discourage non-motorized travel.

The length of the detour would vary by individual depending on their starting location and their ultimate destination. For instance, bicyclists and pedestrians traveling to Vallco Shopping Center from the vicinity of Tantau Avenue and Pruneridge Avenue would experience minimal disruptions in travel time or distance. However, persons traveling by bicycle or foot from The Hamptons to the Pruneridge Avenue bike lane east of Tantau Avenue (in order to access the two parks in the vicinity – Westwood Oaks Park and Jenny Strand Park) would experience longer travel distances (a detour of 0.6 miles in length) and correspondingly longer travel times. The impacts of the Pruneridge Avenue closure on each of the travel modes are described below.

Pedestrians and Bicycles. Pedestrians from the neighborhood in Santa Clara to the east of the project site who have a destination to the west of Wolfe Road (such as the Cupertino Village Shopping Center) would have to detour around the site using Tantau Avenue, Homestead Road and Wolfe Road to reach their destination. There are pedestrian facilities, such as sidewalks and crosswalks, along the detour route; however, increasing the travel distance by 0.6 mile would discourage pedestrians from walking and could result in a shift to driving. To mitigate this significant impact the project would need to provide a pedestrian connection across the project site that is approximately the same length as the connection via Pruneridge Avenue. Such a pedestrian connection has been determined to be infeasible due to Apple’s privacy and security requirements.

Although the impact cannot be directly and fully mitigated with the project, Apple could improve the condition resulting from the route closure by contributing funds to study potential off-site pedestrian and bicycle improvements that would partially mitigate the impact. There are currently two opportunities for trail connections in the vicinity: (1) Calabazas Creek trail and (2) along the drainage channel south of I-280 between the existing Apple Infinite Loop campus area and Vallco Parkway. The first opportunity includes a publicly accessible multi-use path along the Calabazas Creek, to the north and south of Apple Campus 2 (although not through the Apple Campus due to security concerns). The southern segment would connect to the sidewalks and bicycle lanes on Vallco Parkway and to the proposed I-280 trail (discussed below). The northern segment would connect to the sidewalks and bicycle lanes on Homestead Road. These connections would benefit Apple employees both for commuting and recreation, as well as the public. The construction of a bicycle/pedestrian entrance for employees only at the southern leg of the Calabazas Creek trail under I-280, could also be added, if determined to be feasible.

The second opportunity is an east-west multi-use path along I-280. The route would extend from Tantau Avenue to De Anza Boulevard and would run along the existing irrigation right-of-way along I-280 and along existing surface streets near the Vallco Shopping Mall. If possible, the pathway should be built on the side of the sound wall opposite the freeway to limit noise and increase the attractiveness of the trail. Landscaping, lighting, and clear signage are also important to reduce any perceived isolation of the path.

Impact TRANS-31: The proposed closure of Pruneridge Avenue between Wolfe Road and Tantau Avenue would have significant impacts on pedestrian access because it would reduce accessibility for pedestrians and eliminate existing pedestrian facilities (City of Cupertino). (S)

> Mitigation Measure TRANS-31: Implement Mitigation Measures PLAN-2 and PLAN-3. The multi-use paths and the pedestrian improvements proposed as part of the project would lessen the impact, but would not mitigate the impact to a less-than-significant level as the elimination of existing pedestrian facilities would still occur. (SU)

Impact TRANS-32: The proposed closure of Pruneridge Avenue between Wolfe Road and Tantau Avenue would have significant impacts on bicycle access because it would reduce accessibility for bicyclists and eliminates existing bicycle facilities (City of Cupertino). (S)

Mitigation Measure TRANS-32: Implement Mitigation Measure PLAN-2 and PLAN-3. The multi-use paths and bicycle improvements proposed as part of the project would lessen the impact, but would not mitigate the impact to a less-than-significant level as the elimination of existing bicycle facilities would still occur. (SU)

Transit. Currently, VTA local Bus Route 81 travels in the eastbound direction on Pruneridge Avenue between Wolfe Road and Tantau Avenue. Route 81 has two stops on this segment of Pruneridge Avenue: (1) near the intersection with Wolfe Road, and (2) by the current main entrance to the existing campus on the project site. Route 81 is the only transit service that is provided on the section of Pruneridge Avenue that is proposed to be closed to public access. Thus, the proposed project would necessitate a rerouting of Route 81's trip along Pruneridge Avenue.

Currently, Route 81 only accesses Pruneridge Avenue in the eastbound direction from northbound Wolfe Road, where it then turns left onto Tantau Avenue, and then right onto Homestead Road towards the City of Santa Clara. Apple has worked with VTA to determine the appropriate re-route of Route 81. Based on the current plans, Route 81 would travel along Vallco Parkway (instead of Pruneridge Avenue) to access Tantau Avenue and then connect to its current route north of Pruneridge Avenue. The travel distances for the Pruneridge Avenue and Vallco Parkway routes are approximately the same; thus the reroute would have a less-than-significant impact in terms of adding to travel distance.[20]

With the reroute, existing bus stops on Pruneridge Avenue that are easily accessible to residents of The Hamptons apartment community would be removed. The nearest bus stops for The Hamptons apartment community residents would be located near the Wolfe Road/Vallco Parkway or Tantau Avenue/Pruneridge Avenue intersections. Currently approximately 50 people board Route 81 at the stop adjacent to The Hamptons. Accessibility to Route 81 would be significantly reduced for Hamptons residents and others using the stop with implementation of the project and would be considered significant and unavoidable.

Impact TRANS-33: The proposed closure of Pruneridge Avenue and associated reroute of Route 81 to Vallco Parkway would significantly reduce transit access for The Hamptons residents (City of Cupertino). (S)

Mitigation Measure TRANS-33: There are no feasible mitigation measures to restore transit access to Route 81 for The Hamptons residents, therefore the impact is considered significant and unavoidable. (SU)

Access Evaluation for the Hamptons Apartment Community. With the closure of Pruneridge Avenue between The Hamptons apartment community driveway and Tantau Avenue, the vehicles traveling on the roadway between Wolfe Road and the apartment community driveway

[20] Newgren, Steve, 2012. Transit Service Development Supervisor, VTA. Personal communication with Manish Dalia, Civil Engineer, Arup. April 16.

would primarily be traffic from The Hamptons apartment community. The project would provide an exit for unauthorized vehicles onto Pruneridge Avenue about 300 feet east of the Wolfe Road intersection. However, since the access point is limited to exiting visitors who are not authorized to enter the site, the amount of traffic added to Pruneridge Avenue is projected to be minimal.

When entering or exiting The Hamptons apartment community driveway, drivers would no longer have any conflicting movements (i.e., drivers turning left out of the driveway would not have to yield to through volumes on Pruneridge Avenue) and the driveway would essentially have free flow conditions.

The only travelers to/from The Hamptons apartment community that would be significantly affected by the project are those that currently travel to/from the east on Pruneridge Avenue. As discussed previously, these travelers would have to travel west to Wolfe Road and around the project site to access their eventual destinations. For all modes the detour is approximately 1.1 miles. This detour is relatively short for vehicle travel. The significant impact would occur to pedestrians and bicyclists that would have to travel around the project site. This detour could add about 10 to 15 minutes to a pedestrian's trip. There are no feasible mitigation measures to reduce this impact to a less-than-significant level due to Apple's security and privacy concerns.

Impact TRANS-34: The proposed closure of Pruneridge Avenue between Wolfe Road and Tantau Avenue would have significant impacts on access to The Hamptons for those with destinations east of Tantau Avenue (City of Cupertino). (S)

> Mitigation Measure TRANS-34: There are no mitigation measures to reduce the impact to a less-than-significant level. Implementation of Mitigation Measure TRANS-32 would lessen the impact, but not to a less-than-significant level. (SU)

Emergency vehicles would be able to continue to access the apartment community from the Wolfe Road/Pruneridge Avenue intersection. With the closure of Pruneridge Avenue, emergency vehicles would be able to access the apartment community via the Tantau Avenue/Project Access driveway and an emergency access gate at the southeast corner of The Hamptons. With the provision of the secondary emergency vehicle access from Tantau Avenue the impact to emergency access at The Hamptons apartment community is considered less than significant.

Evaluation of Potential Neighborhood Intrusion. The proposed project has the potential to add traffic to residential streets in adjacent neighborhoods. This potential would be heightened if intersection operations immediately adjacent to the project site deteriorate to unacceptable levels and vehicle drivers look for alternate routes to access the project site. Areas identified for potential cut-through traffic evaluation include the area north of Homestead Road in Sunnyvale and the area to the east of Tantau Avenue in Santa Clara. The potential for cut-through traffic in each of these two neighborhoods is discussed below.

Sunnyvale Neighborhood North of Homestead Road. Residents in Sunnyvale have in the past voiced concern that local roadways such as Swallow Drive, Quail Avenue, and Peacock Avenue, have been used to bypass the #18 Wolfe Road/Homestead Road intersection. Each of these roadways is a north-south two-lane local residential street. The existing campus buildings on the site have four driveways onto Homestead Road. Two of these driveways are restricted to right turns in and out, while the other two are full access driveways with left-turn inbound lanes from Homestead Road. The project would close all these driveways and only allow for vehicle site access via Wolfe Road and Tantau Avenue. With this site access configuration, some of the identified north-south cut-through routes would become less attractive, especially Peacock Avenue, since vehicles would still have to use Wolfe Road and Tantau Avenue to access the site.

Quail Avenue has the greatest potential for cut-through traffic since it is the north leg of the #27 Tantau Avenue/Homestead Road intersection (i.e., Tantau Avenue is called Quail Avenue north of Homestead Road). If drivers want to avoid the Wolfe Road/Homestead Road intersection they could turn left from Wolfe Road onto Marion Way or Inverness Way (both of which are signalized intersections) to travel to Quail Avenue to access the project driveway on Tantau Avenue. However, based on the project trip assignment, only 30 AM peak hour and 8 PM peak hour vehicles are expected to make the southbound left-turn movement from Wolfe Road onto Homestead Road. A 20 percent diversion of project trips from the intersection would result in six additional peak hour vehicles on Quail Avenue during the morning peak hour. Based on this assumption (which likely overestimates the potential for cut-through trips), the amount of cut-through traffic in the Sunnyvale neighborhood to the north would be negligible, and therefore less than significant.

Santa Clara Neighborhood East of Tantau Avenue. A traffic calming study undertaken by the City of Santa Clara (now suspended) evaluated Hillsdale Avenue and De Soto Avenue as potential cut-through routes to avoid the #35 Lawrence Expressway/Pruneridge Avenue intersection. This potential cut-through route could be used by vehicles traveling eastbound on Pruneridge Avenue to turn right onto southbound Hillsdale Avenue to eastbound De Soto Avenue to access southbound Lawrence Expressway. De Soto Avenue only has right turn in and out access at Lawrence Expressway, so this potential cut-through route is only viable for outbound traffic from the project site. Approximately 50 and 250 project vehicles during the AM and PM peak hours, respectively, are estimated to make the eastbound right-turn movement to southbound Lawrence Expressway at the #35 Lawrence Expressway/Pruneridge Avenue intersection. The geometries at this intersection facilitate access from Pruneridge Avenue to southbound Lawrence Expressway as the right-turn movement is channelized with an approximately 150-foot section to allow vehicles to merge into southbound traffic. Access to the right-turn lane would be blocked by eastbound through queues greater than seven cars. Intersection analysis results for the Background Plus Project scenario for the #35 Lawrence Expressway/Pruneridge Avenue intersection indicates that the eastbound through queues would extend back for six vehicles. There is enough capacity to allow for the eastbound right-turn movements to access the turn lane under these conditions. Therefore the potential for cut-through traffic in this area is less than significant.

Summary. The potential cut-through routes for the neighborhood to the north of Homestead Road in Sunnyvale and to the east of Tantau Avenue in Santa Clara do not represent routes that are superior to routes on the main arterials and collectors. Therefore, the potential for cut-through traffic would not rise to the level of a significant impact. However, travel behavior is hard to predict; therefore in the conditions of approval for the project, the City should consider requiring Apple to set aside funds to monitor cut-through traffic and potentially install traffic calming measures, should significant levels of cut-through traffic occur due to implementation of the proposed project. Both the City of Sunnyvale and Santa Clara have traffic calming programs that should be considered when evaluating the need for traffic calming measures.

While not required as mitigation for the project, the City should consider adopting the following Condition of Approval to ensure that neighborhood cut-through traffic is minimized:

Condition of Approval CA-TRANS-2: Apple shall fund neighborhood cut-through traffic monitoring studies and provide fees to implement needed traffic calming improvements to minimize neighborhood cut-through traffic. The City of Santa Clara and City of Sunnyvale Traffic Calming Programs should be considered when evaluating traffic calming measures. Based on conversations with the two cities, Apple shall provide up to $250,000 for the City of Santa Clara and up to $500,000 for the City of Sunnyvale for neighborhood cut-through improvements and parking intrusion measures (see CA-TRANS-3).

The details of the neighborhood parking and traffic intrusion monitoring program will be determined in consultation with the cities of Sunnyvale and Santa Clara when the Conditions of Approval are established. The monitoring program shall include the following items: (1) identifying the monitoring areas (roadways where the monitoring will occur); (2) setting baseline conditions (number of parked vehicles and traffic volumes on the roadways); (3) determining thresholds for parking and traffic volume increases requiring action (per Santa Clara and Sunnyvale Traffic Calming Programs); (4) establishing the monitoring schedule; and (5) creating reporting protocols. The baseline conditions shall be established prior to but within 1 year of initial occupancy. Monitoring would then occur annually for 5 years.

Evaluation of Parking for Vehicles and Bicycles. This section of the analysis evaluates on-site parking for the proposed project and provides a comparison to City parking requirements. The proposed parking supply is also compared to the parking demand rates derived from the Infinite Loop campus and the buildings south of Mariani Avenue.

Vehicle Parking Supply Requirement. Section 19.124.040 of the City of Cupertino's Municipal Code defines off-street parking requirements. Based on the City's Municipal Code, office developments, including corporate, administrative, and general multi-tenant office buildings, are required to provide vehicle parking at a rate of one space per 285 square feet. With this parking ratio, the project would need to have 12,000 parking spaces (3,420,000 square feet/285) However, the Parking Ordinance recognizes that in Planned Development zones, in which the project is located, the parking ratio may be used as a guideline. In order to determine the appropriate number of parking spaces for the Campus, the results of a parking survey conducted to determine the actual parking demand at the existing Apple Campus at One Infinite Loop and adjacent Mariani Avenue campuses were used. The Infinite Loop Campus includes a 300-seat auditorium, 785,000 square feet of office space and a company store. The Infinite Loop site has approximately 2,600 parking spaces, which includes a 134-space visitor parking area. The parking survey indicated that the parking demand for the Infinite Loop campus and the buildings south of Mariani Avenue is 0.82 spaces per employee. The Infinite Loop parking demand includes a 28 percent TDM program participation rate and the parking demand for visitors to the Infinite Loop campus and the buildings south of Mariani Avenue. On average the Infinite Loop campus and the buildings south of Mariani Avenue has 200 daily visitors with a high of 400 visitors (these visitors are at the Campus at various times of the day; they are not there at the same time). The peak visitor period is between noon and 3:00 p.m.

Mitigation Measure TRANS-9b requires Apple to improve its TDM program participation rate to 34 percent for the project, with a commensurate reduction in peak hour vehicle trips (a 6 percent point increase), as a mitigation for project impacts. Accounting for the 6 percent increase in TDM participation from 28 percent to 34 percent, the resulting parking demand for Apple Campus 2 is expected to be 0.77 spaces per employee (0.82*0.94). This parking demand rate, when applied to the

14,200 employees at Apple Campus 2, results in a total parking requirement of 10,934 spaces for daily operations for the proposed campus.

Proposed Parking Supply. The proposed Apple Campus 2 Project includes 3,420,000 square feet of office space, a 100,000-square-foot Corporate Fitness Center, and a 1,000-seat Corporate Auditorium. Apple proposes to build the associated parking spaces in two phases. As proposed, Phase 1 includes the construction of 2,820,000 square feet of office space housing 12,000 employees, the 1,000-seat Corporate Auditorium, the Corporate Fitness Center, ancillary facilities and associated parking. Apple is proposing to provide 9,180 spaces (7,352 uni-size, 1,594 compact, 128 accessible spaces) in Phase 1. Apple also proposes to provide valet parking assist services in the Tantau Parking Structure on a daily basis, which would allow an additional 60 cars to be parked at that site. This would allow 9,240 vehicles to be parked for the 12,000 employees that would occupy Phase 1 on regular business days.

About 600,000 square feet of office and research and development space, housing 2,200 employees, and associated parking would be constructed as part of Phase 2. Apple is proposing to provide 1,740 parking spaces (1,715 uni-size and 25 accessible spaces) in Phase 2. Parking for a total of 10,980 vehicles would be provided at the completion of Phase 2. Table V.I-16 summarizes the proposed parking supply for the proposed project.

The proposed parking supply conforms to the parking demand of 0.77 spaces per employee discussed above, assuming that Apple achieves a 34 percent TDM participation rate as required per Mitigation Measure TRANS - 9b. The parking demand includes about 300 guest parking spaces. Since the Apple Campus 2 Project would consolidate many of Apple’s complementary divisions at this location, the number of visitors to Apple Campus 2 is expected to be lower than the number of visitors to the Infinite Loop campus. Therefore, while visitor parking spaces comprise 5.2 percent of the total number of available spaces at the Infinite Loop campus and the buildings south of Mariani Avenue, they would comprise 2.75 percent of the total number of parking spaces available (not including valet parking spaces) at Apple Campus 2.

Table V.I-16: Proposed Vehicle Parking Supply

Parking Type	Phase 1	Phase 2	Total
Uses	2,820,000 s.f. office 1,000 seat Auditorium 100,000 s.f. Fitness Center	600,000 s.f. office	3,420,000 s.f. office 1,000 seat Auditorium 100,000 s.f. Fitness Center
Employees	12,000	2,200	14,200
Total Parking Spaces Provided	9,180	1,740	10,920
Employee			
Uni-size	7,052	1,670	8,722
Compact	1,594	0	1,594
Accessible	128	25	153
Visitor			
Uni-size	300	0	300
Media Trucks	0	45	45
Valet Parking Provided	60	0	60
Total Vehicular Parking Provided	**9,240**	**1,740**	**10,980**
Total Vehicular Parking Required[a]	**9,240**	**1,694**	**10,934**

Notes:
[a] Parking requirement calculates based on number of employees multiplied by a parking rate of 0.77 spaces per employee.

Source: Fehr & Peers, May 2013.

Special Event Parking. Apple estimates that a maximum of 350 guests would be invited to visit the Corporate Auditorium on event days. The rest of the seats would be used by employees who are either on-site or would travel to the campus by Apple shuttles. The approximately 350 invited non-Apple employee guests would be directed to park in the 810-space North Tantau Parking Structure. The site would be staffed with Apple security personnel to direct guests to the appropriate parking facilities, assist the Police Department with traffic control, and direct guests to the Corporate Auditorium

In addition, Apple expects that it would need 45 parking spaces for media trucks to park and provide coverage on event days. These 45 spaces would be provided in the parking lot immediately south of the intersection of Pruneridge Avenue and Tantau Avenue. This parking lot would serve a new building (that would be demolished as part of Phase 2) that has a maximum occupancy of 110 employees. The parking demand for this building is 90 spaces (0.82*110 = 90). There are currently 247 spaces provided in that parking lot (157 more spaces than needed based on the current employment level). Thus the use of 45 parking spaces for media trucks as part of Phase 1 would not compromise the parking supply for the building located south of the intersection of Pruneridge Avenue and Tantau Avenue. As part of Phase 2, parking would be developed to serve all Phase 2 facilities, along with media trucks.

Evaluation of Potential Neighborhood Parking Intrusion. Limiting the amount of parking can be an effective tool to manage the number of people that drive to the project site. However, the project would need to manage its parking effectively, since under-parking a site could lead to secondary impacts with vehicles parking in surrounding neighborhoods.

An increase in demand for neighborhood parking could make it more difficult to find available parking in residential and commercial neighborhoods surrounding the project site, which could have secondary environmental impacts due to additional driving in the neighborhood to find parking.

There are several areas in the immediate vicinity of the project site where employees could attempt to park if proposed on-site parking facilities do not fully meet project-related parking demand or prove to be too inconvenient (e.g., long waiting times to drive in or out of the parking garages). These areas include:

- *Cupertino Village and Linnet Lane* west of Wolfe Road. Direct pedestrian connections are provided to Linnet Lane through the Cupertino Village shopping area. Both the Cupertino Village and Linnet Lane are within a short (less than 0.2 mile) walk and accessible via the signal and crosswalks at the proposed Wolfe Road/Project Access intersection.
- *Nightingale Avenue, Meadowlark Lane, and Leighton Way* north of Homestead Road. The project proposes to provide a pedestrian access point to the project site on Homestead Road opposite Nightingale Avenue that is easily accessible with a short (approximately 0.3 mile) walk via the signal and crosswalks at Wolfe Road/Homestead Road intersection.
- *Forge Drive* and the existing office uses at the southeast corner of Homestead Road/Tantau Avenue. The project proposes to provide two mid-block crosswalks on Tantau Avenue between Homestead Road and Pruneridge Avenue that could encourage employees to park in these areas and take a short (less than 0.1 mile) walk to access the project site.
- *Meadow Avenue, Shasta Drive, Melody Lane, and Giannini Drive* north and south of Pruneridge Avenue just east of Tantau Avenue. These neighborhood streets are easily

accessible with a short (approximately 0.3 mile) walk via the signal and crosswalks at Tantau Avenue/Pruneridge Avenue.

Parking restrictions prohibiting parking for unauthorized vehicles are already posted at the commercial and office parking lots (Cupertino Village and office uses at the southeast corner of Homestead Road/Tantau Avenue). Thus employees are subject to being towed if they park in these areas.

Forge Drive currently has no parking restrictions and could provide the most easily accessible off-site parking opportunity. Thus, parking should be prohibited on Forge Street or at least limited to one to two hours to discourage Apple employees from parking on the street.

The proposed parking supply for the project would conform to the parking demand of 0.77 spaces per employee, assuming that Apple achieves a 34 percent TDM participation rate as required by Mitigation Measure TRANS-9b. However, if the 34 percent TDM participation rate is not met, the parking supply on the project site may be inadequate.

Impact TRANS-35: The project may result in a parking shortfall if Apple does not achieve a 34 percent TDM participation rate. (S)

Mitigation Measure TRANS-35: Implement Mitigation Measure TRANS-9b. (LTS)

With adoption of Mitigation Measure TRANS-9b, the project site would have sufficient parking and the parking impact would be considered less than significant.

Implementation of CA-TRANS-3, below, would further reduce the effects of the project on parking supply, but would not be required to ensure adequate parking supply on the site.

Condition of Approval CA-TRANS-3: If parking spillover is identified as a problem as part of annual parking monitoring, Apple shall provide a detailed parking management strategy for review and ultimate approval by the City. The parking management strategy should show conclusively that the parking supply provided on the site would meet the expected demand (both for daily operations and special events). Examples of the types of strategies Apple may include in the parking management strategy include the following:

- Periodic surveys to measure Apple employee parking demand rates
- Employee education campaigns
- Periodic monitoring of employee parking on streets surrounding the project site which includes license plate checks
- Parking cash-out program
- Additional valet parking assistance beyond that currently proposed with the project
- Additional personnel and signage to direct parking during special events
- Other TDM measures to discourage single-occupancy driving and reduce parking demand on the site

If spillover parking in nearby neighborhoods occurs even after implementation of the measures above, the following should be implemented:

- Parking restrictions on Forge Drive implemented by the City with funding from Apple for design and physical improvements (such as signs, striping, curb painting, etc.) and construction/installation of all such measures.
- Provision of additional parking spaces on-site to meet the parking demand, to the satisfaction of the City. Such additional parking would be subject to supplemental environmental review.
- Implementation or funding of a neighborhood parking permit program, signage, curb painting, or other parking restriction measures.

As a condition of approval, Apple shall provide up to $250,000 for the City of Santa Clara and up to $500,000 for the City of Sunnyvale for needed parking intrusion measures and neighborhood cut-through improvements (see CA-TRANS-2).

The details of the neighborhood parking and traffic intrusion monitoring program will be determined in consultation with the cities of Sunnyvale and Santa Clara when the Conditions of Approval are established. The monitoring program should include the following items: (1) identifying the monitoring areas (roadways where the monitoring will occur); (2) setting baseline conditions (number of parked vehicles and traffic volumes on the roadways); (3) determining thresholds for parking and traffic volume increases requiring action (per Santa Clara and Sunnyvale Traffic Calming Programs); (4) establishing the monitoring schedule; and (5) creating reporting protocols. The baseline conditions should be established prior to but within 1 year of initial occupancy. Monitoring would then occur annually for 5 years.

Bicycle Parking. The City's Municipal Code (Section 19.100.040) requires office uses to provide bicycle parking at a rate of 5 percent of the vehicle-parking requirement. This would require the project to provide 600 bicycle parking spaces (12,000 x 0.05 = 600). Based on information provided by Apple, it would supply 600 bicycle parking spaces for bicycle commuters, in addition to over 1,800 bicycle parking spaces for its bike share program that allows employees to use bicycles to travel between Apple Campus 2 and Infinite Loop campuses, as well as the R&D uses along Tantau Avenue.

Based on data collected at Apple's existing Infinite Loop campus and the buildings south of Mariani Avenue, approximately 3 percent of existing commute trips are by bicycle. Assuming a similar commute trend for the proposed project, approximately 430 employees (14,200 total employees x 0.03) would bicycle to the site. Thus the bicycle parking supply of 600 spaces (as required by the Municipal Code) should be sufficient to meet the site's bicycle parking demand.

VTA's TIA Guidelines recommend that 75 percent of bicycle parking be Class I parking facilities and 25 percent be Class II facilities. Class I facilities protect the entire bicycle from theft, vandalism, and inclement weather and are appropriate for long-term storage. Examples include bike lockers, rooms with key access, guarded parking areas, and valet/check-in parking. Class II parking facilities include bicycle racks to which the frame and at least one wheel can be secured with a user-provided lock.

Thus, of the 600 spaces, 450 should be Class I and the remaining 150 should be Class II bicycle facilities. To be effective, bicycle parking should be placed such that: 1) security is maximized; 2) pedestrian circulation is not adversely affected; and 3) parking spaces can be used to their maximum design capacity.

The VTA Bicycle Technical Guidelines[21] provide guidelines on the placement of bicycle parking. Generally, Class II facilities should be located within 50 feet of building entrances and Class I facilities should be placed on hard all-weather surfaces. Apple should consult the guidelines and the City should review the final design and placement of the on-site bicycle parking facilities. With the provision of these bicycle parking facilities the project would meet City and VTA guidelines.

Evaluation of Parking Garage Access. As discussed previously, the project site is proposed to be a secure campus, with security gates at all vehicle, bicycle, and pedestrian access points. Access to the parking garage off Wolfe Road and Tantau Avenue would be monitored via security plazas that use proximity sensors for badge detection for employees to enter the site. The Wolfe Road security plaza would have six lanes and the Tantau Avenue security plaza would have three lanes where employees can enter the site. The security plaza would be able to accommodate 600 vehicles per hour per lane at each entry point. Thus, the main Wolfe Road driveway could accommodate 3,600 vehicles per hour (6 lanes x 600 vehicles per hour) and the Tantau Avenue driveway could accommodate 2,400 vehicles per hour (4 lanes x 600 vehicles per hour). The inbound traffic and usage of the security plaza would be the highest during the AM peak hour. The project trip assignment assumes that approximately 2,210 and 915 vehicles would access the Wolfe Road and Tantau Avenue driveways, respectively. Thus, assuming that security plaza operations can accommodate 600 vehicles per hour per lane, the proposed access to the site should be sufficient to accommodate the projected project traffic without queuing onto Wolfe Road or Tantau Avenue and additional mitigation measures are not necessary.

Evaluation of Transit Center. The proposed project includes a Transit Center for use by Apple's shuttle service. The Transit Center would be located on the west side of Tantau Avenue about halfway between Homestead Road and Pruneridge Avenue. The Transit Center would be in a semi-circular form with an entry driveway at the north end and an egress driveway to the south. The egress driveway would be signalized to provide protected left-turn movements out onto Tantau Avenue.

The new Transit Center would include eight transit vehicle parking bays, including five spaces for 45-foot coaches and three spaces for 25-foot sprinter vans. Each parking bay would allow independent vehicle movement (i.e., buses would not block each other as can occur at curbside bus pullouts). The anticipated service is approximately 76 transit coaches/shuttles in the PM peak hour, resulting in a total of 152 transit trips (76 inbound and 76 outbound transit trips). Based on information provided by Apple, the Transit Center bays would be approximately 50 percent occupied at any given time during the PM peak hour. Apple's analysis indicated that sufficient shuttle bus berthing capacity would be provided to accommodate the anticipated frequency based on three-minute average dwell times; no additional mitigation measures are required.

Fehr & Peers conducted intersection LOS analysis using the TRAFFIX software program at the Transit Center driveways under Background and Cumulative plus Project conditions. Table V.I-17 summarizes the results of the LOS calculations for the Transit Center driveways.

[21] Santa Clara Valley Transportation Authority, 2007. *Bicycle Technical Guidelines.* December.

Table V.I-17: Transit Center Driveway Level of Service

Transit Center Driveway	Peak Hour[a]	Background Plus Project Conditions		Cumulative Plus Project Conditions	
		Delay[b]	LOS[c]	Delay[b]	LOS[c]
Ingress (north) – unsignalized	AM	8.7	A	8.7	A
	PM	8.4	A	8.4	A
Egress (south) – signalized	AM	5.5	A	5.5	A
	PM	11.8	B	11.8	B

Notes:

[a] AM = morning peak hour; PM = afternoon peak hour

[b] Whole intersection weighted average control delay expressed in seconds per vehicle for the signalized egress intersection and approach delay presented for the unsignalized ingress intersection

[c] LOS = Level of Service

Source: Fehr & Peers, May 2013.

Based on the transit bay loading information provided by Apple and the LOS calculations presented in Table V.I-17, the Transit Center would have sufficient capacity to accommodate passenger loading and unloading and coaches/shuttles would not queue back onto Tantau Avenue.

Evaluation of Special Event Traffic. The Corporate Auditorium would contain fixed seating for 1,000 people. The auditorium would primarily be used for product releases, press briefings, and internal corporate activities. There would be no public use of the auditorium, and it would not be rented for private events. Apple anticipates that the auditorium would be used for these types of events approximately three to four times per year. The North Tantau Parking Structure adjacent to the Corporate Auditorium would contain 750 parking spaces and 60 valet parking spaces (a total of 810 parking spaces) on the east side of Tantau Avenue. Corporate Auditorium parking is addressed in the parking section above.

The North Tantau Parking Structure would be located on the northeast corner of the #28 Tantau Avenue/Pruneridge Avenue intersection. Visitors would park on the east side of Tantau Avenue and then cross the road to access the auditorium. One access driveway is proposed off Pruneridge Avenue and one off Tantau Avenue opposite the egress driveway for the Transit Center. Of the 750 spaces, 350 would be reserved for guests. This means that up to 350 vehicles would be concentrated around the Tantau Avenue/Pruneridge Avenue intersection; while at the same time approximately 350 people would try to cross the roadway for larger special events to occur approximately three to four times per year (the remaining 650 seats would be reserved for Apple employees who would walk to the auditorium or take Apple shuttles). To ensure efficient and safe movements of both vehicles and pedestrians, Apple would provide traffic management/crossing guards during special events.

Intersection operations of special events were not evaluated as part of this analysis. To limit potential impacts, events should be scheduled, if possible, so that visitors do not have to arrive during the peak commute periods (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m.). Additionally, special events are only scheduled to occur approximately three to four times a year, or about once a quarter. So any potential traffic impacts would be temporary impacts and would not rise to a significant level.

Evaluation of Left-Turn Pocket Queuing. The addition of project traffic along the roadway network has the potential to add vehicles to left-turn movements such that the left-turn queue would exceed the turn pocket storage length. Queues that exceed the turn pocket storage length have the potential to impede through traffic movement along an approach. Potentially affected intersections were selected for this evaluation in consultation with the City and based on existing operations and approaches where the project would add a substantial volume of traffic. Table V.I-18 presents intersections that would experience queues that would exceed the left-turn pocket storage length. Table V.I-18 also identifies improvements for those pockets where the queue would exceed the storage capacity.

Table V.I-18: Left-Turn Vehicle Evaluation

Intersection		Pocket (Time of Day)	Available Pocket Length[a]	Projected Queue Length[a] Existing (Existing +Project)	Background (Background +Project)	Cumulative (Cumulative +Project)	Improvement
8	De Anza Boulevard/ Stevens Creek Blvd	WB (PM)	190	250 (300)	350 (425)	475 (550)	Reduce median width on Stevens Creek Boulevard east of intersection to accommodate lengthening of one left-turn lane.
18	Wolfe Road/ Homestead Road	WB (AM)	225	125 (250)	125 (250)	125 (250)	Remove parking and restripe to extend left-turn pocket on Homestead Road.
18	Wolfe Road/ Homestead Road	WB (PM)	225	200 (325)	225 (350)	250 (350)	Remove parking and restripe to extend left-turn pocket on Homestead Road.
23	Wolfe Road/ Vallco Parkway	SB (AM)	155	100 (175)	200 (275)	275 (375)	Reduce median on Wolfe Road north of intersection to accommodate lengthening of left-turn pocket.
23	Wolfe Road/ Vallco Parkway	SB (PM)	155	100 (150)[b]	375 (425)	975 (1,100)	Reduce median on Wolfe Road north of intersection to accommodate lengthening of left-turn pocket.
27	Tantau Avenue/ Homestead Road	WB (AM)	290	225 (275)[b]	200 (325)	200 (325)	Restripe to extend left-turn pocket on Homestead Road.
31	Tantau Avenue/ Stevens Creek Boulevard	EB (AM)	200	150 (225)	225 (300)	225 (300)	Reduce median on Stevens Creek Boulevard west of intersection to accommodate lengthening of left-turn pocket

[a] Pocket and queue lengths reported in feet.
[b] Existing and Existing Plus Project queues can be adequately served by current pocket

Source: Fehr & Peers, May 2013.

Secondary impacts associated with the removal of trees that are protected under the City of Cupertino's Tree Protection Ordinance could occur with some of the median modifications proposed to accommodate added queue storage lengths. Impacts BIO-1 and BIO-3 in Section V.D, Biological Resources, addresses these potential secondary impacts.

Evaluation of Emergency Vehicle Access. Emergency vehicles would be able to access the project site via the two main driveways off Wolfe Road and Tantau Avenue. Additional emergency vehicle access would be provided via Homestead Road at the proposed Corporate Fitness Center and via Tantau Avenue at the Corporate Auditorium. The number of access points is sufficient to accommodate emergency vehicle ingress to the project site. Apple has been working closely with the City's fire code officials to ensure that the project has sufficient emergency vehicle access. Apple should continue working with the City and get approval on the final site plan from the City's fire code official.

The addition of project traffic is expected to increase congestion on Wolfe Road, Homestead Road, and Tantau Avenue, especially during the morning and evening peak commute periods. The added congestion would increase travel times for emergency vehicles on these access routes to the project site. To address this issue, Apple would provide emergency vehicle pre-emption at signalized intersections most likely to be used by emergency vehicles accessing the site (as required by Mitigation Measure PSU-1).

Evaluation of Construction Impacts. Construction of the proposed project is anticipated to occur over a 32-month period once the project is approved. This section of the analysis qualitatively addresses construction-related impacts, specifically as they relate to construction traffic and parking demand. General recommendations on construction-related mitigations, such as limiting times when trucks would be permitted to travel to/from the site and restricting routes to prevent neighboring community impacts, are provided.

The City's Municipal Code (Section 11.32.010) defines the following roadway segments within the project vicinity as truck routes:

- De Anza Boulevard within City limits
- Homestead Road between SR 85 and Lawrence Expressway
- Stevens Creek Boulevard from SR 85 to east City limits
- Tantau Avenue between Stevens Creek Boulevard and Homestead Road
- Wolfe Road between Stevens Creek Boulevard and Homestead Road
- Pruneridge Avenue between Wolfe Road and Tantau Avenue (segment to be closed with project)

Thus all major access routes to the project site are designated as truck routes. In general, truck access should be limited to those routes that provide the most direct access.

The project would likely generate a substantial amount of construction traffic, but most of it would occur during off-peak hours. As shown in Table D-3 of Appendix B most of the study intersections near the project site operate at LOS D or better under Background Conditions; however truck access to the site should be restricted during peak commute times (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m.) to minimize potential impacts to the surrounding roadway network operations.

Hexagon Transportation Consultants prepared a memorandum entitled *Results of the Traffic Simulation Analysis for the Construction Phase of the Proposed Apple Campus Project in the City of Cupertino*.[22] The memorandum summarizes the simulation analysis of the traffic conditions that would occur at and around the proposed project site during construction. Based on information provided by Apple and its proposed construction plan, all truck access on Homestead Road would be

[22] Black, G., and G. Del Rio, 2013. Memorandum to Dan Whisenhunt and John Hillegass from Hexagon Transportation Consultants, Inc., *Results of the Traffic Simulation Analysis for the Construction Phase of the Proposed Apple Campus Project in the City of Cupertino*. January 14.

restricted and trucks would access the project site via the I-280/Wolfe Road interchange. Only construction workers would access the project from the north from Wolfe Road and/or Homestead Road. Overall, the simulation analysis shows that the existing roadway network has adequate capacity at the Wolfe Road/Pruneridge Avenue and Tantau Avenue/Pruneridge Avenue intersections to serve the projected truck traffic during the construction phase of the project. To minimize the effects of construction traffic on residents of The Hamptons apartment complex, trucks accessing the site from Wolfe Road would use the existing project site driveway on Wolfe Road north of the Wolfe Road/ Pruneridge Avenue intersection to enter the site. To exit the site onto Wolfe Road, construction traffic would use Pruneridge Avenue. As a result of this analysis, no significant impacts related to construction traffic were identified and no mitigation measures are required.

TDM Program Expansion. Apple is proposing to expand its TDM program and increase its alternative mode share (percentage of employees traveling to the site via walking, bicycling, riding in private shuttle or public transit vehicles, or ridesharing) from the existing 28 percent. A target of 34 percent at full buildout has been identified as a reasonable target because it is considered aggressive but achievable for office developments in suburban locations greater than ½ mile from a rail station. While higher alternative mode share rates have been established for a few corporate campuses, these higher rates have generally been in areas more urban than Cupertino where there is a higher density of transit facilities. The TDM target would be measured at the peak commute hours, when roadways are most congested.

Project impacts at intersections and freeway segments can be mitigated by increasing the facility's capacity through physical improvements or by reducing the amount of added project traffic through TDM measures. At locations where there are no feasible physical mitigation measures to reduce identified impacts to less-than-significant levels, the alternative mode share increase (and associated vehicle trip reduction) to 34 percent can reduce the severity of the impact. In addition to reducing the severity of intersection and freeway impacts, the TDM program expansion was also utilized in the evaluation of the site's parking demand and associated parking supply.

The City evaluated the feasibility of a mitigation measure requiring a "trip cap." Under a trip cap, once development of the project site generates trip volumes that exceed AM and PM peak-hour values for triggering impacts to the transportation system, continued development and growth at the project site would be halted. A trip cap was rejected as infeasible because it would conflict with a key project objective of consolidating Apple's engineer and support personnel in one location. In addition, such a trip cap would limit employment growth on the site, which would be undesirable to Apple and the City for economic reasons and would conflict with a key project objective of developing a campus that can accommodate 14,200 employees.

Instead, "peak trip counts" are established as the goals that would drive the full implementation of TDM measures in order to reduce physical impacts on the transportation system. Peak trip counts, which would be established for the AM and PM peak hours of adjacent street traffic, would help determine if more robust TDM measures are required to reduce project traffic. In this way, peak trip counts are used to establish mitigation and monitoring measures that address the project's impact on the transportation system while allowing for planned growth within the site as part of the project.

Details of Mitigation Measure TRANS-9b. As part of Mitigation Measure TRANS-9b, Apple would be required to expand its TDM program to achieve a 34 percent (i.e., a 6 percentage point peak hour trip reduction) alternative mode participation rate and associated peak trip counts at full buildout and occupancy of 14,200 employees. The details of the implementation of Mitigation Measure TRANS-9b are discussed in this section. The TDM program expansion component of Mitigation Measure TRANS-9b includes some or all of the elements listed below. These elements include: (1) new TDM measures already proposed to be added as part of the project, including TDM measures already implemented by Apple under existing conditions that would be expanded as part of the project; and (2) additional measures.

New and Expanded Project TDM Measures. The following measures are new or expanded measures that would be implemented as part of the project. Existing measures are presented in Table V.I-6.

- *Apple Transit*. Expand Apple coach service areas and frequency, and provide priority drop-off locations for transit users. Participation in Apple transit shall be measured and reported in real time, with the goal of increasing mode share from 12 percent to 15 percent;
- *Mass Transit Shuttle Links*. Expand Apple shuttle services to include connections to future high-capacity corridors such as VTA BRT lines, electrified Caltrain lines, and Santa Clara BART extensions. The goal is to exceed the baseline 1-2 percent public transit mode share;
- *Off Campus Bicycle Infrastructure*. Improve off-campus bicycle infrastructure, including: bike lanes, bike paths, high-visibility striping, bike boxes at key intersections and other features to encourage safe cycling to and from the site. Strive to increase bicycle mode share from 2 percent to 5 percent;
- *Campus Walking/Cycling Commutes*. Prioritize walking and cycling to the site for those employees who live closest to the campus by providing more convenient pedestrian and bicyclist access to the Main Building, providing bike lockers closest to the entrances of the Main Building, and increasing the distance between on-site parking and work space (i.e., by accommodating much of the project parking underground or in structures, at a distance from work space). Since the majority of proposed parking is not adjacent to office and laboratory space, it is anticipated that the commute time for those employees in a 0-5-mile radius of the project site would be less by bike and foot, than by car;
- *Transit Center*. Provide a Transit Center with an information desk for employees to retrieve maps and information on alternative commute options. The information desk shall be easily accessible from the Main Building;
- *Parking Monitoring System*. Develop a parking monitoring system that would measure individual parking space utilization and collect data to optimize other TDM programs. For example, arrival time information shall help guide new shuttle schedules throughout the Apple transit system. The system shall complement other TDM programs by identifying open parking spaces in various zones and directing employees to the closest zone with an open space, which can help reduce on-site congestion. Some of the data collected shall be included in an annual parking utilization report submitted as part of TDM reporting;
- *Expanded Bike-sharing Program*. Apple shall provide at least 1,000 bikes within the project site to enhance mobility and promote cycling as a viable commute option; and
- *Electric Vehicle Charging*. Apple shall provide at least 300 charging spaces for electrical vehicles.

Additional TDM Measures. If the measures listed above are ineffective in meeting the peak trip counts goal, Apple shall implement additional measures until the peak trip counts goal is achieved. Apple shall choose from among the following when selecting additional measures to meet the peak trip counts goal:

- *Expand Mobile Transit Applications*. Provide real-time vehicle location and seat availability for Apple transit. Integrate this information with data on fixed-route transit (including VTA and Caltrain real-time arrival/departure times), comparative travel times, and parking availability so employees have a single information source to compare travel options and make informed mode choice decisions before they leave home or work;
- *Visibility of Transit Stops*. Improve signage and visibility of transit stops on/adjacent to the project site beyond that already required by the Conditions of Approval;
- *Increase Bicycle Awareness*. Offer free clinics, classes, workshops, and other services, like a bike kitchen, to prioritize bicycle-commuting to/from the project;
- *Flexible Work Schedule*. Apple shall enable a flexible work schedule in a way that is compatible with its corporate culture. A flexible work schedule would shift trips away from the AM and PM peak periods;
- *Rewards Program*. Develop a rewards/incentive program for alternative commute participants, such as free meals, car-share vouchers, products, and raffles for prizes;
- *Reduced/Subsidized Bicycle Tune-ups.* Offer free, or subsidized, bicycle tune-ups to employees who regularly commute by bicycle;
- *Real-time Ridesharing*. Introduce real-time ridesharing to commute website and mobile applications to maintain and expand the potential ride-sharing base of commuters. The goal is to increase ride-sharing participation beyond 10 percent;
- *Telecommuting*. Encourage telecommuting where business practices allow;
- *Car-sharing*. Expand the campus car-sharing fleet and offer deeper discounts for those who cycle and walk to work. Consider making the program free to further incentivize alternative commute options;
- *Universal Transit Passes*. Offer universal transit passes to all employees (i.e., Caltrain GO Pass or VTA Eco Pass); and
- *Parking Cash-Out*. Provide a parking cash-out program under which Apple provides employees with a cash allowance in lieu of a parking space. For instance, Apple could provide employees with a monthly cash benefit that is drawn down each day they use a free parking space at the project site.
- *Other Viable TDM Measures.* Other TDM measures identified in consultation with the City.

TDM Program Monitoring. If the project is approved, Apple would be required to implement a TDM program that increases its non-single-occupant vehicle mode share from 28 to 34 percent at full-occupancy, resulting in an AM and PM peak-hour vehicle trip reduction of 6 percentage points. As part of Mitigation Measure TRANS-9b, a robust monitoring program would be required to ensure that this TDM program mitigation measure is implemented and that the required trip reduction is achieved. The monitoring program would be subject to review and approval by the City of Cupertino. The TDM monitoring program would start 6 months after occupancy of Phase 1. TDM monitoring shall occur over the life of the project. The TDM monitoring program shall be conducted annually for the first 10 years. If the monitoring reveals that the peak trip counts have not been exceeded in the last 3 years of the first 10 years of annual monitoring, the TDM monitoring shall be reduced to once every 2 years. However, if any biennial report reveals that the peak trip counts have been exceeded, the monitoring shall revert to annual monitoring until such times that the peak trip counts have not been exceeded for three consecutive annual reports.

<u>TDM Program Goal</u>

The goal of the program is to ensure that the TDM program reduces the amount of traffic generated by Apple Campus 2 buildings to fewer than 4,270 AM peak-hour vehicle trips and 4,400 PM peak hour vehicle trips, where peak hours are defined as the time periods on the adjacent street with the highest hourly volumes occurring during the morning and evening commute periods. The AM and PM peak hour trips represent traffic generation estimates evaluated in this EIR with an additional 6 percentage point reduction (using gross trip estimates from Table V.I-8: 4,544 AM peak hour trips x 94% = approximately 4,270 AM peak trip count; 4,686 PM peak hour trips x 94% = approximately 4,400 PM peak trip count).

<u>Monitoring Program</u>

The TDM program monitoring would consist of two main elements: (1) Summary of Implemented TDM Measures to be provided by Apple, and (2) TDM Monitoring Report to be conducted by an independent city-approved transportation planning/engineering firm. Each of these components is described below.

1. Summary of Implemented TDM Measures

   Apple would submit annual reports to the City describing the specific TDM measures that are being implemented, the number of employees on site, and the success of the measures expressed in AM and PM peak hour vehicle trips and vehicle trips per employee. The report and data collection would be prepared based on established measurement and monitoring guidelines created by Apple and the City prior to occupancy.

   To determine the effectiveness of the expanded TDM program Apple shall collect the following verifiable data and provide a report to the City (within 180 days of the date of the first certificate of occupancy) and annually thereafter:

   - Apple Transit Ridership - Counted electronically on vehicles and visually verified at the transit center
   - Public Transit Ridership - Counted at area VTA stops
   - Cycling/Walking Volumes - Counted via bike/pedestrian entrances and verified using security footage or in person
   - Carpool Volumes - Counted at entrance plazas and verified via security footage

2. TDM Monitoring Report

   An independent City-approved transportation planning/engineering firm would be retained by the City to collect data and present the results of the monitoring program in a written report. The data collection efforts would include vehicle counts conducted for all Apple Campus 2 driveways and/or parking facilities. Daily, hourly, and fifteen-minute period counts would be taken at the driveways and/or parking facilities over a 2-week period. Counts obtained during the three midweek weekdays (Tuesday, Wednesday, Thursday) would be averaged. The trip counts for the site driveways would be added together. Counts shall be performed between mid-February and late May (before the end of the school year and not during school holidays such as Spring Break) or between Labor Day and Thanksgiving week. Counts shall avoid days immediately before or after holidays or long weekends, and shall not be performed on days with inclement weather. Figure V.I-11 illustrates the required TDM monitoring process to evaluate the project site's peak trip counts.

If the AM and PM peak hour trip generation of Apple Campus 2 is less than 4,270 AM peak-hour vehicle trips and 4,400 PM peak-hour vehicle trips, no additional TDM measures would be required.

Trip rates expressed as AM and PM peak hour vehicle trips per employee would also be reported to assess the vehicle trip-reducing effect of the measures in the current TDM program. The count results would be divided by the number of employees on site. The results would be compared to the AM peak hour rate of 0.32 vehicle trips per employee and PM peak hour rate of 0.33 vehicle trips per employee, which represent the existing 28 percent alternative mode share at the Apple Infinite Loop campus and the buildings south of Mariani Avenue. The target rates are 0.30 AM peak hour vehicle trips per employee and 0.31 PM peak hour vehicle trips per employee. However, the peak trip counts specified above will be the determining factors as to whether Apple has to implement additional TDM measures.

<u>Actions if TDM Program is Not Achieved</u>

The City would notify Apple if one or both of the AM and PM peak hour vehicle trip counts (i.e., 4,270 AM peak-hour vehicle trips and 4,400 PM peak hour vehicle trips) are exceeded, as described above. Apple would be required to meet with the City to develop a plan and identify new TDM measures to be added to achieve the peak trip counts. If Apple does not agree to implement the City approved TDM measures, then Apple would be assessed a $5 per day per trip penalty (adjusted annually starting in 2014 per the Consumer Price Index for All Urban Consumers in the San Francisco-Oakland-San Jose area) for the monitoring period. Payments of these penalties are due to the City within 30 days of issuance of an invoice with supporting documentation. The funds from these penalties would be used at the City's discretion. Within 60 days Apple would be required to meet with the City to reevaluate and identify City-approved new TDM measure to be implemented at the project site. This cycle would continue until Apple agrees to implement City-approved TDM measures.

Once Apple and the City agree on new TDM measures, Apple would implement these within 60 days of the notification date. Follow-up counts, surveys, and/or collection of parking utilization data would be conducted by an independent City-approved transportation planning/engineering firm 60 days after the new measures are implemented to evaluate the effectiveness of the new TDM plan. If the peak trip counts are still exceeded, Apple would pay a fee of $3 per day per extra vehicle trip shown in the peak trip counts (adjusted annually staring in 2014 per the Consumer Price Index for All Urban Consumers in the San Francisco-Oakland-San Jose area). The funds from these fees would be used to provide for City-wide implementation of TDM programs and improvement of bicycle and pedestrian facilities. Payments of these penalties are due to the City within 30 days of issuance of an invoice with reasonable supporting documentation. After three months, Apple would be required to meet with the City to identify City additional approved new TDM measures to be added. If Apple still is not meeting the goal during the next annual monitoring period, penalties would be continued to be levied, until the peak trip counts goal is met.

Monitoring Program Funding

Apple would pay the City for the annual monitoring costs including the cost to conduct monitoring and City staff time to review the annual monitoring reports.

Monitoring Program Duration

Annual monitoring will be conducted for the first 10 years of the project. If in the last 3 years the trip thresholds are not exceeded, the monitoring will change to an every other year cycle. However, if any biennial report reveals that the peak trip counts have been exceeded, the monitoring shall revert to annual monitoring until such times that the peak trip counts have not been exceeded for three consecutive annual reports.

The project sponsor would be required to construct feasible physical mitigation measures for project-specific impacts. These may include the relocation of existing utilities, relocation and/or upgrade of existing traffic signal hardware and equipment, and other associated improvements in the rights-of-way, including but not limited to traffic signal poles and cabinets, striping of crosswalks, etc.

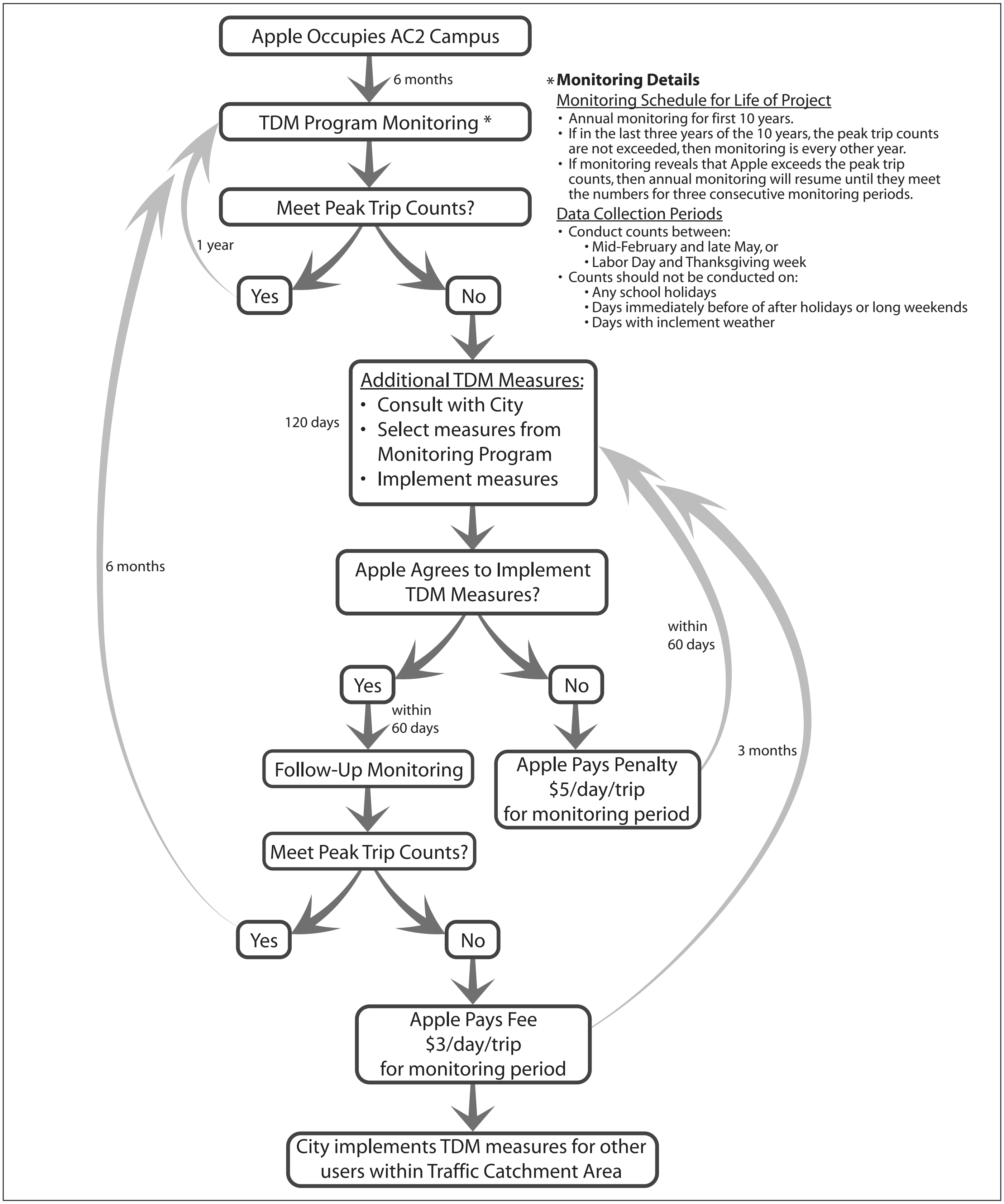

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FIGURE VI-11

Apple Campus 2 Project EIR

TDM Monitoring

SOURCE: FEHR & PEERS, APRIL 2013.

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