Report:

Central & Wolfe Campus Transportation Demand Management (TDM) Program

Submitted to:

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Prepared for:
HOK
Landbank

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1. INTRODUCTION

The purpose of a Transportation Demand Management (TDM) program is to reduce the amount of vehicle traffic generated by a development by creating measures, strategies, incentives, and policies to shift employees from driving alone to using other modes including transit, carpooling, cycling, and walking. This report presents a comprehensive TDM program for the Central & Wolfe Campus development in Sunnyvale, California with a goal of reducing total peak-hour vehicle trips by 35 percent (35%) which is the most robust TDM goal in the City. A key component of the program is dedicated shuttle service to Caltrain and to downtown Sunnyvale. The existing and planned transit, bicycle, and pedestrian facilities near the site that could be used by employees as an alternative to driving alone are described in this report. A wide range of TDM measures to show the potential universe of options are then presented. Measures that would be most successful at the site are then described in more detail. The TDM program monitoring process and penalties for non-compliance are discussed at the end of this report.

PROJECT DESCRIPTION

The project site is bounded by E. Arques Avenue on the north, N. Wolfe Road on the west, Central Expressway on the south, and adjacent buildings to the east. The project includes razing the buildings on the site (nine buildings comprising 258,279 square feet) and constructing new buildings totaling 777,170 square feet (FAR of 1.0), including 747,170 square feet of office space and 30,000 square feet of amenity space. The site plan is shown on **Figure 1**.

There will be three office buildings located in the northeast, northwest, and southwest corners of the site, a parking garage in the southeast corner, and an amenity building adjacent to and north of the parking garage. Best practices were used regarding building placement near the roadways along the site edges.

Sidewalks will be provided around the perimeter of the site. Numerous pedestrian pathways will be provided on the site connecting adjacent roadways to the buildings and connecting the buildings to each other to create a walkable campus. Two new bus pads will be provided: on the east side of N. Wolfe Road, just south of E. Arques Avenue, and another on the south side of E. Arques Avenue, just west of the easternmost driveway. Transit amenities will be added by the project to these bus stops. Additionally, a shuttle stop will be provided on-site for a dedicated shuttle service to Caltrain and downtown Sunnyvale. The bus pad and shuttle stop and service will support employees using transit to reach the site.

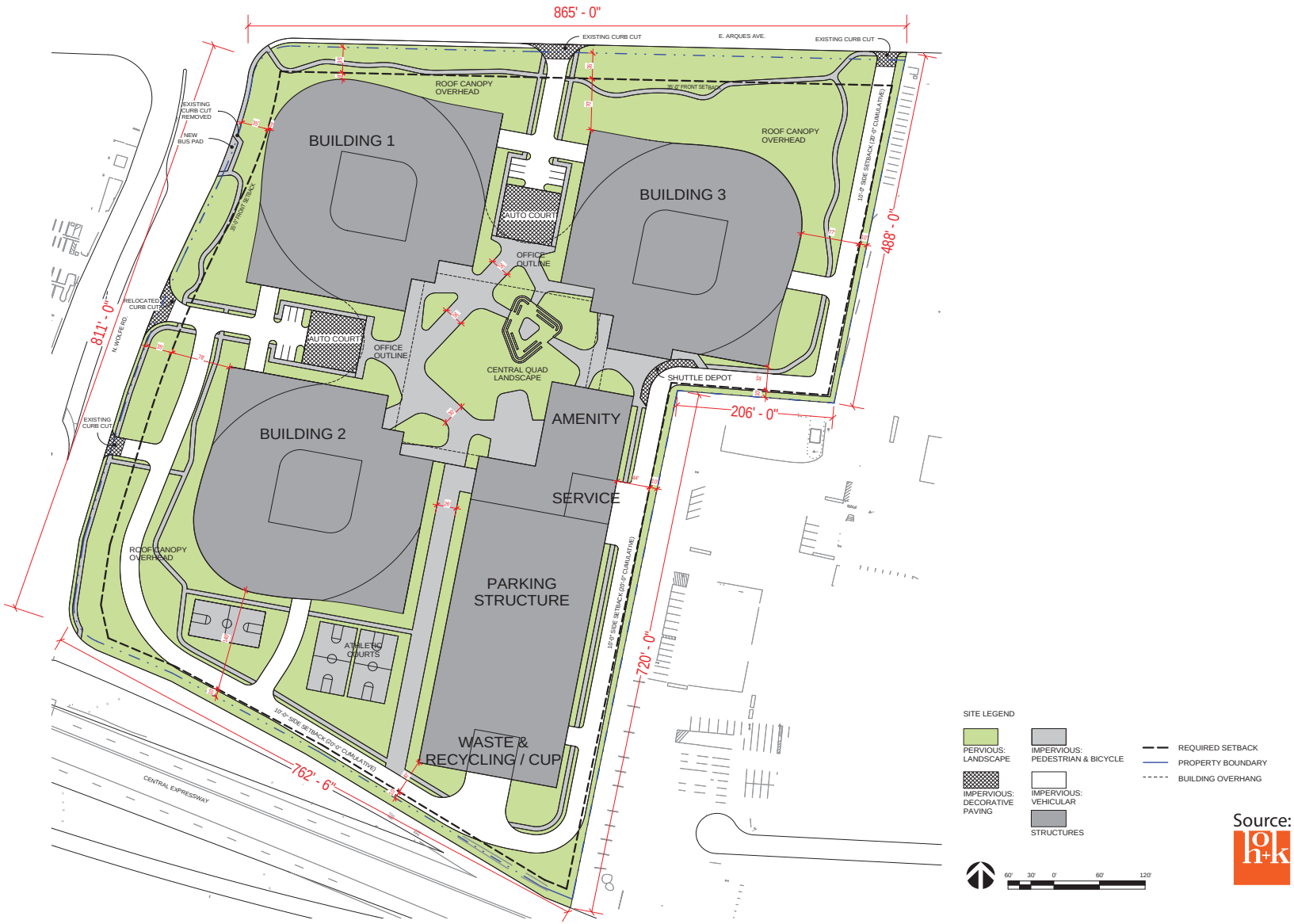

Figure 1.

Conceptual Site Plan

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Parking for the new development will be provided in parking podiums below each building (total of 1,029 spaces), in a standalone structure (1,500 spaces), and in surface spaces in the auto courts (total of 12 spaces). The parking supply for the site will be 2,541 spaces.

TRIP REDUCTION GOAL

The goal of the TDM program is to reduce the number of total peak hour vehicle trips as estimated in the transportation impact analysis (without reductions or credits to account for existing trips) by 35%. Table IV in "Final Report: Transportation Impact Analysis for Landbank R&D Office Redevelopment" dated January 16, 2014 and prepared by TJKM Transportation Consultants presents the vehicle trip generation estimates. The project is projected to generate 773 AM peak hour trips and 724 PM peak hour trips for a total of 1,497 peak hour vehicle trips. Therefore the trip cap with a 35% reduction is **973 total peak hour trips**.

2. AREA TRANSPORTATION SYSTEM

The transportation system serving the site includes roadway facilities, pedestrian and bicycle facilities, and transit service. The existing transit, bicycle, and pedestrian facilities and services and planned improvements that will support travel to the site by modes of transportation other than driving alone are described below.

EXISTING TRANSIT SERVICE

Existing transit service to the project site and vicinity includes VTA bus routes and Caltrain commuter rail service. There are two transit stops adjacent to the project site: southbound 822 Ace Gray Line Shuttle stop on the west side of N. Wolfe Road, and a westbound 822 Ace Gray Line Shuttle and VTA Route 304 stop on the northeast corner of E. Arques Avenue and N. Wolfe Road. More information about these and other nearby transit routes are described below.

The Santa Clara Valley Transportation Authority (VTA) provides bus, light rail, and paratransit services to Santa Clara County. Five VTA bus routes operate in the project vicinity: two limited stop bus routes (Routes 304 and 328), two local bus routes (Routes 26 and 55) and one community bus route (Route 32). VTA Route 304 connects to the Sunnyvale Caltrain Station and has three bus stops near the project site: one on the northwest corner of the N. Wolfe Road and E. Arques Avenue intersection, one on the north side of E. Arques Avenue west of Deguigne Drive, and one on the south side of E. Arques Avenue just east of Commercial Street.

Caltrain is a commuter heavy rail service that runs from downtown San Francisco (4th and King Streets) to downtown San Jose (Diridon Station), with a limited number of commute period trains running farther south to Gilroy. During commute periods, Caltrain offers express service ("Baby Bullet") between downtown San Jose and San Francisco, which allows the trip between San Francisco and San Jose to be made in one hour. This service stops at a limited number of stations including the Sunnyvale Station. The project site is located equidistant between the Sunnyvale Station and the Lawrence Station. The Sunnyvale Station is located near the intersection of Sunnyvale Avenue and West Evelyn Avenue and is about a 1.3-mile walking distance from the site. The Lawrence Station located near the intersection of San Zeno Way and Sonora Court and is about a 1.4-mile walking distance from the site.

Caltrain has two shuttles that serve destinations near the project site. The Lawrence Station Duane Avenue Shuttle route serves the Lawrence Caltrain station and loops up the Lawrence Expressway to Stewart Drive and E. Arques Avenue. The 999 E. Arques Avenue stop is the closest shuttle stop to the project site on the Lawrence Station Duane Avenue Shuttle route. The project includes provisions for a new on-site shuttle stop that may be used by this route. The second shuttle route is the Mountain View Duane Avenue Shuttle route, which serves the Mountain View Caltrain station, plus points along N. Wolfe Road, Stewart Drive, and E. Arques Avenue.

There are no Caltrain shuttles that serve the site and the Sunnyvale Caltrain station. Commuters can use VTA Route 32 and 26 or Route 304 to travel between the site and the Sunnyvale Caltrain station.

The *Caltrain Modernization Program* will electrify the Caltrain system and, in turn, improve the performance, operating efficiency, capacity, safety, and reliability of Caltrain's rail service. Electrification will help meet increasing ridership and is scheduled to be complete by 2019.

Altamont Commuter Express (ACE) is a commuter heavy rail service that runs from Stockton to downtown San Jose (Diridon Station) via Livermore and Fremont and provides an alternative to driving over the Sunol Grade (I-680). ACE has a stop located at the Great America rail station in the City of Santa Clara. Service on ACE is only offered during commute periods, with three trains inbound to San Jose during the AM peak period and three trains outbound to Stockton during the PM peak period. ACE also provides shuttles which connect to ACE stations. The 822 Ace Gray Line Shuttle has a stop on N. Wolfe Road, across the street from the project site, and a stop on the north side of E. Arques Avenue, just west of Deguigne Drive.

Figure 2 shows the existing transit services near the project site, which are described in more detail below and summarized in **Table 1.** Included in the table are the origin and destination, the operating hours, the headways, and the average peak load factor for each bus route and rail line. The average peak load factor is a measure of resource utilization. It compares the average peak number of passengers aboard at any time during the peak period to the supply of seats on each bus. For all-day service, the average peak load factor for the entire day for those bus stops that serve the project site is reported.

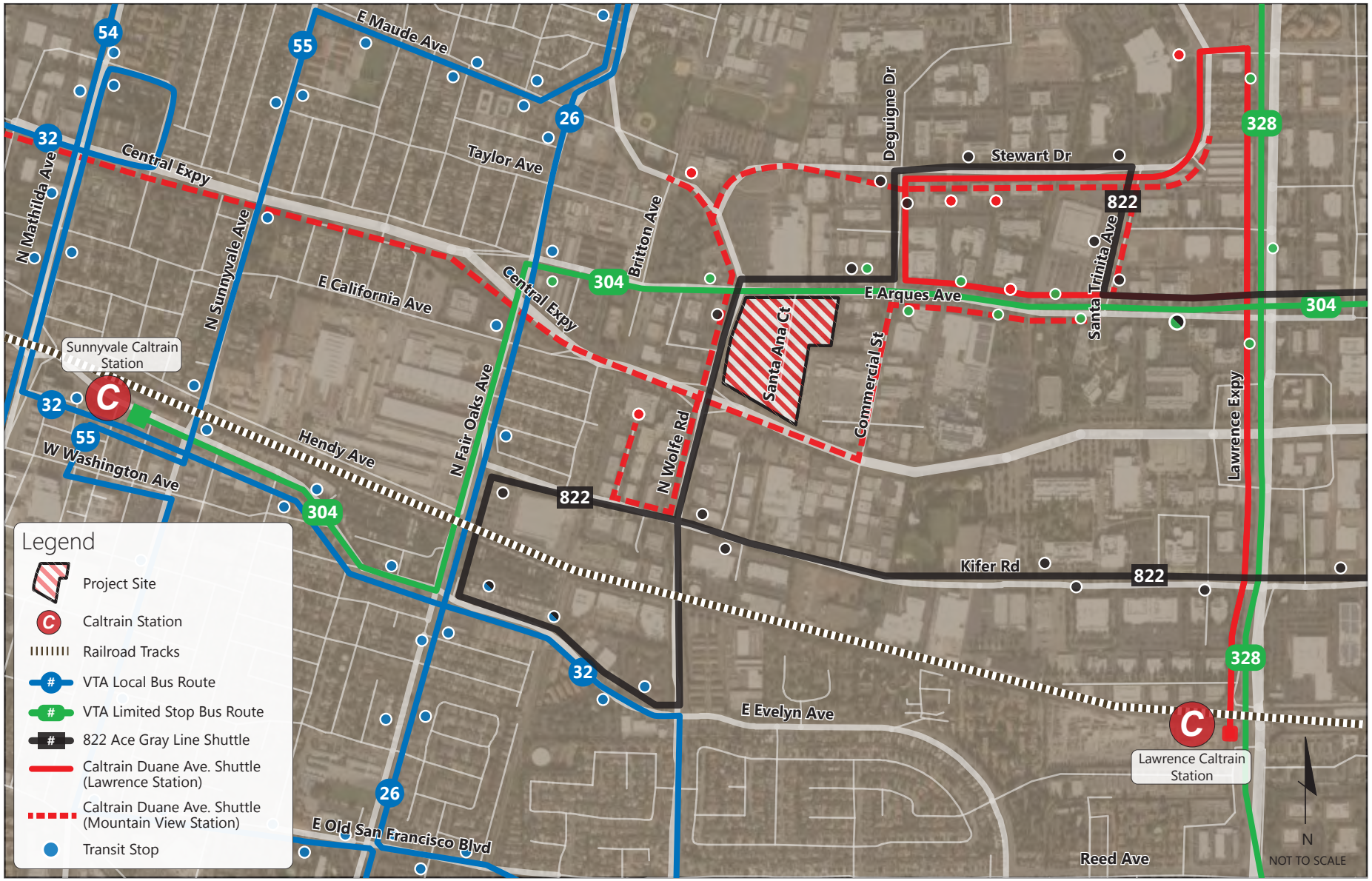

Figure 2.

Existing Transit Routes and Facilities

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TABLE 1: EXISTING TRANSIT SERVICE SUMMARY

Route	From	To	Weekdays			Saturdays	
			Average Peak Load Factor[1]	Operating Hours	Peak Headway[2] (minutes)	Operating Hours	Headway[2] (minutes)
Bus Service (VTA)							
26	Eastridge Transit Center	Lockheed Transit Center	0.27	5:23 a – 11:49 p	30	6:28 a – 10:53 p	30
32	San Antonio Shopping Center	Santa Clara Transit Center	N/A	6:00 a – 8:00 p	30	9:00 a – 5:47 p	60
55	De Anza College	Great America	0.16	5:37 a – 11:08 p	15	7:53 a – 9:05 p	30 - 60
304	South San Jose	Sunnyvale Transit Center	N/A	5:56 a – 8:42 a 3:34 p – 6:56 p	4 NB Runs – AM 4 SB Runs – PM	No Service	
328	Almaden Expwy and Camden	Lockheed Transit Center	0.09	6:00 a – 7:02 a 5:06 p – 6:09 p	1 NB Run – AM 1 SB Run – PM	No Service	
Commuter Rail Service							
Caltrain	San Francisco	San Jose – Diridon	N/A	4:30 a – 1:30 a	35 (local) / 30 (express)	7:00 a – 1:30 a	60
Shuttle Service							
Duane Avenue Shuttle	Mountain View Caltrain Station	Duane Area Office Buildings	N/A	7:50 a – 10:06 a 4:27 p – 7:05 p	3 Runs – AM 4 Runs – PM	No Service	
Duane Avenue Shuttle	Lawrence Caltrain Station	Duane Area Office Buildings	N/A	7:15 a – 8:42 a 3:13 p – 5:54 p	2 Runs – AM 3 Runs - PM	No Service	
ACE 822	Great America Station	South Sunnyvale	N/A	6:16 a – 9:52 a 3:13 p – 6:39 p	4 SB Runs – AM 4 NB Runs - PM	No Service	

Notes:
1. Average peak load factor is the ratio of the average peak number of on-board passengers aboard during the peak period to supply of seats.
2. Headways are defined as the time interval between two transit vehicles traveling in the same direction over the same route.
AM = morning commuter period
PM = evening commute period
Source: VTA, August 2011, Caltrain February 2013

VTA LOCAL BUS ROUTES

Bus Route 26 operates between the Eastridge Mall and Lockheed Martin/Moffett Park transit centers. Route 26 follows major arterials and travels through Sunnyvale, Cupertino, San Jose, and Campbell including N. Wolfe Road near the site. The closest Route 26 stop is located at E. Arques Avenue/N. Fair Oaks Avenue, approximately 1/3 mile west of the project site. Other bus stops for Route 26 in the project vicinity are located at Bryan Avenue/N. Fair Oaks Avenue, Kifer Road/N. Fair Oaks Avenue, E. California Avenue/N. Fair Oaks Avenue, Maude Avenue/N. Fair Oaks Avenue.

Bus Route 55 operates on De Anza Boulevard and Sunnyvale-Saratoga Road between De Anza College and Great America. This route provides direct access to the Sunnyvale Caltrain station. With a short transfer along VTA Light Rail at Great America, the route provides access to the Altamont Commuter Express (ACE) train service, as well as Amtrak Capitol Corridor service. The closest Route 55 stop is located at Maude Avenue/N. Fair Oaks Avenue, approximately half of a mile northwest of the project site.

VTA EXPRESS AND LIMITED STOP BUS ROUTES

Bus Route 304 is a limited stop bus route that runs from South San Jose to the Sunnyvale Transit Center via E. Arques Avenue. Route 304 has four northbound runs during the AM peak period and four southbound runs during the PM peak period on weekdays. Route 304 makes several stops along E. Arques Avenue including bus stops at E. Arques Avenue/Lawrence Expressway, E. Arques Avenue/Santa Trinita Avenue, E. Arques Avenue/Commercial Street, and E. Arques Avenue/N. Wolfe Road.

Bus Route 328 is a limited stop bus route that operates on Lawrence Expressway near the project site; it connects south San Jose (near Almaden Expressway) to the Lockheed Martin Transit Center. One Route 328 run occurs during each weekday peak period (northbound in the morning, southbound in the afternoon). The closest stop is located at E. Arques Avenue/Lawrence Expressway, along the eastern border of the project site. Route 328 bus stops are also located at Duane Avenue/Lawrence Expressway and Kifer Road/Lawrence Expressway.

VTA COMMUNITY BUS ROUTES

Bus Route 32 is a community bus route which runs from the San Antonio Shopping Center to the Santa Clara Transit Center. The closest Route 32 bus stop is located at N. Wolfe Road/Evelyn Avenue, approximately half of a mile south of the project site.

CALTRAIN SHUTTLE BUS ROUTES

Caltrain Duane Avenue Shuttle is a shuttle service that takes passengers between Mountain View and Lawrence Caltrain Stations and the Duane Avenue area office buildings during commute hours. There are two Duane Avenue shuttle routes: one serves the Mountain View Caltrain Station and the second serves the Lawrence Caltrain Station. The Lawrence Caltrain Station route has two runs in the morning commute hours and three runs in the evening. The Mountain View Station route has three runs in the morning commute hours and four runs in the evening commute hours.

Shuttle route information is summarized below:

- The most recent shuttle planning has been conducted in response to calls for projects and the availability of shuttle funding.
- VTA is the principal entity managing allocation and distribution of shuttle funding.
- Historically, employers and/or cities provided 25% of BART/Caltrain shuttle costs; however employer funding can reach as high as 90%.

ACE SHUTTLE BUS ROUTES

ACE 822 Gray Line South Sunnyvale Shuttle is a shuttle service provided by ACE which connects the ACE Great America Station to South Sunnyvale. The route has four southbound runs during the AM peak period and four northbound runs during the PM peak period. Route 822 makes several stops along E. Arques Avenue, along the northern border of the project area including at E. Arques Avenue/Lawrence Expressway, E. Arques Avenue/Commercial Street, and E. Arques Avenue/N. Wolfe Road.

PEDESTRIAN FACILITIES

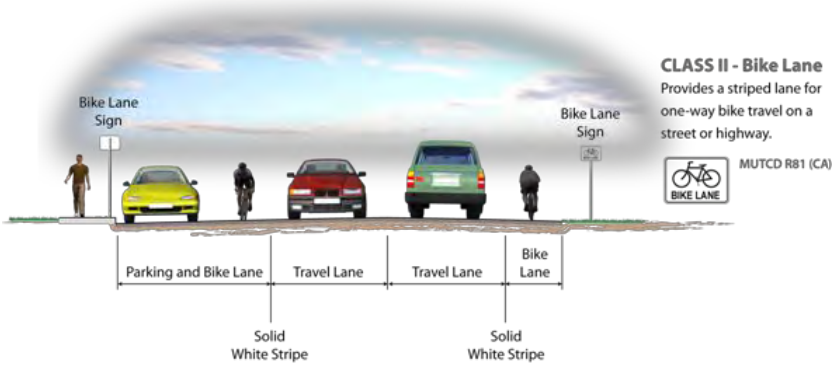
Pedestrian facilities consist of sidewalks, crosswalks, and pedestrian signals. Adjacent to and within the project site, sidewalks are provided on both sides of N. Wolfe Road, along the northern side of E. Arques Avenue, along portions of the western side of Commercial Street, and along portions of the northern side of E. California Avenue. No sidewalks are provided along Santa Ana Court or on Central Expressway. Crosswalks and pedestrian signals are provided at all signalized intersections within the project area.

BICYCLE FACILITIES

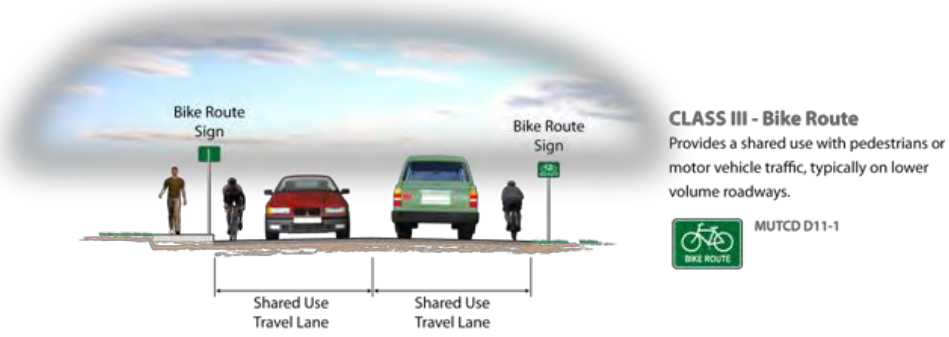
Bikeway planning and design in California typically relies on guidelines and design standards established by the California Department of Transportation (Caltrans) in the *Highway Design Manual* (Chapter 1000: Bikeway Planning and Design). There are three types of bikeway facilities, as described below and shown on the accompanying figures.

- *Class I Bikeway (Bike Path)* provides a completely separate right-of-way and is designated for the exclusive use of bicycles and pedestrians with vehicle and pedestrian cross-flow minimized. In general, bike paths serve corridors not served by streets and highways or where sufficient right-of-way exists to allow such facilities to be constructed away from the influence of parallel streets and numerous vehicle conflicts.

- *Class II Bikeways (Bike Lanes)* are lanes for bicyclists generally adjacent to the outer vehicle travel lanes. These lanes have special lane markings, pavement legends, and signage. Bicycle lanes are generally five (5) feet wide. Adjacent vehicle parking and vehicle/pedestrian cross-flow are permitted.



- *Class III Bikeway (Bike Route)* are designated by signs or pavement markings for shared use with pedestrians or motor vehicles, but have no separated bike right-of-way or lane striping. Bike routes serve either to: a) provide continuity to other bicycle facilities, or b) designate preferred routes through high demand corridors.



The *VTA Bicycle Technical Guidelines* (December 2007) recommends that Caltrans standards regarding bicycle facility dimensions be used as a minimum and provides supplemental information and guidance on when and how to better accommodate the many types of bicyclists.

VTA adopted the *Santa Clara Countywide Bicycle Plan* (CBP). The CBP guides the development of major bicycle facilities in the county by identifying Cross County Bicycle Corridors and other bicycle projects of countywide or intercity significance. Two of the Cross County Bicycle Corridors travel through the study area, along N. Wolfe Road and E. Arques Avenue.

The City of Sunnyvale adopted the *City of Sunnyvale 2006 Bicycle Plan*, which updates the goals, policies, and action statements that guide bicycling improvements throughout the City. The 2006 Bicycle Plan map identifies existing and future planned bicycle facilities throughout the City. The *2006 Bicycle Plan* included a planned bike lane for Evelyn Avenue, which has since been installed. No other facilities are planned near the site.

Figure 3 shows the location of the existing bicycle facilities within the project study area. Near the project site, bicycle lanes (Class II) are provided on E. Arques Avenue, N. Wolfe Road, Commercial Street, and Kifer Road. West of the project site, a Class II bike lane is provided along N. Fair Oaks Avenue from Kifer Road to E. Evelyn Avenue. North of the project site, a Class II bike lane is provided on Stewart Drive. East of the project site, a Class II bike lane is provided on Santa Trinita Avenue and on Oakmead Parkway between Lawrence Expressway and Central Expressway.

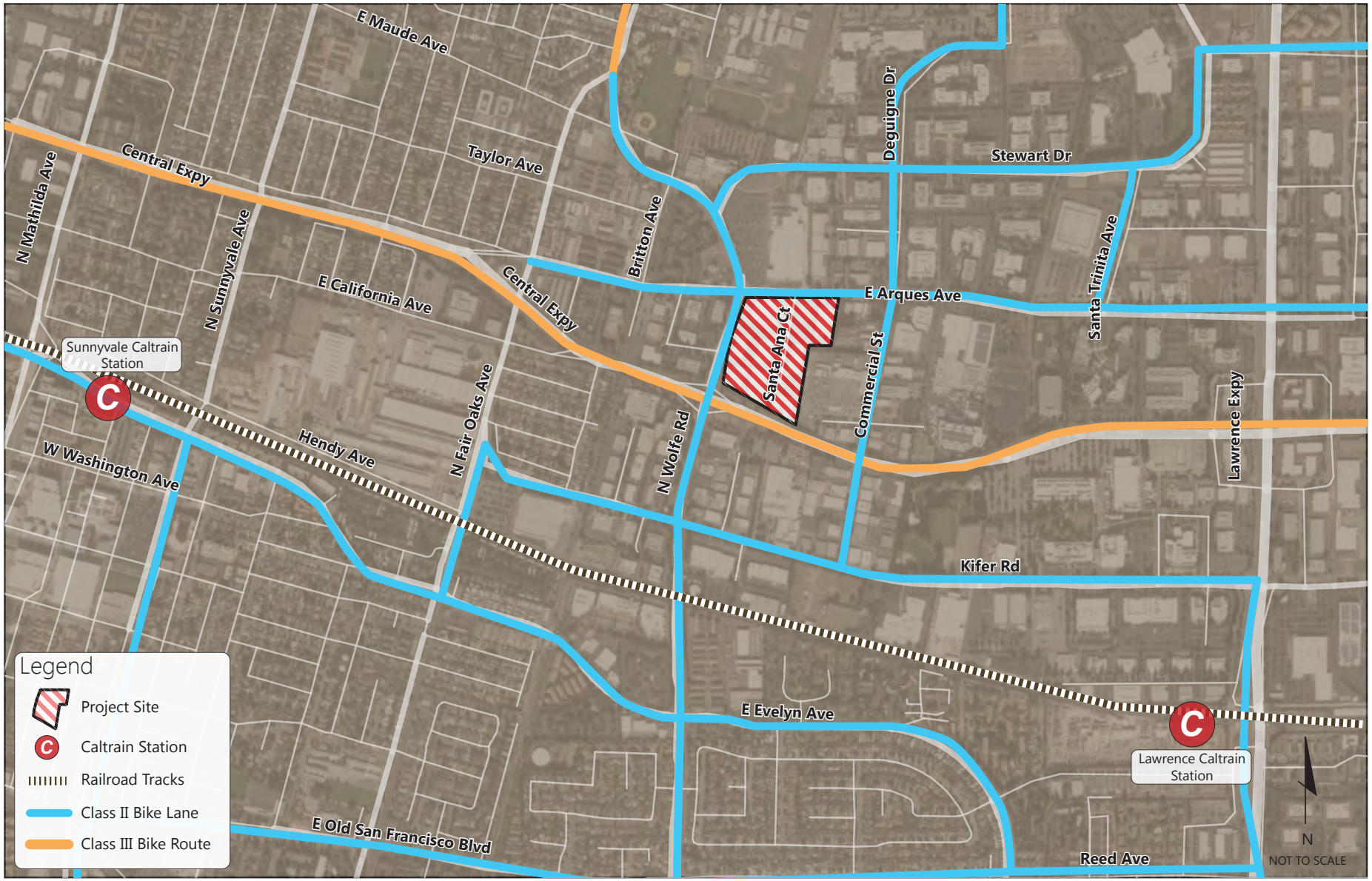


Figure 3.

Existing Bicycle Facilities

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3. TDM MEASURES AND STRATEGIES

The City of Sunnyvale has a long list of TDM measures and strategies that are described in *Transportation Demand Management (TDM) Tool Kit*, prepared by The Hoyt Company in December 1999. Since that time new measures and strategies have been developed due to the emergence of web-based tools. The list of measures from the toolkit is summarized in Tables 2 and 3. Measures from this list plus more recent measures that are included in the TDM program for the Central & Wolfe Campus development are described in the next chapter.

SUNNYVALE TDM TOOLKIT

The Sunnyvale TDM Tool Kit Measures can be divided into two sets of strategies: Planning and Design, and Programs and Services. The Planning and Design strategies, presented in **Table 2**, are part of the initial planning of the development to ensure that multiple modes of travel will be supported by a project's design, including sidewalks, bicycle parking, and urban design features. Further, these provisions help connect the project to its surrounding environment and transportation networks.

TABLE 2:
SUNNYVALE TDM TOOL KIT MEASURES: PLANNING AND DESIGN

TDM Measure	Description
Building Design & Layout	
Building entries	Building entries located towards pedestrian–oriented activities and transit stops
Building setbacks	Reduced setbacks provide closer access to sidewalks and transit stops
Passenger loading zones	Passenger loading zones near building entrances provide accessible locations for drop-off and pick-up of carpool, vanpool, and transit/shuttle passengers
Building wiring	Wiring with fiber optics facilitates teleworking
Transit Design Elements	
Intersection geometrics	Streets and intersections designed to accommodate transit vehicle turning radii
Street design	Streets designed to structurally support the weight of transit vehicles
Land dedication for transit facilities	Land dedicated for construction of a future rail station or bus stop

TABLE 2:
SUNNYVALE TDM TOOL KIT MEASURES: PLANNING AND DESIGN

TDM Measure	Description
Transit passenger shelter/bus stop	Transit passenger amenities provided for on-site
Bus/rail station subsidy	Payment for the cost of constructing a bus stop or rail station
Parking Design Measures	
Off-street parking	Parking located on the side or rear of the building; not between building entrance and transit service
Parking configuration	Parking lot layout conducive to pedestrian access and circulation
Preferential parking	Designated parking spaces for carpools and vanpools near building entrances
Reduced parking	Reducing the number of parking spaces (with a strong TDM program) to shift people to alternative modes of transportation
Reduced parking fees	Free parking or reduced fees for preferential spaces (for sites that have paid parking)
Pedestrian Design Measures	
Pedestrian connections	Safe, convenient pedestrian connections between buildings and surrounding streets
Internal pedestrian access	Safe, convenient pedestrian connections between buildings on the site
Bicycle Design Measures	
Showers/clothes lockers	Shower facilities and clothes lockers for those who walk and bike to work
Bicycle parking (short + long term)	Secure bicycle parking including racks, lockers, and enclosed locked limited access areas
On-Site Amenities	
Cafeteria with hot food service, ATM, exercise facilities, convenience retail, childcare, valet service, post office/stamps, onsite transit pass sales, etc.	On-site amenities provide services that would otherwise require a separate trip before, during, or after work hours

Source: *Transportation Demand Management (TDM) Tool Kit*, prepared for the City of Sunnyvale by The Hoyt Company, December 1999.

Fehr & Peers, 2013.

The Programs and Services TDM measures are typically property management and employer-implemented strategies that support employee specific commuting options. These programmatic measures are often dependent on the design measures. For example, bicycle parking at the project site will be necessary for an effective employee bicycle program. The program and service measures are listed and described in **Table 3**.

TABLE 3:
SUNNYVALE TDM TOOL KIT MEASURES: PROGRAMS AND SERVICES

TDM Measure	Description
Information Board	
Information board	Permanent locations for updated TDM information
Transportation Coordinator	
Transportation coordinator	Transportation coordinators are responsible for developing, marketing, implementing, and evaluating TDM programs
Carpool Programs	
Carpool programs	Carpool programs help carpools to form by matching drivers and passengers
Vanpool Programs	
Vanpool programs	Vanpool programs help vanpools to form by matching drivers and passengers and by providing or subsidizing vans
Transit Programs	
Transit subsidies	Employers subsidize transit passes through programs such as Commuter Check or by purchasing passes
Onsite pass outlet	Providing transit passes for sale onsite as a convenience for employees
Shuttle programs	Operation of a shuttle service to nearby rail and transit stations and possibly to midday destinations
Parking Programs	
Preferential parking	Designated parking spaces for carpools and vanpools near building entrances
Paid parking	Free parking or reduced fees for preferential spaces (for sites that have paid parking)
Parking cashout	Employees receive the cash equivalent of employer-provided parking if they elect to forgo parking

TABLE 3:
SUNNYVALE TDM TOOL KIT MEASURES: PROGRAMS AND SERVICES

TDM Measure	Description
Pedestrian Programs	
Pedestrian programs	Walking programs encourage employees to walk to work and may include mapping walking routes, creating walking groups or buddies, and providing incentives
Bicycle Programs	
Bicycle programs	Bicycle programs encourage employees to bike to work and may include mapping routes, creating biking groups or buddies, and providing incentives
Promotional Programs	
New employee orientation	Introduces new employees to the TDM program
Flyers, posters, emails	Ways to keep the TDM message in front of employees on a regular basis
Transportation fairs	Transportation fairs provide alternative mode information in a fun event
Newsletter articles	Articles about TDM in company newsletters
Commuter information center	An on-site, one-stop shop for transit and commute alternatives information
Transit field trips	Orient new transit riders by showing them the local routes, fare collection method, transfer points, and other operational features
Free trial rides	Free transit tickets for employees interested in using transit
Transit riders guide	A guide with transit routes and schedules to the site
Bike-to-work day	A regional event to introduce bicycle commuting
Bicycle riders guide	A guide with bicycle routes, lanes, and paths to the site and bicycle parking facilities on the site
Guaranteed Ride Home Program	Employees who use transit, carpools, or vanpools are guaranteed a ride home in case of emergency or if they need to work late
Car share	Employees who bike or walk or use transit, carpools, or vanpools can utilize a car share vehicle located on site for errands or meetings

TABLE 3:
SUNNYVALE TDM TOOL KIT MEASURES: PROGRAMS AND SERVICES

TDM Measure	Description
Telecommuting	
Telecommuting	Telecommuting allows employees to work from home or from neighborhood telecenters via telecommunications
Alternative work schedule	
Flextime	Employees set or modify their arrival and departure times
Staggered Work Hours	Work units or groups select or are assigned different starting and ending times for their work day
Compressed Work Week	Employees work more hours in a single day, but fewer days of the week

Source: *Transportation Demand Management (TDM) Tool Kit*, prepared for the City of Sunnyvale by The Hoyt Company, December 1999.
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OTHER TDM MEASURES

Other measures that may be included but that are not on the toolkit list are presented in **Table 4**.

TABLE 4:
OTHER TDM MEASURES

Measure	Description
On-Site Shuttle Stop	Shuttle stops on site making shuttle use convenient.
Private Long Distance Buses	Private buses equipped with wifi are an employee benefit and are a popular means of transportation. Wifi on the bus allows employees to be productive during their commute which can make it more attractive than driving.
Bicycle Infrastructure Improvements	Improve bicycle infrastructure near the site by filling in gaps in the network, upgrading existing facilities to Class I or II, installing wayfinding signage, etc.
Internal Bike Share Program	A bike share program provides employees with campus bicycles and free bicycle helmets and can help eliminate trips made by car during the day.
Regional Bike Share Pods	Providing a bike share pod that is part of a larger bike share system provides employees with the option to bike to or from other locations within the City or region.

Electric Bicycle Charging Stations	Charging stations for electric bicycle could be located throughout the site which can be used for longer trips than standard bicycles.
Bicycle Repair Stands	Bicycle repair stands offer an air pump and basic tools to keep personal bikes in great shape, including Phillips/Flat-Head Screwdrivers, 15/32mm Combination Wrench, 8/9/10/11mm Combination Wrenches, Tire Levers, Torx Wrench and Allen Wrenches.
Sidewalk Improvements	Improving sidewalk connectivity and access to a site makes it possible for people to access nearby transit and adjacent land uses without a car.
Tax Incentives	Passing employer tax benefits to employees who use non drive alone modes
Financial Incentives	Employees who use alternative modes are provided financial incentives to encourage continued use of that mode.
Subsidized Bicycle Expenses	Employers can reimburse employees up to $20 per month for qualified bicycle commuting expenses as a pre-tax payroll deduction.
All-Inclusive Mobility App	An app that includes access to TDM information for all modal elements and services (esp. transit and ridesharing), including dynamic or on-demand services, improves access to alternative modes of transportation.
Real-Time Transit Information	511, NextBus, Twitter, etc. are all existing real-time platforms that many commuters are unaware of. Dedicated marketing to increase awareness of these platforms can make it much easier for people to use transit.
Transit Frequency Improvements	Work with the transit agencies to increase bus frequencies on existing routes to make transit a more attractive option.
Traffic Calming	Use traffic calming on site and around the site to create a more pedestrian and bicycle friendly environment.

4. SELECTED TDM MEASURES AND STRATEGIES

The TDM measures and strategies for Central & Wolfe Campus are divided into three general categories: (1) developer provided, including site planning and design measures based on the physical attributes of the site and the proposed buildings, plus improvements to the transportation facilities and services near the site, (2) those provided by the property manager and that could be used by multiple tenants, and (3) measures provided by the tenants. The last category of measures may need to be included in lease agreements or some other instrument to ensure their implementation if it is determined that they are mandatory. If there is a single tenant, they would be responsible for measures in both category 2 and 3.

DEVELOPER-PROVIDED – PLANNING AND DESIGN MEASURES

BUILDING DESIGN & LAYOUT

Building Setbacks

The buildings are located close to both N. Wolfe Road and E. Arques Avenue. Only Building 2 is slightly separated from the adjacent roadway by an internal circulation roadway. Locating the buildings near pedestrian and transit facilities encourages walking and transit use. Alternatively, having seas of parking between a roadway and a building would encourage driving.

Passenger Loading Zones

Passenger loading zones are located in the auto courts near the main entries to each building. They are convenient for carpools and vanpools dropping off passengers.

Building Wiring

The building will be wired with fiber optics for fast internet access which will facilitate telecommuting (employees working at home or other off-site location).

TRANSIT DESIGN ELEMENTS

Bus Stop Improvements

New bus pads will be constructed for the bus stop on the east side of N. Wolfe Road, south of E. Arques Avenue and on the south side of E. Arques Avenue just west of the easternmost driveway as part of the site frontage improvements. The new bus pads will accommodate transit buses stopping near the site facilitating transit as an access mode.

On-Site Shuttle Stop

An added site design measure that is not included in the Sunnyvale list is an on-site shuttle stop – or shuttle passenger loading and unloading zone - located near Building 3. The stop would be used by the new shuttle service to be provided (described in more detail in a subsequent section) and could also be used as a new stop on the ACE 822 Gray Line South Sunnyvale Shuttle route and the Caltrain Duane Avenue Shuttle route, which serves the Mountain View and Lawrence Caltrain Stations. The shuttle stop provides a dedicated on-site area for shuttle riders thus supporting shuttle use.

PARKING DESIGN MEASURES

Off-Street Parking

Parking is located beneath the office space and in a standalone garage located behind the buildings. Therefore it is not located between the building entrances and transit service, which would increase the distance transit riders and pedestrian would need to walk. The short walking distances make the site more appealing for transit and pedestrian access.

Parking Configuration

The parking location supports pedestrian access and circulation. The building entrances are a short distance from the street sidewalks with clearly defined pedestrian walkways and crossings. Replacing surface parking with safe, secure, and covered podium and structured parking garages creates convenient walking distances for employees and visitors.

Preferential Parking

Parking spaces in the parking podiums near the building entrances would be designated as carpool and vanpool spaces. These spaces would be located in premium and convenient locations to incentivize carpooling. These spaces could be made available for other vehicles after 10:00 am.

PEDESTRIAN DESIGN MEASURES

Sidewalk Improvements

Improving sidewalk connectivity and access to a site makes it possible for people to access nearby transit stops, adjacent land uses, and nearby employee residences without a car. Sidewalk improvements being constructed as part of the project include a pedestrian-safe sidewalk along N. Wolfe Road setback from the street edge by a planted median to preserve mature heritage trees. In addition, a new sidewalk, also setback from the street edge, will be added on the south side of E. Arques Avenue from the intersection of N. Wolfe Road to the eastern edge of the project site. A new sidewalk will be added to provide connectivity off-site, closing the remaining gap between the eastern edge of the project site and the E. Arques Avenue/Commercial Street Intersection. The resulting continuous sidewalk network is expected to increase transit use to the project site, as well as enhance pedestrian access.

Pedestrian Connections and Internal Pedestrian Access

The site is designed with numerous pedestrian walkways and connections. Sidewalks are located around the perimeter of the site with connections to the internal pedestrian circulation system and to the central landscape quad. These walkways create a pedestrian-friendly environment on the site and provide safe and convenient connections between the buildings and to the surrounding streets. One hundred percent of employees are within a 2.5-minute walk (or less) from the center of the campus quad.

BICYCLE DESIGN MEASURES

Bicycle Infrastructure Improvements

Improving bicycle infrastructure near the site by filling in gaps in the network or upgrading existing facilities makes it viable for employees to bike to work. This project will add a Class II bicycle lane on the south side of E. Arques Avenue to eliminate the eastbound gap in the Cross County Bicycle Corridor between N. Wolfe Road and the eastern property boundary. This improvement will enhance existing project bicycle access, as well as the regional Cross County Bicycle Corridor.

Showers and Lockers

The buildings will have shower facilities and lockers and/or changing rooms. Shower and changing rooms will help promote bicycling (and walking) as an alternative commute option for interested employees.

Bicycle Parking

The site will contain bicycle lockers for long term secure bicycle storage and bike racks for short-term bicycle parking. The number and placement of bicycle facilities will meet the City of Sunnyvale municipal code. The City follows the VTA Bicycle Technical Guidelines when determining the required amount of Class I and Class II bicycle parking.

Electric Bicycle Charging Stations

Electric bicycle charging stations would be added to support the use of electric bicycles. Electric bicycles can be used by employees for whom a standard bicycle is not practical due to the length of their commute or other physical/health limitations.

POTENTIAL ON-SITE AMENITIES

Amenities will be provided on-site as a convenience for all employees, especially those who to travel to the site by walking, bicycling, carpooling/vanpooling, or riding transit. The amenities on the Central & Wolfe Campus may include a cafeteria, a fitness facility, coffee bar, grab-and-go meals, general store, an ATM, a barbershop, sport courts, banking, dry cleaning pick-up, health and wellness, and a bicycle repair shop. Food truck access may also be provided in and around the central quad. Amenities will encourage employees to remain on-campus, resulting in a lower number of trips to and from the site.

PROPERTY MANAGEMENT-PROVIDED MEASURES

In addition to the Planning and Design attributes that contribute to alternative mode use, the property manager of the building can provide additional measures to meet the TDM goal. (Some of these measures can be provided by the property manager and/or by individual tenants.) These measures include a Transportation Coordinator and various components that together create a comprehensive Commute Trip Reduction Program. New dedicated shuttle service to Caltrain and downtown Sunnyvale will be a key component of the trip reduction program.

Commuter Information Center/Information Board

Information kiosks/boards can be located in the building lobbies. The kiosks contain information on shuttles, Caltrain, ACE, VTA bus and LRT service, carpool and vanpool organizations, bicycle routes, and other transportation options information. Alternatively, this information could be provided on a website.

The Transportation Coordinator would be in charge of updating information. (Individual tenants may also post commuter information in their employee break rooms or other common gathering areas.)

Transportation Coordinator

A Transportation Coordinator will be hired by the property manager to promote the TDM Program, activities, and features to employees of all or some of the tenants. (Larger tenants may elect to have their own Transportation Coordinator.) The Transportation Coordinator would develop an on-site transportation information center or website as discussed above. The Transportation Coordinator may provide information via new employee orientation packets, flyers, posters, email, and/or educational programs. The Transportation Coordinator's role also includes actively marketing alternative mode use, administering a carpool and vanpool matching program, developing pedestrian and bicycle programs, and promoting special programs such as Bike-to-Work Day or Carpool Week. The Transportation Coordinator can notify employees of Spare the Air days (as declared for the Bay Area region) and associated transit promotions. Prizes may be offered for non-SOV travel on these days to encourage participation. The Transportation Coordinator may offer prizes as incentives for ridesharing, using transit, bicycling, and walking.

Carpool/Vanpool Programs

Carpools in the Bay Area consist of two or more people riding in one vehicle for commute purposes. Vanpools provide similar commuting benefits as carpools, though a vanpool consists of seven to 15 passengers, including the driver, and the vehicle is either owned by one of the vanpoolers or leased from a vanpool rental company. The Transportation Coordinator can provide an Internet link to the 511.org Rideshare website to access ride matching services. The Transportation Coordinator can also administer an on-site carpool and vanpool matching service for employees or via peer-to-peer matching programs such as ZimRide and RideSpring. A list of available vanpools that provide service between the project site and various points in the Bay Area can also be provided.

New Shuttle Service

New dedicated shuttle service will be provided between the site, Caltrain, and downtown Sunnyvale. This service will be provided either by the property owner or through a Transportation Management Association (TMA), if one is formed in the area.

Enhanced Existing Shuttle Service

Two Caltrain Duane Avenue shuttle routes are located near or adjacent to the project site, however, neither of them have a stop near the project site. The property manager can consider requesting additional stops on the routes, which originate from the Mountain View and Lawrence Caltrain Stations. Caltrain will consider adding shuttle stops to an existing route after determining the impact on the existing route's schedule, capacity, and funding. The VTA is the principal entity managing the allocation and distribution of shuttle funding; however, most shuttles receive between 25-90% of their funding from employers. The property manager/lead employer/owner may be responsible for all additional service costs beyond those budgeted.

Pedestrian and Walking Group Programs

The purpose of pedestrian programs is to encourage employees to walk to work. They include maps showing the most pedestrian-friendly routes in the area, programs that describes the health benefits of walking, and creating walking buddies – or walking groups- for people who choose to walk together to and from work. Another way to encourage walking is to have periodic pedometer challenges with prizes for the most steps in a selected time period. Pedestrian programs would be administered by the Transportation Coordinator.

Bicycle and Biking Group Programs

Similar to pedestrian programs, the purpose of bicycle programs is to encourage employees to cycle to work. Bicycle programs include maps of bicycle facilities in the area, which can be annotated to describe the cycling conditions, bicycling buddies/groups (bike commuters with common bike routes), and bicycle support items such as water bottles and tire patch kits. Bicycle programs would be administered by the Transportation Coordinator.

Promotional Programs

There are many items that can be categorized as general promotional programs that are used to provide information regarding non-solo driving modes and to create excitement around using alternative modes. These programs would be administered by the Transportation Coordinator.

> *Transportation Fairs* – Usually include booths/tables sponsored by transit agencies and bicycle advocacy groups with information on commute options, and can include demonstrations on bicycle riding tips and bicycle repairs, and raffles for bus tickets, transit passes, water bottles, bike helmets, etc.

Flyers and Posters – That advertise commute options and special activities such as Bike-to-Work Day.

Free Trial Rides – Free bus or train passes provided to employees so that they can try riding transit.

Transit Riders Guide – An informational guide on how transit pay systems work, bus routes and stop locations, etc. to make riding transit more familiar.

Bicycle Riders Guide – An informational guide with bicycle safety and riding tips to encourage bicycle riding.

Bike-to-Work Day - A regional event to introduce bicycle commuting can get people to start bicycling more frequently.

Car Share

Car sharing provides an on-demand access to shared vehicles on-site on an as-needed basis, providing alternative mode commuters a means for day trips. A car share program can be created through a local partnership or an existing car share company.

Internal Bike Share

Bicycles and bike helmets can be provided on-site for use by tenants during the day. This allows employees who use transit or walk to work with a way to run errands during the day.

Regional Bike Share Pods

Providing a bike share pod that is part of a larger bike share system provides employees with the option to bike to or from other locations within the City or region. VTA's Bay Area Bike Share program has been deployed throughout various cities in the Bay Area. While there are currently no stations in Sunnyvale, the City of Sunnyvale's Bicycle and Pedestrian Advisory Commission has been considering implementation of a bike sharing system. Participation in either VTA's program or another bike share option could expand the range of alternatives that employees have to access the Central & Wolfe campus.

Bicycle Repair Stands

For those employees that already bike to work bicycle repair stands offer an air pump and basic tools to keep their bikes in great shape, including Phillips/Flat-Head Screwdrivers, 15/32mm Combination Wrench, 8/9/10/11mm Combination Wrenches, Tire Levers, Torx Wrench and Allen Wrenches. These stands are

easy and inexpensive to install and provide an added convenience for employees that choose to bike to work.

Real Time Transit Information

511, NextBus and Twitter are all existing real-time platforms that many commuters are unaware of. These types of information services can reduce time wasted gathering information from more traditional means by providing quick accessibility to up-to-date information. Dedicated marketing to increase awareness of these platforms can make it much easier for people to use transit.

All-Inclusive Mobility App

An app that includes access to TDM information for all modal elements and services, particularly transit and ridesharing, including dynamic or on-demand services, improves access to alternative modes of transportation. An app is a common means of distributing information and gives people the sense that the services they are using are made to fit their mobile lifestyle.

Transit Frequency Improvements

By working with the transit agencies to increase frequencies on existing routes property management can make transit a more attractive option for employees interested in using rail or bus, but need the flexibility to arrive or depart at different times each day.

TENANT-PROVIDED MEASURES

The tenant (individual employers) can provide measures that directly affect the commute mode choices of their employees such as financial incentives, accommodating telecommuting and alternative work schedules and programs tailored to their employees' needs.

Private Long Distance Buses

Private long distance buses that transport employees from their homes to their work places and are equipped with wifi are an employee benefit and are a popular means of transportation at many companies. Wifi on the bus allows employees to be productive during their commute and features such as reclining seats and leg room add to the appeal of using this type of service and allow riders to work in comfort. Creating this type of environment on the bus can make it more attractive than driving long distances because employees feel that their time is productive.

Subsidized Transit (Caltrain and VTA) Passes

All employees who use transit can be provided with subsidized transit passes, such as VTA's Eco Pass, through the Commuter Check (http://www.commutercheck.com/) or other similar program, which provides vouchers that can be redeemed online for transit passes and tickets, vanpool fares, or park and ride lot costs at Caltrain stations. The Commuter Check credit can be provided tax-free to employees that ride transit to work in amounts up to $240 per month (amount determined by the IRS (IRS Tax Code Section 132(f) - Qualified Transportation Fringe)). Tenants may also elect to fully subsidize Commuter Checks as an employee benefit. 511.org has an outreach program to help employers get started.

On-Site Transit Pass Sales

Commuter Checks can be made available online through Commuter Check Direct, a service that will deliver the transit passes directly to the employee's home or office.

Guaranteed Ride Home Program

A common reason that employees do not use alternative modes (i.e., carpool, vanpool, or transit) is the inability to leave work unexpectedly for a family emergency or the fear of being stranded if they need to work late. One TDM element that allays these fears is a Guaranteed Ride Home program. With this program, employees can use a taxi service, rental car, or other means to get home, and the employer pays for the service. Employees who wish to use the service would contact the Transportation Coordinator or other designated person to make the travel arrangements.

Telecommuting

Allowing employees to work off-site and providing them with the necessary infrastructure, i.e., internet access and internal data access, reduces the number of vehicle trips entering and exiting the site and on the roadway system.

Alternative Work Schedules

Flextime options such as compressed workweeks and alternative work hours can allow employees to make better use of transit and/or reduce the number of days they travel to the office. As noted above, employees arriving after 10:00 am will be eligible to park in available carpool and vanpool preferential parking locations.

Driving (Parking) Cash-Out

With a driving (or parking) cash-out program, employees are offered the option of a "free" parking space if they elect to drive alone or a cash equivalent that can be used to offset the cost of commuting by an alternative mode. Typically employers offer their employees a cash payment equivalent to the cost of the parking space to the employer based on their rent payments.

Tax Incentives

Tax benefits are available for employees that opt for transit and bicycle use. Bicycle commuter subsidies are available via the Commuter Check for Bicycling Program (see http://www.commutercheck.com/mycommutercheck.aspx). As of January 1, 2009, employees who regularly use their bicycles to get to and from work are eligible for up to a $20-a-month, tax-free reimbursement from their employers for bicycle-related expenses. Employers will in turn be able to deduct the expense from federal taxes.

Financial Incentives

Tenants can consider offering employees who commute by transit, bicycling or walking financial incentives such as cash payments, gift cards, monthly raffles with prizes, etc.

Subsidized Bicycle Expenses

Employers can reimburse employees up to $20 per month for qualified bicycle commuting expenses as a pre-tax payroll deduction.

Promotional Programs

In addition to the promotional programs listed under the measures provided by Property Managers, tenants can also create promotional programs tailored to their employees. These include:

New employee orientation – New employee orientation packets outlining alternative transportation options and an orientation program, which explains the importance and benefits of

using alternative transportation modes, and incentives provided by the company, such as commuter checks, ECO Passes, etc.

Newsletter Articles – The tenant may include articles about commute options, including highlighting staff who primarily use commute options, in their internal newsletters and websites

Transit Field Trips – Employees may be offered a transit field trip as a way to become more familiar with travel on buses, Caltrain, or ACE

5. MONITORING AND PENALTIES FOR NON-COMPLIANCE

The purpose of this TDM Program is to reduce the total number of peak-hour vehicle trips associated with the Central & Wolfe campus by 35 percent. Annual monitoring will be needed to assess whether the TDM measures utilized are producing the desired effect. If trips exceed the associated trip cap, then the TDM program will be reassessed for its effectiveness and additional measures or enhanced measures will be implemented. Penalties for non-compliance will be assessed if the goal is not met.

MONITORING AND REPORTING

The tenant or property manager will develop a process of monitoring and reporting to be conducted on an annual basis for determining whether the TDM program is effective. The process will consist of a quantitative measure of whether the volumes at the site's driveways are meeting the goal as well as an assessment of employee mode split and preferences. The results will be reported to the City of Sunnyvale.

MONITORING

The Transportation Coordinator will work with an independent third party contractor to conduct vehicle counts at each of the driveways used to access the site. The counts will be collected using a mechanical counter to monitor the peak-hour volumes on a typical weekday. The individual driveways will be summed to provide the total site peak-hour volumes. The peak-hour volumes will be compared against the trip cap of **973 total peak hour trips** to determine if the 35 percent reduction in total peak-hour trips is being met.

In addition to monitoring volumes a survey will be developed and administered by the employer(s) to determine mode splits for employees accessing the workplace. Employees who do not respond to the survey will be assumed to be driving alone. The survey will also gather information on usage of individual TDM program components as well as gauge employee perception of the overall TDM program. The results will allow the building manager and employer to enhance the program and implement new TDM measures that will attract more employee participation.

REPORTING

The Transportation Coordinator will use the results of the annual survey and vehicle counts to report to the City of Sunnyvale on progress towards achieving the 35 percent peak-hour vehicle trip reduction goal.

Progress will be measured by comparing the results to previous years and the baseline. If the results show that the trip reduction goal is not being met additional TDM measures will be implemented. Those measures may be based on the toolkit described in this Program or may include new technologies and methods for trip reduction.

PENALTIES FOR NON-COMPLIANCE

The penalties for non-compliance are currently being discussed with City of Sunnyvale staff. They will be added to this report once they have been confirmed.