

4.1 TRANSPORTATION AND TRAFFIC

This section of the EIR summarizes applicable technical transportation-related components of the Google Caribbean Campus project (project or proposed project) to be located at the proposed future addresses of 100 and 200 West Caribbean Drive within the Moffett Park Specific Plan (MPSP). This section is based on the Final Transportation Impact Analysis Study (TIA) completed by Wood Rodgers in August 2019 and included as Appendix C of this EIR. The TIA refers to a project study area to capture roadways, intersections, and infrastructure potentially affected by the proposed project and covers a much larger area than the proposed project site. The TIA did not include intersections that were previously analyzed in the 2016 Mathilda Avenue Improvements at State Route (SR) 237 and US Highway 101 (US HWY 101) Project ("Caltrans EIR"). The Caltrans EIR is also a project EIR that analyzes the reconfiguration of the State Route 237 and US HWY 101 interchanges with Mathilda Avenue, including: modification to on and off ramps; removal, addition, and signalization of intersections; and provision of new left turn lanes. The analysis covers certain potentially significant transportation impacts the proposed project may produce related to the Mathilda Avenue interchanges with State Route 237 and Highway 101. Additionally, the TIA did not include intersections that were included in the LUTE EIR. The LUTE EIR potential traffic impacts based on the City's planned land uses, development density, transportation, and projected buildout by 2035. The LUTE EIR analyzed permitted uses, development density, and projected transportation impacts at the project site and evaluated potential traffic impacts on the surrounding roadway network. Therefore, as discussed in Section 1.2 above, the analysis in this section of the Initial Study Checklist tiers off of the Caltrans EIR (State Clearinghouse No. 2015082030) and the LUTE EIR" (State Clearinghouse No. 2012032003).

In some instances, the discussion of resources within the project study area are summarized (e.g. bicycle facilities) due to some of the sites being substantially distanced, but the complete accounting of the resources are available in Appendix C. The project study area in terms of the TIA is shown on *Figure 4.1-1: Project Location and Study Facilities*. The TIA is a stand-alone, separate document, which presents additional technical information on transportation impacts associated with implementation of the proposed project. The TIA was prepared following the guidelines of the City of Sunnyvale (City) and Santa Clara Valley Transportation Authority (VTA), the congestion management agency for Santa Clara County.

The TIA evaluated a total of 27 intersections. The 27 intersections were selected for analysis using VTA TIA Guidelines (adopted October 2014) criteria thresholds, engineering judgement, and coordination with City staff. All intersections that were projected to experience 10 or more Project peak hour vehicle trips per lane for any movement, based on Project trip generation and distribution, were included in this TIA, except those intersections that were analyzed in the City of Sunnyvale LUTE EIR, or the Traffic Operations Analysis Report: Mathilda Avenue Improvements between SR 237 and US HWY 101 Project .

The "project" analyzed in this EIR and the "Project Alternative" discussed in the TIA both refer to the same proposed project for 100 and 200 Caribbean. This difference in terminology is attributable to the different statutes governing preparation of an EIR (CEQA, Public Resources Code § 21000 et seq.) and preparation of a TIA (The Congestion Management Act, Gov. Code §§ 65088-65089.10). Therefore, even though Table

1 of the TIA refers to the installation of a traffic signal at the intersection of W. Caribbean Drive and the entrance to 200 Caribbean as a "Project Alternative," the traffic signal installation was included in the proposed project analyzed in this EIR.

Lastly, the TIA evaluated traffic conditions at a total of 27 intersections for what was then the "proposed project (right-in-right out only)". This was done prior to the City's decision to include the full-access option at the Caribbean Parking Garage Driveway/Caribbean Drive intersection to the proposed project. Upon evaluation of the "Project Alternative (full access)," it was determined that traffic conditions would differ at a total of 15 intersections (intersections 1-15). The TIA included tables for all 27 intersections under the former "proposed project," and included only the 15 intersections that would experience different conditions under the "project alternative." Therefore, to simplify the analysis in this TEIR, the 15 intersections from the original "proposed project" were replaced by the 15 intersections from the "project alternative" and is the basis for the analysis.

This section also utilizes information from the City of Sunnyvale Land Use and Transportation Element (LUTE) EIR published in August 2016 as appropriate. The LUTE is part of the City of Sunnyvale General Plan (SGP), which establishes the fundamental framework as to how the City streets and buildings would be laid out, and how various land uses, developments, and transportation facilities would function together. Elements of these documents are discussed throughout this chapter of the EIR as applicable to the environmental review process.

4.1.1 ENVIRONMENTAL SETTING

Regionally, the proposed project is in Santa Clara County in the Silicon Valley and in the northwestern area of the City. Santa Clara County is bounded by Alameda County to the north, San Mateo and Santa Cruz Counties to the west, San Benito County to the south, and Merced and Stanislaus Counties to the east. The proposed project is located on the southern edge of the San Francisco Bay and is part of a nearly continuous urban landscape with the neighboring cities including Mountain View, Los Altos, Cupertino, and Santa Clara. Overall the area is highly urbanized, with concentrations of high-technology centers, old and new residential areas, transportation infrastructure, and downtown settings.

This section describes the existing conditions of the roadway facilities, pedestrian and bicycle facilities, and transit service. It also presents existing traffic conditions, and operations for the study intersections and freeway segments with the results of level of service (LOS) calculations. LOS is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection or roadway segment, representing progressively worsening traffic operations. Level of Service "A" represents free-flow conditions with little to no delays, while LOS "F" represents jammed or grid-lock conditions.

Recent changes to the California Environmental Quality Act (CEQA) will require use of vehicle miles traveled (VMT) instead of LOS beginning July 1, 2020. Until that time, or until lead agencies develop new thresholds that account for impacts related to VMT, the agencies may continue to evaluate projects using the LOS thresholds. Accordingly, due to the timing of the adoption of the revised CEQA guidelines and

the preparation of this traffic study for the project, LOS standards were used. Additional information is provided below in pertinent sections of this chapter.

Regional Circulation

Regional access to Sunnyvale is provided by US HWY 101 and SR 237. Both are located approximately one mile to the south of the proposed project. SR 237 trends northeasterly and southwesterly connecting to Interstate 880 (I-880) approximately seven miles to the east and to Interstate 680 (I-680) approximately eight miles to the east. I-880 generally trends north and south and provides access to points north including Oakland approximately 35 miles north, and San Jose, approximately five miles south before joining US HWY 101, which provides access to southerly portions of the state to as far south as Los Angeles County. In proximity to the project site, US HWY 101 generally trends in a northwesterly direction on the westerly side of the San Francisco Bay. US HWY 101 provides access to Sonoma County, Marin County, San Francisco County, and San Mateo County. *Figure 3-1: Regional Location Map*, shows the proposed project site in relation to surrounding counties as well as major transportation corridors.

Local Circulation

Locally, the City is immediately south of the San Francisco Bay and occupies approximately 22-square miles. Land uses are served by the City circulation system that consists of, the listed freeways, local and regional roadways, bicycle and pedestrian facilities, a public transit system, and railroad and light rail facilities. The major public transportation line is the Caltrain line that splits the City roughly in half from west to east and provides service to north to San Francisco and south to Gilroy. The proposed project site and majority of the commercial and industrial uses occupy the portion of the City north of the Central Expressway and Caltrain line and residential uses are predominantly to the south. Within the MPSP area, roadways provide access to the various industrial and commercial uses as well as the VTA light rail line on East Java Drive, approximately 800 feet south of the proposed project site and provides access through the proposed project site and ends of the line in Mountain View and Campbell.



FIGURE 4.1-1: Project Location and Study Facilities
Google Caribbean Campus



Not to scale

Roadways immediately adjacent to the proposed project site include West Caribbean Drive on the north, North Mathilda Avenue to the west, Bordeaux Drive and Caspian Drive to south, and Borregas Avenue to the east. *Table 4.1-1: City of Sunnyvale Roadway Classifications* provides a description of the various classes of roadways within the City.

Table 4.1-1: City of Sunnyvale Roadway Classifications

State Freeway	Provides mostly uninterrupted travel by car, bus, or trucks, and designed for high speeds over long distances. Fully controlled access through on- and off-ramps, with some sort of separation between opposing traffic flow. Driveways and alternative modes of transportations such as walking, or bicycling are forbidden, and intersections may only occur as freeway interchanges.
County Expressway	Provides partially controlled access on high-speed roads with a limited number of driveways and intersections. Expressways also allow bicycles; pedestrians are permitted in limited locations. Speed is typically between 45 and 70 miles per hour, dependent upon location. Expressways are generally designed for longer trips at the county or regional level.
Class I Arterial	Provides regional access to all transit modes, with a focus on regional transit and auto traffic. Includes pedestrian connections linking land uses to transit. Class I arterials may or may not have street parking or bike lanes. Six-lane arterials may provide up to 130 feet of right-of-way (ROW) with a median, while four-lane arterials may provide for up to 115 feet of ROW.
Class II Arterial	Provides access to all transportation modes with a focus on local access. Pedestrian connections link land uses to transit. Four-lane arterials may provide for up to 100 feet of ROW with a median. Two-lane arterials may provide for up to 90 feet of ROW with a median and may feature parking lanes and bike lanes
Commercial/Industrial Corridor	Serves local cross-town traffic and may also serve regional traffic. Industrial and commercial corridors connect local roads and streets to arterial roads. Provides access to local transit, and includes pedestrian connections designed to encourage multi-purpose trips. Four-lane corridors provide for up to 90 feet of ROW with street parking or bike lanes. Two-lane corridors may provide for up to 90 feet of ROW with street parking and may have bike lanes.
Residential Corridor	Serves local cross-town and residential traffic and may serve some regional traffic. Residential corridors are collector streets that connect cars, bicycles, and pedestrians to arterial roads and land uses. Residential corridors may have on-street parking and/or bike lanes, and a median may be present if there is no bike lane. The ROW includes sidewalks and traffic buffers, such as trees, on both sides.
Source: Sunnyvale 2015	

Existing Roadway Network

The existing roadways and freeways within the study area provide regional and local access, as well as direct routes to the proposed project site. The following descriptions of characteristics of freeways and major roadways, as well as some local roadways include those that would most likely be used to access the proposed project site.

US HIGHWAY (US)-101 is an eight-lane freeway (three mixed-flow lanes and one HOV lane in each direction) that primarily runs north-south but runs east-west to the south of the proposed project site. US HWY 101 connects multiple Bay Area cities, from San Francisco in the north to Gilroy in the south. US HWY 101 has interchanges with Mathilda Avenue, Fair Oaks Avenue, and Lawrence Expressway near the proposed project site.

STATE ROUTE (SR) 237 is a four to six-lane freeway that extends between SR- 82 in Mountain View and Interstate 880 in Milpitas. SR 237 has two mixed-flow lanes and one HOV lane in each direction east of Mathilda Avenue, and has just two mixed-flow lanes in each direction west of Mathilda Avenue. SR 237 has interchanges with Mathilda Avenue, Java Drive- Fair Oaks Avenue, and Caribbean Drive-Lawrence Expressway in the vicinity of the proposed project site.

CENTRAL EXPRESSWAY is a four to six-lane county expressway that runs east-west between San Antonio Road in Mountain View and Trimble Road/De La Cruz Boulevard in Santa Clara. Central expressway is approximately 2.25 miles south of the proposed project site and has a four-lane cross-section. It has been designated as a regionally significant roadway/expressway by the City.

LAWRENCE EXPRESSWAY (COUNTY ROUTE G2) is a six to eight-lane north-south county expressway that runs from Saratoga Avenue (where it becomes Quito Road) to SR 237 (where it becomes Caribbean Drive approximately 1.25 miles east of the proposed project site). It has six-lanes between Saratoga Avenue and Stevens Creek Boulevard, while it has eight total lanes (three mixed-flow lanes and one HOV lane in both the northbound and southbound directions) between Stevens Creek Boulevard and SR 237. Lawrence Expressway has been designated as a regionally significant roadway/expressway by the City.

CARIBBEAN DRIVE is a six-lane class I arterial in the Moffett Park Specific Plan area of Sunnyvale that generally runs east-west between Mathilda Avenue (western limit) and SR 237 (eastern limit) where it becomes Lawrence Expressway. Caribbean Drive has a posted speed limit of 45 mph. Caribbean Drive has been designated as a regionally significant roadway by the City of Sunnyvale.

EL CAMINO REAL (STATE ROUTE 82) is a six-lane class I arterial that runs northwest-southeast between A Street in Daly City (where it becomes Mission Street) and The Alameda in Santa Clara. El Camino Real is approximately 3.5 miles south of the proposed project site and runs through San Mateo, Palo Alto, Mountain View, and Sunnyvale along the way. El Camino Real has been designated as a regionally significant roadway by the City.

FAIR OAKS AVENUE is a four to six-lane north-south class I arterial between Wolfe Road and Fair Oaks Way where it becomes Java Drive. Fair Oaks Avenue has five lanes (two lanes northbound and three lanes southbound) between Wolfe Road and the US HWY 101 southbound ramps, four lanes over US HWY 101, six lanes between US HWY 101 northbound ramps and Tasman Drive, and five lanes between Tasman Drive and Fair Oaks Way (two lanes northbound and three lanes southbound). South of Wolfe Road, Fair Oaks Avenue becomes a four-lane class II arterial which runs generally north-south until El Camino Real.

MATHILDA AVENUE is a six to eight-lane class I arterial that runs north-south through Sunnyvale between Sunnyvale Saratoga Road, approximately 3.5 miles south, and West Caribbean Drive on the north adjacent to the proposed project site. Near the proposed project site, Mathilda Avenue has four lanes northbound and three lanes southbound between Ahwanee Avenue and the Moffett Park Drive, and three lanes northbound and three lanes southbound between Moffett Park Drive and Caribbean Drive. Mathilda Avenue has been designated as a regionally significant roadway by the City.

JAVA DRIVE is a four-lane class I arterial in the Moffett Park Specific Plan area of Sunnyvale that generally runs east-west between Mathilda Avenue and Fair Oaks Way where it becomes Fair Oaks Avenue.

SUNNYVALE SARATOGA ROAD is a four to six-lane class I arterial that runs north-south through southern Sunnyvale between Homestead Road and El Camino Real where it becomes Sunnyvale Avenue approximately 3.75 miles south of the proposed project site. Sunnyvale Saratoga Road has six lanes between Homestead Road and Mathilda Avenue and four lanes between Mathilda Avenue and El Camino Real. Sunnyvale Saratoga Road has been designated as a regionally significant roadway by the City.

WOLFE ROAD is a six-lane class I north-south arterial in Sunnyvale between Old San Francisco Road Reed Avenue and Fair Oaks Avenue. South of Old San Francisco Road-Reed Avenue, Wolfe Road becomes a four-lane class II arterial which runs north-south until Stevens Creek Boulevard in Cupertino where it becomes Miller Avenue.

GREAT AMERICA PARKWAY is a six to eight-lane arterial in the City of Santa Clara about 2.75 miles to the east. This road that runs north-south between SR 237 and US HWY 101 where it becomes Bowers Avenue. Great America Parkway has six lanes between SR 237 and Tasman Drive, seven lanes (four lanes northbound and three lanes southbound) between Tasman Drive and Mission College Boulevard, and eight lanes between Mission College Boulevard and US HWY 101.

ARQUES AVENUE is a four-lane east-west class II arterial in Sunnyvale between Fair Oaks Avenue and Oakmead Parkway where it becomes Scott Boulevard. West of Fair Oaks Avenue, Arques Avenue becomes a two-lane local roadway which runs east-west until reaching a dead-end just east of San Bernardino Way.

AHWANEE AVENUE is a two-lane collector that generally runs east-west in Sunnyvale, along the south side of US HWY 101, between Mathilda Avenue (western limit) and San Tomas Street (eastern limit).

Transit

Existing transit to the proposed project site is provided by Caltrain and VTA bus routes and VTA light rail. Each are discussed in more detail below.

BUS ROUTES

VTA operates bus service within the vicinity of the proposed project site. Within one-mile of the proposed project site there are eight local bus routes. Routes 26, 54, 55, 120, 121, 122, 321, and 328. Six of the bus lines run along West Java Drive and have stops within 0.25 miles of the proposed project site. These lines include Route 26, Route 328, Route 321, Route 120, Route 121, and Route 122. Two bus routes (Routes

22 and 32) provide service to neighboring cities and run mainly east-west through Sunnyvale near the downtown area on El Camino Real and on Evelyn Avenue. The other bus routes generally run in a north-south direction and connect the neighborhoods south of El Camino Real with the northerly employment areas, such as those in the MPSP.

Route 26 - Route 26 is a local service that runs between the Lockheed Martin Transit Center in Sunnyvale and the Eastridge Transit Center in San Jose. Within the project study area, Route 26 primarily runs along Java Drive and Fair Oaks Avenue, with stops at the Lockheed Martin Transit Center (0.6 miles from the proposed project site), as well as the Java Drive intersections with Mathilda Avenue (0.3 miles from the proposed project site), Bordeaux Drive (0.2 miles from the proposed project site), Borregas Avenue (0.2 miles from the proposed project site), Geneva Drive (0.4 miles from the proposed project site), and Crossman Avenue (0.6 miles from the proposed project site), as well as the Fair Oaks Avenue intersections with Fair Oaks Way (0.9 miles from the proposed project site) and Tasman Drive (1.0 miles from the proposed project site). On weekdays, eastbound and westbound Route 26 operate between approximately 5:14 AM and 11:50 PM on 30-minute headways, except for the last two busses of the day, which operate on approximately 60-minute headways. On weekends, eastbound and westbound Route 26 operate between approximately 6:16 AM and 10:54 PM on 30-minute headways, except for the last three busses of the day, which operate on approximately 60-minute headways.

Route 54 - Route 54 is a local service that runs between De Anza College in Cupertino and the Lockheed Martin Transit Center in Sunnyvale. Near the project study area, Route 54 primarily runs along Mathilda Avenue, with stops at the Lockheed Martin Transit Center (0.6 miles from the proposed project site) and the Mathilda Avenue / Moffett Park Drive intersection (0.8 miles from the proposed project site). On weekdays, northbound and southbound Route 54 operate between approximately 6:03 AM and 9:29 PM on 30-minute headways, except for the last two busses of the day, which operate on approximately 40- and 60-minute headways, respectively. On Saturday, northbound and southbound Route 54 operate between 7:54 AM and 7:50 PM on 45 to 60-minute headways. On Sunday, northbound and southbound Route 54 operate between 8:55 AM and 7:15 PM on 45 to 60-minute headways. Note that under the VTA Fiscal Year 2018-2019 Transit Service Plan, Route 54 will be discontinued with the introduction of the Rapid 523 line along Mathilda Avenue, Sunnyvale Avenue, and Sunnyvale-Saratoga Road.

Route 55 is a local service that runs between De Anza College in Cupertino and Great America in Santa Clara. Near the project study area, Route 55 primarily runs along Lawrence Expressway and Fair Oaks Avenue, with stops at the Lawrence Expressway intersections with Tasman Drive (2.4 miles from the proposed project site) and Lakehaven Drive (2.5 miles from the proposed project site). On weekdays, northbound and southbound Route 55 operate between approximately 5:38 AM and 10:54 PM on approximately 15 to 30-minute headways, except for the last two busses of the day, which operate on approximately 60-minute headways. The 15-minute headways generally occur within the Project vicinity from approximately 7:30 AM to 9:30 AM and 2:30 PM to 6:00 PM. On Saturday, northbound and southbound Route 55 operate between approximately 7:43 AM and 9:09 PM on approximately 30-minute headways except for the first and last few busses of the day which operate on 60-minute headways. On Sunday, northbound and southbound Route 55 operate between approximately 7:52 AM and 8:34 PM on 45 to 60-minute headways.

Route 120 is an express bus route that runs from the Fremont BART station to the Lockheed Martin Transit Center in Sunnyvale. Near the project study area, Route 120 primarily runs along SR 237, Mathilda Avenue, Java Drive, Crossman Avenue, and Caribbean Drive, with stops at the Lockheed Martin Transit Center (0.6 miles from the proposed project site); the Java Drive intersections with Mathilda Avenue (0.3 miles from the proposed project site), Bordeaux Drive (0.2 miles from the proposed project site), Borregas Avenue (0.2 miles from the proposed project site), Geneva Drive (0.4 miles from the proposed project site), and Crossman Avenue (0.6 miles from the proposed project site); the Crossman Avenue intersections with Java Drive (0.7 miles from the proposed project site) and Baltic Way (0.7 miles from the proposed project site); and the Caribbean Drive / Moffett Park Drive intersection (1.0 mile from the proposed project site). On weekdays, northbound Route 120 operates from approximately 4:04 PM to 7:12 PM on approximately 30-minute headways. On weekdays, southbound Route 120 operates from approximately 6:16 AM to 9:30 AM on approximately 15 to 60-minute headways. Route 120 does not operate on Saturday or Sunday.

Route 121 is an express bus route that runs from the Gilroy Transit Center to the Lockheed Martin Transit Center in Sunnyvale. Near the project study area, Route 121 primarily runs along Mathilda Avenue, Java Drive, Crossman Avenue, Caribbean Drive, Lawrence Expressway, and Tasman Drive with stops at the Lockheed Martin Transit Center (0.6 miles from the proposed project site); the Java Drive intersections with Mathilda Avenue (0.3 miles from the proposed project site), Bordeaux Drive (0.2 miles from the proposed project site), Borregas Avenue (0.2 miles from the proposed project site), Geneva Drive (0.4 miles from the proposed project site), and Crossman Avenue (0.6 miles from the proposed project site); the Crossman Avenue intersections with Java Drive (0.7 miles from the proposed project site) and Baltic Way (0.7 miles from the proposed project site); and the Caribbean Drive/Moffett Park Drive intersection (1.0 mile from the proposed project site). On weekdays, northbound Route 121 operates from approximately 4:30 AM to 9:20 AM on approximately 15 to 45-minute headways. On weekdays, southbound Route 121 operates from approximately 2:51 PM to 7:36 PM on approximately 15 to 45-minute headways. Route 121 does not operate on Saturday or Sunday.

Route 122 is an express bus route that runs from South San Jose to the Lockheed Martin Transit Center in Sunnyvale. Near the project study area, Route 122 primarily runs along Mathilda Avenue, Java Drive, Crossman Avenue, Caribbean Drive, Lawrence Expressway, and US HWY 101, with stops at the Lockheed Martin Transit Center (0.6 miles from the proposed project site); the Java Drive intersections with Mathilda Avenue (0.3 miles from the proposed project site), Bordeaux Drive (0.2 miles from the proposed project site), Borregas Avenue (0.2 miles from the proposed project site), Geneva Drive (0.4 miles from the proposed project site), and Crossman Avenue (0.6 miles from the proposed project site); the Crossman Avenue intersections with Java Drive (0.7 miles from the proposed project site) and Baltic Way (0.7 miles from the proposed project site); and the Caribbean Drive / Moffett Park Drive intersection (1.0 mile from the proposed project site). On weekdays, northbound Route 122 operates from approximately 5:52 AM to 6:45 AM, with only one arrival per stop. On weekdays, southbound Route 122 operates from approximately 4:48 PM to 6:02 PM, with only one arrival per stop. Route 122 does not operate on Saturday or Sunday.

Route 321 is a limited-stop bus route that runs from the Great Mall/Main Transit Center in Milpitas to the Lockheed Martin Transit Center in Sunnyvale. Near the project study area, Route 55 primarily runs along

Mathilda Avenue, Java Drive, Crossman Avenue, Caribbean Drive, Lawrence Expressway, and Tasman Drive, with stops at the Lockheed Martin Transit Center (0.6 miles from the proposed project site); the Java Drive intersections with Mathilda Avenue (0.3 miles from the proposed project site), Bordeaux Drive (0.2 miles from the proposed project site), Borregas Avenue (0.2 miles from the proposed project site), Geneva Drive (0.4 miles from the proposed project site), and Crossman Avenue (0.6 miles from the proposed project site); the Crossman Avenue intersections with Java Drive (0.7 miles from the proposed project site) and Baltic Way (0.7 miles from the proposed project site); and the Caribbean Drive / Moffett Park Drive intersection (1.0 mile from the proposed project site). On weekdays, northbound Route 321 operates from approximately 5:52 PM to 6:38 PM, with only one arrival per stop. On weekdays, southbound Route 321 operates from approximately 8:11 AM to 8:50 AM, with only one arrival per stop. Route 321 does not operate on Saturday or Sunday.

Route 328 is a limited-stop bus route that runs from Almaden Expressway and Camden Avenue in San Jose to the Lockheed Martin Transit Center in Sunnyvale. Near the project study area, Route 55 primarily runs along Java Drive, Crossman Avenue, Caribbean Drive, and Lawrence Expressway, with stops at the Lockheed Martin Transit Center (0.6 miles from the proposed project site); the Java Drive intersections with Mathilda Avenue (0.3 miles from the proposed project site), Bordeaux Drive (0.2 miles from the proposed project site), Borregas Avenue (0.2 miles from the proposed project site), Geneva Drive (0.4 miles from the proposed project site), and Crossman Avenue (0.6 miles from the proposed project site); the Crossman Avenue intersections with Java Drive (0.7 miles from the proposed project site) and Baltic Way (0.7 miles from the proposed project site); and the Caribbean Drive / Moffett Park Drive intersection (1.0 mile from the proposed project site). On weekdays, northbound Route 328 operates from approximately 5:57 AM to 8:43 AM on approximately 80-minute headways, for a total of two arrivals per stop per day. On weekdays, southbound Route 328 operates from approximately 4:53 PM to 7:14 PM on approximately 60-minute headways, for a total of two arrivals per stop per day. Route 328 does not operate on Saturday or Sunday.

LIGHT RAIL

Light rail service is provided by VTA, which operates Line 902. Line 902 has a stop at the Lockheed Martin Transit Centers approximately 0.6 miles southwest of the proposed project site and the Borregas Station approximately 0.25 miles south of the proposed project site along West Java Drive. The Lockheed Martin Light Rail Station also provides connections to two local bus routes, three express routes, and two limited-stop routes. Other areas of Moffett Park served by the light rails includes a station north of US HWY 101 along Tasman Drive, Fair Oaks Avenue, and North Mathilda Avenue. Route 902 runs between Downtown Mountain View and Winchester Avenue in Campbell with 15-minute headways during peak commute hours. *Figure 4.1-2: Local Transit*, shows the connectivity of the light rail and areas it links to in the vicinity of the project.

CALTRAIN SERVICE

Caltrain is a commuter rail line that runs between San Francisco and Santa Clara County in Gilroy. There are two Caltrain stations in Sunnyvale: the Lawrence Caltrain Station and the Sunnyvale Caltrain Station. The nearest Caltrain station to the proposed project site is Sunnyvale Caltrain Station located east of the

intersection of West Evelyn Avenue and South Mathilda at South Francis Street approximately 3.0 miles to the south. VTA Bus line 54 provides service from this stop to the proposed project site. Service at the Sunnyvale Caltrain Station, located near the intersection of Frances Street and Evelyn Avenue, has approximately 20- to 30-minute headways during the weekday AM and PM commute hours and 60-minute headways midday, at night, and on weekends. The Sunnyvale Caltrain Station is served by all local, limited-stop, and baby bullet trains. Bus routes 32 and 54 stop at the Sunnyvale Transit Station.

The Mary/Moffett Caltrain Shuttle is a free public shuttle program funded by Google with financial support from the Bay Area Air Quality Management District (BAAQMD) and the Peninsula Corridor Joint Powers Board (PCJPB). This shuttle provides service between the Mountain View Caltrain Station and the Mary/Moffett area office buildings during commute hours. Shuttles depart from the Caltrain Station in the morning and travel northbound to the Mary/Moffett business area between 7 AM and 10 AM. During the afternoon commute period, the shuttles provide southbound service to take passengers to the Caltrain Station between 2:50 PM and 6:00 PM (City of Sunnyvale, 2016).

ALTAMONT COMMUTER EXPRESS SERVICE

The Altamont Commuter Express (ACE) Gray Shuttle (Route 822) serves Sunnyvale. ACE offers commuter rail service between Stockton, Tracy, Pleasanton, and San Jose during commute hours. This free shuttle, funded by the Bay Area Air Quality Management District, transports Sunnyvale passengers to and from the ACE Great America Station in Santa Clara. The Gray Shuttle runs on Arques Avenue, Wolfe Road, and Kifer Road, with four eastbound trips in the morning and four westbound trips in the afternoon/evening with headways averaging 60 minutes (City of Sunnyvale, 2016).

AVIATION

Moffett Federal Airfield is located within the City of Sunnyvale Sphere of Influence. Aviation uses of the airfield are limited to federal and federally hosted operations, including Google's initiative to pay for landing rights as a hosted operation. San Jose International Airport is located approximately 6 miles east of Sunnyvale, with commercial air carrier and air cargo services, as well as general aviation (City of Sunnyvale, 2016).

Pedestrian Facilities

Pedestrian sidewalks are provided in some locations adjacent to roadways near the proposed project site, but the existing sidewalk network is not complete and linked. For example, the sidewalk frontage on West Caribbean Drive fronting the proposed project site has detached pedestrian paths.

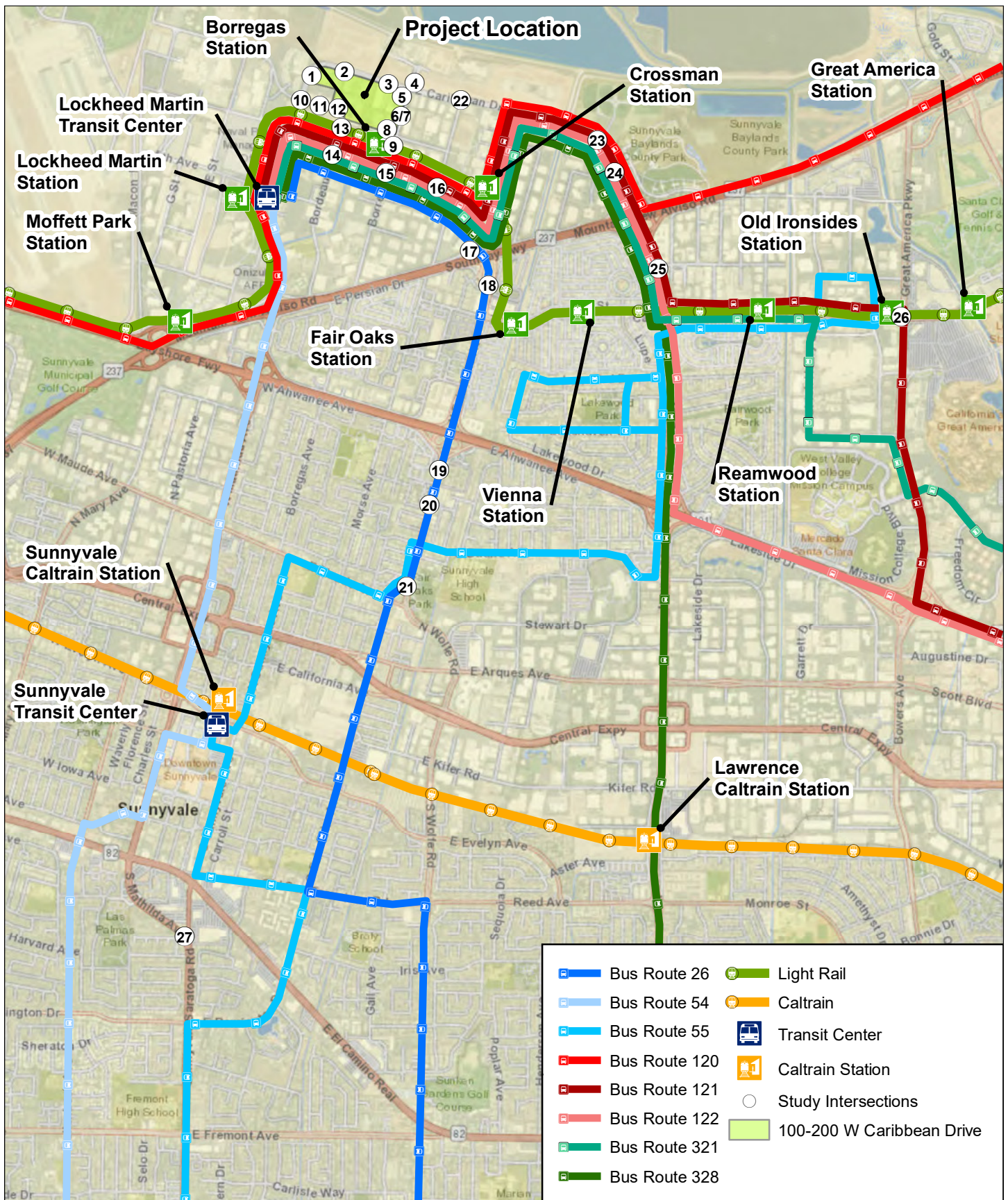
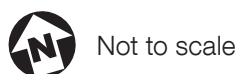


FIGURE 4.1-2: Local Transit
Google Caribbean Campus



Borregas Avenue has a sidewalk on the easterly side of the street, but on the project side there is no sidewalk. Lastly, Caspian Court which would provide access to the southerly side of the 100 West Caribbean building does not have sidewalks on either side of the street.

Within the existing proposed project site there are short concrete pathways on the margins of the parking lots that providing access to the existing building entrances. The different buildings on the various parcels; however, are not well linked by any distinct pathways other than pavement marking indicating a pedestrian crossing. Access from building to building is generally provided through parking lots. There is no east and west access across the West Channel except along the streets at West Caribbean Drive on the north and West Java Drive on the south. This distance is approximately 1,900 feet. Pedestrian and bicycle access along the levee tops to enable north-south travel is available through spaces around the vehicle access gates.

Bicycle Facilities

Within the existing interior of the proposed project site there are no existing bicycle facilities but there is a Class II Bikeway along the southern and northern right-of-way of West Caribbean Drive. This Bikeway begins east of the intersection with Borregas Avenue and continued along all project frontage through the curve to North Mathilda Avenue and south beyond 5th Street. Along Borregas Avenue Class II Bikeways are located on both sides of the street, but vehicle parking is only allowed on the west site (northbound direction). There are no bike lanes on either side of Caspian Court or the project frontage with Bordeaux Drive.

The VTA Bicycle technical Guidelines defers to the Caltrans Highway Design Manual 6th Edition for bicycle facilities classifications that include definitions of Class I Bikeway (Bike Path), a Class II Bikeway (Bike Lane), and a Class III Bikeway (Bike Route). These terms and associated bikeways within and near the proposed project site are shown below:

CLASS I BIKEWAY (BIKE PATH) – Provides a complete separated right-of-way for the exclusive use of bicycles and pedestrians with crossflow by motorists minimized.

The nearest Class I Bikeway is the Bay Trail that is approximately 0.25 miles to the north. From the proposed project site, the Bay Trail would be accessed north of West Caribbean Drive along the West Channel. A total of four Class I bikeways are in proximity to the proposed project site. These are described below.

- The Bay Trail is a paved path which runs east-west to the north of the proposed project site, parallel to Caribbean Drive and along the southern boundary of the San Francisco Bay. The Bay Trail begins at the Adobe Creek Loop Trail in Palo Alto, CA (western limit) and runs east until ending at Lafayette Street in Santa Clara (eastern limit). There are existing Bay Trail access points at the Yahoo parking on the western side of Mathilda Avenue and via Carl Road.
- The Baylands Park Trail is a paved path which runs east-west along the north side of SR 237 between the Caribbean Drive / Moffett Park Drive-Baylands Park intersection and Lafayette Street

in Santa Clara. There is a Baylands Park Trail access point at the Caribbean Drive / Moffett Park Drive-Baylands Park intersection.

- The Calabazas Creek Trail is a mostly paved path which runs north-south along the east side of Calabazas Creek and intersects the Bay Trail approximately two miles east of the proposed project site.

CLASS II BIKEWAY (BIKE LANE) – Provides a striped lane for one-way bicycle travel on a street or highway. These lanes are generally adjacent to the outside vehicular travel lane and are marked by special lane markings and signs.

The City has designated a large number of Class II bikeways. Those within the MPSP exist in the following locations:

- Caribbean Avenue between Mathilda Avenue and Moffett Park Drive
- Eastbound 1st Avenue between E Street and Mathilda Avenue
- Enterprise Way between Manila Drive / West Moffett Park Drive and 5th Avenue
- 11th Avenue between Enterprise Way and Innovation Way
- D Street between 11th Avenue and 5th Avenue
- Northbound Mathilda Avenue between 1st Avenue and Caribbean Drive.
- Bordeaux Drive between Moffett Park Drive and Java Drive
- Borregas Avenue between Moffett Park Drive and Caribbean Drive.
- Crossman Avenue between Moffett Park Drive and Caribbean Drive
- Moffett Park Drive between Enterprise Way and Innovation Way and between Bordeaux Drive and Caribbean Drive

CLASS III BIKEWAY (BIKE ROUTE) – Provides for shared use with bicycle travel or motor vehicle traffic, typically on lower volume roadways. Class II bikeways are typically designated by signs and are used to provide continuity to other bicycle facilities.

The City also has designated many Class III bikeways. This within the MPSP exist in the following locations:

- Mathilda Avenue between Moffett Park Drive and 1st Avenue
- Moffett Park Drive between Innovation Way and Borregas Avenue

Existing Intersection Levels of Service

Existing intersection operations were quantified under Existing traffic volumes and Existing intersection lane geometrics and control. The intersection operations analysis of all signalized intersections in the City of Sunnyvale's jurisdiction was calibrated against collected queues and delays.

LOS assignments were given to each signalized intersection based on the description and average control delay. *Table 4.1-2: Signalized Intersection LOS Thresholds*, *Table 4.1-3: Unsignalized Intersection LOS Thresholds*, and *Table 4.1-4: Freeway Segment LOS Thresholds*, show this information below.

Table 4.1-2: Signalized Intersection LOS Thresholds

Level of Service	Description	Average Control Delay (seconds/vehicle)
A	Free-flow conditions with negligible to minimal delays. Excellent progression with most vehicles arriving during the green phase and not having to stop at all. Nearly all drivers find freedom of operation.	Delay ≤ 10.0
B+	Good progression with slight delays. Short cycle-lengths typical. Relatively more vehicles stop than under LOS "A". Vehicle platoons are formed. Drivers begin to feel somewhat restricted within groups of vehicles.	10.0 < delay ≤ 12.0
B		12.0 < delay ≤ 18.0
B-		18.0 < delay ≤ 20.0
C+	Relatively higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear. The number of vehicles stopping is significant, although many still pass through without stopping. Most drivers feel somewhat restricted.	20.0 < delay ≤ 23.0
C		23.0 < delay ≤ 32.0
C-		32.0 < delay ≤ 35.0
D+	Somewhat congested conditions. Longer but tolerable delays may result from unfavorable progression, long cycle lengths, and/or high volume-to-capacity ratios. Many vehicles are stopped. Individual cycle failures may be noticeable. Drivers feel restricted during short periods due to temporary back-ups.	35.0 < delay ≤ 39.0
D		39.0 < delay ≤ 51.0
D-		51.0 < delay ≤ 55.0
E+	Congested conditions. Significant delays result from poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures occur frequently. There are typically long queues of vehicles waiting upstream of the intersection. Driver maneuverability is very restricted.	55.0 < delay ≤ 60.0
E		60.0 < delay ≤ 75.0
E-		75.0 < delay ≤ 80.0
F	Jammed or grid-lock type operating conditions. Generally considered to be unacceptable for most drivers. Zero or very poor progression, with oversaturation or high volume-to-capacity ratios. Several individual cycle failures occur. Queue spillovers from other locations restrict or prevent movement.	delay > 80.0

Source: Traffic Level of Service Analysis Guidelines, June 2003; HCM-2000 Exhibit 16-2.

Table 4.1-3: Unsignalized Intersection LOS Thresholds

Level of Service	Description	Average Control Delay (seconds/vehicle)
A	Free-flow conditions with negligible to minimal delays.	delay ≤ 10.0
B	Good progression with slight delays.	10.0 < delay ≤ 15.0
C	Relatively higher delays.	15.0 < delay ≤ 25.0
D	Somewhat congested conditions with longer but tolerable delays.	25.0 < delay ≤ 35.0
E	Congested conditions with significant delays.	35.0 < delay ≤ 50.0
F	Jammed or grid-lock type operating conditions.	delay > 50.0

Source: Traffic Level of Service Analysis Guidelines, June 2003; HCM-2000 Exhibit 17-2 and 17-22.

Table 4.1-4: Freeway Segment LOS Thresholds

Level of Service	Average Control Delay (seconds/vehicle)
A	density \leq 11.0
B	11.0 < density \leq 18.0
C	18.0 < density \leq 26.0
D	26.0 < density \leq 46.0
E	46.0 < density \leq 58.0
F	density > 58.0

Source: HCM-2000 Exhibit 17-2 and 17-22.

Existing Traffic Volumes

Project study intersection traffic operations were evaluated for the AM and PM peak hours under existing conditions. To assess the existing traffic volumes, counts of vehicles, pedestrians, and bicycles were taken at select traffic study intersections, including intersections 4, 9, 10, and 14-26. Data from these intersections was collected in May of 2018 and information for the remaining intersections (1 through 3, 5 through 8, and 11 through 13) were obtained from the City. *Table 4.1-5: Existing Conditions Intersection Traffic Operations*, shows these values in tabular format. The traffic operations of the study area intersections were evaluated for the AM and PM peak hours and it was determined peak hours were 7:00 AM and 10:00 AM and between 4:00 PM and 7:00 PM. The AM and PM peak hours at County-controlled intersections (i.e., the study intersections along Lawrence Expressway); however, had the highest one hour of traffic flow counted between 7:00 AM and 9:00 AM and between 4:00 PM and 6:00 PM, respectively, on a typical weekday. The intersection operations analysis of all signalized intersections in the City of Sunnyvale's jurisdiction was calibrated against collected queues and delays.

The queues and delays were analyzed to determine if improvements were justified and to determine if a new signal was warranted. Traffic signals may be warranted when traffic operations fall below acceptable LOS standards and when one or more signal warrants are satisfied. Factors that can be used to justify the need for a new signal include but is not limited to, traffic volumes during peak hours and evaluation of directions of travel, pedestrian activity, speed limits, physical layout, and intersection crash history.

In addition to use of the traffic counts, field observations of the study intersections were noted and during the following evaluations of the existing traffic conditions were noted:

BORREGAS AVENUE / CARIBBEAN DRIVE (#4): During the AM peak hour the westbound left turn experiences queuing of approximately 500 feet (or 20 vehicles). The southbound approach experiences single digit queues, mostly large trucks.

JAVA DRIVE-FAIR OAKS AVENUE / FAIR OAKS WAY-KENSINGTON PLACE (#18): During the AM peak hour the northbound approach was backed up to Tasman Drive and the eastbound approach had a queue length of approximately eight (8) vehicles. During the PM peak hour, the southbound approach was backed up beyond Crossman Drive while the northbound approach had a queue length of approximately eight (8) vehicles.

FAIR OAKS AVENUE / AHWANEE AVENUE (#19): During the AM peak hour the northbound and southbound approaches had queue lengths of approximately five (5) vehicles. During the PM peak hour, the southbound approach was backed up to the US HWY 101 northbound ramps and the northbound approach had queue lengths of approximately five (5) vehicles.

FAIR OAKS AVENUE / CALIENTE DRIVE (#20): During the AM peak hour the northbound approach was backed up to Duane Avenue and the southbound approach had queue lengths of approximately five (5) vehicles. During the PM peak hour, the northbound approach was backed up to the southern edge of the Chavez Supermarket driveway and the southbound approach was backed up to Ahwanee Avenue.

FAIR OAKS AVENUE / WOLFE ROAD (#21): During the AM peak hour the northbound approach had queue lengths of approximately 20 vehicles and the eastbound approach had queue lengths of approximately 8 vehicles. During the PM peak hour the southbound approach was backed up approximately halfway to Duane Avenue (approximately 400 feet) and the northbound approach had queue lengths of approximately 10 vehicles.

CARIBBEAN DRIVE / TWIN CREEKS (#23): During the AM peak hour the northbound approach had queue lengths of approximately 20 vehicles and the southbound approach had queue lengths of approximately 4 vehicles. During the PM peak hour the south approach had queue lengths of approximately 15 vehicles and the northbound approach had minor queuing of only 1-2 vehicles.

CARIBBEAN DRIVE / MOFFETT PARK DRIVE-BAYLANDS PARK (#24): During the AM peak hour the northbound approach had queue lengths of approximately 25 vehicles and the southbound, eastbound, and westbound approaches had minor queuing of less than 5 vehicles each. During the PM peak hour the eastbound approach had queue lengths of approximately 15 vehicles in the right turn lane and the southbound approach had queue lengths of approximately 12 vehicles.

LAWRENCE EXPRESSWAY / PERSIAN DRIVE-ELKO DRIVE (#25): During the AM peak hour the northbound approach was backed up to Tasman Drive and the westbound approach was backed up to Lawrence Station Road. During the PM peak hour the southbound approach was backed up to the SR 237 overcrossing and the northbound approach had queue lengths of approximately 12 vehicles.

Existing Freeway Segment Operations

Ten freeway segments near the project study area were selected for analysis and are shown in *Table 4.1-6: Existing Conditions Freeway Segment LOS*, and were selected based on segment density, for both mixed flow and HOV lanes. Information to derive the existing freeway segment worst-case peak hour speeds, flows, and densities were obtained from the 2017 CMP Monitoring and Conformance Report (Santa Clara Valley Transportation Authority, April 23, 2017), the most recently available VTA CMP monitoring report as of September 2018. As defined in the VTA Traffic Level of Service Analysis Guidelines, the minimum acceptable LOS threshold for CMP freeway segments is LOS E. As shown, at least one segment northbound (NB) or southbound (SB) of the ten segments operates as LOS F.

Table 4.1-5: Existing Conditions Intersection Traffic Operations

#	Intersection	Control Type	LOS Criteria	Peak Hour	Existing Conditions		
					Delay (S/V) ¹	LOS	Warrant Met? ²
1	Mathilda Avenue / Mathilda Parking Garage Driveway ⁴	OWSC	E	AM	-	-	-
				PM	-	-	-
2	Caribbean Parking Garage Driveway (right-in right-out) / Caribbean Drive ⁴	OWSC	E	AM	-	-	-
				PM	-	-	-
3	Caribbean NE Surface Lot Driveway / Caribbean Drive ⁴	OWSC	E	AM	-	-	-
				PM	-	-	-
4	Borregas Avenue / Caribbean Drive ⁴	Signal	E	AM	33.0	C-	-
				PM	23.6	C	-
5	Borregas Avenue / Borregas NE Surface Lot Driveway	OWSC	D	AM	-	-	-
				PM	-	-	-
6	Borregas Avenue / Borregas Service Ingress Driveway	None	D	AM	-	-	-
				PM	-	-	-
7	Borregas Avenue / Borregas Service Egress Driveway	OWSC	D	AM	-	-	-
				PM	-	-	-
8	Borregas Avenue / Borregas Shuttle Driveway	OWSC	D	AM	-	-	-
				PM	-	-	-
9	Borregas Avenue / Caspian Court-Caspian Drive	TWSC	D	AM	13.2	B	No
				PM	11.3	B	No
10	Mathilda Avenue / 1st Avenue-Bordeaux Drive ⁴	Signal	E	AM	34.5	C-	-
				PM	39.2	D	-
11	Bordeaux Service Driveway / Bordeaux Drive	OWSC	D	AM	-	-	-
				PM	-	-	-
12	Bordeaux Shuttle Egress Driveway / Bordeaux Drive	OWSC	D	AM	-	-	-
				PM	-	-	-
13	Bordeaux Shuttle Ingress Driveway / Bordeaux Drive	None	D	AM	-	-	-
				PM	-	-	-
14	Bordeaux Drive / Java Drive	Signal	D	AM	30.0	C	-
				PM	31.3	C	-
15	Borregas Avenue / Java Drive	Signal	D	AM	35.2	D+	-
				PM	30.0	C	-

Table 4.1-5: Existing Conditions Intersection Traffic Operations

#	Intersection	Control Type	LOS Criteria	Peak Hour	Existing Conditions		
					Delay (S/V) ¹	LOS	Warrant Met? ²
16	Geneva Drive / Java Drive	Signal	D	AM	30.2	C	-
				PM	26.2	C	-
17	Crossman Avenue-SR 237 WB On-Ramp / Moffett Park Drive	Signal	D	AM	17.9	B	-
				PM	14.5	B	-
18	Java Drive-Fair Oaks Avenue / Fair Oaks Way- Kensington Place	Signal	D	AM	36.3	D+	-
				PM	28.7	C	-
19	Fair Oaks Avenue / Ahwanee Avenue	Signal	D	AM	22.5	C+	-
				PM	24.5	C	-
20	Fair Oaks Avenue / Caliente Drive	Signal	D	AM	16.0	B	-
				PM	17.5	B	-
21	Fair Oaks Avenue / Wolfe Road	Signal	D	AM	24.8	C	-
				PM	18.2	B-	-
22	Geneva Drive/Caribbean Drive	OWSC	E	AM	8.6	A	No
				PM	11.7	B	No
23	Caribbean Drive / Twin Creeks	Signal	E	AM	19.4	B-	-
				PM	16.1	B	-
24	Caribbean Drive / Moffett Park Drive – Baylands Drive	Signal	E	AM	26.3	C	-
				PM	30.3	C	-
25	Lawrence Expressway/Persian Drive-Elko Drive	Signal	E	AM	26.2	C	-
				PM	40.9	D	-
26	Great America Parkway/Tasman Drive	Signal	E	AM	41.5	D	-
				PM	44.8	D	-
27	Mathilda Avenue/Sunnyvale Saratoga Road – Talisman Drive	Signal	E	AM	34.3	C-	-
				PM	41.4	D	-
Notes: 1. For OWSC (one-way-stop-control) and TWSC(two-way stop control) intersections, “worst-case” movement delay is indicated. “Average” control delays (in seconds/vehicle) are indicated for signal control intersections. 2. Warrant Met? = California Manual on Uniform Traffic Control Devices (CA MUTCD) based Peak-hour- Volume warrant#3 3. CMP Intersection(s). 4. Regionally significant intersection(s).							

Existing Freeway Ramp Operations

Twenty (20) freeway ramps near the proposed project site were selected for analysis and are shown in *Table 4.1-7: Existing Conditions Freeway Ramp Traffic Operations*. Data was obtained from intersection counts performed for this TIA, the Caltrans Performance Measurement System (PeMS) online database, and the 2016 Caltrans Traffic Census Program volumes available on the Caltrans website. In some instances, growth rates were applied to the count based on observed trends at nearby facilities. Ramp capacities were obtained from HCM 2000 Exhibit 25-3 and current ramp metering rates provided by Caltrans District 4, where applicable.

Background Conditions

Study area intersection traffic operations for background conditions are those conditions that would occur without the proposed project generated trips but with traffic generated by “approved but not yet constructed” developments within the study area. Background conditions are a near-term future condition that could reasonably represent traffic conditions in the study area conditions when the proposed project is completed.

As part of the background conditions two roadway improvement projects were assumed to be completed in the near-term future within the project study area. These improvements include:

- Sunnyvale-Saratoga Road Traffic Signal, Bicycle and Pedestrian Safety Project proposes the installation of new traffic signal equipment and bicycle/pedestrian equipment and bicycle/pedestrian enhancements at the Mathilda Avenue/Sunnyvale Saratoga Road-Talisman Drive intersection. The intersection lane geometrics would remain the same.
- Caribbean Drive Parking and Trail Access Enhancements proposes to enhance parking and access to the Bay Trail on Caribbean Drive and is projected to be completed by 2022. This project consists of a road diet/rechannelization on westbound Caribbean Drive, addition of buffered parking spaces, bio retention planters with native species (to clean and treat stormwater), and a one-way multi-use path on the north side of Caribbean Drive. In addition, the following intersection will be reconfigured as listed below:
 - Borregas Avenue / Caribbean Drive: The existing outside westbound through-right lane will be converted to a right-turn-only lane.

As shown in *Table 4.1-8: Background Conditions Intersection Traffic Operations*, one signalized intersection, #26 - Great America Parkway / Tasman Drive, is projected to operate at an unacceptable average intersection LOS F under Background AM and PM peak hour conditions. All of the remaining study intersections are projected to operate at acceptable Background LOS conditions (LOS D or better for City of Sunnyvale intersections and LOS E or better for Santa Clara County, regionally significant, and CMP intersections) during the AM and PM peak hours. California Manual on Uniform Traffic Control Devices (CA MUTCD) based peak hour signal warrant 3 is not projected to be met at any study unsignalized intersections under Background AM and PM peak hour conditions.

Table 4.1-6: Existing Conditions Freeway Segment LOS

Segment Number	Freeway	Segment	Direction	Peak Hour	Capacity (vphpl) ¹		Lanes		Existing Peak Density (pc/mi/ln) ²		Existing Peak LOS	
					Mixed	HOV	Mixed	HOV	Mixed	HOV	Mixed	HOV
1	SR 237	Between Maude Avenue and US HWY 101	EB	AM	4,400	-	2	-	33.6	-	D	-
				PM	4,400	-	2	-	94.7	-	F	-
			WB	AM	4,400	-	2	-	39.8	-	D	-
				PM	4,400	-	2	-	75.0	-	F	-
2	SR 237	Between US HWY 101 and Mathilda Avenue	EB	AM	4,400	-	2	-	51.2	-	E	-
				PM	4,400	-	2	-	83.2	-	F	-
			WB	AM	4,400	-	2	-	61.2	-	F	-
				PM	4,400	-	2	-	69.7	-	F	-
3	SR 237	Between Mathilda Avenue and Fair Oaks Avenue	EB	AM	4,400	1,650	2	1	32.4	26.0	D	C
				PM	4,400	1,650	2	1	84.3	64.7	F	F
			WB	AM	6,900	-	3	-	76.4	-	F	-
				PM	6,900	-	3	-	79.6	-	F	-
4	SR 237	Between Fair Oaks Avenue and Lawrence Expressway	EB	AM	4,400	1,650	2	1	27.9	16.2	D	B
				PM	4,400	1,650	2	1	82.0	84.4	F	F
			WB	AM	4,400	1,650	2	1	79.0	83.3	F	F
				PM	4,400	1,650	2	1	78.4	65.7	F	F
5	SR 237	Between Lawrence Expressway and Great America Parkway	EB	AM	4,400	1,650	2	1	32.0	15.3	D	B
				PM	4,400	1,650	2	1	77.4	74.0	F	F
			WB	AM	4,400	1,650	2	1	66.2	58.3	F	F
				PM	4,400	1,650	2	1	32.0	8.9	D	A
6	US HWY 101	Between Great America Parkway	SB	AM	6,900	1,650	3	1	72.4	79.3	F	F
				PM	6,900	1,650	3	1	25.8	9.0	C	A
			NB	AM	6,900	1,650	3	1	32.1	16.3	D	B

Table 4.1-6: Existing Conditions Freeway Segment LOS

Segment Number	Freeway	Segment	Direction	Peak Hour	Capacity (vphpl) ¹		Lanes		Existing Peak Density (pc/mi/ln) ²		Existing Peak LOS	
					Mixed	HOV	Mixed	HOV	Mixed	HOV	Mixed	HOV
		and Lawrence Expressway		PM	6,900	1,650	3	1	87.9	83.0	F	F
7	US HWY 101	Between Lawrence Expressway and Fair Oaks Avenue	SB	AM	6,900	1,650	3	1	72.5	67.7	F	F
				PM	6,900	1,650	3	1	25.1	8.9	C	A
			NB	AM	6,900	1,650	3	1	25.1	9.0	C	A
				PM	6,900	1,650	3	1	75.0	87.4	F	F
8	US HWY 101	Between Fair Oaks Avenue and Mathilda Avenue	SB	AM	6,900	1,650	3	1	60.4	70.1	F	F
				PM	6,900	1,650	3	1	27.6	9.2	D	A
			NB	AM	6,900	1,650	3	1	26.3	8.9	D	A
				PM	6,900	1,650	3	1	62.3	55.4	F	E
9	US HWY 101	Between Mathilda Avenue and SR 237	SB	AM	6,900	1,650	3	1	58.4	58.7	F	F
				PM	6,900	1,650	3	1	32.3	23.7	D	C
			NB	AM	6,900	1,650	3	1	32.2	13.4	D	B
				PM	6,900	1,650	3	1	63.7	58.4	F	F
10	US-101	Between SR 237 and Moffett Boulevard	SB	AM	6,900	1,650	3	1	58.9	62.5	F	F
				PM	6,900	1,650	3	1	43.8	9.8	D	A
			NB	AM	6,900	1,650	3	1	54.1	24.5	E	C
				PM	6,900	1,650	3	1	67.1	53.7	F	E

Table 4.1-7: Existing Conditions Freeway Ramp Traffic Operations

Ramp Number	Ramp	Type	Peak Hour	Lanes				Existing Peak	
				Mixed	HOV	Meter	Capacity ¹	Volume ²	V/C ³
1	SR 237 Westbound On-Ramp from Mathilda Avenue	Diamond	AM	1	-	-	2,000	326	0.16
			PM	1	-	-	2,000	760	0.38
2	SR 237 Westbound Off-Ramp to Mathilda Avenue	Diamond	AM	1	-	-	2,000	866	0.43
			PM	1	-	-	2,000	680	0.34
3	SR 237 Eastbound Off-Ramp to Mathilda Avenue	Diamond	AM	2	-	-	4,100	824	0.20
			PM	2	-	-	4,100	361	0.09
4	SR 237 Eastbound On-Ramp from Mathilda Avenue	Diamond	AM	1	-	-	2,000	636	0.32
			PM	1	-	-	2,000	875	0.44
5	SR 237 Westbound On-Ramp from Crossman Avenue/Moffett Park Drive	Diagonal	AM	1	-	-	2,000	122	0.06
			PM	1	-	-	2,000	180	0.09
6	SR 237 Westbound On-Ramp from Southbound Caribbean Drive	Diagonal	AM	1	-	ON	720	396	0.55
			PM	1	-	ON	720	216	0.30
7	SR 237 Westbound Off-Ramp to Northbound Caribbean Drive	Diagonal	AM	1	-	-	2,000	103	0.05
			PM	1	-	-	2,000	650	0.33
8	SR 237 Eastbound On-Ramp from Southbound Lawrence Expressway	Loop	AM	1	-	-	1,800	306	0.17
			PM	1	-	ON	550	420	0.76
9	SR 237 Eastbound Off-Ramp to Northbound Lawrence Expressway	Loop	AM	1	-	-	1,800	102	0.06
			PM	1	-	-	1,800	45	0.02
10	US HWY 101 Northbound On-Ramp from Southbound Lawrence Expressway	Diagonal	AM	1	1	ON	1,140	505	0.44
			PM	1	1	-	2,900	349	0.12
11	US HWY 101 Northbound Off-Ramp to Lawrence Expressway	Diagonal	AM	2	-	-	3,500	1136	0.32
			PM	2	-	-	3,500	1309	0.37
12	US HWY 101 Southbound Off-Ramp to Lawrence Expressway	Diagonal	AM	2	-	-	3,500	811	0.23
			PM	2	-	-	3,500	1754	0.50
13	US HWY 101 Southbound On-Ramp from Southbound Lawrence Expressway	Loop	AM	1	1	-	2,700	346	0.13
			PM	1	1	ON	1,180	206	0.17
14		Diagonal	AM	1	1	-	2,900	1041	0.36

Table 4.1-7: Existing Conditions Freeway Ramp Traffic Operations

Ramp Number	Ramp	Type	Peak Hour	Lanes				Existing Peak	
				Mixed	HOV	Meter	Capacity ¹	Volume ²	V/C ³
	US HWY 101 Northbound On-Ramp from Fair Oaks Avenue		PM	1	1	-	2,900	435	0.15
15	US HWY 101 Northbound Off-Ramp to Fair Oaks Avenue	Diagonal	AM	1	-	-	2,000	448	0.22
			PM	1	-	-	2,000	1063	0.53
16	US HWY 101 Southbound On-Ramp from Southbound Fair Oaks Avenue	Loop	AM	1	1	-	2,700	340	0.13
			PM	1	1	ON	1,240	198	0.16
17	US HWY 101 Southbound off-ramp to northbound Fair oaks Avenue	Loop	AM	1	-	-	1,900	213	0.11
			PM	1	-	-	1,900	94	0.05
18	US HWY 101 Northbound Off-Ramp to Northbound Mathilda Avenue	Diagonal	AM	1	-	-	2,000	334	0.17
			PM	1	-	-	2,000	262	0.13
19	US HWY 101 Southbound On-Ramp from Southbound Mathilda Avenue	Loop	AM	1	1		2,700	178	0.49
			PM	1	1	ON	1,480	720	0.49
20	US HWY 101 Northbound On-Ramp from Moffett Park Drive	Diagonal	AM	1	-	-	2,000	374	0.19
			PM	1	-	-	2,000	228	0.11
Notes: 1. Ramp Capacities were obtained from HCM 2000 Exhibit 25-3 and current ramp metering rates provided by Caltrans District 4, where applicable. Capacities represent the combined capacity of mixed-flow and HOV lanes where both exist. 2. Ramp Volumes were obtained from intersection counts performed for this TIA, the Caltrans Performance Measurement System (PeMS) online database, and the 2016 Caltrans Traffic Census Program volumes available on the Caltrans website. If the latest available counts for a ramp facility were several years old, growth rates were applied to the count based on observed trends at nearby facilities. Volumes represent the combined volumes of mixed-flow and HOV lanes where both exist. 3. V/C = Volume-to-capacity ratio. BOLD indicates unacceptable level of service.									

Table 4.1–8: Background Conditions Intersection Traffic Operations

Intersection	Control Type	LOS Criteria	Peak Hour	Background Conditions		
				Delay (S/V) ¹	LOS	Warrant Met?
1. Mathilda Avenue/Mathilda Parking Garage	OWSC	E	AM	-	-	-
			PM	-	-	-
2. Caribbean Parking Garage Driveway (right-in right-out)/Caribbean Drive ⁴ right-out) / Caribbean Drive ⁴	OWSC	E	AM	-	-	-
			PM	-	-	-
3. Caribbean NE Surface Lot Driveway / Caribbean Drive ⁴	OWSC	E	AM	-	-	-
			PM	-	-	-
4. Borregas Avenue / Caribbean Drive ⁴	Signal	E	AM	46.1	D	-
			PM	25.1	C	-
5. Borregas Avenue / Borregas NE Surface Lot Driveway	OWSC	D	AM	-	-	-
			PM	-	-	-
6. Borregas Avenue / Borregas Service Ingress Driveway	None	D	AM	-	-	-
			PM	-	-	-
7. Borregas Avenue / Borregas Service Egress Driveway	OWSC	D	AM	-	-	-
			PM	-	-	-
8. Borregas Avenue / Borregas Shuttle Driveway	OWSC	D	AM	-	-	-
			PM	-	-	-
9. Borregas Avenue / Caspian Court-Caspian Drive	TWSC	D	AM	14.3	B	No
			PM	11.9	B	No
10. Mathilda Avenue / 1st Avenue-Bordeaux Drive	Signal	E	AM	35.5	D+	-
			PM	40.7	D	-
11. Bordeaux Service Driveway / Bordeaux Drive	OWSC	D	AM	-	-	-
			PM	-	-	-
12. Bordeaux Shuttle Egress Driveway / Bordeaux Drive	OWSC	D	AM	-	-	-
			PM	-	-	-
13. Bordeaux Shuttle Ingress Driveway / Bordeaux Drive	None	D	AM	-	-	-
			PM	-	-	-

Table 4.1–8: Background Conditions Intersection Traffic Operations

Intersection	Control Type	LOS Criteria	Peak Hour	Background Conditions		
				Delay (S/V) ¹	LOS	Warrant Met?
14. Bordeaux Drive / Java Drive	Signal	D	AM	33.6	C-	-
			PM	39.0	D	-
15. Borregas Avenue / Java Drive	Signal	D	AM	37.8	D+	-
			PM	30.5	C	-
16. Geneva Drive / Java Drive	Signal	D	AM	27.8	C	-
			PM	36.3	D+	-
17. Crossman Avenue-SR 237 WB On-Ramp /Moffett Park Drive Moffett Park Drive	Signal	D	AM	21.1	C+	-
			PM	17.6	B	-
18. Java Drive-Fair Oaks Avenue / Fair Oaks Way-Kensington Place Kensington Place	Signal	D	AM	40.1	D	-
			PM	34.0	C-	-
19. Fair Oaks Avenue / Ahwanee Avenue	Signal	D	AM	23.7	C	-
			PM	28.8	C	-
20. Fair Oaks Avenue / Caliente Drive	Signal	D	AM	16.7	B	-
			PM	19.3	B-	-
21. Fair Oaks Avenue/Wolfe Road	Signal	D	AM	26.3	C	-
			PM	18.9	B-	-
22. Geneva Drive / Caribbean Drive ⁴	OWSC	E	AM	8.7	A	No
			PM	13.5	B	No
23. Caribbean Drive / Twin Creeks ⁴	Signal	E	AM	22.5	C+	-
			PM	17.2	B	-
24. Caribbean Drive / Moffett Park Drive Baylands Park ⁴	Signal	E	AM	29.5	C	-
			PM	31.4	C	-
25. Lawrence Expressway / Persian Drive-Elko Drive ⁴	Signal	E	AM	25.8	C	-
			PM	42.4	D	-
26. Great America Parkway/Tasman Drive	Signal	E	AM	106.5	F	-
			PM	168.8	F	-

Table 4.1–8: Background Conditions Intersection Traffic Operations

Intersection	Control Type	LOS Criteria	Peak Hour	Background Conditions		
				Delay (S/V) ¹	LOS	Warrant Met?
27. Mathilda Avenue/Sunnyvale Saratoga Road – Talisman Drive	Signal	E	AM	38.3	D+	-
			PM	55.0	E+	-
Notes: 1. For OWSC (One-Way-Stop-Control) and TWSC (Two-Way-Stop-Control) intersections, "worst-case" movement delay is indicated. "Average" control delays (in seconds/vehicle) are indicated for signal-Control intersections. 2. Wrrnt Met? = CA MUTCD based Peak-hour-Volume Warrant #3. 3. CMP Intersection(s). 4. Regionally significant intersection(s). BOLD indicates unacceptable level of service.						

Analysis Scenarios

Twenty-seven intersections were evaluated under both AM and PM peak hour conditions. Based on increased traffic that the proposed project would result in, a determination of impacts and needed improvements was made. The following definitions were used for the analysis and are provided below for reference:

Existing plus Project Conditions:	Existing traffic volumes plus traffic projected to be generated by the proposed project assuming a full-access Caribbean Parking Garage Driveway on West Caribbean Drive.
Background Conditions:	Existing volumes plus traffic from “approved but not yet constructed or occupied” developments within an approximately one-mile radius of the proposed project study intersections. Trips generated by the proposed project are not included.
Background plus Proposed Project Conditions:	Background traffic volumes plus traffic projected to be generated by the proposed project assuming a full-access Caribbean Parking Garage Driveway on West Caribbean Drive.
Cumulative Conditions:	Existing volumes plus traffic from “approved but not yet constructed or occupied” and “pending” developments within an approximately one-mile radius of the project study intersections plus an assumed yearly 1.5% growth rate to increase overall base Existing traffic volumes to cumulative conditions of year 2030.
Cumulative plus Proposed Project Conditions:	Cumulative traffic volumes plus traffic projected to be generated by the proposed project assuming a full-access Caribbean Parking Garage Driveway on West Caribbean Drive.

4.1.2 REGULATORY SETTING

The City has jurisdiction over all City streets and City-operated traffic signals. Caltrans has jurisdiction over state facilities, including US HWY 101, I-280, SR 82 (El Camino Real), SR 85, and SR 237. Caltrans also has jurisdiction over on- and off-ramp intersections with local streets. Transit agencies operating within the City limits include VTA and Caltrain. Within the MPSP area; however, only VTA manages facilities. Several regional, state, and federal agencies have jurisdiction over transportation planning and implementation of circulation improvements in Sunnyvale and these agencies and applicable planning and policy documents are listed below.

Federal

AMERICANS WITH DISABILITIES ACT OF 1990

Titles I, II, III, and V of the Americans with Disabilities Act (AD) have been codified in Title 42 of the United States Code, beginning at Section 12101. Title III prohibits discrimination on the basis of disability in places of public accommodation (businesses and nonprofit agencies that serve the public) and commercial facilities (other businesses). The regulation includes Appendix A to Part 36 (Standards for Accessible Design) establishing minimum standards for ensuring accessibility when designing and constructing a new facility or altering an existing facility. Examples of key guidelines include detectable warnings for

pedestrians entering traffic where there is no curb, a clear zone of 48 inches for the pedestrian travel way, and a vibration-free zone for pedestrians.

Federal Highway Administration

The Federal Highway Administration (FHWA) is a major agency of the US Department of Transportation (USDOT). In partnership with state and local agencies, the FHWA carries out federal highway programs to meet the nation's transportation needs. The FHWA administers and oversees federal highway programs to ensure that federal funds are used efficiently.

State

CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS)

Caltrans has authority over the state highway system, including freeways, interchanges, and arterial state routes. Caltrans approves the planning, design, and construction of improvements for all state-controlled facilities, including SR 82, SR 85, US HWY 101, SR 237, and I-280, and the associated interchanges for these facilities. Caltrans requirements are described in its Guide for the Preparation of Traffic Impact Studies (2001), which covers the information needed for Caltrans to review the impacts on state highway facilities, including freeway segments.

COMPLETE STREETS (ASSEMBLY BILL 1358)

Assembly Bill (AB) 1358, also known as the California Complete Streets Act (CCSA) of 2008, requires cities and counties to include complete streets policies in their general plans. These policies address the safe accommodation of all users, including bicyclists, pedestrians, motorists, public transit vehicles and riders, children, the elderly, and the disabled. These policies can apply to new streets as well as to the redesign of corridors such as El Camino Real in areas of planned change such as downtown Sunnyvale or the Lawrence Station.

CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC)

The CPUC has jurisdiction over the safety of highway-rail crossings in California. The California Public Utilities Code requires CPUC approval for the construction or alteration of these crossings and grants the CPUC exclusive power on the design, alteration, and closure of such crossings in California.

SENATE BILL 743

Senate Bill (SB) 743 was signed into law on September 27, 2013 adding Chapter 2.7, Modernization of Transportation Analysis for Transit-Oriented Infill Projects, to Division 13 (Section 21099) of the Public Resources Code, which created a process to change the way transportation impacts are analyzed under CEQA. The changes shifted agency focus away from using auto delay, level of service, and other similar measures and implemented a focus on vehicle miles traveled (VMT). In addition, SB 743 required the state Office of Planning and Research (OPR) to update the CEQA Guidelines and establish "criteria for determining the significance of transportation impacts of projects within transit priority areas." As part of the new CEQA Guidelines, the new criteria "shall promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses."

In January of 2016, OPR released for public review the Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA. After review and public comment over the next couple years, the revised State CEQA Guidelines using VMT as a metric for evaluating traffic impacts were adopted in 2018. As of the adoption, cities have two years to implement the new guidelines and must be used after July 1, 2020.

Regional

METROPOLITAN TRANSPORTATION COMMISSION

The Metropolitan Transportation Commission (MTC) is the Bay Area's regional transportation planning agency and federally designated metropolitan planning organization (MPO). MTC is responsible for preparing the Regional Transportation Plan (RTP), a comprehensive blueprint for the development of mass transit, highway, airport, seaport, railroad, bicycle, and pedestrian facilities. The RTP is a 20-year plan that is updated every three years to reflect new planning priorities and changing projections of future growth and travel demand. The long-range plan must be based on a realistic forecast of future revenues, and the transportation projects taken as a whole must help improve regional air quality.

PLAN BAY AREA

Consistent with Senate Bill (SB) 375, the Bay Area must develop a Sustainable Communities Strategy that strives to reach the greenhouse gas (GHG) reduction target established by the California Air Resources Board (CARB). SB 375 also requires the region to plan for housing 100 percent of its projected population at all income levels. Plan Bay Area is the region's first regional transportation plan subject to SB 375. The MTC and the ABAG jointly prepared Plan Bay Area (PBA) in response to this requirement; the PBA serves as the long-term Regional Transportation Plan (RTP) for the San Francisco Bay Area as well as the region's Sustainable Communities Strategy (SCS). The PBA was written, in part, to respond to the region's projected population, which is expected to grow to more than 9 million people by 2040. It focuses on accommodating projected growth while fostering an innovative, prosperous and competitive economy; preserving a healthy and safe environment; and allowing all Bay Area residents to share the benefits of vibrant, sustainable communities connected by an efficient and well-maintained transportation network.

SANTA CLARA VALLEY TRANSPORTATION AUTHORITY

VTA serves two roles in Santa Clara County: as the primary transit operator and as the Congestion Management Agency. In its role as transit operator, VTA is responsible for the development, operation, and maintenance of the bus and light rail system in the county. VTA operates over 70 bus lines and three light rail lines, in addition to shuttle and paratransit service. VTA also provides transit service to major regional destinations and transfer centers in adjoining counties.

During the Valley Transportation Plan 2035 update, VTA published the Community Design & Transportation (CDT) Program, which provides design guidelines, planning tools, and policy guidance for coordinating transportation and land use in projects across the county. This report identifies future growth areas including Sunnyvale, the El Camino corridor, and the station areas adjacent to the light rail and Caltrain stations.

Santa Clara County Congestion Management Program

The Santa Clara County Congestion Management Program (CMP) was prepared in accordance with California Statute, Government Code 65088. The intent of the legislation is for local jurisdictions to develop comprehensive transportation improvement program to improve the multimodal transportation system performance and land use decision making as it pertains to air quality. The Santa Clara County CMP designates the roadway system for use in annual monitoring of level of service standards, identifies regionally significant roadways and intersections to be evaluated in land use impacts analyses, and identifies the potential candidates for inclusion in the Regional Transportation Plan capital improvement program.

The designated CMP Roadway Network includes state highways, county expressways and principal arterials. The adopted definition for principal arterials is: roadways that connect with the freeway and/or county expressway system and meet one of the following criteria: (1) state highway; (2) six-lane facility; or (3) non-residential arterial with average daily traffic of 30,000 vehicles per day. In the City Sunnyvale, the CMP roadway system includes US Highway 101, SR 85, SR 237, Central Expressway, Lawrence Expressway, El Camino Real, Mathilda Avenue, Caribbean Drive and Sunnyvale-Saratoga Road (VTA, 2017).

TRANSIT

VTA's Short Range Transit Plan is a federally mandated planning document that describes the plans, programs, and goals of VTA's transit service. The plan has a 10-year planning horizon and is updated annually. It focuses on the characteristics and capital needs of the existing system and on committed (funded) expansion plans. The current plan proposes to keep bus and light rail service at existing levels, expand community bus services (neighborhood-based circulator and feeder routes that travel within a limited area), continue to contribute monetarily to Caltrain service, and replace and expand the bus vehicle fleet.

COUNTY OF SANTA CLARA

The Santa Clara County Trails Master Plan (SCTMP) was approved by the Santa Clara County Board of Supervisors in 1995. The goal of the SCTMP is to direct the County's trail implementation efforts well into the twenty-first century with a balanced regard for the public good and individual desires for privacy. The SCTMP implements the vision to provide a continuous trail network that connects cities to one another, connects cities to the county's regional open space resources, connects county parks to other county parks, and connects the northern and southern urbanized regions of the county. The plan identifies regional trail routes, subregional trail routes, connector trail routes, and historic trails. The SCTMP also synthesizes other local and county plans into a comprehensive 20-year cross-county bicycle corridor network and expenditure plan.

Local

CITY OF SUNNYVALE GENERAL PLAN

The current General Plan Land Use and Transportation Element includes policies and implementing measures that address the following areas:

- Roadway, pedestrian, and bicycle facilities linkage with neighborhood and services.
- Pedestrian-friendly spaces in new development.
- Level of service E or better for citywide roadways and intersections and required roadway improvements for development projects to address level of service issues.
- Minimization of the total vehicle miles traveled.
- Support for all forms of transportation (pedestrian, bicycle, transit, and vehicle) and safety.

In addition, the General Plan Housing Element, last adopted in 2014, contains the following policy:

Policy F.3: Continue a high quality of maintenance for public streets, rights-of-way, and recreational areas, and provide safe and accessible pedestrian, bike, and transit linkages (accessibility) between jobs, residences, transportation hubs, and goods and services.

CITY OF SUNNYVALE LAND USE AND TRANSPORTATION ELEMENT

The LUTE of the City of Sunnyvale General Plan includes goals, policies, and strategic actions that are relevant to transportation and circulation in the city of Sunnyvale. The following policies of the City of Sunnyvale's General Plan would be applicable to the project:

Policy LT-3.5: Follow California Environmental Quality Act requirements, Congestion Management Program requirements, and additional City requirements when analyzing the transportation impacts of proposed projects and assessing the need for offsetting transportation system improvements or limiting transportation demand.

Policy LT-3.8: Prioritize safe accommodation for all transportation users over non-transport uses. As City streets are public spaces dedicated to the movement of vehicles, bicycles, and pedestrians, facilities that meet minimum appropriate safety standards for transport uses shall be considered before non-transport uses are considered.

Policy LT-3.11: As they become available, use multimodal measures of effectiveness to assess the transportation system in order to minimize the adverse effect of congestion. Continue to use LOS to describe congestion levels. Use VMT analysis to describe potential environmental effects and impacts to the regional transportation system.

Policy LT-3.14: Require roadway and signal improvements for development projects to improve multimodal transportation system efficiency.

Policy LT-3.27: Require appropriate roadway design practice for private development consistent with City standards and the intended use of the roadway.

CITY OF SUNNYVALE MUNICIPAL CODE

Municipal Code Chapter 10.60 Code sets forth the City's Transportation Demand Management program. Section 19.46.100 includes minimum and maximum requirements for off-street parking spaces. Section 19.46.150 establishes minimum requirements for bicycle parking (number and type of spaces).

TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is typically set as a condition of approval on some development projects in Sunnyvale. TDM is a requirement for all businesses located in the Moffett Park Specific Plan area as well as for all developments requesting floor area ratios that exceed 35 percent, regardless of location. TDM may also be used to achieve certain voluntary incentives under the City's Green Building program at this location. The City focuses the objectives and monitoring of TDM programs on the reduction of peak-hour trips. This is to minimize congestion during the peak commute periods and to allow more flexibility in the types of TDM techniques that can be employed. For private developments, project sponsors can play an effective role in supporting the City's initiatives through the deployment of TDM programs.

TRANSPORTATION IMPACT FEES

Transportation impact fees are charged to new development to fund major transportation projects, including bicycle and pedestrian improvements necessary to support land use plans. The City's TIF program varies by area of the city (north of SR 237 and south of SR 237). The fees are charged to net new development (i.e., new residential units and increased commercial square footage). The existing development that remains would not be required to pay transportation impact fees.

Sunnyvale Bicycle Master Plan (SBMP)

Two of the purposes of the SBMP is to encourage the use of bicycles for transportation and recreation are to minimize air pollution and reduce energy consumption and traffic. Objectives of the plan include enhancing Sunnyvale's livability by supporting bicycling, ensure safe travel, and supporting cycling as a travel mode on an equal basis with motorized options. Within the MPSP, the SBMP notes a related action of establishing the West Channel as a pathway and connection to the Bay Trail. Other intents are to enable the overall usability and connectivity of bike paths within the MPSP and connections to off-site areas that make the use of bicycles more feasible for commuter needs.

4.1.3 STANDARDS OF SIGNIFICANCE

Significance Criteria and Thresholds

As part of AB 743, State CEQA Guidelines were recently updated and part of the update was a revision to the impact methodology for Transportation and Traffic. The update changed the analysis methodology from Level of Service (LOS) to Vehicle Miles Travelled (VMT). As of the adoption of the new guidelines, cities have two years to implement the new guidelines (July 1, 2020). The City has not yet adopted new threshold to address the revised guidelines. Pursuant to State CEQA Guideline 15064 Determining the Significance of the Environmental Effects Caused by a Project (b)(2) states, "Thresholds of significance, as

defined in Section 15064.7(a), may assist lead agencies in determining whether a project may cause a significant impact. When using a threshold, the lead agency should briefly explain how compliance with the threshold means that the project's impacts are less than significant. Compliance with the threshold does not relieve a lead agency of the obligation to consider substantial evidence indicating that the project's environmental effects may still be significant." As in the case of the proposed project, and because formal thresholds related to the revised guidelines have not been adopted, the City has determined that the use of thresholds listed below is sufficient to fully disclose impacts associated with transportation and traffic. Accordingly, State CEQA Guidelines 15064.7 Thresholds of Significance subsection (b) states in part... "Lead agencies may also use thresholds on a case-by-case basis as provided in Section 15064(b)(2)."

SIGNAL WARRANTS

In order to determine whether traffic signals should be installed at currently unsignalized intersections, and to determine unsignalized intersections significance criteria, a CA MUTCD based traffic signal warrant analysis was completed. The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the need for installation of a traffic signal at an unsignalized intersection location. The CA MUTCD signal warrant criteria are based upon several factors including volume of vehicular and pedestrian traffic, location of school areas, frequency and type of collisions, etc. This TIA evaluated CA MUTCD based Peak-Hour-Volume-based Warrant 3 as a representative type of warrant analysis. Per CA MUTCD and City of Sunnyvale standards, right-turn volumes were excluded from signal warrant analysis. However, the CA MUTCD indicates that "the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal." Therefore, even at locations that do meet one or more the CA MUTCD signal warrants, engineering studies and judgement should be considered/applied when determining whether or not a signal should be installed.

Trip Generation

Trip generation refers to the process of estimating the amount of vehicular traffic a project would add to the surrounding roadway system. New trips generated by the proposed project were estimated using rates from the Institute of Transportation Engineers Trip Generation Manual, 10th Edition. A six percent proximity to light rail stop reduction, a 5 percent financial incentives TDM program reduction, and a 1.5 percent project-funded dedicated shuttle TDM program reduction (for a total 12.5 percent reduction) were applied to the trip generation estimates, consistent with the VTA Trip Reduction Statement and the VTA Standard Trip Reduction Method. Trips from existing occupied buildings on the proposed project site were subtracted from the proposed project's trip generation. The proposed project is anticipated to generate a total of 8,319 daily trips, 775 AM peak hour trips (671 inbound, 104 outbound), and 828 PM peak hour trips (119 inbound, 709 outbound) under typical traffic demand conditions. *Table 4.1-9: Project Trip Generation Volumes* presents this information below.

It should be noted that the proposed project does not include the proposed utility plant as reflected in the table. The utility plant had been included and the original traffic study for the project as originally proposed. Since then; however, the utility plant was removed from the project plans, and as described in

the project description, power would be supplied by the new generation facility adjacent to the project along Borregas Avenue. Trip generation without the CUP would be reduced compared to the current project as proposed. Therefore, the trip generation considering use and operation of the CUP was used in order to present a conservative approach to the traffic analysis.

Table 4.1-9: Project Trip Generation Volumes

Land Use Category	ITE Code	Units	Quantity	Daily	Weekday AM Peak Hour Trips			Weekday PM Peak Hour Trips		
				Trips	Total	In	Out	Total	In	Out
Proposed Office Buildings	710 ¹	KSF ³	1,041.890	10,305	1,006	865	141	1,056	169	887
12.5% Standard Trip Reduction ⁴				-1,288	-126	-108	-18	-132	-21	-111
Net Total Proposed Office Buildings Trips				9,017	880	757	123	924	148	776
Proposed Utility Plant	170 ²	KSF	52.796	700	122	98	24	120	24	96
12.5% Standard Trip Reduction ⁴				-88	-15	-12	-3	-15	-3	-12
Net Total Proposed Utility Plant Trips				612	107	86	21	105	21	84
Existing Office Building (1330-1338 Bordeaux Drive)	710 ¹	KSF	-25.200	-279	-50	-43	-7	-31	-5	-26
6% Standard Trip Reduction ⁵				17	3	3	0	2	0	2
Existing Light Industrial (1393-1395 Borregas Avenue)	110 ¹	KSF	-50.880	-251	-27	-24	-3	-23	-3	-20
6% Standard Trip Reduction ⁵				15	2	1	1	1	0	1
Existing Warehousing (1383 Borregas Avenue)	150 ¹	KSF	-54.501	-132	-32	-26	-6	-34	-7	-27
6% Standard Trip Reduction ⁵				8	2	2	0	2	0	2
Existing Manufacturing (360-364 & 370-376 Caribbean Drive)	140 ²	KSF	-125.643	-557	-78	-60	-18	-84	-26	-58
Existing Warehousing (380-382 Caribbean Drive)	150 ¹	KSF	-54.000	-131	-32	-25	-7	-34	-9	-25
Net Total Existing Buildings Trips				-1,310	-212	-172	-40	-201	-50	-151
Net New Project Trip Generation				8,319	775	671	104	828	119	709
Notes:										
1 The trip rates used for this ITE Code were based on ITE Trip Generation (10th Edition) fitted curve equations.										
2 The trip rates used for this ITE Code were based on ITE Trip Generation (10th Edition) average rates.										
3 KSF = 1,000 Sq. feet gross floor area										
4 Standard Trip Reduction based on VTA TIA Guidelines. Strategies assumed: TDM Financial Incentives, TDM Shuttle Program, Employment within a 2,000-foot walk of a Light Rail Station.										
5 Standard Trip Reduction based on VTA TIA Guidelines. Strategies assumed: Employment within a 2,000-foot walk of a Light Rail Station.										

Lead Agency Thresholds

The City of Sunnyvale currently utilizes LOS D as the minimum acceptable LOS threshold for signalized intersections within the City during the AM and PM peak periods, except for intersections that have been designated as regionally significant, that have been designated as part of the Congestion Management Plan (CMP), or which are controlled by Santa Clara County. Caltrans controlled intersections within the City of Sunnyvale follow the City's LOS thresholds. Proposed project impacts at City (not regionally significant) signalized intersections would be considered significant if one of the following criteria is met:

IMPACTS ON INTERSECTION OPERATING CONDITIONS

For the purposes of this analysis, an impact on a City of Sunnyvale (not regionally significant) intersection is considered significant if implementation of the project would result in any of the following conditions:

- If the addition of project generated traffic to an intersection causes the AM or PM peak hour LOS of the intersection to degrade from an acceptable LOS D or better to an unacceptable LOS E or worse;
- If an intersection operates at an unacceptable AM or PM peak hour LOS E or worse without the addition of project generated traffic, and the addition of project generated traffic increases the average control delay for critical movements by four (4) or more seconds and increases the critical volume-to-capacity (V/C) ratio by 0.01 or more;
- If an intersection operates at an unacceptable AM or PM peak hour LOS E or worse without the addition of project generated traffic, and the addition of project generated traffic reduces the amount of average control delay for critical movements (i.e. a negative change in delay) and the project increases the critical V/C ratio by 0.01 or more.

The City of Sunnyvale currently utilizes LOS E as the minimum acceptable LOS threshold for signalized intersections in Sunnyvale that have been designated as regionally significant by the City, that have been designated as part of the CMP, or which are controlled by Santa Clara County. The City of Santa Clara currently utilizes LOS E as the minimum acceptable LOS threshold for signalized intersections in Santa Clara that have been designated as part of the CMP. Proposed project impacts at regionally significant City of Sunnyvale intersections, City of Sunnyvale and City of Santa Clara CMP intersections, and Santa Clara County operated intersections would be considered significant if one of the following criteria is met:

- If the addition of project generated traffic to an intersection causes the AM or PM peak hour LOS of the intersection to degrade from an acceptable LOS E or better to an unacceptable LOS F;
- If an intersection operates at an unacceptable AM or PM peak hour LOS F without the addition of project generated traffic, and the addition of project generated traffic increases the average control delay for critical movements by four (4) or more seconds and increases the critical volume-to-capacity (V/C) ratio by 0.01 or more;
- If an intersection operates at an unacceptable AM or PM peak hour LOS F without the addition of project generated traffic, and the addition of project generated traffic reduces the amount of

average control delay for critical movements (i.e. a negative change in delay) and the project increases the critical V/C ratio by 0.01 or more.

Regionally Significant Unsignalized City of Sunnyvale Intersections

The City of Sunnyvale currently utilizes LOS E as the minimum acceptable LOS threshold for unsignalized intersections in Sunnyvale that have been designated as regionally significant by the City. Impacts at regionally significant unsignalized City of Sunnyvale intersections would be considered significant if one of the following criteria is met:

- If an unsignalized intersection operates at an acceptable LOS (i.e. E or better) without the Project and degrades to an unacceptable LOS (i.e. LOS F) with the addition of Project traffic;
- If an unsignalized intersection operates at an unacceptable LOS (i.e. LOS F) without the Project, and the addition of Project traffic increases:
 - the average intersection delay by four (4) seconds or more, and the volume-to capacity (v/c) value by 0.01 or more for all-way stop-controlled intersections; or
 - the worst movement delay by four (4) seconds or more, and the critical volume-to capacity (v/c) value by 0.01 or more for side-street stop-controlled intersections.
- Intersection meets the warrant(s) for installation of a traffic signal as per the latest edition of California Manual on Uniform Traffic Control Devices (CA MUTCD), last updated April 2017.

IMPACTS TO FREEWAY RAMPS

A freeway ramp analysis was performed as part of this TIA in order to verify that the freeway ramps would have sufficient capacity to serve the Existing and Existing plus Project traffic volumes. Project impacts at freeway ramps would be considered significant if one of the following criteria is met:

- If the addition of project generated traffic to a freeway ramp causes the V/C ratio of the freeway ramp to exceed 1.0.
- If freeway ramp already has a V/C ratio of greater than 1.0 without the addition of project generated traffic, and the addition of project generated traffic increases the traffic volume on this ramp by more than one (1) percent of the capacity of the ramp.

IMPACTS TO FREEWAY SEGMENTS

According to the VTA Traffic Level of Service Analysis Guidelines, the VTA currently utilizes LOS E as the minimum acceptable LOS threshold for CMP freeway segments. Project impacts at CMP freeway segments would be considered significant if one of the following criteria is met:

- If the addition of project generated traffic to a CMP freeway segment causes the density-based LOS to degrade from an acceptable LOS E or better to an unacceptable LOS F;

- If CMP freeway segment operates at an unacceptable density-based LOS F without the addition of project generated traffic, and the addition of project generated traffic increases the traffic volume on this segment by more than one (1) percent of the capacity of the segment.

IMPACTS ON BICYCLE FACILITIES

Impacts on bicycle facilities are considered significant if implementation of the project would:

- Adversely affect existing or planned bicycle facilities,
- Result in unsafe conditions for bicyclists, or
- Fail to adequately provide for access by bicycles.

IMPACTS ON TRANSIT FACILITIES

Impacts on the transit system are considered significant if implementation of the project would:

- Adversely affect public transit operations, or
- Fail to adequately provide access to transit;
- Impacts on Emergency Services and Access

IMPACTS ON EMERGENCY SERVICES AND ACCESS ARE CONSIDERED SIGNIFICANT IF IMPLEMENTATION OF THE PROJECT WOULD:

- Substantially increase emergency response times, or
- Result in inadequate emergency access.

4.1.4 PROJECT IMPACTS AND MITIGATION

The LOS was evaluated for signalized, unsignalized, and freeway segments and ramps that could be affected by implementation of the proposed project. LOS thresholds were used to define the existing conditions of the intersections as well as to evaluate the effects the proposed project would have, if any, on those intersections. Vehicle trips that would be generated by the proposed project were calculated based on the trips generated by the existing uses subtracted from the proposed uses. Trips generation rates were used for the following land uses, General Office Building, Utility, General Light Industrial, Manufacturing, and Warehousing. *Table 4.1-9: Project Trip Generation Volumes*, above shows these calculations and the anticipated resultant AM and PM peak hour trips.

The proposed project is anticipated to generate a total of 8,319 daily trips, 775 AM peak hour trips (671 inbound, 104 outbound), and 828 PM peak hour trips (119 inbound, 709 outbound) under typical traffic demand conditions. These trips would be considered new (or incremental) trips on the City's immediate local circulation system. The generated trips were distributed to area roadways based on existing conditions traffic volumes and patterns, engineering judgment, distributions from recently approved

traffic studies for similar proposed developments in the MPSP area, and the proposed configuration and transportation elements of the proposed project.

IMPACT TRANS-1	WOULD THE PROPOSED PROJECT RESULT IN IMPACTS ON INTERSECTION OPERATING CONDITIONS (INCLUDING UNSIGNALIZED INTERSECTIONS)? (LESS THAN SIGNIFICANT IMPACT)
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Existing Plus Project Intersection Operations

Existing Plus Project intersection operations are shown in *Table 4.1-10: Existing Plus Project Conditions Intersection Traffic Operations*. This analysis accounts for intersections and lane geometrics and controls and the driveway configurations that would be implemented as part of the proposed project compared to the current traffic conditions. Table 4.1-10 only provides a comparison to the existing traffic volumes and conditions.

Under the Existing Plus Project PM peak hour conditions, the Caribbean Parking Garage Driveway/Caribbean Drive intersection is projected to operate at an unacceptable LOS F when unsignalized. The Caribbean Parking Garage Driveway/Caribbean Drive intersection is a new intersection that would be constructed as part of the proposed project. As shown on the project site plan, the proposed project has been designed to include a new traffic signal at this new driveway location. Construction of the traffic signal at the Caribbean Parking Garage Driveway/Caribbean Drive intersection would result in the intersection meeting safety standards and result in traffic operations at an acceptable LOS B or better conditions. Additionally, this intersections would meet sight distance requirements to enhance safety. With the implementation of this design feature, potential Impacts are considered less than significant and no mitigation is required.

All other project study intersections (i.e. intersections 1 and intersections 3-27) are projected to operate at acceptable Existing Plus Project LOS D or better for City of Sunnyvale intersections and LOS E or better for Santa Clara County regionally significant, and CMP intersections during the AM and PM peak hours. The peak hour signal warrant under CA MUTCD 3 also is not projected to be met at any unsignalized intersections under Existing Plus Project AM and PM peak hour conditions. Therefore, impacts in this regard are less than significant and mitigation under these conditions for these intersections is not required.

Thus, with compliance with generally uniformly applied development policies, the project would have no (1) peculiar impacts, (2) impacts not analyzed in the LUTE EIR, or (3) significant off-site impacts and cumulative impacts not discussed in the LUTE EIR, and (4) there is no substantial new information indicating that an impact would be more severe than discussed in the LUTE EIR. The findings of the certified LUTE EIR remain valid and no further analysis is required.

Level of Significance After Mitigation:

With the incorporation of design features shown on the project site plan, the Caribbean Parking Garage Driveway/Caribbean Drive intersection is projected to operate at acceptable LOS B or better conditions. Therefore, impacts at this intersection are considered less than significant and no mitigation is required.

Table 4.1-10: Existing Plus Project Conditions Intersection Traffic Operations

#	Intersection	Control Type	LOS Criteria	Peak Hour	Existing Conditions			Existing plus Project Conditions				
					Delay (S/V) ¹	LOS	Wrnt Met?	Delay (S/V) ¹	LOS	Wrnt Met? ²	D in Critical V/C	D in Critical Delay
1	Mathilda Avenue / Mathilda Parking Garage Driveway ⁴	OWSC	E	AM	-	-	-	9.7	A	No	0.018	0.1
				PM	-	-	-	10.9	B	No	0.139	0.8
2	Caribbean Parking Garage Driveway / Caribbean Drive ⁴	OWSC	E	AM	-	-	-	19.7	C	No	0.224	1.8
				PM	-	-	-	70.5	F	No	1.122	23.7
3	Caribbean NE Surface Lot Driveway / Caribbean Drive ⁴	OWSC	E	AM	-	-	-	8.8	A	No	0.009	0.0
				PM	-	-	-	11.8	B	No	0.096	0.4
4	Borregas Avenue / Caribbean Drive ⁴	Signal	E	AM	33.0	C-	-	41.9	D	-	0.050	28.4
				PM	23.6	C	-	24.7	C	-	0.096	0.7
5	Borregas Avenue / Borregas NE Surface Lot Driveway	OWSC	D	AM	-	-	-	11.5	B	No	0.028	0.7
				PM	-	-	-	10.9	B	No	0.080	2.1
6	Borregas Avenue / Borregas Service Ingress Driveway	None	D	AM	-	-	-	8.2	A	No	0.004	0.1
				PM	-	-	-	7.7	A	No	0.002	0.0
7	Borregas Avenue / Borregas Service Egress Driveway	OWSC	D	AM	-	-	-	11.4	B	No	0.005	0.1
				PM	-	-	-	10.4	B	No	0.009	0.2
8	Borregas Avenue / Borregas Shuttle Driveway	OWSC	D	AM	-	-	-	10.9	B	No	0.010	0.1
				PM	-	-	-	9.7	A	No	0.008	0.1
9	Borregas Avenue / Caspian Court-Caspian Drive	TWSC	D	AM	13.2	B	No	13.9	B	No	0.006	-0.1
				PM	11.3	B	No	13.2	B	No	0.025	-0.5
10	Mathilda Avenue / 1st Avenue-Bordeaux Drive ⁴	Signal	E	AM	34.5	C-	-	33.5	C-	-	0.017	0.2
				PM	39.2	D	-	39.6	D	-	0.081	1.1
11	Bordeaux Service Driveway / Bordeaux Drive	OWSC	D	AM	-	-	-	9.0	A	No	0.005	0.5
				PM	-	-	-	8.9	A	No	0.008	0.6
12	Bordeaux Shuttle Egress Driveway / Bordeaux Drive	OWSC	D	AM	-	-	-	8.8	A	No	0.006	0.3
				PM	-	-	-	8.7	A	No	0.006	0.3
13	Bordeaux Shuttle Ingress Driveway / Bordeaux Drive	None	D	AM	-	-	-	0.0	A	No	0.000	0.0
				PM	-	-	-	0.0	A	No	0.000	0.0
14	Bordeaux Drive / Java Drive	Signal	D	AM	30.0	C	-	30.1	C	-	0.003	0.0
				PM	31.3	C	-	31.2	C	-	0.003	0.1

Table 4.1-10: Existing Plus Project Conditions Intersection Traffic Operations

#	Intersection	Control Type	LOS Criteria	Peak Hour	Existing Conditions			Existing plus Project Conditions				
					Delay (S/V) ¹	LOS	Wrnt Met?	Delay (S/V) ¹	LOS	Wrnt Met? ²	D in Critical V/C	D in Critical Delay
15	Borregas Avenue / Java Drive	Signal	D	AM	35.2	D+	-	36.6	D+	-	0.013	-0.3
				PM	30.0	C	-	31.7	C	-	0.030	2.2
16	Geneva Drive / Java Drive	Signal	D	AM	30.2	C	-	26.1	C	-	0.155	-13.6
				PM	26.2	C	-	27.0	C	-	0.019	1.0
17	Crossman Avenue-SR 237 WB On-Ramp / Moffett Park Drive	Signal	D	AM	17.9	B	-	18.0	B	-	0.002	0.1
				PM	14.5	B	-	15.1	B	-	0.012	0.8
18	Java Drive-Fair Oaks Avenue / Fair Oaks Way-Kensington Place	Signal	D	AM	36.3	D+	-	36.7	D+	-	0.027	0.6
				PM	28.7	C	-	29.0	C	-	0.019	0.3
19	Fair Oaks Avenue / Ahwanee Avenue	Signal	D	AM	22.5	C+	-	22.8	C+	-	0.010	0.4
				PM	24.5	C	-	25.0	C	-	0.008	0.7
20	Fair Oaks Avenue / Caliente Drive	Signal	D	AM	16.0	B	-	16.1	B	-	0.009	0.2
				PM	17.5	B	-	17.7	B	-	0.008	0.4
21	Fair Oaks Avenue / Wolfe Road	Signal	D	AM	24.8	C	-	25.0	C	-	0.004	0.1
				PM	18.2	B-	-	18.3	B-	-	0.002	0.0
22	Geneva Drive / Caribbean Drive ⁴	OWSC	E	AM	8.6	A	No	8.7	A	No	0.001	0.0
				PM	11.7	B	No	13.1	B	No	0.021	-0.1
23	Caribbean Drive / Twin Creeks ⁴	Signal	E	AM	19.4	B-	-	21.5	C+	-	0.054	2.5
				PM	16.1	B	-	17.1	B	-	0.067	1.3
24	Caribbean Drive / Moffett Park Drive- Baylands Park ⁴	Signal	E	AM	26.3	C	-	28.2	C	-	0.123	-6.4
				PM	30.3	C	-	31.5	C	-	0.063	1.6
25	Lawrence Expressway / Persian Drive- Elko Drive ⁴	Signal	E	AM	26.2	C	-	26.1	C	-	0.022	-0.2
				PM	40.9	D	-	41.0	D	-	0.004	0.0
26	Great America Parkway / Tasman Drive ^{3 4}	Signal	E	AM	41.5	D	-	41.9	D	-	0.008	0.8
				PM	44.8	D	-	44.9	D	-	0.004	0.1
27	Mathilda Avenue / Sunnyvale Saratoga Road - Talisman Drive ⁴	Signal	E	AM	34.3	C-	-	34.6	C-	-	0.011	0.3
				PM	41.4	D	-	41.7	D	-	0.012	0.5

Table 4.1-10: Existing Plus Project Conditions Intersection Traffic Operations

#	Intersection	Control Type	LOS Criteria	Peak Hour	Existing Conditions			Existing plus Project Conditions				
					Delay (S/V) ¹	LOS	Wrnt Met?	Delay (S/V) ¹	LOS	Wrnt Met? ²	D in Critical V/C	D in Critical Delay
Notes: 1. For OWSC (One-Way-Stop-Control) and TWSC (Two-Way-Stop-Control) intersections, "worst-case" movement delay is indicated. "Average" control delays (in seconds/vehicle) are indicated for signal-Control intersections. 2. Wrnt Met? = CA MUTCD based Peak-hour-Volume Warrant #3; 3. CMP Intersection(s); 4. Regionally significant intersection(s). BOLD Indicates unacceptable level of Service SHADED indicates a significant impact												

Background Plus Project Intersection Operations

The Background Plus Project intersection operations were quantified using the projected traffic volumes, intersection lane geometrics and controls, and proposed driveways that would be constructed as part of the proposed project. In addition, likely conditions that would occur with traffic generated by approved but not yet constructed developments within the study area are included to this analysis. Background conditions are a near-term future condition that could reasonably represent traffic conditions in the study area when the proposed project is completed. *Table 4.1-11: Background Plus Project Conditions Intersection Traffic Operations*, illustrates the resulting Background Plus Project intersection LOS operations. Table 4.1-11 shows the projected background traffic conditions without project generated trips and associated intersection delays and LOS for comparison purposes. The table also shows the projected change in delay of critical movements and critical V/C ratio as a result of trips that would be generated by the proposed project combined with the anticipated background traffic.

As shown in Table 4.1-11, Intersection #26 - Great America Parkway/Tasman Drive is a signalized intersection and is projected to operate at unacceptable average intersection LOS F under the Background Plus Project AM and PM peak hour conditions. The Great America Parkway/Tasman Drive intersection is projected to operate at unacceptable Background Plus Project AM and PM peak hour LOS F conditions. However; the addition of project generated trips is not projected to increase the average delay of critical movements by four (4) or more seconds and increase the critical V/C ratio by 0.01 or more. Therefore, based on City of Santa Clara and VTA intersection traffic impact criteria, impacts at the Great America Parkway/Tasman Drive intersection is considered less than significant.

In addition, the Caribbean Parking Garage Driveway/Caribbean Drive would operate at unacceptable worse-case movement LOS F under Background Plus Project during the PM peak hour conditions. However, as discussed above, the proposed project has been designed to include a new traffic signal at this new driveway location. Construction of the traffic signal at the Caribbean Parking Garage Driveway/Caribbean Drive intersection would result in the intersection meeting safety standards and result in traffic operations at an acceptable LOS B or better conditions.

All of the remaining study intersections (intersections 1 and 3-25, and 27) are projected to operate at acceptable Background Plus Project LOS D or better for City of Sunnyvale intersections and LOS E or better for Santa Clara County, regionally significant, and CMP intersections during the AM and PM peak hour. CA MUTCD based peak hour signal warrant 3 is not projected to be met at any of the remaining study unsignalized intersections under Background Plus Project AM and PM peak hour conditions.

Thus, with compliance with generally uniformly applied development policies, the project would have no (1) peculiar impacts, (2) impacts not analyzed in the LUTE EIR, or (3) significant off-site impacts and cumulative impacts not discussed in the LUTE EIR, and (4) there is no substantial new information indicating that an impact would be more severe than discussed in the LUTE EIR. The findings of the certified LUTE EIR remain valid and no further analysis is required.

Level of Significance After Mitigation:

With the incorporation of traffic signal design features shown on the project site plan, the Caribbean Parking Garage Driveway/Caribbean Drive intersection is projected to operate at acceptable LOS B or better conditions. Therefore, impacts at this intersection are considered less than significant and no mitigation is required.

Table 4.1-11: Background Plus Project Conditions Intersection Traffic Operations

#	Intersection	Control Type	LOS Criteria	Peak Hour	Background Conditions			Background Plus Project Conditions				
					Delay (S/V) ¹	LOS	Wrnt Met? ²	Delay (S/V) ¹	LOS	Wrnt Met? ²	D in Critical V/C	D in Critical Delay
1	Mathilda Avenue / Mathilda Parking Garage Driveway ⁴	OWSC	E	AM	-	-	-	9.9	A	No	0.019	0.1
				PM	-	-	-	11.5	B	No	0.151	0.7
2	Caribbean Parking Garage Driveway / Caribbean Drive ⁴	OWSC	E	AM	-	-	-	22.3	C	No	0.259	1.8
				PM	-	-	-	133.1	F	Yes	1.463	40.0
3	Caribbean NE Surface Lot Driveway / Caribbean Drive ⁴	OWSC	E	AM	-	-	-	8.8	A	No	0.010	0.0
				PM	-	-	-	12.4	B	No	0.103	0.4
4	Borregas Avenue / Caribbean Drive ⁴	Signal	E	AM	46.1	D	-	67.8	E	-	0.050	34.7
				PM	25.1	C	-	26.8	C	-	0.096	1.4
5	Borregas Avenue / Borregas NE Surface Lot Driveway	OWSC	D	AM	-	-	-	12.0	B	No	0.029	0.7
				PM	-	-	-	11.2	B	No	0.083	2.0
6	Borregas Avenue / Borregas Service Ingress Driveway	None	D	AM	-	-	-	8.4	A	No	0.005	0.1
				PM	-	-	-	7.8	A	No	0.002	0.0
7	Borregas Avenue / Borregas Service Egress Driveway	OWSC	D	AM	-	-	-	11.9	B	No	0.005	0.1
				PM	-	-	-	10.6	B	No	0.009	0.2
8	Borregas Avenue / Borregas Shuttle Driveway	OWSC	D	AM	-	-	-	11.3	B	No	0.010	0.1
				PM	-	-	-	9.8	A	No	0.008	0.1
9	Borregas Avenue / Caspian Court- Caspian Drive	TWSC	D	AM	14.3	B	No	15.2	C	No	0.008	-0.1
				PM	11.9	B	No	13.9	B	No	0.028	-0.4
10	Mathilda Avenue / 1st Avenue- Bordeaux Drive ⁴	Signal	E	AM	35.5	D+	-	34.9	C-	-	0.009	-0.2
				PM	40.7	D	-	40.8	D	-	0.081	1.2
11	Bordeaux Service Driveway / Bordeaux Drive	OWSC	D	AM	-	-	-	9.0	A	No	0.005	0.5
				PM	-	-	-	8.9	A	No	0.008	0.5
12	Bordeaux Shuttle Egress Driveway / Bordeaux Drive	OWSC	D	AM	-	-	-	8.8	A	No	0.006	0.2
				PM	-	-	-	8.7	A	No	0.006	0.2
13	Bordeaux Shuttle Ingress Driveway / Bordeaux Drive	None	D	AM	-	-	-	0.0	A	No	0.000	0.0
				PM	-	-	-	0.0	A	No	0.000	0.0

Table 4.1-11: Background Plus Project Conditions Intersection Traffic Operations

#	Intersection	Control Type	LOS Criteria	Peak Hour	Background Conditions			Background Plus Project Conditions				
					Delay (S/V) ¹	LOS	Wrnt Met? ²	Delay (S/V) ¹	LOS	Wrnt Met? ²	D in Critical V/C	D in Critical Delay
14	Bordeaux Drive / Java Drive	Signal	D	AM	33.6	C-	-	33.6	C-	-	0.003	-0.1
				PM	39.0	D	-	38.9	D+	-	0.003	0.3
15	Borregas Avenue / Java Drive	Signal	D	AM	37.8	D+	-	39.9	D	-	0.014	-0.1
				PM	30.5	C	-	32.3	C-	-	0.029	2.8
16	Geneva Drive / Java Drive	Signal	D	AM	27.8	C	-	28.2	C	-	0.029	0.7
				PM	36.3	D+	-	36.9	D+	-	0.019	0.7
17	Crossman Avenue-SR 237 WB On-Ramp / Moffett Park Drive	Signal	D	AM	21.1	C+	-	21.1	C+	-	0.001	0.0
				PM	17.6	B	-	18.0	B-	-	0.012	0.4
18	Java Drive-Fair Oaks Avenue / Fair Oaks Way-Kensington Place	Signal	D	AM	40.1	D	-	41.1	D	-	0.027	1.3
				PM	34.0	C-	-	35.0	D+	-	0.019	1.4
19	Fair Oaks Avenue / Ahwanee Avenue	Signal	D	AM	23.7	C	-	24.1	C	-	0.010	0.6
				PM	28.8	C	-	29.9	C	-	0.008	1.7
20	Fair Oaks Avenue / Caliente Drive	Signal	D	AM	16.7	B	-	16.8	B	-	0.010	0.4
				PM	19.3	B-	-	19.7	B-	-	0.008	0.6
21	Fair Oaks Avenue / Wolfe Road	Signal	D	AM	26.3	C	-	26.6	C	-	0.005	0.0
				PM	18.9	B-	-	19.0	B-	-	0.003	0.0
22	Geneva Drive / Caribbean Drive ⁴	OWSC	E	AM	8.7	A	No	8.8	A	No	0.002	0.0
				PM	13.5	B	No	15.8	C	No	0.047	0.0
23	Caribbean Drive / Twin Creeks ⁴	Signal	E	AM	22.5	C+	-	28.3	C	-	0.054	6.7
				PM	17.2	B	-	18.7	B-	-	0.067	1.9
24	Caribbean Drive / Moffett Park Drive-Baylands Park ⁴	Signal	E	AM	29.5	C	-	35.7	D+	-	0.049	8.3
				PM	31.4	C	-	33.6	C-	-	0.063	2.8
25	Lawrence Expressway / Persian Drive-Elko Drive ⁴	Signal	E	AM	25.8	C	-	25.2	C	-	0.022	-0.1
				PM	42.4	D	-	42.7	D	-	0.003	0.2
26	Great America Parkway / Tasman Drive ^{3,4}	Signal	E	AM	106.5	F	-	107.6	F	-	0.000	0.1
				PM	168.8	F	-	169.5	F	-	0.005	1.7

Table 4.1-11: Background Plus Project Conditions Intersection Traffic Operations

#	Intersection	Control Type	LOS Criteria	Peak Hour	Background Conditions			Background Plus Project Conditions				
					Delay (S/V) ¹	LOS	Wrnt Met? ²	Delay (S/V) ¹	LOS	Wrnt Met? ²	D in Critical V/C	D in Critical Delay
27	Mathilda Avenue / Sunnyvale Saratoga Road - Talisman Drive ⁴	Signal	E	AM	38.3	D+	-	39.0	D	-	0.010	0.9
				PM	55.0	E+	-	58.0	E+	-	0.012	4.1
Notes: 1. For OWSC (One-Way-Stop-Control) and TWSC (Two-Way-Stop-Control) intersections, "worst-case" movement delay is indicated. "Average" control delays (in seconds/vehicle) are indicated for signal-Control intersections. 2. Wrnt Met? = CA MUTCD based Peak-hour-Volume Warrant #3; 3. CMP Intersection(s); 4. Regionally significant intersection(s); BOLD indicates unacceptable level of service; SHADED indicates a significant impact.												

IMPACT
TRANS-2

**WOULD THE PROPOSED PROJECT RESULT IN IMPACTS ON FREEWAY
SEGMENT OPERATIONS?**

(LESS THAN SIGNIFICANT IMPACT)

This analysis evaluated 10 study freeway segments under AM and PM peak hour conditions. The freeway segment volumes were developed by estimating how many peak hour trips the proposed project would add to each freeway segment. The project trip generation values and trip distribution percentages were used and added to the existing freeway segment counts to determine the potential impacts to the respective freeway segments. Project generated traffic was assigned to HOV lanes using HOV percentages calculated for each segment from existing freeway counts. *Table 4.1-12: With Proposed Project Freeway Segment Traffic Operations*, presents the projected study freeway segment densities, number of project generated trips added to each segment, and LOS that would occur under the proposed project.

As shown in Table 4.1-12, the following freeway segments are already operating at unacceptable levels and are projected to operate at unacceptable density-based LOS F under the proposed project for either AM or PM peak hour conditions, or both:

- Eastbound SR 237 between Maude Avenue and US HWY 101 during the PM peak hour.
- Westbound SR 237 between Maude Avenue and US HWY 101 during the PM peak hour.
- Eastbound SR 237 between US HWY 101 and Mathilda Avenue during the PM peak hour.
- Westbound SR 237 between US HWY 101 and Mathilda Avenue during the AM and PM peak hours.
- Eastbound SR 237 between Mathilda Avenue and Fair Oaks Avenue during the PM peak hour.
- Westbound SR 237 between Mathilda Avenue and Fair Oaks Avenue during the AM and PM peak hours.
- Eastbound SR 237 between Fair Oaks Avenue and Lawrence Expressway during the PM peak hour.
- Westbound SR 237 between Fair Oaks Avenue and Lawrence Expressway during the AM and PM peak hours.
- Eastbound SR 237 between Lawrence Expressway and Great America Parkway during the PM peak hour.
- Westbound SR 237 between Lawrence Expressway and Great America Parkway during the AM peak hour.
- Southbound US HWY 101 between Great America Parkway and Lawrence Expressway during the AM peak hour.
- Northbound US HWY 101 between Great America Parkway and Lawrence Expressway during the PM peak hour.

- Southbound US HWY 101 between Lawrence Expressway and Fair Oaks Avenue during the AM peak hour.
- Northbound US HWY 101 between Lawrence Expressway and Fair Oaks Avenue during the PM peak hour.
- Southbound US HWY 101 between Fair Oaks Avenue and Mathilda Avenue during the AM peak hour.
- Northbound US HWY 101 between Fair Oaks Avenue and Mathilda Avenue during the PM peak hour (mixed-flow lanes only).
- Southbound US HWY 101 between Mathilda Avenue and SR 237 during the AM peak hour.
- Northbound US HWY 101 between Mathilda Avenue and SR 237 during the PM peak hour.
- Southbound US HWY 101 between SR 237 and Moffett Boulevard during the AM peak hour.
- Northbound US HWY 101 between SR 237 and Moffett Boulevard during the PM peak hour (mixed-flow lanes only).

In addition, the following previously listed freeway segments, under the addition of project generated trips, are projected to increase the traffic volume by more than one (1) percent of the capacity of the segment:

- Westbound SR 237 between Maude Avenue and US HWY 101 during the PM peak hour;
- Westbound SR 237 between US HWY 101 and Mathilda Avenue during the PM peak hour;
- Eastbound SR 237 between Lawrence Expressway and Great America Parkway during the PM peak hour;
- Westbound SR 237 between Lawrence Expressway and Great America Parkway during the AM peak hour;
- Southbound US HWY 101 between Great America Parkway and Lawrence Expressway during the AM peak hour;
- Northbound US HWY 101 between Great America Parkway and Lawrence Expressway during the PM peak hour.

Impact 3.4.7 of the LUTE Draft EIR analyzes the impacts of implementing the LUTE to contribute to significant traffic operational impacts to intersections and freeway segments under year 2035 conditions as compared to existing conditions. The analysis concluded that the LUTE would result in substantial contributions to a number of intersections and freeway segments within the City and the region resulting in unacceptable levels of service (LOS). These operational impacts would also significantly impact transit travel times (Impact 3.4.2). The Draft EIR identifies a number of mitigation measures to reduce these impacts; however, because implementation of some of these mitigation measures is uncertain or infeasible some impacts would remain significant and unavoidable (mitigation measures MM 3.4.7a and MM 3.4.7b were determined to be feasible). The analysis also identifies LUTE policies (e.g., Policy LT-3.5,

LT-3.6, LT-3.7, LT- 3.13, and LT-11.4) that constitute elements of a Transportation Demand Management (TDM) program, which is a combination of services, incentives, facilities, and actions that reduce single-occupant vehicle trips to help relieve traffic congestion. Implementation of a TDM program helps proposed developments to meet City requirements for reducing vehicle trips by 20 to 35 percent, depending on the proposed land use and its location. The LUTE EIR concluded that Impact 3.4.2 and 3.4.7 were significant and unavoidable for project and cumulative conditions.

The Municipal Code Chapters 10.60 and 19.45 set forth the City's TDM program. Section 19.45.030(b)(2) requires a TDM for development seeking bonus FAR through the Green Building Program that reduces trips to no more than the trips produced by development at the generally permitted FAR in the applicable zoning district. Section 19.46.100 includes minimum and maximum requirements for off-street parking spaces. Section 19.46.150 establishes minimum requirements for bicycle parking (number and type of spaces). The project would implement a TDM program. The project's preliminary TDM program would result in reducing project vehicle trips to the number trips that would be generated by an office/R&D development at the project site at an intensity of 0.66 FAR, which is an intensity permitted by the existing zoning.

The project would have a transportation impact on freeway segments based on VTA freeway segment traffic impact criteria. The applicant shall pay fee's to fund select improvements listed in the VTA's Valley Transportation Plan (VTP) 2040. The funds shall be a fair share contribution to pay toward the cost of the identified express lane program along US HWY 101. However, application of generally applicable development policies would reduce this impact to less than significant, and therefore the impact is not peculiar. With compliance with uniformly applied development policies, the project would not have no (1) impacts not analyzed in the LUTE EIR, (2) new or more significant off-site impacts and cumulative impacts not discussed in the LUTE EIR, and (3) there is no substantial new information indicating that an impact would be more severe than discussed in the LUTE EIR. As such, none of the conditions identified in Section 15162 of the State CEQA Guidelines that would result in a new significant impact have been identified. The findings of the certified LUTE EIR remain valid and no further analysis is required.

Level of Significance After Mitigation: Significant and Unavoidable.

Although the applicant would make a fair share contribution, capacity improvements on freeways are outside of the City of Sunnyvale's jurisdiction. Therefore, the freeway impacts would be significant and unavoidable.

Table 4.1-12: With Proposed Project Freeway Segment Traffic Operations

#	Fwy	Segment	Dir	Pk Hr	Capacity (vphpl) ¹		Lanes		Existing Peak Density (pc/mi/ln) ⁴		Existing Peak LOS		Trips Added from Project		Existing Plus Project Density (pc/mi/ln)		Existing Plus Project LOS		% of Capacity ⁵	
					MF ²	HOV ³	MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV
1	SR 237	Between Maude Avenue and US HWY 101	EB	AM	4,400	-	2	-	33.6	-	D	-	103	0	34.5	-	D	-	2.3%	-
				PM	4,400	-	2	-	94.7	-	F	-	19	0	96.1	-	F	-	0.4%	-
			WB	AM	4,400	-	2	-	39.8	-	D	-	17	0	40.0	-	D	-	0.4%	-
				PM	4,400	-	2	-	75.0	-	F	-	108	0	78.4	-	F	-	2.5%	-
2	SR 237	Between US HWY 101 and Mathilda Avenue	EB	AM	4,400	-	2	-	51.2	-	E	-	205	0	54.0	-	E	-	4.7%	-
				PM	4,400	-	2	-	83.2	-	F	-	38	0	85.3	-	F	-	0.9%	-
			WB	AM	4,400	-	2	-	61.2	-	F	-	19	0	61.6	-	F	-	0.4%	-
				PM	4,400	-	2	-	69.7	-	F	-	128	0	73.3	-	F	-	2.9%	-
3	SR 237	Between Mathilda Avenue and Fair Oaks Avenue	EB	AM	4,400	1,650	2	1	32.4	26.0	D	C	0	0	32.4	26.0	D	C	0.0%	0.0%
				PM	4,400	1,650	2	1	84.3	64.7	F	F	0	0	84.3	64.7	F	F	0.0%	0.0%
			WB	AM	6,900	-	3	-	76.4	-	F	-	4	0	76.5	-	F	-	0.1%	-
				PM	6,900	-	3	-	79.6	-	F	-	20	0	80.1	-	F	-	0.3%	-
4	SR 237	Between Fair Oaks Avenue and Lawrence Expressway	EB	AM	4,400	1,650	2	1	27.9	16.2	D	B	0	0	27.9	16.2	D	B	0.0%	0.0%
				PM	4,400	1,650	2	1	82.0	84.4	F	F	0	0	82.0	84.4	F	F	0.0%	0.0%
			WB	AM	4,400	1,650	2	1	79.0	83.3	F	F	1	1	79.0	83.4	F	F	0.0%	0.1%
				PM	4,400	1,650	2	1	78.4	65.7	F	F	1	0	78.4	65.7	F	F	0.0%	0.0%
5	SR 237	Between Lawrence Expressway and Great America Parkway	EB	AM	4,400	1,650	2	1	32.0	15.3	D	B	13	4	32.1	15.4	D	B	0.3%	0.2%
				PM	4,400	1,650	2	1	77.4	74.0	F	F	70	38	80.1	76.5	F	F	1.6%	2.3%
			WB	AM	4,400	1,650	2	1	66.2	58.3	F	F	66	37	67.7	59.6	F	F	1.5%	2.2%
				PM	4,400	1,650	2	1	32.0	8.9	D	A	16	3	32.2	9.0	D	A	0.4%	0.2%

Table 4.1-12: With Proposed Project Freeway Segment Traffic Operations

#	Fwy	Segment	Dir	Pk Hr	Capacity (vphpl) ¹		Lanes		Existing Peak Density (pc/mi/ln) ⁴		Existing Peak LOS		Trips Added from Project		Existing Plus Project Density (pc/mi/ln)		Existing Plus Project LOS		% of Capacity ⁵	
					MF ²	HOV ³	MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV
6	US HWY 101	Between Great America Parkway and Lawrence Expressway	SB	AM	6,900	1,650	3	1	72.4	79.3	F	F	79	24	74.1	81.2	F	F	1.1%	1.5%
				PM	6,900	1,650	3	1	25.8	9.0	C	A	17	2	25.9	9.0	C	A	0.2%	0.1%
			NB	AM	6,900	1,650	3	1	32.1	16.3	D	B	14	3	32.1	16.3	D	B	0.2%	0.2%
				PM	6,900	1,650	3	1	87.9	83.0	F	F	79	29	91.6	86.6	F	F	1.1%	1.8%
7	US HWY 101	Between Lawrence Expressway and Fair Oaks Avenue	SB	AM	6,900	1,650	3	1	72.5	67.7	F	F	31	11	73.1	68.2	F	F	0.4%	0.7%
				PM	6,900	1,650	3	1	25.1	8.9	A	A	7	1	25.1	8.9	C	A	0.1%	0.1%
			NB	AM	6,900	1,650	3	1	25.1	9.0	A	A	4	1	25.1	9.0	C	A	0.1%	0.1%
				PM	6,900	1,650	3	1	75.0	87.4	F	F	11	3	75.3	87.8	F	F	0.2%	0.2%
8	US HWY 101	Between Fair Oaks Avenue and Mathilda Avenue	SB	AM	6,900	1,650	3	1	60.4	70.1	F	F	12	3	60.5	70.2	F	F	0.2%	0.2%
				PM	6,900	1,650	3	1	27.6	9.2	D	A	2	0	27.7	9.2	D	A	0.0%	0.0%
			NB	AM	6,900	1,650	3	1	26.3	8.9	D	A	0	0	26.3	8.9	D	A	0.0%	0.0%
				PM	6,900	1,650	3	1	62.3	55.4	F	E	0	0	62.3	55.4	F	E	0.0%	0.0%
9	US HWY 101	Between Mathilda Avenue and SR 237	SB	AM	6,900	1,650	3	1	58.4	58.7	F	F	0	0	58.4	58.7	F	F	0.0%	0.0%
				PM	6,900	1,650	3	1	32.3	23.7	D	C	0	0	32.3	23.7	D	C	0.0%	0.0%
			NB	AM	6,900	1,650	3	1	32.3	13.4	D	B	0	0	32.2	13.4	D	B	0.0%	0.0%
				PM	6,900	1,650	3	1	63.7	58.4	F	F	0	0	63.7	58.4	F	F	0.0%	0.0%
10	US HWY 101	Between SR 237 and Moffett Boulevard	SB	AM	6,900	1,650	3	1	58.9	62.5	F	F	13	4	59.1	62.6	F	F	0.2%	0.2%
				PM	6,900	1,650	3	1	43.8	9.8	D	A	97	11	44.6	10.0	D	A	1.4%	0.7%
			NB	AM	6,900	1,650	3	1	54.1	24.5	E	C	80	23	54.9	24.8	E	C	1.2%	1.4%
				PM	6,900	1,650	3	1	67.1	53.7	F	E	13	6	67.3	53.8	F	E	0.2%	0.4%

Table 4.1-12: With Proposed Project Freeway Segment Traffic Operations

#	Fwy	Segment	Dir	Pk Hr	Capacity (vphpl) ¹		Lanes		Existing Peak Density (pc/mi/ln) ⁴		Existing Peak LOS		Trips Added from Project		Existing Plus Project Density (pc/mi/ln)		Existing Plus Project LOS		% of Capacity ⁵			
					MF ²	HOV ³	MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV
<p>Notes: Freeway volumes were obtained from the 2017 CMP Monitoring and Conformance Report (Santa Clara Valley Transportation Authority, April 23, 2017)</p> <p>1. Freeway segment capacities were based on VTA TIA Guidelines. Units are vehicles per hour per lane.</p> <p>2. MF = Mixed Flow</p> <p>3. HOV = High Occupancy Vehicle</p> <p>4. Density = Peak Hour Segment Volume / (Peak Hour Speed * Number of Lanes). Units are passenger cars per mile per lane.</p> <p>BOLD indicates unacceptable level of service</p> <p>SHADED indicates a significant impact.</p>																						

IMPACT TRANS-3	WOULD THE PROPOSED PROJECT RESULT IN IMPACTS ON FREEWAY RAMP OPERATIONS? (LESS THAN SIGNIFICANT IMPACT)
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A total of 20 study freeway ramps were analyzed for the proposed project for both AM and PM peak hour conditions to determine potential impacts at these locations. Potential impacts to freeway ramp volumes were developed by estimating how many peak hour trips the proposed project would add to each freeway ramp. This was done using the trip generation values and trip distribution percentages prescribed to the proposed project. These trips were then added to the existing freeway ramp counts to determine the total volume.

As shown in *Table 4.1-13, With Proposed Project Freeway Ramp Traffic Operations*, all study freeway ramps are projected to operate at acceptable V/C ratios of less than 1.0 under the proposed project AM and PM peak hour conditions. All project study freeway ramps are projected to operate at acceptable V/C ratio standards under Existing Traffic Conditions and Existing Plus Project AM and PM peak hour conditions. Therefore, the proposed project is not anticipated to have any significant impacts on project study freeway ramps under the proposed project.

Table 14.1-13: With Proposed Project Freeway Ramp Traffic Operations

Ramp		Type	Peak Hour	Lanes				Existing Peak		Trips Added by Project	Existing Plus Project Peak		% of Capacity ⁴
				Mixed	HOV	Meter	Capacity ¹	Volume ²	V/C ³		Volume	V/C	
1	SR 237 Westbound On- Ramp from Mathilda Avenue	Diamond	AM	1	-	-	2,000	326	0.16	17	343	0.17	0.9%
			PM	1	-	-	2,000	760	0.38	110	870	0.44	5.5%
2	SR 237 Westbound Off- Ramp to Mathilda Avenue	Diamond	AM	1	-	-	2,000	866	0.43	2	868	0.43	0.1%
			PM	1	-	-	2,000	680	0.34	1	681	0.34	0.1%
3	SR 237 Eastbound Off- Ramp to Mathilda Avenue	Diamond	AM	2	-	-	4,100	824	0.20	205	1029	0.25	5.0%
			PM	2	-	-	4,100	361	0.09	38	399	0.10	0.9%
4	SR 237 Eastbound On- Ramp from Mathilda Avenue	Diamond	AM	1	-	-	2,000	636	0.32	0	636	0.32	0.0%
			PM	1	-	-	2,000	875	0.44	0	875	0.44	0.0%
5	SR 237 Westbound On- Ramp from Crossman Avenue/ Moffett Park	Diagonal	AM	1	-	-	2,000	122	0.06	2	124	0.06	0.1%
			PM	1	-	-	2,000	180	0.09	19	199	0.10	1.0%
6	SR 237 Westbound On- Ramp from Southbound Caribbean Drive	Diagonal	AM	1	-	ON	720	396	0.55	0	396	0.55	0.0%
			PM	1	-	ON	720	216	0.30	0	216	0.30	0.0%
7	SR 237 Westbound Off- Ramp to Northbound Caribbean Drive	Diagonal	AM	1	-	-	2,000	103	0.05	101	204	0.10	5.1%
			PM	1	-	-	2,000	650	0.33	18	668	0.33	0.9%
8	SR 237 Eastbound On- Ramp from Southbound Lawrence Expressway	Loop	AM	1	-	-	1,800	306	0.17	17	323	0.18	0.9%
			PM	1	-	ON	550	420	0.76	108	528	0.96	19.6%
9	SR 237 Eastbound Off- Ramp to Northbound Lawrence Expressway	Loop	AM	1	-	-	1,800	102	0.06	0	102	0.06	0.0%
			PM	1	-	-	1,800	45	0.02	0	45	0.02	0.0%
10	US HWY 101 Northbound On- Ramp from Southbound Lawrence Expressway	Diagonal	AM	1	1	ON	1,140	505	0.44	0	505	0.44	0.0%
			PM	1	1	-	2,900	349	0.12	0	349	0.12	0.0%

Table 14.1-13: With Proposed Project Freeway Ramp Traffic Operations

Ramp		Type	Peak Hour	Lanes				Existing Peak		Trips Added by Project	Existing Plus Project Peak		% of Capacity ⁴
				Mixed	HOV	Meter	Capacity ¹	Volume ²	V/C ³		Volume	V/C	
11	US HWY 101 Northbound Off-Ramp to Lawrence Expressway	Diagonal	AM	2	-	-	3,500	1136	0.32	61	1197	0.34	1.7%
			PM	2	-	-	3,500	1309	0.37	11	1320	0.38	0.3%
12	US HWY 101 Southbound off-ramp to Lawrence Expressway	Diagonal	AM	2	-	-	3,500	811	0.23	0	811	0.23	0.0%
			PM	2	-	-	3,500	1754	0.50	1	1755	0.50	0.0%
13	US HWY 101 Southbound on Ramp from Southbound Expressway	Loop	AM	1	1	-	2,700	346	0.13	12	358	0.13	0.4%
			PM	1	1	ON	1,180	206	0.17	96	302	0.26	8.1%
14	US HWY 101 Northbound On-Ramp from Fair Oaks Avenue	Diagonal	AM	1	1	-	2,900	1041	0.36	0	1041	0.36	0.0%
			PM	1	1	-	2,900	435	0.15	0	435	0.15	0.0%
15	US HWY 101 Northbound Off-Ramp to Fair Oaks Avenue	Diagonal	AM	1	-	-	2,900	448	0.22	26	474	0.24	1.3%
			PM	1	-	-	2,900	1063	0.53	6	1069	0.53	0.3%
16	US HWY 101 Southbound On-Ramp from Southbound Fair Oaks Avenue	Loop	AM	1	1	-	2,700	340	0.13	5	345	0.13	0.2%
			PM	1	1	ON	1,240	198	0.16	14	212	0.17	1.1%
17	US HWY 101 Southbound Off-Ramp to Northbound Fair Oaks Avenue	Loop	AM	1	-	-	1,900	213	0.11	0	213	0.11	0.0%
			PM	1	-	-	1,900	94	0.05	0	94	0.05	0.0%
18	US HWY 101 Northbound Off-ramp to Northbound Mathilda	Diagonal	AM	1	-	-	2,000	334	0.17	15	349	0.17	0.8%
			PM	1	-	-	2,000	262	0.13	2	246	0.13	0.1%
19	US HWY 101 Southbound on-ramp from Southbound Mathilda Avenue	Loop	AM	1	1	-	2,700	178	0.07	0	178	0.07	0.0%
			PM	1	1	ON	1,480	720	0.49	0	720	0.49	0.0%
20	US HWY 101 Northbound On-Ramp from Moffett Park Drive	Diagonal	AM	1	-	-	2,000	374	0.19	14	388	0.19	0.7%
			PM	1	-	-	2,000	218	0.11	88	306	0.15	4.4%

**IMPACT
TRANS-4****WOULD THE PROPOSED PROJECT RESULT IN IMPACTS ON PROJECT ACCESS
DRIVEWAYS, THROAT LENGTHS, AND SIGHT DISTANCE?
(LESS THAN SIGNIFICANT IMPACT)**

The following discussion regarding operational design features included as part of the proposed project, is provided for informational purposes.

Driveway throat length is defined as the distance from the outer edge of the travel way of the intersecting roadway to the first point along the driveway at which there are conflicting vehicular traffic movements. Three primary factors should be considered that are important to the internal design of the project include¹:

- Sufficient length for ingress vehicles to react to conflicts (ingress stopping sight distance),
- Sufficient length to avoid spillback onto public roads (ingress queuing), and
- Sufficient length to avoid spillback into the internal circulation (egress queuing).

To reduce potential conflicts and provide for adequate traffic storage and stacking at the proposed project's ingress and egress points, the project includes the following design features:

- The project site plans show minimum throat length to provide for deceleration and turn pockets at the following driveways: #1 Mathilda Parking Garage Driveway (310 feet), #2 Caribbean Parking Garage Driveway (475 feet), #3 Caribbean Northeast Surface Lot Driveway (110 feet), and #5 Borregas Northeast Surface Lot Driveway (115 feet).
- The project site plans show turn pockets at the following locations and of the listed lengths:
 - Caribbean Parking Garage Driveway/Caribbean Drive:
 - Eastbound right-turn storage pocket – 150 feet in length;
 - Westbound left-turn storage pocket – 225 feet in length,
 - Caribbean Northeast Surface Lot Driveway – 175 feet in length,
 - The Caribbean Parking Garage Driveway shall be placed at least 960 feet east of the end of the Mathilda Avenue /Caribbean Drive curve.
- The project restricts on-street parking within the intersection sight distance of all project driveways, and parking is restricted along project frontage on Bordeaux Drive.

With the incorporation of the project design features listed above, no project operational conflicts or new impacts have been identified and no mitigation is required.

¹ Per the National Highway Cooperative Highway Research Program (NCHRP) Report 659 section on "Minimum Length of Driveway Throat"

IMPACT
TRANS-5

WOULD THE PROPOSED PROJECT RESULT IN IMPACTS ON TRANSIT FACILITIES?
(LESS THAN SIGNIFICANT IMPACT)

Transit vehicle delay was considered for transit routes that operate within the study area. Transit vehicles for the transit routes in the study area are expected to use the shared right-of-way with other motorists. Since the proposed project is anticipated to increase the vehicle delay at study intersections, transit vehicle delay could increase. It should be noted that there are no impact thresholds for transit delay and therefore the transit delay is provided for informational purposes only.

Buses operating on study roadway facilities could experience increased delay due to the addition of project related trips to study intersections. The seven (7) bus routes that would serve the proposed project and travel through multiple proposed project study area intersections include Routes 26, 55, 120, 121, 122, 321, and 328.

These seven (7) bus routes run through study area intersections on Java Drive, Crossman Avenue, Caribbean Drive, Lawrence Expressway, Tasman Drive, and Fair Oaks Avenue. The AM and PM peak hour delay experienced by each bus route within the project study area was determined by summing the average peak hour delays for each study intersection movement that a bus would use along its route upon implementation of the proposed project. The proposed project would result in a maximum increase in transit vehicle delay that is projected to be 5.9 seconds (Route 121 under PM peak hour conditions), and a maximum increase in transit vehicle delay for Route 121 under AM peak hour conditions is projected to be 38.1 seconds.

Overall, increases in transit delay would be negligible, and in some cases due to the changes in the circulation system, transit times would be reduced. These impacts are considered less than significant, and no mitigation is required.

IMPACT
TRANS-6

WOULD THE PROPOSED PROJECT RESULT IN IMPACTS ON BICYCLE FACILITIES?
(LESS THAN SIGNIFICANT IMPACT)

The City's proposed Caribbean Drive Parking and Trail Access Enhancements project would install a one-way multi-use path and new access point to the Bay Trail along the north side of Caribbean Drive. The proposed project would make numerous bicycle path improvements including a multi-use path along the western and northern side of the project site fronting Mathilda Avenue and Caribbean Drive which would have accessed to the proposed Caribbean Parking Garage Driveway (where a signal is recommended), and two-way bicycle use east of the proposed Caribbean Parking Garage Driveway, which would increase safety. Proposed internal bicycle paths would increase the on-site areas that could be used by bicycle travel. This would provide project employees and the public with multiple routes through the site to access the buildings, parking lots, and surrounding local roadways. In addition, both Class I and Class II

bicycle parking for employees would be provided. Bicyclists would be able to use existing or planned Class I/II bicycle facilities or multi-use paths on Mathilda Avenue, Borregas Avenue, Caribbean Drive, and Crossman Avenue to travel between the proposed project and the Lockheed Martin Transit Center, Lockheed Martin Station, and nearby bus stops.

Lastly, the proposed project would improve connectivity between and through the project site to the Bay Trail via the proposed multi-use paths along Caribbean Drive, the pedestrian crosswalks at the Borregas Avenue / Caribbean Avenue intersection and which would be installed at the recommended signalized Caribbean Parking Garage Driveway / Caribbean Drive intersection, and the new access point to the Bay Trail on the north side of Caribbean Drive proposed as part of the City's Caribbean Drive Parking and Trail Access Enhancements project. Therefore, the proposed project would be considered a benefit to bicycle access and no impacts would occur.

**IMPACT
TRANS-7**

**WOULD THE PROPOSED PROJECT RESULT IN IMPACTS ON PEDESTRIAN FACILITIES?
(LESS THAN SIGNIFICANT IMPACT)**

The proposed project would result in improvements to the available pedestrian facilities on the project site. The proposed project includes substantial improvements throughout the project site that would not only enhance on site pedestrian resources but increase connectivity within the MPSP and surrounding areas. Among the proposed improvement is a proposed northerly crossing of West Caribbean Drive at the Caribbean Parking Garage Driveway/Caribbean Drive intersection near the VW's West Channel. The mid-block crossing would be joined with a signalized intersection and provide cyclists and pedestrians with direct connectivity between the project site, the local roadway system south of Caribbean Drive, the existing trail along the West Channel, and the Bay Trail located north of Caribbean Drive. Overall, the proposed project would result in beneficial impacts related to pedestrian facilities.

Level of Significant After Mitigation: Less than significant.

**IMPACT
TRANS-8**

**WOULD THE PROPOSED PROJECT RESULT IN IMPACTS ON EMERGENCY SERVICES AND ACCESS?
(LESS THAN SIGNIFICANT IMPACT)**

The project site is located in the MPSP which is an existing urban area and is close to emergency services. The project site design includes numerous access points that would provide adequate emergency vehicle ingress and egress to and from the project site. Interior pathways have been designed to accommodate oversized and heavy emergency vehicles. Additionally, the proposed project has been designed to City of Sunnyvale standards to accommodate turning requirements for fire trucks. Project intersections would operate at an acceptable LOS within the project site in case of an evacuation event and would not conflict with the City of Sunnyvale policies and standards. Lastly, one of the interior bridge crossing over the West

Channel would be constructed to accommodate emergency vehicles and improve emergency access between the 100 Caribbean and 200 Caribbean addresses. This impact would be less than significant.

4.1.5 CUMULATIVE IMPACTS

Cumulative conditions traffic volumes were developed by adding trips generated by nearby approved but not constructed and pending developments to growth rated existing conditions traffic volumes. Approved and pending projects were obtained from City of Sunnyvale and City of Santa Clara. As per City of Sunnyvale policy, projects that were designated as approved or pending on the list of approved and pending projects, that consisted of land uses larger than 20 residential units or 10,000 square-feet of office/commercial space, and which were located within or nearby the project study area were selected to be a part of cumulative conditions volumes.

Net new trips from approved developments within the project vicinity were obtained from Background conditions. Net new trips from the pending developments within the vicinity of the proposed project study area were either obtained from approved traffic studies or environmental documents for the development (when available) or estimated using typical ITE Trip Generation Manual 10th Edition rates and City of Sunnyvale and VTA trip reduction guidelines/ targets. Trips were then assigned to the study area network using existing traffic volume patterns and available planning documents. Cumulative traffic volumes were obtained by applying a 1.5% per year growth rate to Existing traffic volumes and adding the assigned pending development trips and approved development trips.

CUMULATIVE PLUS PROJECT INTERSECTION OPERATIONS

Intersection Operations

Cumulative impacts from the proposed project on intersection operations were quantified using the Cumulative Plus Project traffic volumes, the background intersection lane geometrics and controls, and the proposed project driveway configurations. *Table 4.1-14: Cumulative Plus Project Conditions Intersection Traffic Operations* shows the cumulative intersection LOS operations, the intersection delays, and LOS for comparison purposes. The table also provides the projected change in delay of critical movements and critical V/C ratio caused by the addition of project generated trips. The projected change in delay of critical movements and critical V/C ratio were reported for use in identifying significant impacts.

As shown, Intersection #2 Caribbean Parking Garage Driveway/Caribbean Drive unsignalized intersection is projected to operate at unacceptable worst-case movement LOS F under the cumulative plus proposed project PM peak hour conditions. In addition, the CA MUTCD based peak hour signal warrant 3 is projected to be met and would require mitigation to reduce impacts.

Under this scenario, three (3) other signalized intersections are projected to operate at unacceptable average intersection LOS E or F under cumulative project conditions for AM and/or PM peak hour conditions. These intersections include the following:

#19 - Fair Oaks Avenue / Ahwanee Avenue – The Fair Oaks Avenue / Ahwanee Avenue intersection is projected to operate at unacceptable PM peak hour LOS E under cumulative conditions. However; the addition of project generated trips is not projected to increase the average delay of critical movements by four (4) or more seconds and increase the critical V/C ratio by 0.01 or more. Therefore, based on City of Sunnyvale intersection traffic impact criteria, the cumulative project impact at the Fair Oaks Avenue/Ahwanee Avenue intersection would be less than significant.

#26 - Great America Parkway / Tasman Drive – The Great America Parkway / Tasman Drive intersection is projected to operate at unacceptable AM and PM peak hour LOS F cumulative conditions. However; the addition of project generated trips is not projected to increase the average delay of critical movements by four (4) or more seconds and increase the critical V/C ratio by 0.01 or more. Therefore, based on City of Santa Clara and VTA intersection traffic impact criteria, the proposed project impact at the Great America Parkway / Tasman Drive intersection would be less than significant.

#27 - Mathilda Avenue / Sunnyvale Saratoga Road-Talisman Drive – The Mathilda Avenue / Sunnyvale Saratoga Road - Talisman Drive intersection is projected to operate at unacceptable PM peak hour LOS F cumulative conditions. The addition of project generated trips is projected to increase the average delay of critical movements by four (4) or more seconds and increase the critical V/C ratio by 0.01 or more. Therefore, based on City of Sunnyvale intersection traffic impact criteria, the impacts of the proposed project at the Mathilda Avenue/Sunnyvale Saratoga Road - Talisman Drive intersection is projected to be significant in this regard.

There is no feasible mitigation to reduce this impact to less than significant. To reduce impacts, restriping of the westbound approach to a two left-turn lane and one shared-left through-right lane would be needed to improve cumulative operations to an acceptable LOS for PM peak hour conditions. This improvement; however, is not considered feasible as it would require signal timing changes that would disrupt the current signal coordination of the Mathilda Avenue-Sunnyvale Saratoga Road corridor and create new and additional significant traffic impacts along the corridor. There is no other feasible mitigation that is available to reduce this impact because this project is located in a developed urban area and there is limited right-of-way available to add capacity to the intersection. Per Chapter 3.50 of the Sunnyvale Municipal Code, the proposed project would be required to pay the City's Transportation Impact Fee (TIF). The purpose of the TIF is to help provide adequate transportation-related improvements to serve cumulative development within the city. However, with payment of the fee, the impact at the intersection would remain. Therefore, this impact would be significant and unavoidable.

All of the remaining study intersections (i.e. intersections 1, 3-18, 20-25) are projected to operate at acceptable LOS under cumulative project conditions. LOS conditions would be LOS D or better for City of Sunnyvale intersections and LOS E or better for Santa Clara County, regionally significant, and CMP intersections) during the AM and PM peak hour. CA MUTCD based peak hour signal warrant 3 is not projected to be met at any of the remaining study unsignalized intersections under Cumulative Plus Project AM and PM peak hour conditions.

Freeway Segments and Ramps

Cumulative impacts to freeway ramps and segments would be the same as discussed in Impact Trans-2, above. Contribution of the proposed project in this regard would be not change impacts to the cumulative conditions. Impacts would remain significant and unavoidable. The same mitigation is proposed but the mitigation would not reduce impacts to less than significant. There is no additional feasible mitigation to further reduce the cumulative effects.

Cumulative impacts to freeway ramps would be the same as discussed in Impact Trans-3, above. A total of 20 freeway ramps were analyzed for the proposed project for both AM and PM peak hour conditions to determine potential impacts at these locations. As shown in Table 4.1-13, all study freeway ramps are projected to operate at acceptable V/C ratios of less than 1.0 under the proposed project AM and PM peak hour conditions. Contribution by the proposed project in this regard would not change impacts to the cumulative conditions. Therefore, the proposed project is not anticipated to make a substantial cumulative contribution to project study freeway ramp operations.

Table 4.1-14: Cumulative Plus Proposed Project Conditions Intersection Traffic Operations

#	Intersection	Control Type	LOS Criteria	Peak Hour	Cumulative Conditions			Cumulative Plus Project Conditions				
					Delay (S/V) ¹	LOS	Wrnt Met? ²	Delay (S/V) ¹	LOS	Wrnt Met? ²	D in Critical V/C	D in Critical Delay
1.	Mathilda Avenue / Mathilda Parking Garage Driveway ⁴	OWSC	E	AM	-	-	-	9.9	A	No	0.019	0.1
				PM	-	-	-	12.1	B	No	0.162	0.7
2.	Caribbean Parking Garage Driveway (right-in right-out) / Caribbean Drive ⁴	OWSC	E	AM	-	-	-	25.7	D	No	0.302	1.7
				PM	-	-	-	212.5	F	Yes	1.861	58.3
3.	Caribbean NE Surface Lot Driveway / Caribbean Drive ⁴	OWSC	E	AM	-	-	-	8.9	A	No	0.010	0.0
				PM	-	-	-	13.1	B	No	0.112	0.4
4.	Borregas Avenue / Caribbean Drive ⁴	Signal	E	AM	44.7	D	-	68.8	E	-	0.049	23.8
				PM	26.0	C	-	28.4	C	-	0.096	2.3
5.	Borregas Avenue / Borregas NE Surface Lot Driveway	OWSC	D	AM	-	-	-	12.9	B	No	0.031	0.6
				PM	-	-	-	11.7	B	No	0.085	1.9
6.	Borregas Avenue / Borregas Service Ingress Driveway	None	D	AM	-	-	-	8.6	A	No	0.005	0.1
				PM	-	-	-	7.9	A	No	0.002	0.0
7.	Borregas Avenue / Borregas Service Egress Driveway	OWSC	D	AM	-	-	-	12.7	B	No	0.006	0.1
				PM	-	-	-	11.0	B	No	0.010	0.2
8.	Borregas Avenue / Borregas Shuttle Driveway	OWSC	D	AM	-	-	-	12.0	B	No	0.012	0.1
				PM	-	-	-	10.0	A	No	0.008	0.1
9.	Borregas Avenue / Caspian Court-Caspian Drive	TWSC	D	AM	16.3	C	No	17.3	C	No	0.010	-0.1
				PM	12.9	B	No	15.4	C	No	0.036	-0.3
10.	Mathilda Avenue / 1st Avenue-Bordeaux Drive ⁴	Signal	E	AM	41.8	D	-	40.8	D	-	0.009	-0.3
				PM	41.2	D	-	41.7	D	-	0.081	1.2
11.	Bordeaux Service Driveway / Bordeaux Drive	OWSC	D	AM	-	-	-	9.1	A	No	0.005	0.4
				PM	-	-	-	9.0	A	No	0.008	0.4
12.	Bordeaux Shuttle Egress Driveway / Bordeaux Drive	OWSC	D	AM	-	-	-	8.9	A	No	0.006	0.2
				PM	-	-	-	8.7	A	No	0.006	0.2
13.	Bordeaux Shuttle Ingress Driveway / Bordeaux Drive	None	D	AM	-	-	-	0.0	A	No	0.000	0.0
				PM	-	-	-	0.0	A	No	0.000	0.0

Table 4.1-14: Cumulative Plus Proposed Project Conditions Intersection Traffic Operations

#	Intersection	Control Type	LOS Criteria	Peak Hour	Cumulative Conditions			Cumulative Plus Project Conditions				
					Delay (S/V) ¹	LOS	Wrnt Met? ²	Delay (S/V) ¹	LOS	Wrnt Met? ²	D in Critical V/C	D in Critical Delay
14.	Bordeaux Drive / Java Drive	Signal	D	AM	38.4	D+	-	38.1	D+	-	0.004	-0.2
				PM	44.7	D	-	44.5	D	-	0.003	0.5
15.	Borregas Avenue / Java Drive	Signal	D	AM	40.7	D		38.5	D+	-	-0.025	1.5
				PM	31.9	C		33.1	C-	-	0.034	2.3
16.	Geneva Drive/Java Drive	Signal	D	AM	29.7	C		30.3	C	-	0.029	0.9
				PM	37.3	D+		38.1	D+	-	0.019	1.0
17.	Crossman Avenue-SR-237 WB On-ramp / Moffett Park Drive	Signal	D	AM	21.3	C+		21.4	C+	-	0.000	0.0
				PM	17.9	B		18.4	B-	-	0.012	0.5
18.	Java Drive-Fair Oaks Avenue / Fair Oaks Way – Kensington Place	Signal	D	AM	43.9	D		46.1	D	-	0.026	2.9
				PM	44.2	D		47.7	D	-	0.019	4.7
19.	Fair Oaks Avenue / Ahwanee Avenue	Signal	D	AM	29.5	C		29.4	C	-	0.014	0.8
				PM	65.1	E		68.4	E	-	0.008	4.6
20.	Fair Oaks Avenue / Caliente Drive	Signal	D	AM	20.0	C+		20.6	C+	-	0.010	0.9
				PM	33.5	C-		35.5	D+	-	0.008	3.0
21.	Fair Oaks Avenue / Wolfe Road	Signal	D	AM	28.0	C		28.4	C	-	0.001	0.4
				PM	21.8	C+		21.9	C+	-	0.003	0.1
22.	Geneva Drive / Caribbean Drive ⁴	OWSC	E	AM	8.8	A	No	8.9	A	No	0.001	0.0
				PM	15.2	C	No	18.2	C	No	0.057	0.1
23.	Caribbean Drive / Twin Creeks ⁴	Signal	E	AM	36.7	D+		62.1	E	-	0.054	29.1
				PM	18.6	B-		20.9	C+	-	0.067	2.9
24.	Caribbean Drive / Moffett Park Drive – Baylands Park ⁴	Signal	E	AM	45.8	D		68.4	E	-	0.050	30.3
				PM	44.0	D		55.5	E+	-	0.063	14.1
25.	Lawrence Expressway / Persian Drive – Elko Drive ⁴	Signal	E	AM	31.6	C		31.8	C	-	0.022	0.4
				PM	46.1	D		46.6	D	-	0.004	0.2
26.	Great America Parkway / Tasman Drive ^{3 4}	Signal	E	AM	122.0	F		124.0	F	-	0.001	0.1
				PM	155.3	F		156.2	F	-	0.005	1.9

Table 4.1-14: Cumulative Plus Proposed Project Conditions Intersection Traffic Operations

#	Intersection	Control Type	LOS Criteria	Peak Hour	Cumulative Conditions			Cumulative Plus Project Conditions				
					Delay (S/V) ¹	LOS	Wrnt Met? ²	Delay (S/V) ¹	LOS	Wrnt Met? ²	D in Critical V/C	D in Critical Delay
27.	Mathilda Avenue / Sunnyvale Saratoga Road – Talisman Drive ⁴	Signal	E	AM	56.3	E+		59.5	E+	-	0.010	3.9
				PM	90.4	F		95.4	F	-	0.012	6.8

Transit Delays

Under the proposed project cumulative conditions, the maximum increase in transit vehicle delay is projected to be 74.5 seconds (Route 121 under AM peak hour conditions). It should be noted that some changes in transit delay were calculated to be reduced from current conditions. In other words, some transit times would be inadvertently benefited by the proposed project. This is due to how the analysis software calculates delay and should be interpreted as showing that the proposed project trips would not increase transit delay.

Level of Significance After Mitigation: Less than significant.

4.1.6 CONCLUSION

The proposed project would result in increased vehicle trips from implementation of the proposed project that would utilize existing area roadways to travel to and from the project site. Some of the area roadways, intersections, and freeway segments, and on-ramps are operating at unacceptable or reduced LOS. The addition of project related vehicles would worsen some of these conditions and exacerbate intersections, roadways, and segments that are already operating at unacceptable levels. The proposed project includes roadway and signalization improvements as well as mitigation to reduce these impacts. The proposed project also includes a robust multi-modal transportation network with new shuttles, new bicycle and pedestrian pathways, and links to existing mass transit including light rail and local bus routes. These project elements and design features would reduce some of the demand on area roadways and freeways. Nonetheless, the proposed project would result in significant and unavoidable impacts to six freeway segments under the Proposed Project + Background scenario that were previously analyzed and addressed under the LUTE EIR, and cumulative project impacts at the Mathilda Avenue/Sunnyvale Saratoga Road - Talisman Drive intersection.

References:

Valley Transportation Authority, 2017. 2017 Congestion Management Program Document. Available: http://vtaorgcontent.s3-us-west-1.amazonaws.com/Site_Content/2017_CMP_Document.pdf Accessed: July 19, 2019.

Wood Rodgers, 2019. Final Transportation Impact Analysis 100-200 West Caribbean Drive.