



August 2017



Tasman Corridor

COMPLETE STREETS STUDY

Existing Conditions Report



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I. INTRODUCTION

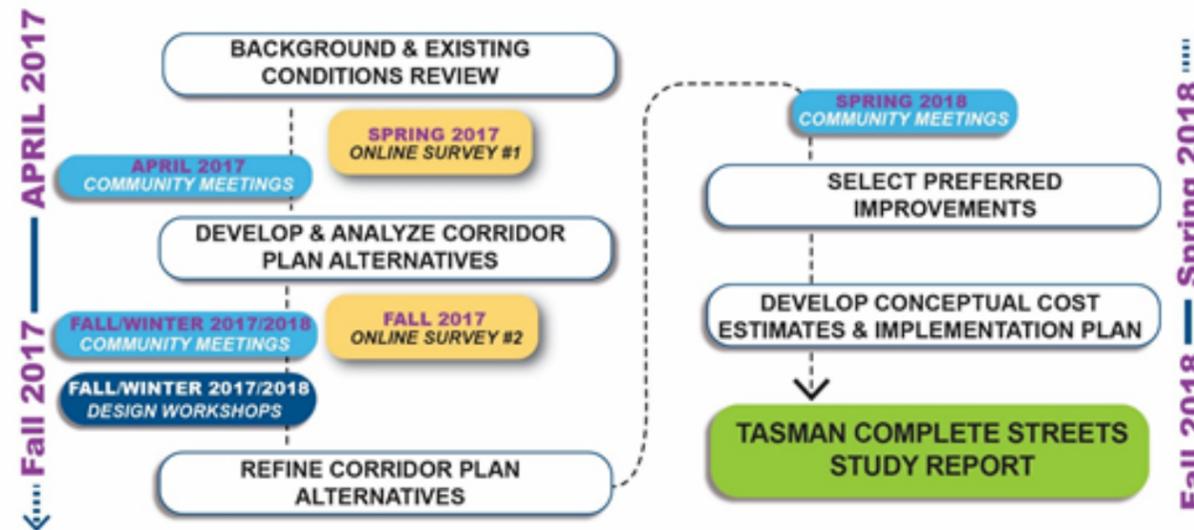
Project Description

Tasman Drive and Great Mall Parkway (the “Corridor”) serve numerous regional and local transportation needs for the workers, residents, and visitors of Silicon Valley. Local and commuter trips are generated by a multitude of low- and medium-density residential complexes, corporate headquarters and other major employment centers, and commercial centers. Regional trips are generated by major entertainment and commercial generators, including Levi’s Stadium, the Santa Clara Convention Center, Six Flags Great America theme park, and the Great Mall. The opening of the new Milpitas Bay Area Rapid Transit (BART) Station is expected to add additional transportation demands for both local and regional trips. Ongoing and planned developments in Milpitas and Santa Clara will add significant new employment, residential, and entertainment uses to the Corridor as well. Transportation modes on or crossing the Corridor include regional light rail operating within the median, several local bus and shuttle routes, commuter and regional rail services, on-street bicycle lanes, four grade-separated regional trails sidewalks, and four to six lanes of auto traffic.

To provide for the ongoing growth and transportation demands on the Corridor in a sustainable and community-supportive manner, the Tasman Corridor Complete Streets Study (“Study”) is the start of a process to enhance the safety, comfort, and reliability of the Corridor’s transit, bicycle, and pedestrian facilities while still accommodating drivers. The Santa Clara Valley Transportation Authority (VTA) is leading the project effort in close partnership with the Cities of Sunnyvale, Santa Clara, San Jose, and Milpitas (“Partner Agencies”). It is intended that the outcomes of the study will assist VTA and the Partner Agencies in implementing a cohesive set of multimodal improvements along the Corridor.

This Report details the existing conditions of the Corridor within the Study limits from Morse Avenue to Montague Expressway (where the Corridor is renamed to Great Mall Parkway, also known as the “Corridor”) as the Corridor traverses through the municipalities of Sunnyvale, Santa Clara, San Jose, and Milpitas. Adjacent properties and connecting corridors within a 100-foot buffer of the Corridor were included in this existing conditions assessment.

The Study’s objective is to identify a set of community-supported improvements to enhance safety, comfort, and reliability of all modes along the Corridor. In support of this objective, this study includes a large public outreach effort in addition to technical efforts.



The initial efforts of the Study involved gathering and analyzing data provided by local agencies or collected by the Consultant team, in addition to performing field observations of the Corridor. Current and future planned conditions along the Corridor were analyzed as part of this overall existing conditions analysis. In addition, a robust public and stakeholder outreach effort obtained input on corridor needs, areas for improvement opportunities, and corridor priorities. Outreach efforts completed during the initial project phase included three community meetings held at different locations along the Corridor, four walking audits that collectively extended the entire length of the corridor, and an online map-based survey. **The Summary of Corridor Needs** toward the end of this Report summarizes input received from the first round of public meetings.

The next effort of the Study will use the existing conditions and first round of public input to identify potential multimodal corridor improvements. These improvements are anticipated to include enhancements to address spot deficiencies as well as treatments that could be applied to stretches of the Corridor across jurisdictional boundaries to help create a cohesive corridor. These improvements will be brought before the public during a second round of public outreach.

The feedback received from the second round of public meetings will be used to refine the potential improvements and identify a set of recommended improvements for the Corridor. The refined improvements will be further analyzed before being brought back to the public during a third round of public outreach.

The outcome of the Study will be a community-supported set of improvements comprising a preferred improvement alternative. This preferred alternative will be evaluated for conceptual construction cost estimates and an implementation plan will be developed.

Existing Conditions Methodology

Data for the Corridor was collected from each municipality participating in this study (the Cities of Sunnyvale, Santa Clara, San Jose, and Milpitas) as well as from VTA. For critical information where data was not readily available, field observations and supplemental data collection were performed.

The following sections of the Report provide insight into the Existing Conditions of the Corridor that are based upon the data received and input gathered during the first round of public meetings. The report includes an overview of the Study area, previous and current planning processes taking place along or adjacent to the corridor, the conditions of all modes of transportation (i.e., automobile, light rail, bus, bicycle, and pedestrian), collision history, and a summary of the information gathered from the public outreach efforts and the field observations recorded by the Project Team.

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II. STUDY AREA

Study Limits

The Study extends from Morse Avenue in Sunnyvale to Montague Expressway in Milpitas along Tasman Drive and Great Mall Parkway. A buffer of 100 feet in each direction of the roadway was included to consider corridor access and connections. The Study corridor extends 7.2 miles across four cities. *Figure 1- Tasman Corridor Complete Streets Study Area Map* on **Page II-2** represents the limits of the Study Area.

Right-of-Way Description

The area along the Corridor is largely developed, with some large areas undergoing redevelopment. This limits the potential to purchase/acquire additional right-of-way for certain improvements. Understanding the constraints placed on the corridor due to the available right-of-way is important to comprehend the challenges in updating the corridor design.

Characteristics of the Corridor, including the number of lanes, speed limit, right-of-way width, bicycle facilities, and pedestrian facilities differ along the corridor and by municipality. *Appendix A – CAD BASE MAPS* contains a comprehensive set of maps that depict the current roadway configuration for the Corridor from Morse Avenue to Montague Expressway. The maps visually represent the right-of-way/property lines as well as the location of the curbs/sidewalk along the Corridor. Right-of-way and its allocation to different elements of the corridor (e.g., transit facilities, travel lane widths, bicycle facilities, pedestrian facilities, etc.) vary between municipality and by segment. The Corridor is described by municipality below.

Sunnyvale. The street character and right-of-way significantly changes at the Fair Oaks Avenue intersection. From Morse Avenue to Fair Oaks Avenue, the Corridor has a right-of-way width of 44 feet with a three-lane undivided cross-section, widening at the Fair Oaks Avenue intersection. Additionally, at this intersection, light rail transitions from running along the median of Fair Oaks Avenue to the median of the Corridor. To the east of this intersection, the cross-section within Sunnyvale increases to a divided four-lane facility.

Approximately 1,500 feet west of Vienna Drive, the width of the curb-to-curb pavement on either side of the median light rail is 25 feet. Further east, the curb-to-curb pavement width changes from mid-block to each

intersection. For example, mid-block between Birchwood Drive and Reamwood Drive, the pavement width for each curb-to-curb is 20 feet.

A five-foot bicycle lane exists from Mores Avenue to Fair Oaks Avenue. A six-foot sidewalk is present on both the north and south side of the Corridor from Morse Avenue to approximately 650 feet east of Fair Oaks Avenue. From this point continuing east, a four-foot sidewalk is present on the south side of the Corridor until approximately 1,500 feet west of Vienna Drive. At Vienna Drive, a five-foot sidewalk begins again and remains on only the south side until the intersection of Patrick Henry Drive. Small segments of sidewalk exist on the north side of the Corridor between Vienna Drive and Patrick Henry Drive, but these segments are located at intersections for the most part.

The speed limit along the Corridor is consistently 40 mph and maintains this speed to where Sunnyvale’s jurisdiction over the Corridor ends at Calabazas Creek.

Santa Clara. Within Santa Clara, the Corridor maintains a four-lane divided cross-section between Calabazas Creek and Centennial Boulevard. Right-of-way mid-block from Patrick Henry to Old Ironsides Drive is approximately 70 feet, with an additional 40 feet of VTA right-of-way in the median. The curb-to-curb pavement width varies from 36 feet to 40 feet on either side of the VTA LRT throughout this segment of the corridor and typically increases in width at intersections. Between Convention Center Drive and San Tomas Aquino Creek Trail, right-of-way is approximately 90 feet with VTA’s median right-of-way approximately 50 feet. Curb-to-curb pavement width in this area is around 40 feet. Between Calle Del Sol and Lick Mill Boulevard totals approximately 85 feet of right-of-way with VTA’s median right-of-way at approximately 45 feet. The Corridor spans bridges in four locations within Santa Clara, including Calabazas Creek, San Tomas Aquino Creek, Guadalupe River, and Lafayette Street.

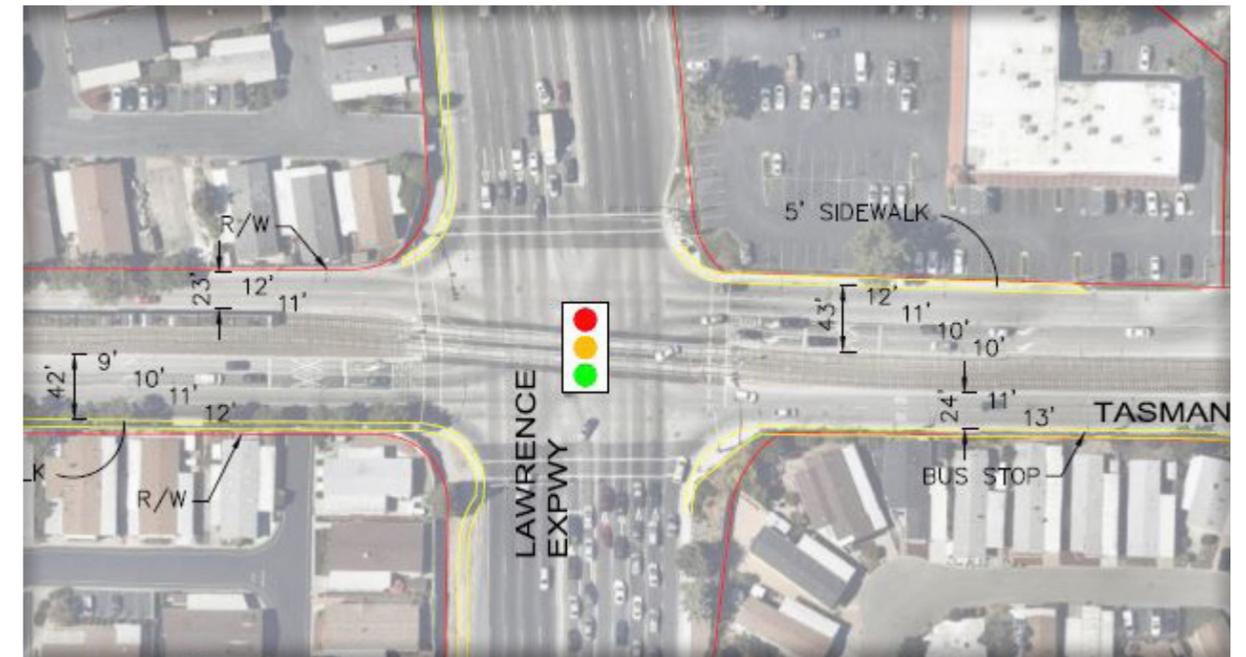


Exhibit 1: Tasman Drive configuration at the intersection of Tasman Drive and Lawrence Expressway in Sunnyvale

The portion of the Corridor within Santa Clara is generally comprised of 5-foot sidewalks (6-foot in areas near Levi’s Stadium). Between Great America Parkway and Convention Center, the Corridor includes Class II buffered bicycle lane. At Convention Center, the bicycle lane widens to 6 feet to Centennial Boulevard and gains a painted buffer which ranges from 7 to 9 feet wide. There is currently no bicycle lane between Centennial Boulevard and San Jose City Limits at the Guadalupe River.

The posted speed limits is 40 mph at the west city limit and maintains this speed traveling east across the corridor. Speed decreases to 35 mph east of the intersection with Lick Mill Boulevard and maintains this speed to the eastern city limit.

Tasman Corridor

COMPLETE STREETS STUDY

Figure 1- Tasman Corridor Complete Streets Study Area Map

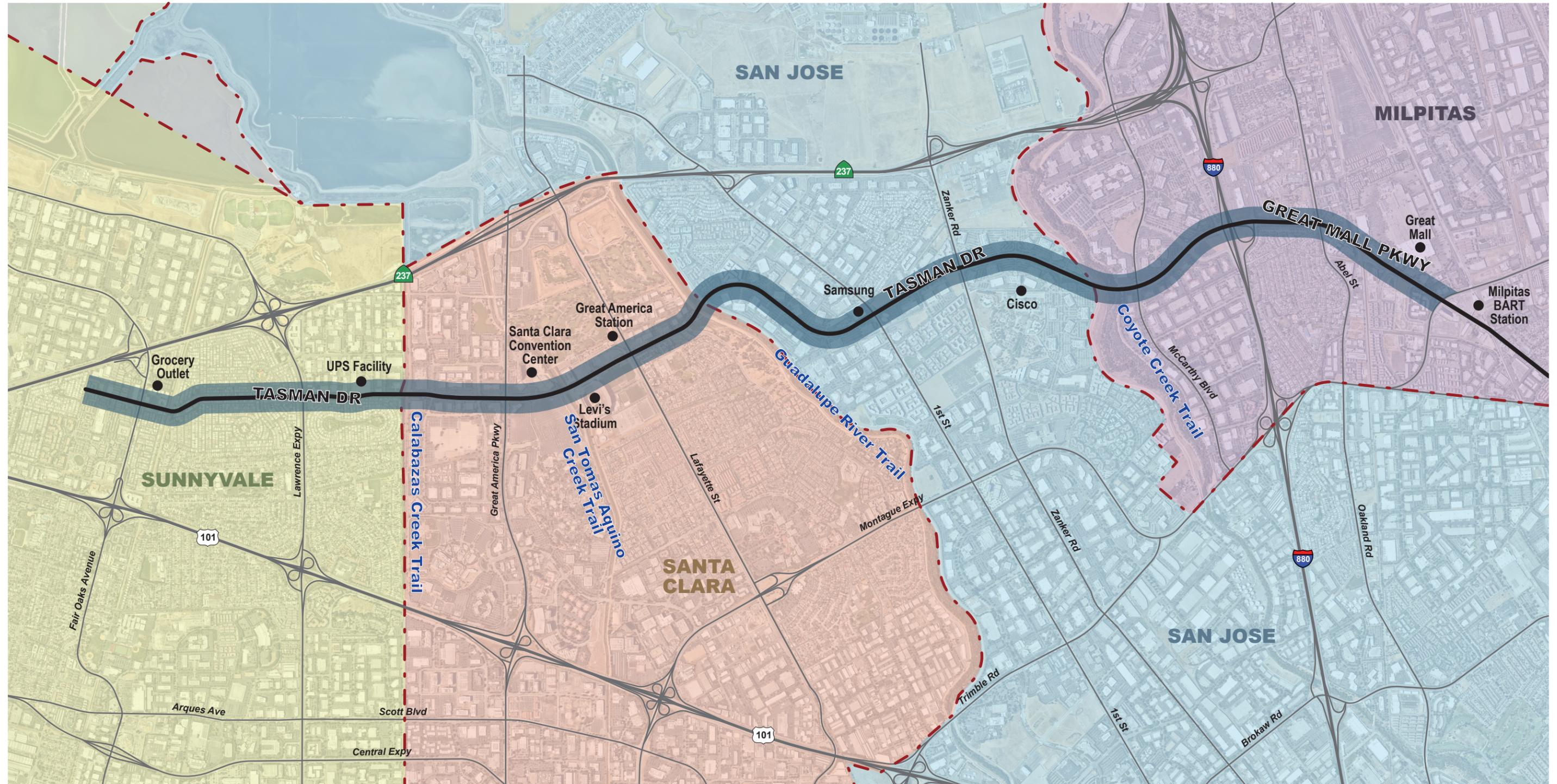




Exhibit 2: Tasman Drive configuration at the intersection of Tasman Drive and North 1st Street in San Jose



Exhibit 3: Tasman Drive configuration at the intersection of Tasman Drive and McCarthy Boulevard in Milpitas

San Jose. The Corridor enters City of San Jose jurisdiction at the Guadalupe River with approximately 120 feet of right-of-way, 30 feet of pavement on either side of the center-running light rail (VTA right-of-way of 50 feet), with a five-foot bike lane with four-foot striped buffer on the north side and a six-foot bike lane on the south. Both sides have 5-foot sidewalks. East of Renaissance Drive, the pavement width (for either side of the median) varies between 38 and 45 feet.

Between Rio Robles and North 1st Street, the total right-of-way (including VTA's 50 feet of right-of-way for the LRT median) is 145 feet.

At the North 1st Street intersection, the light rail connects between the Corridor and North 1st Street, completing turning movements through the intersection on dedicated phases.

Between Zanker Road and the eastern City limit, the Corridor gains an additional travel lane in both directions of travel, creating a six-lane divided facility. At this point, total right-of-way is approximately 185 feet, with 40 of those feet belonging to VTA. Curb-to-curb is approximately 80 feet of pavement. Travel lanes vary between 10 and 12 feet.

The Corridor enters San Jose's western jurisdiction at a posted speed limit of 35 mph and maintains this speed limit until the intersection with Zanker Road, where it increases to 45 mph. This remains the speed limit for the remainder of the Corridor within San Jose.

Milpitas. The cross-section for Tasman Drive/Great Mall Parkway varies greatly within Milpitas city limits. Where the Corridor spans Coyote Creek and enters Milpitas jurisdiction, three westbound travel lanes and two eastbound travel lanes are provided. The eastbound direction of travel gains an additional lane approaching McCarthy Boulevard. East of McCarthy Boulevard, the Corridor has six lanes divided by center-running light rail, a 5-foot westbound and 7-foot eastbound bike lane, and typically 6 feet of sidewalk. Between McCarthy Boulevard and Alder Drive, right-of-way is approximately 110 feet with an additional 80 feet as a median under VTA jurisdiction. Travel lanes within Milpitas are typically 12 feet wide with some 13-foot lanes toward the eastern limit. The bike lane for the remainder of the corridor is typically 8 feet wide; sidewalks range between 6 and 10 feet in width.

In addition to bridging over Coyote Creek as it transitions from San Jose, the Corridor also crosses over I-880 at a freeway interchange. Travel lanes at the interchange are 12 feet wide, with 8-foot bike lanes, and 6-feet of sidewalk.

As it approaches South Abel Street, the center-running light rail becomes grade-separated and is raised in the median along Great Mall Parkway to the east. Right-of-way varies to accommodate left- and right-turn bays at intersections. Between I-880 and S Abel, total right-of-way is 200 feet with 80 feet of that total belonging to VTA.

The posted speed limit of the Corridor on the west city limit of Milpitas is 45 mph. The speed limit decreases to 40 mph east of the intersection with McCarthy Boulevard and remains this speed for the remainder of the corridor.

Major Points of Interest and Land Uses

There are many local and regional activity generators located along the Corridor. These include the Santa Clara Convention Center, Levi's Stadium, Six Flags over Great America, Samsung, Cisco, UPS, and the Great Mall.

Adjacent land uses and their transportation demands influence the design and functionality of the Corridor. The following reviews the general plan and zoning designations, applicable specific plans, and major development projects along the Corridor. Zoning designations define what use is currently allowed on a parcel, and outline design and development guidelines such as setbacks, minimum lot sizes and landscaping requirements. General Plan Land Use designations are broader categories that offer guidelines for development now and for the future. *Figure 2- General Plan Land Use Designations* on **Page II-5** illustrates the General Plan Land Uses adjacent to the Corridor for the Cities of Sunnyvale, Santa Clara, San Jose and Milpitas.

Sunnyvale. The Corridor passes through the following General Plan designations in Sunnyvale: Industrial to Residential, Mobile Home Residential, and Industrial.¹ Similarly, zoning designations along the corridor include Industrial and Service, Residential Mobile Home, and Highway Business.² The predominant designation in the corridor is Mobile Home Residential. The Tasman/Fair Oaks Area Pedestrian and Bicycle Circulation Plan guides development within the corridor in Sunnyvale. The plan addresses goals around high-density housing, access to transportation, commercial infrastructure, job creation, and safe and efficient alternative modes of transportation.³ Major Planned Developments (PD) along the Corridor include 1101 N. Fair Oaks Avenue, a multi-family residential project consisting of 97 units, and redevelopment of an industrial area into a residential development with 205 apartment units and a 51-room hotel.

Santa Clara. In Santa Clara, the Corridor runs through the following General Plan designations: Regional Commercial, Low Density Office, Light Industrial, Parks and Open Space, and Industrial Park. The zoning designations in Santa Clara along the corridor include Light Industrial, Planned Development, Commercial Park, Public and Quasi Public, Agricultural and Planned Development, and Industrial Park. The most prevalent zoning designation is commercial. The Santa Clara General Plan includes a complete streets goal for "a roadway network designed to accommodate alternate transportation modes in addition to vehicles."⁴ The corridor forms one of the edges of the Tasman East Specific Plan, which supports a high-density transit-oriented neighborhood (currently proposed to be up to 100 Dwelling units per acre), along with retail. With the addition of phase three of the 2023 General Plan, the Corridor will be located approximately .5 miles from the Great America Parkway Focus Area. Existing and Major Planned Developments in Santa Clara along the Corridor include the Centennial Gateway (an approved project consisting of 600,000 square feet of office space, a hotel, an open-air plaza, and approximately 120,000 square feet of retail); City Place (an approved project consisting of 240 acres of mixed-use development separated into five parcels); and Levi's Stadium (an existing project consisting of 1.85 million square feet and seating for approximately 68,500).

San Jose. In San Jose, the dominant General Plan designation along the corridor is Industrial Park, a designation intended for a wide variety of industrial uses that allow development up to 15 stories. There is a small segment of the corridor that passes through the Open Space, Parklands and Habitat district in San Jose. Similar to the General Plan designation, the zoning designation for the corridor in San Jose is also primarily Industrial Park with a small segment of land designated Open Space, Parklands and Habitat.⁵ According to the San Jose General Plan, one of the City's goals is to "design, construct, operate, and maintain public streets to enable safe, comfortable, and attractive access and travel for motorists, pedestrians, bicyclists, and transit users of all ages, abilities, and preferences."⁶



Photo 1: Samsung complex along the Corridor

The Corridor is located in the North San Jose Area. This area has several policy documents that guide the ongoing growth and development of North San Jose. These documents include North San Jose Area Development Policy, North San Jose Area Design Guidelines and the North San Jose Neighborhoods Guiding Principles Plans. These documents include goals to address proactive planning for growth, increase in research and development, job creation for San Jose residents, pedestrian infrastructure, and access to transportation systems.⁷ The Complete Streets Design Guidelines facilitate development and street design in San Jose.⁸ Historically, North San Jose has been an area reserved for industrial park development, consisting of mainly one- to two-story buildings, with substantial setbacks from the street and surface parking lots. San Jose's Design Guidelines aim to promote a more "urban" type of development than what has historically occurred in North San Jose.⁹

¹ City of Sunnyvale, 2011. General Plan. July.

² City of Sunnyvale, 2014. Zoning Map. Available online at: <http://sunnyvale.ca.gov/Portals/0/Sunnyvale/CDD/Maps/Zoning%20Between%20ECR%20and%20101%20for%20web.pdf>. Accessed June.

³ City of Sunnyvale, 2004. Tasman/Fair Oaks Area Pedestrian and Bicycle Circulation Plan. Available online at: <http://sunnyvale.ca.gov/Portals/0/Sunnyvale/CDD/Residential/Developments/TasmanFairOaksPlan-FINAL.pdf>. Accessed March.

⁴ City of Santa Clara, 2010. General Plan. November.

⁵ City of San Jose, 2017. San Jose Municipal Code. Available online at: https://www.municode.com/library/ca/san_jose/codes/code_of_ordinances?nodeId=TIT20ZO_CH20.50INZODI. Accessed March.

⁶ City of San Jose, 2011. General Plan. November.

⁷ City of San Jose, 2017. North San Jose Area Development Policy. Available online at: <https://www.sanjoseca.gov/index.aspx?nid=1744>. Accessed March.

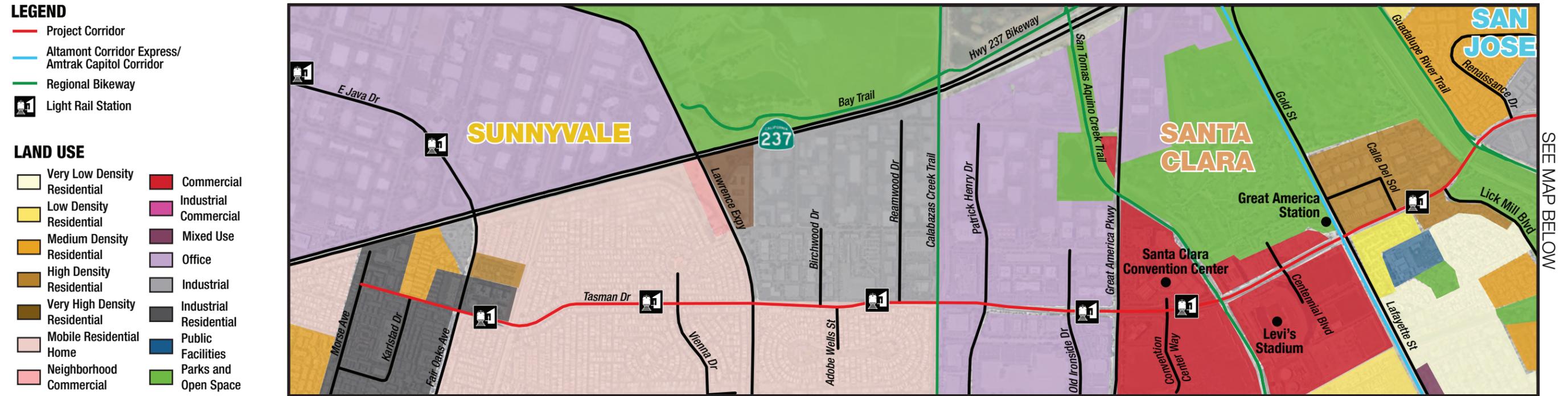
⁸ City of San Jose, Department of Transportation, Fehr & Peers, Community Design + Architecture 2016. San Jose Complete Streets Design Guidelines. July.

⁹ City of San Jose. North San Jose Area Design Guidelines. Available online at: <https://www.sanjoseca.gov/DocumentCenter/View/38775>. Accessed March.

City of Milpitas, 2012. General Plan Land Use Map. Available online at:



Figure 2- Existing General Plan Land Use Map



Milpitas. The Corridor passes through the following General Plan designations in Milpitas: Industrial Park, General Commercial, Public Facilities, Single Family Residential, Parks and Open Space, Multi-Family Residential, Retail Residential, and High Density Mixed-Use.¹⁰ Zoning designations along the corridor in Milpitas include Parks Open Space, Industrial, General Commercial, Institutional, Single-Family Residential, Multi-Family Residential, and Mixed-Use.¹¹

In Milpitas, the corridor is located within the Milpitas Midtown Specific Plan. Goals of the Midtown Specific Plan include improving the character of the streets; creating facilities for viable bike, pedestrian, and alternative modes of transportation; increasing housing stock; and investing in the Great Mall and local light rail. According to the Milpitas General Plan, a large increase in traffic is anticipated by year 2035 due to regional through-traffic along sub-regional routes such as State Route 237 and Montague Expressway. Policy 7.5 of the Midtown Milpitas Plan requires the creation of a coordinated development plan for the parcels at and around the proposed BART station. The Milpitas Transit Area Specific Plan fulfills that requirement.¹²

The Milpitas Transit Area Specific Plan process was initiated in November 2004, following up on the recommendations laid out in the Midtown Milpitas Specific Plan. The Transit Area Specific Plan area consists of 437 acres (almost half of the Milpitas Midtown Specific Plan area). Approximately 286 acres are located in both the Midtown and Transit Area Specific Plan areas.¹³ The Great Mall is a “retail anchor” in the TASP¹⁴ and has the opportunity to expand entertainment activities.¹⁵ The Great Mall accounts for the majority of the area’s commercial and retail space, plus a hotel and a branch of Heald College, which has been classified as office use.¹⁶ The completion of the Midtown Specific Plan and Transit Area Specific Plan (TASP), along with recent development activity, has forecasted an increase in cumulative traffic.¹⁷

The Milpitas BART Station, which is scheduled to open in late 2017, is located at the east end of the corridor. Additional Planned Development projects include 1102 Abel Street (366 dwelling units), 1201 S. Main (204 dwelling units and parking garage), McCandless Drive (mixed-use project with 1,154 dwelling units, 87,023 square feet of commercial space), and Lyon Communities Montague (474 dwellings units).

Table 1: The Corridor’s General Plan and Zoning Designations

	General Plan Designation	Zoning Designation
Sunnyvale	Industrial to Residential, Mobile Home Residential, Industry	Industrial and Service, Residential Mobile Home, Highway Business
Santa Clara	Regional Commercial, Low Density Office, Light Industrial, Parks And Open Space, Industrial Park.	Light Industrial, Planned Development, Commercial Park, Public and Quasi Public, Agricultural and Planned Development, Industrial Park.
San Jose	Industrial Park, Open Space, Parklands and Habitat	Industrial Park
Milpitas	Industrial Park, General Commercial, Public Facilities, Single Family, Parks and Open Space, Multi-Family Residential, Retail Residential, and High Density Mixed-Use	Parks Open Space, Industrial, General Commercial, Institutional, Single Family Residential, Multi-Family Residential, and Mixed-Use

¹⁰City of Milpitas, 2012. General Plan Land Use Map. Available online at: http://www.ci.milpitas.ca.gov/_pdfs/plan_plan_general_chapter2.pdf. Accessed March.

¹¹City of Milpitas, 2017. Zoning Map. Available online at: <http://geodesy.net/webmaps/milpitas/gedit2/gedit.htm?map=zoning>. Accessed March

¹²Dyett & Bhatia, 2007. Draft Environmental Impact Report- Milpitas Transit Area Specific Plan. Available online at: http://www.ci.milpitas.ca.gov/_pdfs/plan_eir_tasp_draft.pdf. Accessed June.

¹³Dyett & Bhatia, 2007. Draft Environmental Impact Report- Milpitas Transit Area Specific Plan. Available online at: http://www.ci.milpitas.ca.gov/_pdfs/plan_eir_tasp_draft.pdf. Accessed June.

¹⁴Dyett & Bhatia, 2007. Draft Environmental Impact Report- Milpitas Transit Area Specific Plan. Available online at: http://www.ci.milpitas.ca.gov/_pdfs/plan_eir_tasp_draft.pdf. Accessed June.

¹⁵City of Milpitas, 2002 updated 20110. Milpitas Midtown Specific Plan. Available online at: http://www.ci.milpitas.ca.gov/_pdfs/plan_plan_midtown.pdf. Accessed June.

¹⁶Dyett & Bhatia, 2007. Draft Environmental Impact Report- Milpitas Transit Area Specific Plan. Available online at: http://www.ci.milpitas.ca.gov/_pdfs/plan_eir_tasp_draft.pdf. Accessed June.

¹⁷City of Milpitas, 2015. General Plan.



III. EXISTING PEDESTRIAN/BICYCLE NETWORK

The Corridor bicycle and pedestrian network includes many types of facilities; however, the network is not complete throughout the Study area. Currently, some sections of the Corridor provide high quality facilities for pedestrians and bicyclists while other areas could benefit from enhancements to improve the safety, comfort, and access for these modes.

This section describes conditions for pedestrians and bicyclists along the Corridor and describes facility-specific conditions including sidewalks, intersections, bicycle facilities, trail access, transit stops, and wayfinding.

Corridor-wide Themes

The Corridor has many examples of strong walking and bicycling amenities. Several regional trails, including the Calabazas Creek Trail, Guadalupe River Trail, San Tomas Aquino Creek Trail, and the Coyote Creek Trail, cross the Corridor and provide low-stress, high-comfort routes for pedestrians and bicyclists. Where there are sidewalks along the Corridor, the surface quality is generally in good condition, and some sections are nicely landscaped and have pleasant streetscapes.

In several locations, infrastructure could be improved to provide a safer and more pleasant walking and biking experience. Common themes along the block lengths and intersections of the Corridor include:

Sidewalks

- Sidewalk gaps in certain sections of the Corridor interrupt the pedestrian network.
- Obstructions to the sidewalk are present in many parts of the Corridor. These include utility boxes, poles, and fire hydrants located within the sidewalk blocking the clear path of travel.

Bicycle Facilities

- Existing bicycle lanes are marked adjacent to high speed vehicle traffic. Bike lanes are not consistently marked throughout the Corridor. At the intersection of the Corridor and Lick Mill Boulevard, the westbound bicycle lane drops off approximately 200 feet before the intersection. The City of San Jose uses dashed paint to mark conflict zones and some of the bike lanes have a painted buffer. These are the only green lane markings on the Corridor.

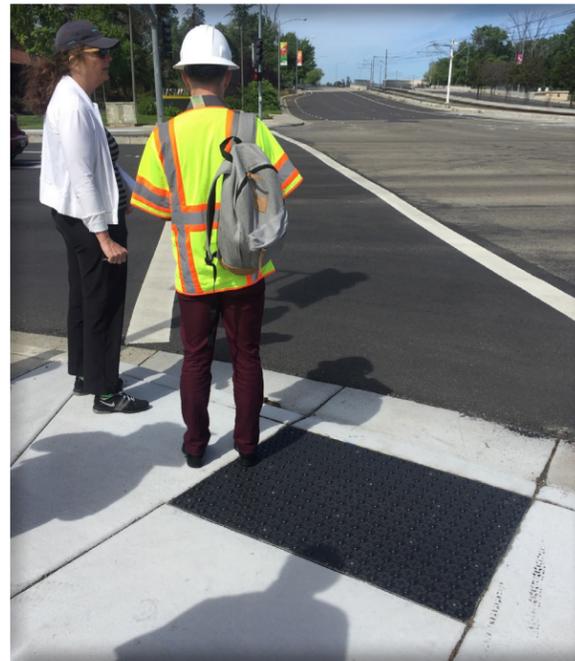


Photo 2: Sidewalks and ramps have high surface quality in Milpitas on Tasman Dr. and McCarthy Dr.

Wayfinding

- Lack of consistent wayfinding for non-motorized users and transit signage makes it challenging to locate destinations and identify the most direct, comfortable routes to key destinations.

Intersections

- Signal timing is oriented to minimize vehicle delay and results in long wait times for both bicyclists and pedestrians. Most, but not all, intersections have pedestrian call buttons while presence of bicycle detection varies on the Corridor.
- Large intersections with wide curb radii result in long exposure periods for bicyclists and pedestrians traveling through the intersections, and encourage higher vehicle speeds through turning movements.
- Wide spacing of intersections with marked pedestrian crossings in certain Corridor segments results in pedestrians jaywalking at midblock locations.

More detail about these Corridor-wide themes can be found below.

Intersections

In general, most intersections in the Corridor present challenges to pedestrians and cyclists and create stressful environments. Such challenges include:

- Wide intersections that increase pedestrian and bicyclists crossing time and exposure;
- Substandard lane markings where right-hand turn movements conflict with cyclists;
- The intersection of the Corridor with Renaissance Drive does not have marked crosswalks.
- Signal timing prioritizes vehicle throughput that results in long delays and waiting times for pedestrians; and
- Corner radii are wide and encourage higher speed turns. Also, median refuge islands are frequently shaved back to facilitate higher speed vehicle turns, which creates a stressful environment for those walking and biking.



Photo 3: Wide turning radius at Lawrence Expressway and Tasman Dr. in Sunnyvale

In Milpitas, the marked crosswalks at the signalized intersections are difficult for motorists to see, especially when traveling at higher speeds. In particular, the intersection of Great Mall Parkway and Montague Expressway presents difficulties for multiple users as it is a wide intersection with limited sight lines.

Also in Milpitas, at the intersection of the Corridor and South Main Street, the skewed roadway geometry and current placement of marked crosswalks creates excessive crossings and walking distances to access the light rail station in median. As a result, during the April 2017 walk audits, people were observed crossing mid-block, which introduces conflicts and multi-threat collisions for pedestrians and motorists.

In Sunnyvale, the Lawrence Expressway and Corridor intersection is particularly large. Pedestrians and bicyclists must cross a total of six lanes (including turn lanes) and light rail tracks when crossing the Corridor, as well as a total of 11 lanes (including turn lanes) when crossing the Lawrence Expressway. Vehicles along the Expressway approach and cross the Corridor at high speeds due to the wide turning radii. Pedestrian wait times are very long, resulting in a high-stress, inconvenient environment for pedestrians and cyclists.

The interchange at I-880 presents particular pedestrian and bicycle safety and access issues. At the southbound on-ramp, the curb ramps do not meet current Americans with Disabilities Act (ADA) standards, and push buttons are inaccessible since they are located far from the curb ramps. At the northbound on-ramp from the eastbound approach of The Corridor, the slope of the roadway and location of the crosswalk across the on-ramp limit sightlines and visibility.

Pedestrian Facilities

Sidewalks throughout the Corridor generally have good surface quality, but there are gaps in the network and some areas are in need of maintenance. In limited sections, a landscaped strip between the roadway and sidewalk provide shade and comfort as an additional buffer between pedestrians and vehicles.

Some locations are missing sidewalks, and in other locations the obstacles such as poles, fire hydrants, and other utilities, are located within the sidewalk. [Figure 3 – Existing Pedestrian Facilities Map](#) on [Page III-3](#) demonstrates existing pedestrian facilities. This impedes space for wheelchair access and pedestrians and results in users walking in the bike lane or roadway, as observed during the project walking audit (April 28, 2017). In some locations, such as in Milpitas, overgrown landscaping encroaches on sidewalks, greatly limiting

pedestrian space.

Gaps in the sidewalk are present in the following sections:

Sunnyvale:

- On the south side of the Corridor:
 - » North of Calle Isabella (a street south of Tasman Drive) to west of Vienna Drive
- On the north side of the Corridor:
 - » In front of 413-415 Tasman Drive (near Glin Terrace)
 - » 695 Tasman Drive to Reawood Station
 - » Calabazas Creek to east of Reawood Drive
 - » Vienna Drive west to Lawrence Expressway
 - » Lawrence Expressway west to Calabazas Creek Trail (with small segments of sidewalks near intersections and bus stops)

Santa Clara:

- On the north side:
 - » Centennial Boulevard to Calle Del Sol

San Jose:

- No sidewalk gaps were noted in San Jose

Milpitas:

- On the south side:
 - » McCarthy Boulevard to Alder Drive
 - » South Main Street to McCandless Drive (area currently under construction)

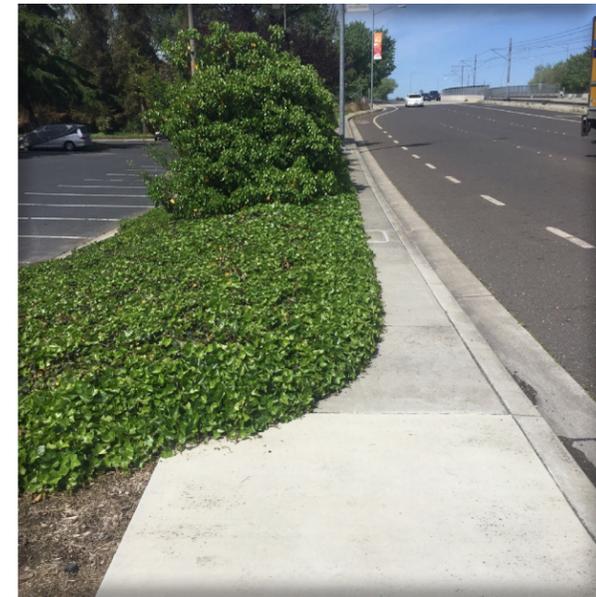


Photo 4: Landscaping encroaching onto the sidewalk in Milpitas

Bicycle Facilities

Bicycle facilities along The Corridor are adequate in some segments and non-existent in others. [Figure 4 – Existing Bicycle Facilities Map](#) on [Page III-4](#) represents the existing bicycle network that is in place as of August 2017.

Bicycle facilities are classified into four categories. The following provides a brief description of the characteristics of these classifications.

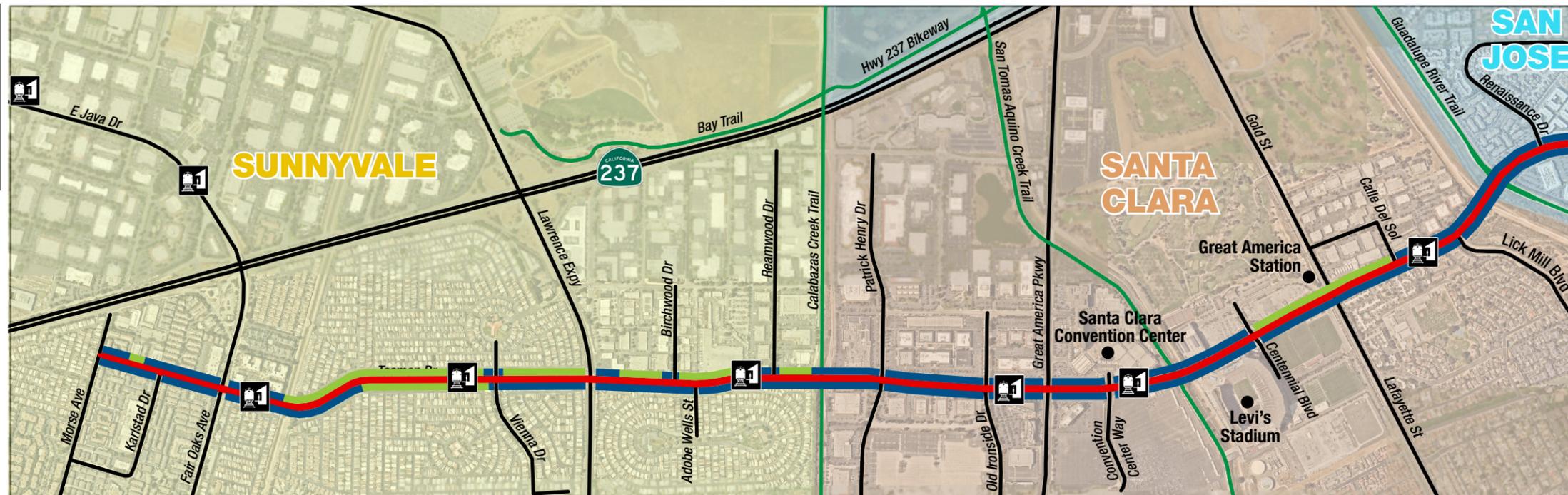
- **Class I:** Bicycle Path off street – A completely separated paved right-of-way (shared with pedestrians) that excludes general motor vehicle traffic.
- **Class II:** Bicycle Lane on street – A striped lane for one-way bike travel on a roadway.
- **Class III:** Bicycle Route or Sharrow – A signed street that is shared and provides shared-use between bicyclists and motor vehicles; there are no facilities on these streets, only signs identifying it as a bike route.
- **Class IV:** Cycle Track – A separated facility on one or both sides of the roadway.



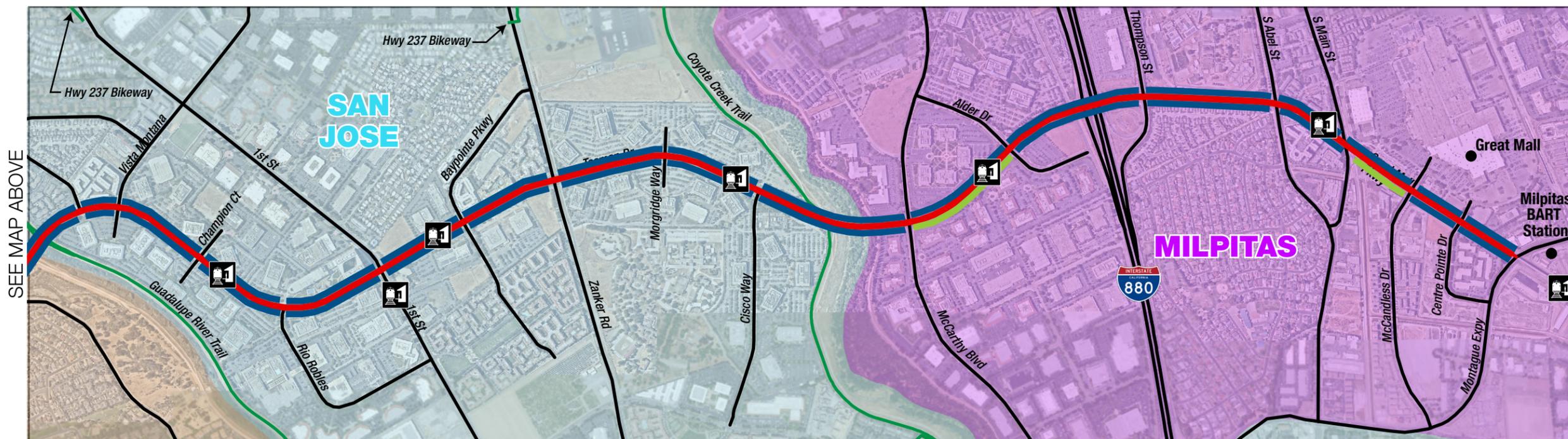
Figure 3- Existing Pedestrian Facilities Map

LEGEND

- VTA Light Rail Station
- Existing Sidewalk
- No Existing Sidewalk
- Project Corridor
- Regional Bikeway



SEE MAP BELOW



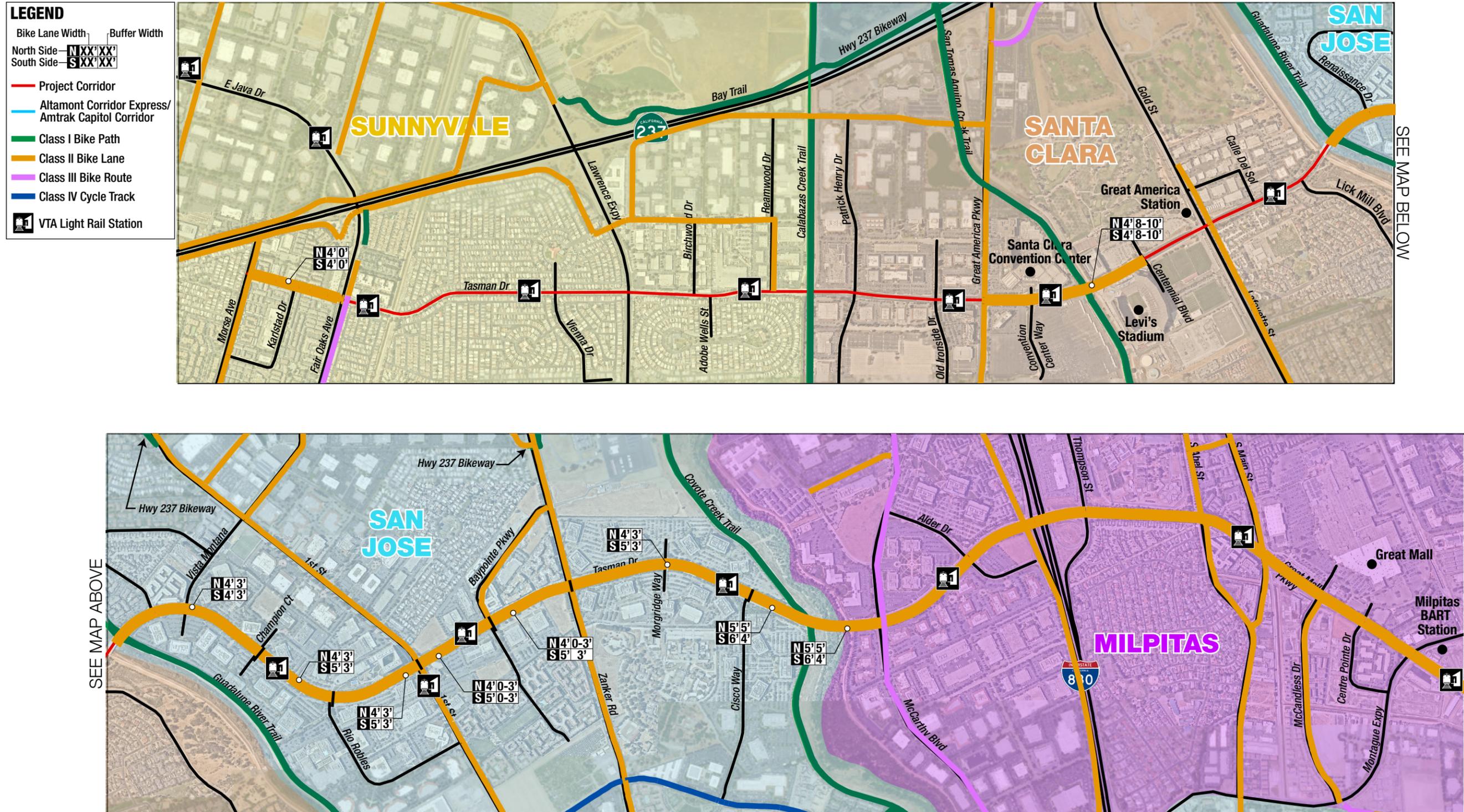
SEE MAP ABOVE



August 2017

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Figure 4- Existing Bicycle Facilities Map



Source: VTA Bikeways Map (2016)



August 2017

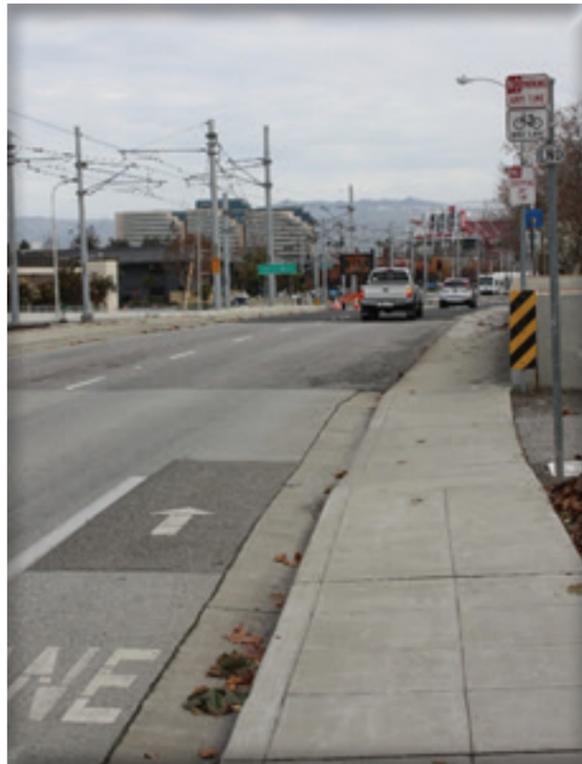


Photo 5: The end of the bike lane in Sunnyvale on Tasman Dr. near Reamwood Dr.

In Sunnyvale, the Corridor has limited bike facilities, largely due to the constrained right-of-way. Class II bike lanes are located between Morse Avenue and Fair Oaks Avenue on both the north and south sides of the Corridor. Bike lanes are marked from Reamwood Avenue to the west Calabazas Creek Trail. The rest of the Corridor does not include striped bike lanes.

In Santa Clara, Class II buffered bike lanes are marked on the north side of the Corridor from Old Ironsides Drive to Patrick Henry Drive. Class II buffered bike

lanes are marked on both sides of the Corridor from the Great America Parkway to Centennial Boulevard. These bike lanes are 4 feet wide with an 8-10-foot-wide painted buffer.

The City has plans to install Class II bike lanes in several segments of the Corridor from Calabazas Creek to Guadalupe River. Buffered bike lanes will be installed from Great America Parkway to Guadalupe River. These lanes will fill the gaps in the bikeway network and feature paint indicating conflict areas to match segments of the Corridor where there are existing buffered bike lanes.

In San Jose, the Corridor has some of the highest quality bicycle facilities along the Corridor with Class II bike lanes along the entire length. The majority of the Corridor also maintains a buffer for the bike lane. The bike lane widths range from 4 to 6 feet and buffers have widths up to 4 feet. Intersections have been enhanced with green paint markings to highlight conflict zones. Even with these facilities, challenges with high traffic volumes and speed still exist, particularly when vehicles are merging across the bike lane to make a right-hand turn.

During the walking audits conducted in April 2017, vehicles were observed parked in bike lanes (such as at North 1st Street in front of the Samsung building) and blocking a VTA bus stop. Currently there are not any “No Parking” signs or painted red curbs along this portion of the Corridor.

In Milpitas, Class II bike lanes are located on both sides of Tasman Drive/Great America Parkway (the road changes names at I-880); however, the lanes are adjacent to fast-moving traffic and may not feel comfortable for most bicyclists. When approaching intersections and freeway ramps, the bike lanes drop or the lanes are placed between a through-travel lane and right-turn lane for extended distances—a stressful facility design for most bicyclists. Also, debris and weeds obstruct the bike lanes in some locations.



Photo 6: Green painted bike lanes on Tasman Dr. and Zanker Rd. in San Jose

Trail Access

Many regional trails connect to the Corridor and are integral components of the regional pedestrian and bicycle network. The following trails intersect with the Corridor:

- Calabazas Creek Trail in Sunnyvale/Santa Clara
- San Tomas Aquino Creek Trail in Santa Clara
- Guadalupe River Trail in San Jose
- Coyote Creek Trail in San Jose

These trails provide comfortable and low-stress amenities for pedestrians and cyclists; however, accessing some of these trails can be difficult.

For example, the Calabazas Creek Trail in Sunnyvale lacks a formal crossing of the Corridor, and many people use an unpaved dirt trail as an undercrossing. People have been observed to cross illegally mid-block on the Corridor over the light rail tracks from one side of Calabazas Creek Trail to the other. A formal crosswalk is marked at the Reamwood Station; however, the pedestrian wait time is long, resulting in people crossing against the red light. Bicyclists who exit the Calabazas Creek Trail must walk their bikes on the sidewalk to cross at the Reamwood station and walk their bikes back on the sidewalk to continue back on the trail. Users were observed illegally riding on the sidewalk or in the wrong direction within the bike lanes.

In San Jose, the Guadalupe River Trail has a formal crossing under the Corridor that easily connects the north and south trail segments and has signage at the trailhead. The trailhead on the Corridor has a high lip between the sidewalk and pavement that is challenging for bicyclists to clear as they turn between the Trail and the roadway.



Photo 7: The termination of the Calabazas Creek Trail at Tasman Dr. in Sunnyvale

Access to Transit Stations/Stops

The Corridor includes 12 light rail stations and 55 bus stops that are utilized by residents, commuters, and people enjoying the area's entertainment and retail facilities, including Levi's Stadium.

All light rail stations along the Corridor are located in the roadway median between the vehicular travel lanes. Two light rail stations are located along an elevated guideway. The Great Mall Station can be accessed by a pedestrian overcrossing from the east side of Great Mall Parkway or from crosswalks to vertical circulation in the roadway median. The Montague Station is currently under construction to provide a new pedestrian overcrossing from the BART Station to be located on the east side of Great Mall Parkway. There are no pedestrian overcrossings to the west side of Great Mall Parkway.

The light rail stations are generally in a state of good repair and well-maintained. Pedestrian scale lighting, signage noting the station locations, and truncated domes at the edges of the platform and on the curb ramps are in a uniformly excellent condition throughout the Corridor. The stations offer benches and shelter for passengers waiting to board the trains. Some bus stops provide amenities such as benches and bus shelters.

The light rail stations are located near crossing streets where patrons boarding or alighting the trains are encouraged to cross. These crossings have traffic signals with pedestrian countdown signal heads most locations. In Sunnyvale, there is not a pedestrian signal where pedestrians exit the Fair Oaks Station and travel north. The configuration for this portion of the intersection requires pedestrians to traverse the final leg across a right-turn only lane. This lane does not have a pedestrian signal and turning vehicles are not restricted.

There are no unsignalized mid-block crossings on the Corridor. VTA encourages patrons to cross at the formal crossings and has installed fencing along the edge of the platform at most light rail stations to channelize people to the crossings. But, at many stations trains were observed to dwell at the portion of the station furthest from the signalized crossing. This results in a longer and circuitous route for people needing to access office buildings and other destinations in the middle of the block. Instead of the circuitous routing, some patrons were observed to jay-walk across the rail tracks and the Corridor where fencing was not provided.

In Santa Clara, the Lick Mill Station also provides a connection to the Altamont Corridor Express (ACE) and the Amtrak Capitol Corridor route. Access to the Great America Amtrak/ACE Station is circuitous from both the Corridor and the Lick Mill Station, and the staircase that connects to the platform could be improved as it is not ADA-accessible nor easily utilized by bicyclists.

In Sunnyvale, at the Reamwood station, pedestrians crossing the Corridor must do so in two phases which results in long delays as they must wait for one signal phase to the Reamwood station in the middle of the Corridor and wait again for a signal phase to cross the other side of the Corridor.

In San Jose, challenges exist for pedestrians exiting the stations, especially the Champion and Cisco Way stations. When exiting the train at Champion Station, pedestrians often cross east of the station at an uncontrolled mid-block crossing rather than crossing at the signalized intersection at Champion Court. At the Tasman Station, the median nose is narrow and does not offer a large enough refuge space for multiple pedestrians queuing while waiting.

The crossings at the Cisco Way Station are not aligned with the marked crosswalks at the intersections, causing a barrier for people in wheelchairs due to the lack of a receiving ramp from the station. Also, people heading to the office buildings to the west illegally cross the tracks at the back of the platform and cross three travel lanes to access the buildings.

Wayfinding

The Corridor lacks wayfinding signage to direct people to transit stations and other destinations. Warning signs and some wayfinding signs are posted near the light rail stations, and in Sunnyvale, "Share the Road" signs for motorists and cyclists are dotted along the Corridor. Signage was noted to not be consistent between cities. Wayfinding with directions and distances to key destinations such as trails, transit stations, and other amenities would greatly help in orienting users and contributing to a sense of place.



Photo 8: Pedestrian Crossing to LRT Station entrance.



Photo 9: Railings and landscaping to direct pedestrians to Champion Ct. and Tasman Dr. at the Champion Station



Photo 10: Narrow pedestrian refuge in median at Tasman Station



IV. TRANSIT SERVICE

Services Provided

VTA provides two types of transit services along the Corridor: Light Rail and Bus. Bus service is segmented along the Corridor with only five bus routes serving stretches longer than two miles along the Corridor. [Table 2](#) represents the routes and types that have these characteristics.

Service types include:

- **Express:** Nonstop links during peak hours, typically for long trips across the County.
- **Limited:** This route provides faster service with widely spaced stops only during the peak commute. (In the Next Network Plan, this service type has been removed)
- **Community:** Especially infrequent services, focused on low-demand areas.
- **Local:** Less frequent local stops.
- **ACE Shuttle:** Altamont Corridor Express,

Additionally, VTA also operates paratransit service. Through this service, VTA provides an exterior door-to-door service for persons who are unable to independently use its local bus or light rail services due to physical, visual, or cognitive disabilities.

At the time of this study, there were approximately 35 routes that operate along some segment or cross the Corridor at one intersection. [Figure 5 – Existing VTA LRT Routes and Stop Locations Map](#) visually displays the existing bus stops along the Corridor.

Two light rail routes are provided along the Corridor. The two routes are Route 901 – Santa Teresa to Alum Rock (Blue), and Route 902 – Mountain View to Winchester (Green). Route 901 is available at the Tasman Station and continues east past the Montague Station on the Corridor. The full Route 901 extends from Alum Rock Station to Santa Teresa Station, spanning approximately 25 miles. Weekday Headways for this route are at 15-minute intervals from 6:00 AM to 8:00 PM. From 8:00 PM to about 12:00 AM (midnight), headways are approximately 30 minutes.

Table 2: Example of service routes along portions of Tasman Drive

Service Type	Route Name	From	To	Length of route on Corridor
Express Bus	Freemont Bart - M. College & Montague (Route 140)	Old Ironsides	I-880	~ 4 miles
Limited	Almaden Valley - Tasman Drive (Route 330)	Old Ironsides	Alder Drive	~ 4 miles
Community Bus	Baypointe LRT - Mountain View LRT (Route 200)	Morse Avenue	Baypoint Parkway	~ 4 miles
Local	VTA Peak Hour (Route 212)	Renaissance Drive	Cisco Way	~ 2 miles
Shuttle - ACE	Purple Line - ACE West Milpitas (Route 825)	Centennial Boulevard	Alder Drive	~ 3.25 miles

Route 902 is also available on the Corridor from Fair Oaks Station to the Tasman Station located on North 1st Street. Route 902 extends from Downtown Mountain View Transit Center to the Winchester Transit Center spanning approximately 21 miles. This route has 15-minute headways from 5:15 AM to 10:00 AM and 3:00 PM to 9:00 PM, and 30 minute headways from 10:00 AM to 3:00PM and 9:00 PM to 12:00 AM (Midnight).

[Figure 5 – Existing VTA Transit Routes and Stop Locations Map](#) displays these routes.

Park and Ride

Another service provided by VTA along the Corridor is a Park and Ride Lot where users may park their vehicle for a significant period of the day and use the LRT to commute to their destination. The Park and Ride on the Corridor is located near the intersection of Tasman Drive and I-880 in Milpitas. This parking lot provides 259 vehicle parking spaces, seven of which are reserved for handicapped parking, and nine of which are designated as green curb parking (short-term or time limited parking). This location also includes 10 bicycle lockers. A recent survey of the parking inventory showed that during an average weekday around noon, the parking lot is at approximately thirty (30) percent of its capacity. The parking utilization counts were taken on May 10th and May 17th of 2017.



Photo 11: VTA bus shelter in Milpitas

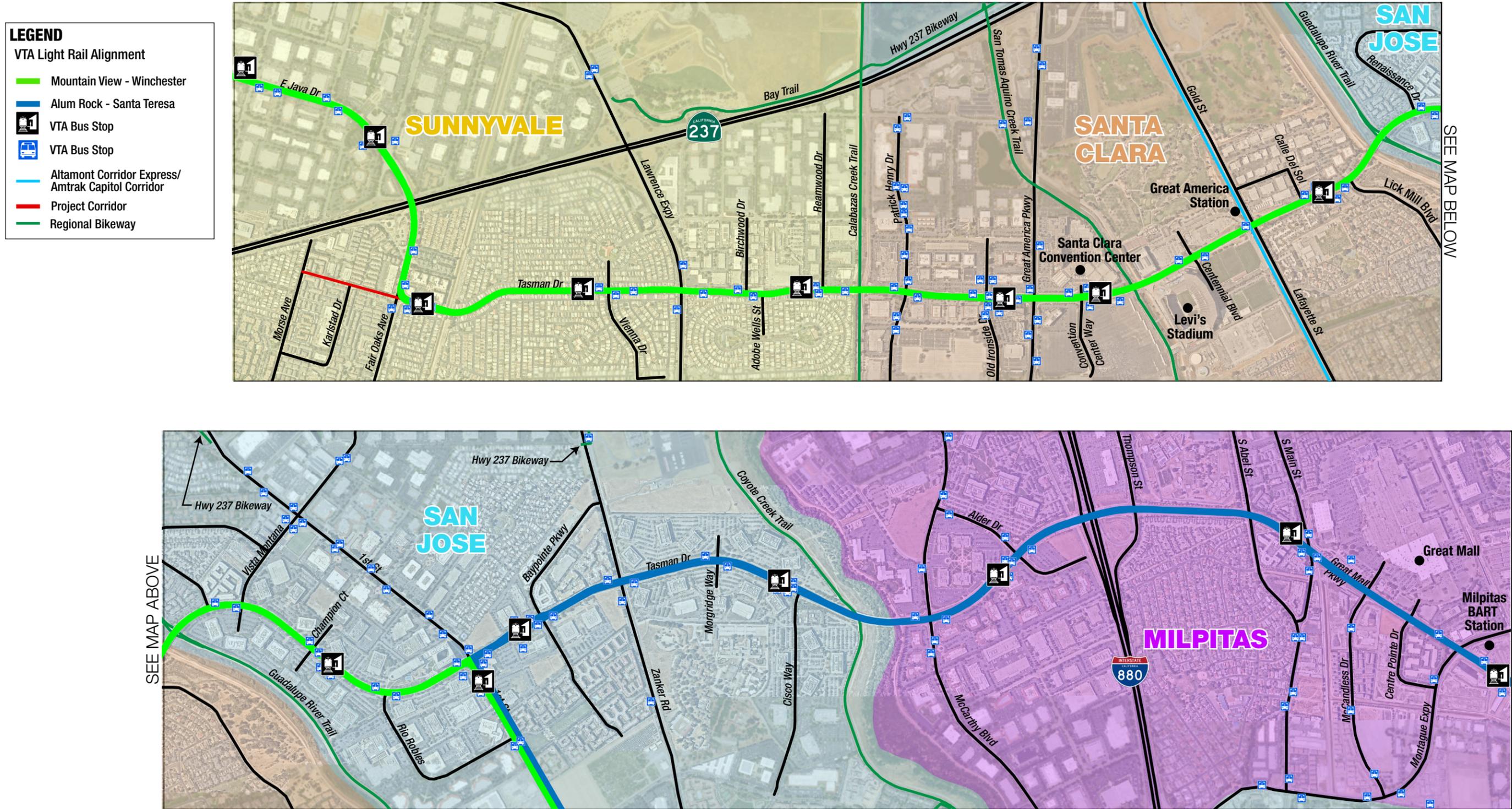


Photo 12: VTA Park and Ride Lot

Tasman Corridor

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Figure 5- Existing VTA LRT Routes and Stop Locations Map



Source: VTA



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Ridership

Figure 6 – VTA LRT Ridership by Station Location Map on Page IV-4 displays average weekday light rail boardings and alightings at each light rail station (October 2016 data). Total activity for the 13 LRT stations within the Study area is 13,965 riders with 6,826 boardings and 7,137 alightings.

Three LRT stations generate activity of more than 1,000 riders per day: Tasman Station (4,559), Great Mall Station (2,586), and Great America Station (1,066). These stations are located near large employment centers and regional attractions. It should be noted that the high activity of the Tasman Station is due in part to the high number of transfers at this location between two LRT routes.

Figure 7 – VTA Bus Transit Ridership by Stop Location Map on Page IV-5 displays the ridership data from VTA for bus stops located along the Corridor. Average weekday boardings and alightings are shown for each stop (March 2016 data). The stops with the highest ridership are 1) near the intersection of Fair Oaks Avenue and Tasman Drive with activity at approximately 200 riders and 2) near the intersection of Old Ironsides Drive and Tasman Drive with total ridership activity near 150 riders.

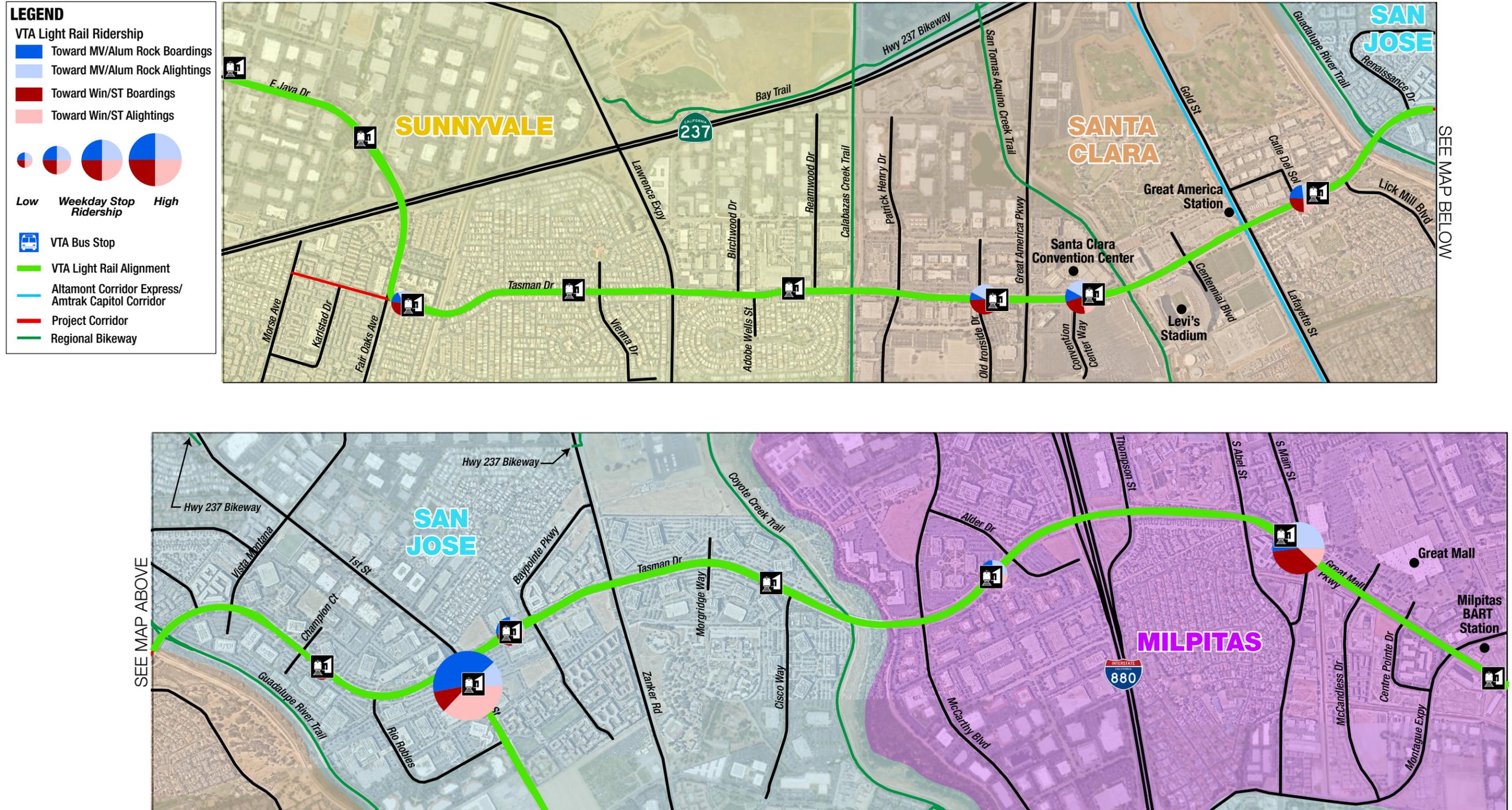


Photo 13: Transit Riders connecting from Capitol Corridor to the Corridor

Tasman Corridor

COMPLETE STREETS STUDY

Figure 6- VTA LRT Ridership by Station Location Map



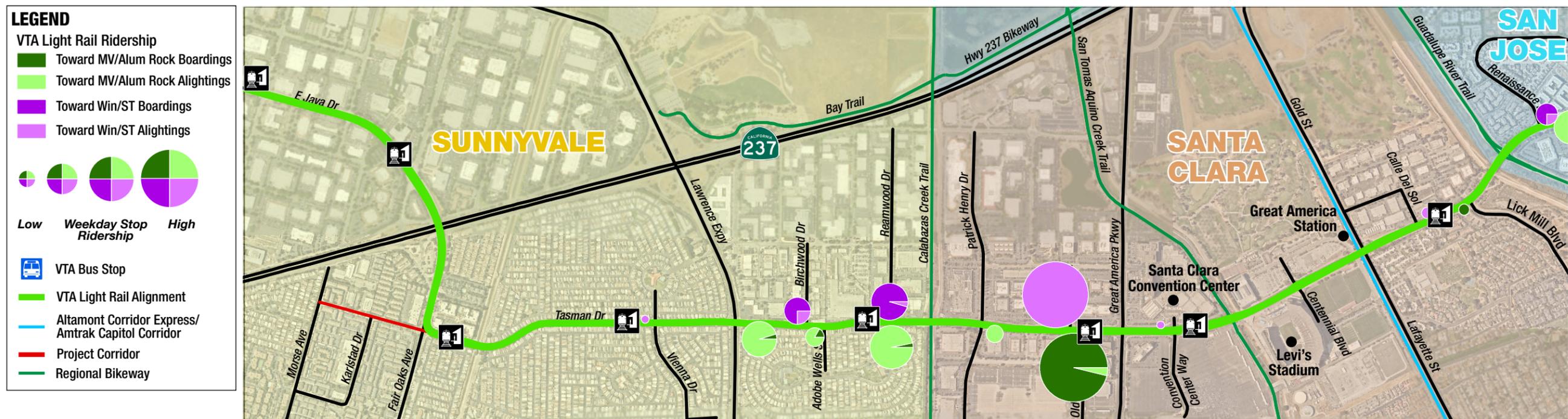
Source: VTA Light Rail Ridership Data (October 2016)



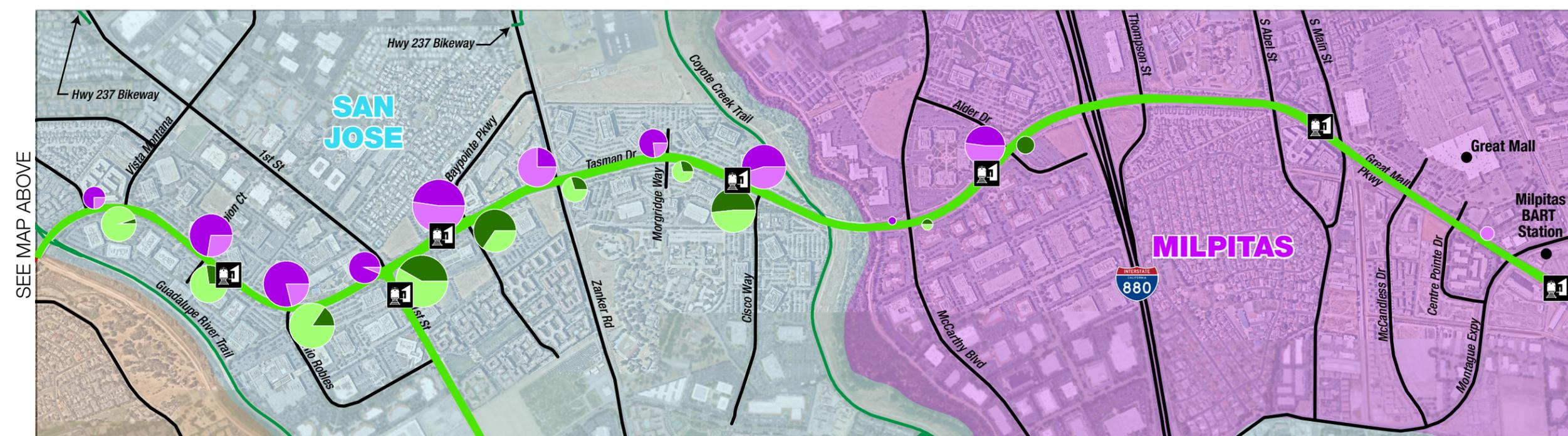
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Figure 7- VTA Bus Transit Ridership by Stop Location Map



SEE MAP BELOW



SEE MAP ABOVE



Source: VTA Bus Ridership Data (March 2016)

August 2017

Travel Time/Reliability

Numerous traffic signals and high traffic volumes along the Corridor result in delays to light rail trains. While light rail operates in an exclusive guideway in the the Corridor median, it must still cross all signalized intersections at-grade and adhere to all traffic signal indications. The exception to this is the eastern portion of the line along Great Mall Parkway where it is elevated. To assess travel times, speeds, and reliability for the light rail service, Automatic Vehicle Location (AVL) data was obtained from VTA for the period of October 17-31 of 2016 (considered a typical period of operations). The data set included records on a train's location, speed, direction, and schedule adherence (performance compared to schedule).

The average speed of both eastbound and westbound trains (routes 901 and 902) for weekday travel time was measured by miles per hour (mph). As indicated [Figure 8 – VTA LRT Speeds by Segment and Direction \(Weekday\)](#) on [Page IV-7](#), average LRT speeds by segment rang up to 20 mph. The corridor segments with the lowest speeds were those containing stations or approaches to major signalized intersections. The segments with the highest average speeds were those containing few intersections or where the LRT guideway is grade-separated.

The overall reliability of the LRT is measured by the standard deviation of schedule adherence for the trains in minutes. To reflect the reliability of the LRT vehicles, the standard deviation of the “schedule adherence” metric was used at each stop and segment. The standard deviation is higher if the schedule adherence metric is more variant at a station or segment (e.g., if a train consistently arrives at Champion Station 5 minutes late according to the data, that would be more reliable than a train that arrives 5 minutes late half the time and 5 minutes early at all other times).

This measurement ranged from 1:00 minute of standard deviation to 3:30 minutes. The train reliability for each direction of travel is relatively consistent in being 1 to 2:30 minutes off schedule. [Table 3 and Table 4](#) display the standard deviation of Weekday arrival times at each LRT Station for routes 901 and 902, respectively; [Table 5 and Table 6](#) display this same information for weekends. The overall trend displayed in [Figure 9 – VTA LRT Reliability by Direction, Segment, and Station \(Weekday\) Map](#) is the magnitude of deviation from the train schedule, which appears to increase as trains travel farther away from their origin station. The westbound train's reliability begins to decrease around the intersection with Zanker Road; the eastbound train's reliability begins to decrease near the intersection with Great America Parkway, but substantially decreases past the intersection with Morgridge Way. Specific intersections that appear to be introducing more variability to travel times are Morgridge Way and McCarthy Blvd.

Table 3: Standard Deviation of Weekday LRT Stop Arrival Times - Route 901

Direction	Standard Deviation of Stop Arrival Times					
	Tasman	Baypointe	Cisco	I-880/Milpitas	Great Mall/Main	Montague
Westbound	01:51	01:47	01:15	01:56	01:51	01:54
Eastbound	02:42	02:28	02:11	02:13	02:39	02:16

Table 4: Standard Deviation of Weekday LRT Stop Arrival Times - Route 902

Direction	Standard Deviation of Stop Arrival Times							
	Fair Oaks	Vienna	Reamwood	Old Ironsides	Great America	Lick Mill	Champion	Tasman
Westbound	02:22	02:23	02:13	02:17	02:06	02:01	01:56	02:14
Eastbound	01:25	01:22	01:35	01:36	01:44	01:52	01:56	02:02

Table 5: Standard Deviation of Weekend LRT Stop Arrival Times - Route 901

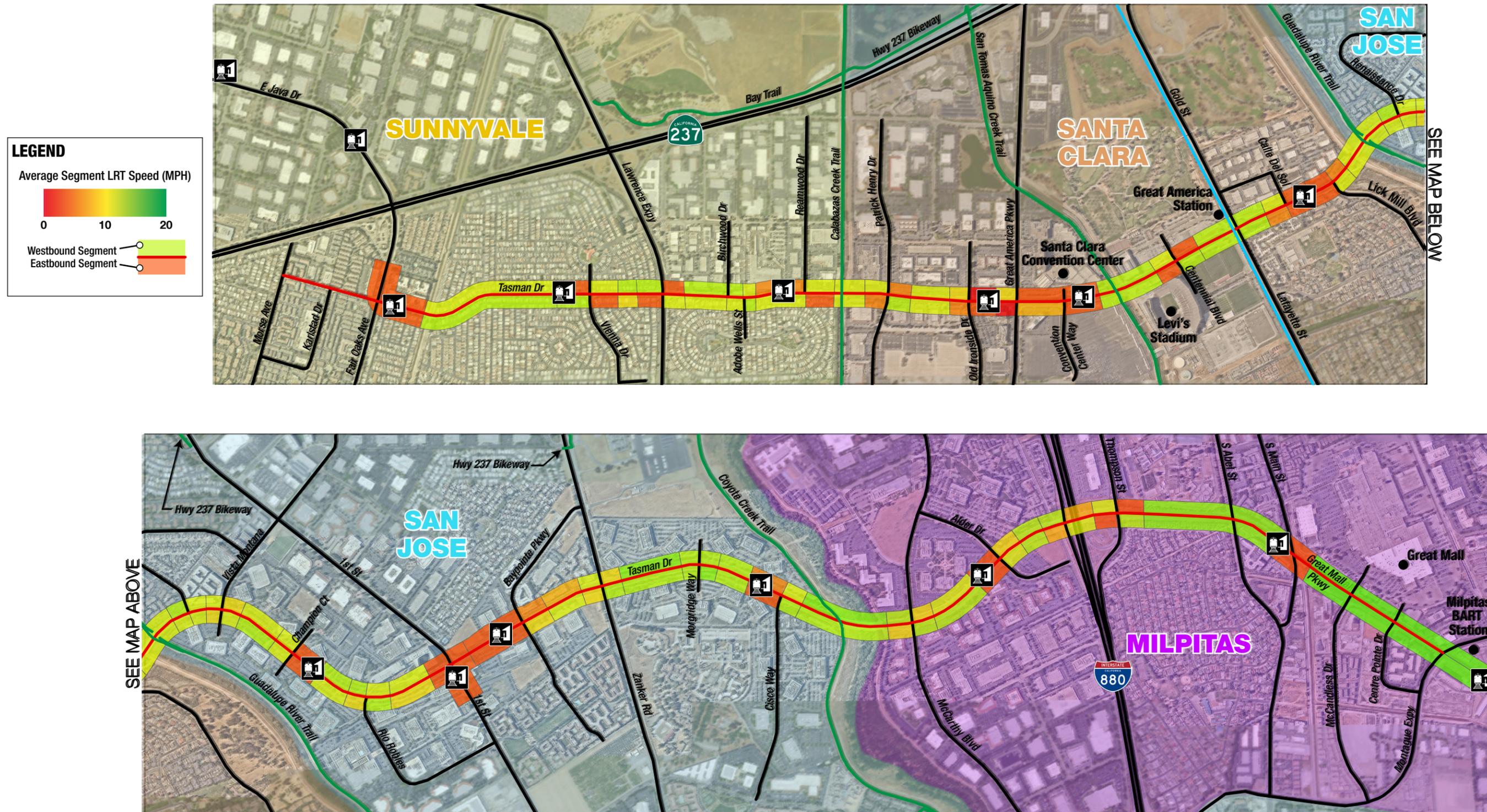
Direction	Standard Deviation of Stop Arrival Times					
	Tasman	Baypointe	Cisco	I-880/Milpitas	Great Mall/Main	Montague
Westbound	01:29	01:38	01:22	01:22	01:28	01:23
Eastbound	02:27	02:14	01:44	02:10	02:14	02:08

Table 6: Standard Deviation of Weekend LRT Stop Arrival Times - Route 902

Direction	Standard Deviation of Stop Arrival Times							
	Fair Oaks	Vienna	Reamwood	Old Ironsides	Great America	Lick Mill	Champion	Tasman
Westbound	01:57	01:57	02:07	02:02	01:40	01:30	01:09	01:33
Eastbound	01:16	01:14	01:18	01:22	01:31	01:44	01:26	01:43



Figure 8- VTA LRT Speeds by Segment and Direction (Weekday)



Source: VTA Automatic Vehicle Location (AVL) Data (September 2016)

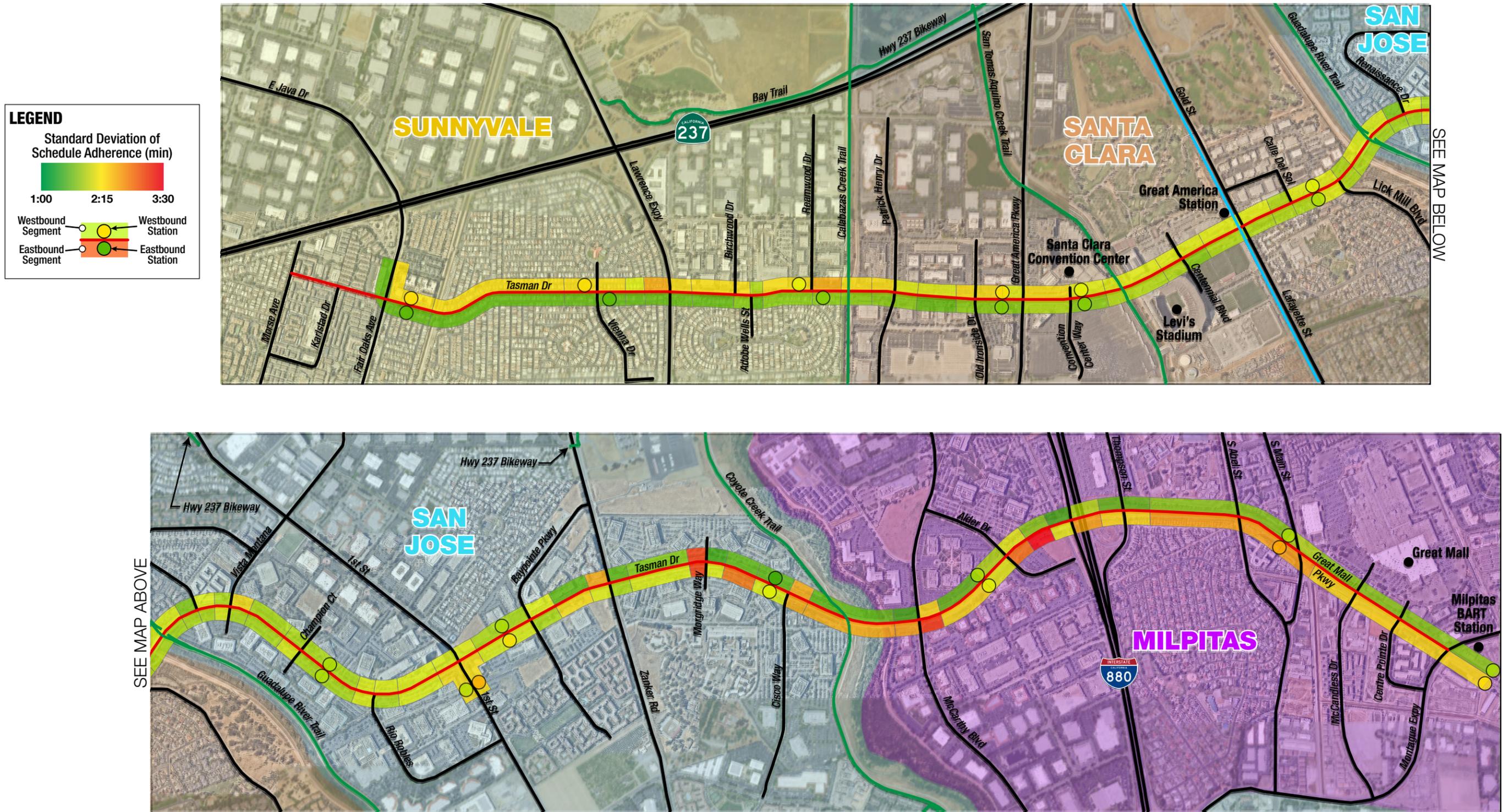


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Figure 9- VTA LRT Reliability by Direction, Segment, and Station (Weekday)



Source: VTA Automatic Vehicle Location (AVL) Data (September 2016)



August 2017



Stops/Facilities

The bus stop locations provided in *Figure 7 – VTA Bus Transit Ridership by Stop Location* represent the current locations along the Corridor at the time of this study. With the presence of eastbound/westbound light rail service along the Corridor, bus transit has lower ridership in the Study Area. Of the more than 30 bus stops located along the Corridor, about 45 percent have a pedestrian shelter, compared to 32 percent which only have a sign. The remaining 23 percent have a bench available to waiting riders. Additionally, of all the stop facility types, 32 percent have a bus pull-out dedicated in the right-of-way.

A high concentration of stops is located between the intersections of Patrick Henry Drive and Great America Parkway within Santa Clara (near the Old Ironsides LRT Station). This area has high activity for transfers.

Next Network

The FY18-19 Transit Service Plan, which was the product of the Next Network Planning Process, was adopted by VTA’s Board of Directors in May of 2017. That plan will result in several changes to transit service along and intersecting with the Corridor, most notably the addition of a new Orange Line light rail connecting Downtown Mountain View and Alum Rock Station. The FY18-19 Service Plan adjusts VTA’s spending on ridership-purposed routes (those that follow corridors that have transit-supportive characteristics like density and walkability) and coverage-purposed routes (those that serve areas for the purpose of providing access, rather than achieving ridership or the urban context). VTA’s current transit service employs a 70/30 balance of spending on ridership and coverage routes, respectively. The FY18-19 Service Plan will employ an 83/17 balance resulting in more frequent routes, more weekend service, and less service to outlying or low-productivity areas.

Figure 10 – VTA’s Next Network Final Plan Map on Page IV-10 is representative of the Next Network improvements within and adjacent to the Corridor. Some existing service routes were removed from the Final Transit Service Plan, including current Route 181 which travels through Fremont/San Jose, and Route 55 (specifically the deviation that serves the Fair Oaks/Remington Area). The Next Network Final Transit Service Plan states that it could potentially result in an increase of light rail ridership from 15 to 20 percent, and an eight to 10 percent increase in bus ridership.¹⁸

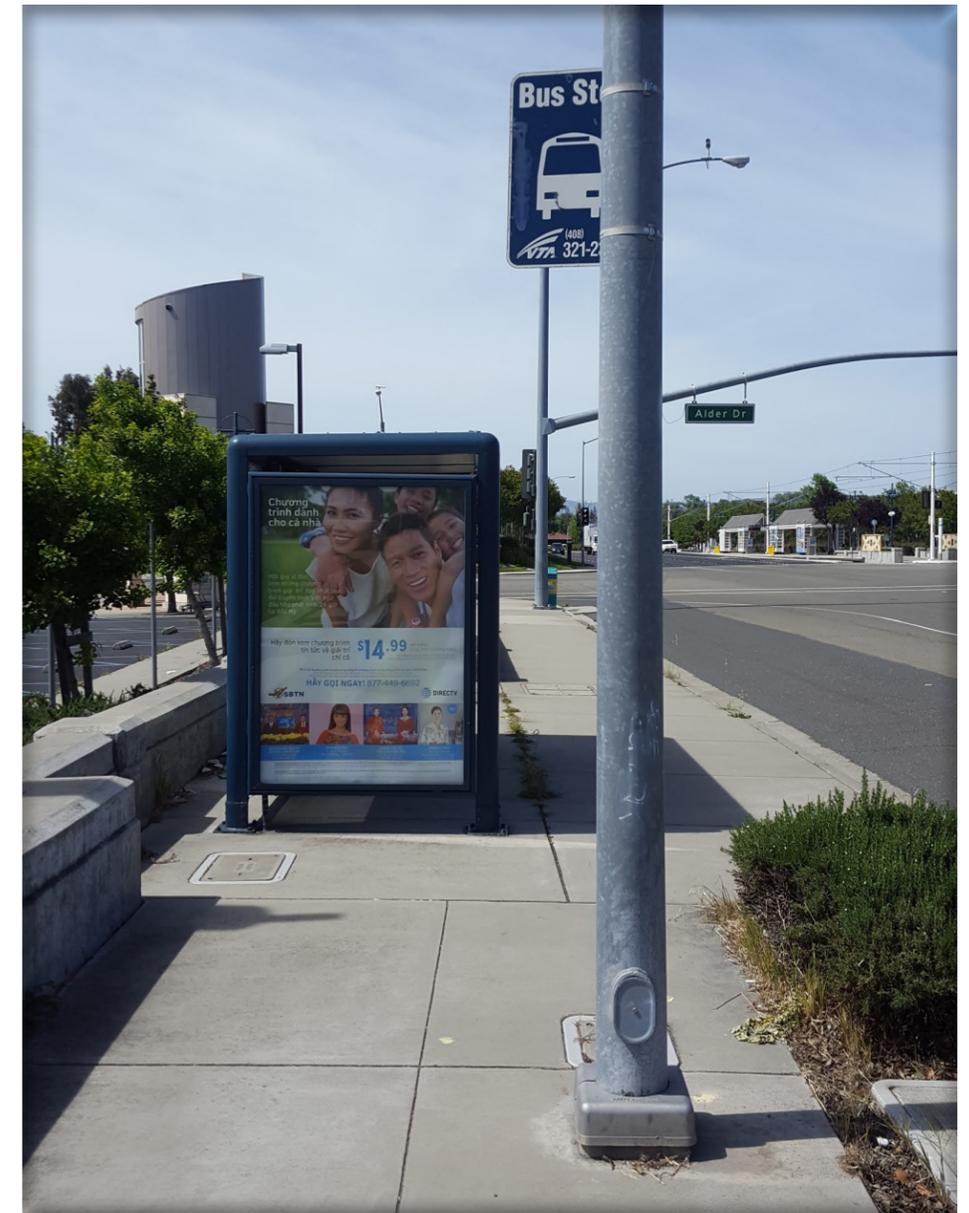
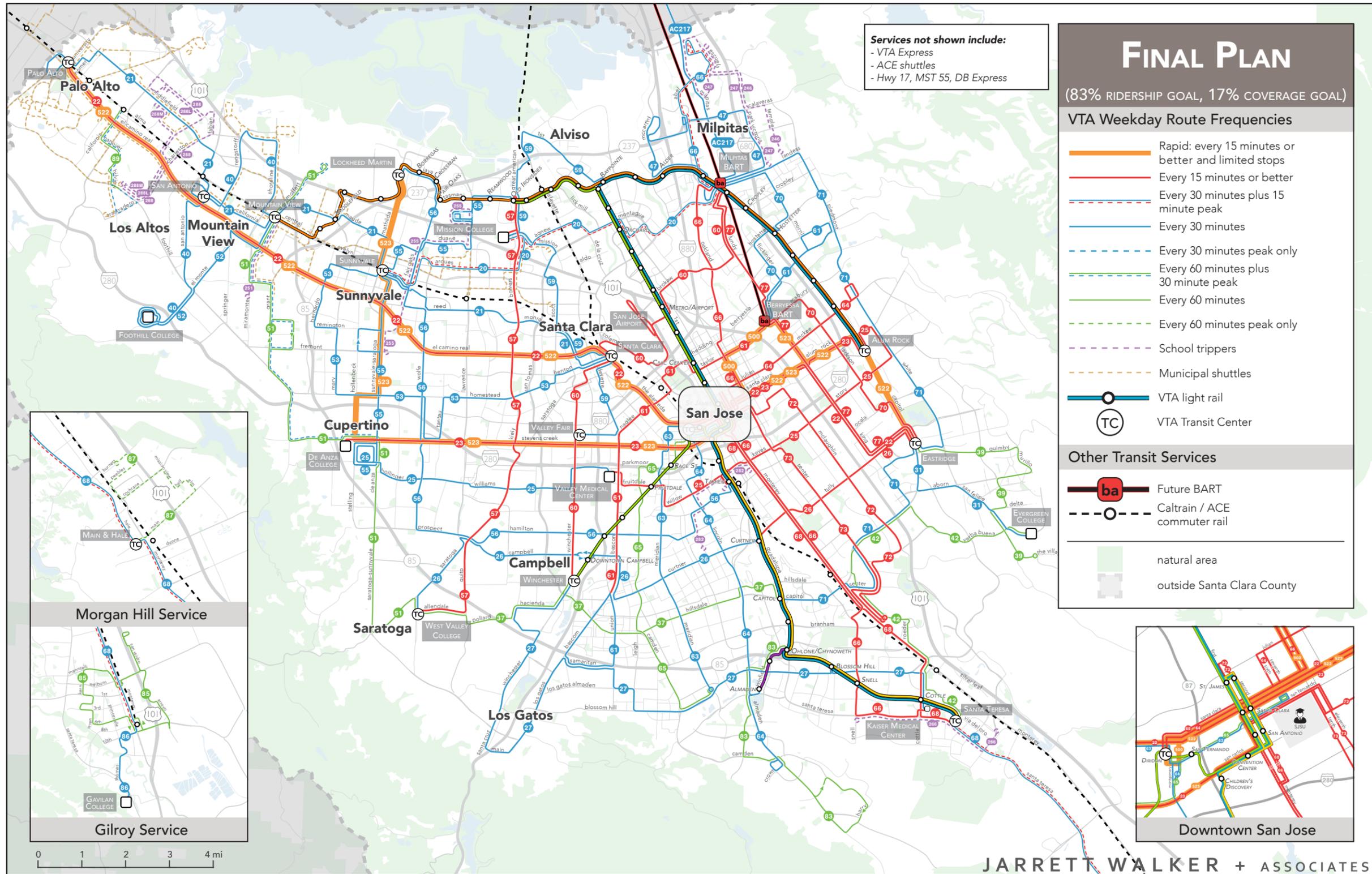


Photo 14: Example of a bus shelter along the Corridor

¹⁸<https://static1.squarespace.com/static/56c7a8e68a65e2903b636e0a/t/58e80c53e6f2e1d-e5333e5e3/1491602516067/Final+Transit+Service+Plan+Board+Memo.pdf>

Tasman Corridor COMPLETE STREETS STUDY

Figure 10 - VTA's Next Network Final Plan Map





V. TRAFFIC LEVELS

Vehicular Volumes

Bi-directional 24-Hour Average Daily Traffic (ADT) counts were collected for four segments along the Study Corridor. Counts were collected in May 2017 along one segment of Tasman Drive/Great Mall Parkway in each of the four cities presented in [Table 7: Average Daily Traffic Counts](#).

Table 7: Average Daily Traffic Counts

Segment	Eastbound ADT	Westbound ADT	TOTAL
Fair Oaks Avenue to Vienna Drive (Sunnyvale)	6,519	5,588	12,107
Patrick Henry Drive to Old Ironsides Drive (Santa Clara)	5,325	5,710	11,035
North 1st Street to Zanker Road (San Jose)	7,689	8,777	16,466
I-880 Ramp to S Abel Street (Milpitas)	16,939	16,660	33,599

The ADT counts show that traffic increases as the Corridor transitions east from Sunnyvale toward Milpitas. These ADTs are indicative of the existing cross-sections that differ from one municipality to the next. In Sunnyvale, the Corridor provides either one or two travel lanes in each direction. The Corridor widens east of Patrick Henry Drive in Santa Clara and gains a third travel lane (for each direction of traffic) east of Zanker Road. [Figure 11 – Average Daily Traffic Volume with Speeds Map](#) is a visual representation of these counts as well as the 85th percentile speeds and speed limits.

Turning Movement Counts

In addition to collecting and analyzing roadway volumes across the length of the 7-mile Corridor, intersection volumes were also analyzed. Weekday turning movement counts for the morning (AM) and evening (PM) peak hours were collected at all signalized intersections along the Corridor. Counts from previous studies were supplemented by counts taken for the purposes of this study, providing a range of count data from 2015 to present day.

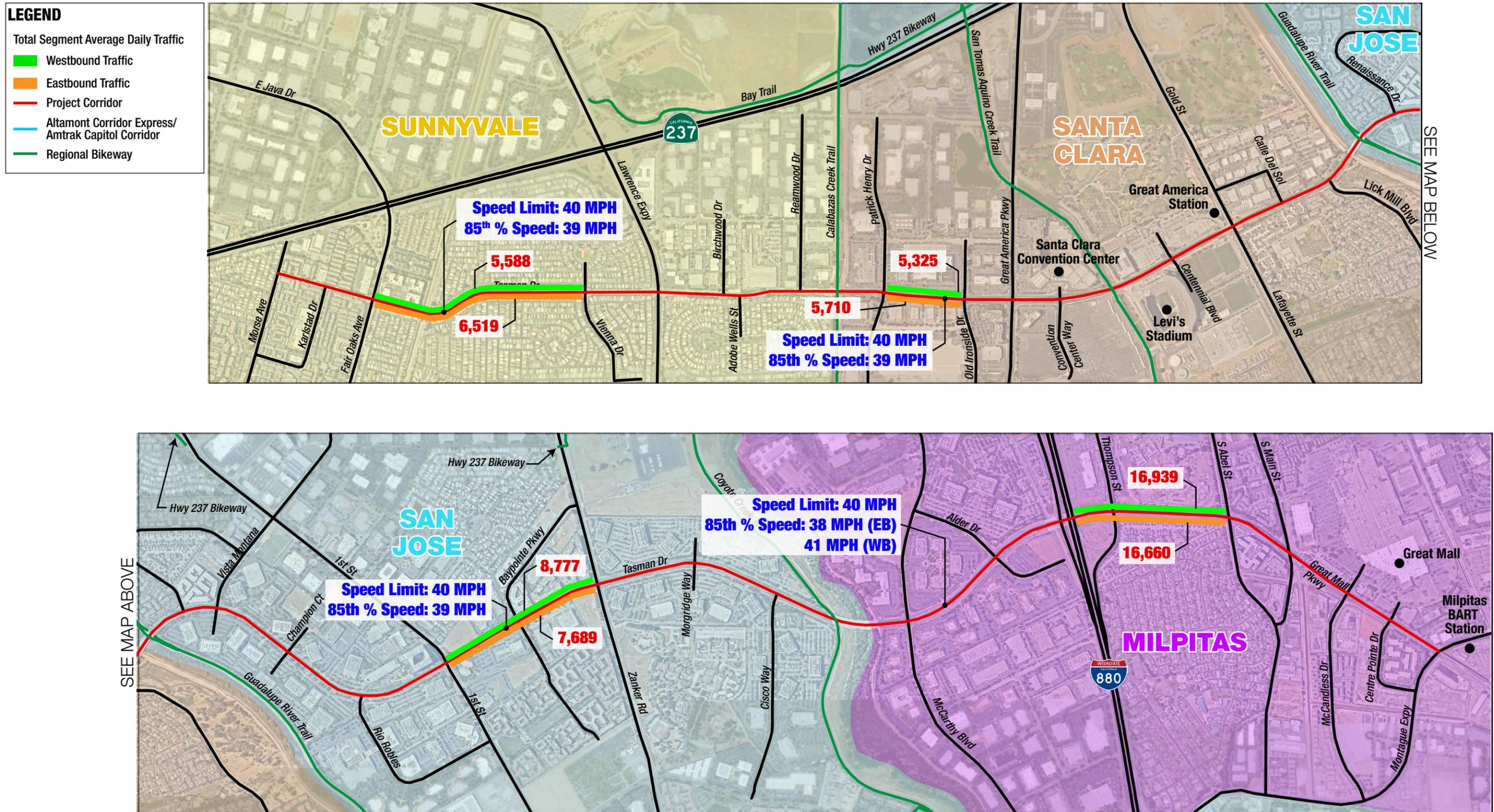
The intersection of Morse Avenue and Tasman Drive is the only stop-controlled intersection counted; The remainder are signalized intersections.

Detailed intersection volumes and turning movements are visually represented in [Figure 12 - 2015-2016 Intersection Turning Movement Volumes Map](#).

Tasman Corridor

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Figure 11- Average Daily Traffic Volume with Speeds Map



Source: WILTEC 24-HR ADT Counts May 24, 2017; VTA Speed Survey May 16-17, 2017 and City of Milpitas Speed Survey June 24, 2010



August 2017



Figure 12- 2015-2016 Intersection Turning Movement Volumes Map

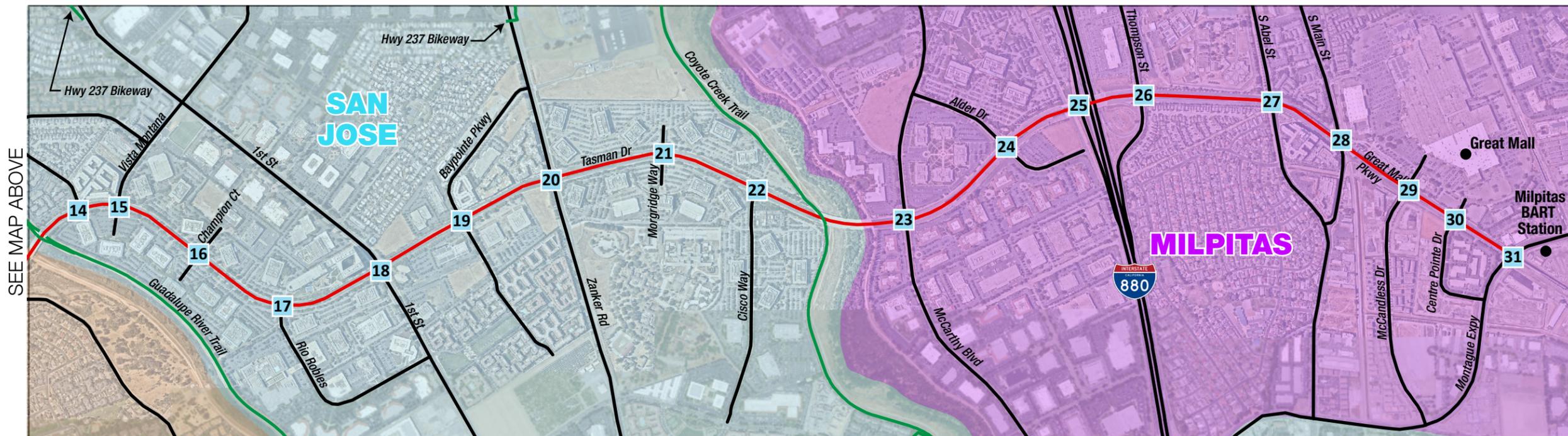
LEGEND

Turning Movement Counts

- 1 Intersection location
- Project Corridor
- Regional Bikeway



SEE MAP BELOW



SEE MAP ABOVE



August 2017

Tasman Corridor COMPLETE STREETS STUDY

Figure 12- 2015-2016 Intersection Turning Movement Volumes Map Continued

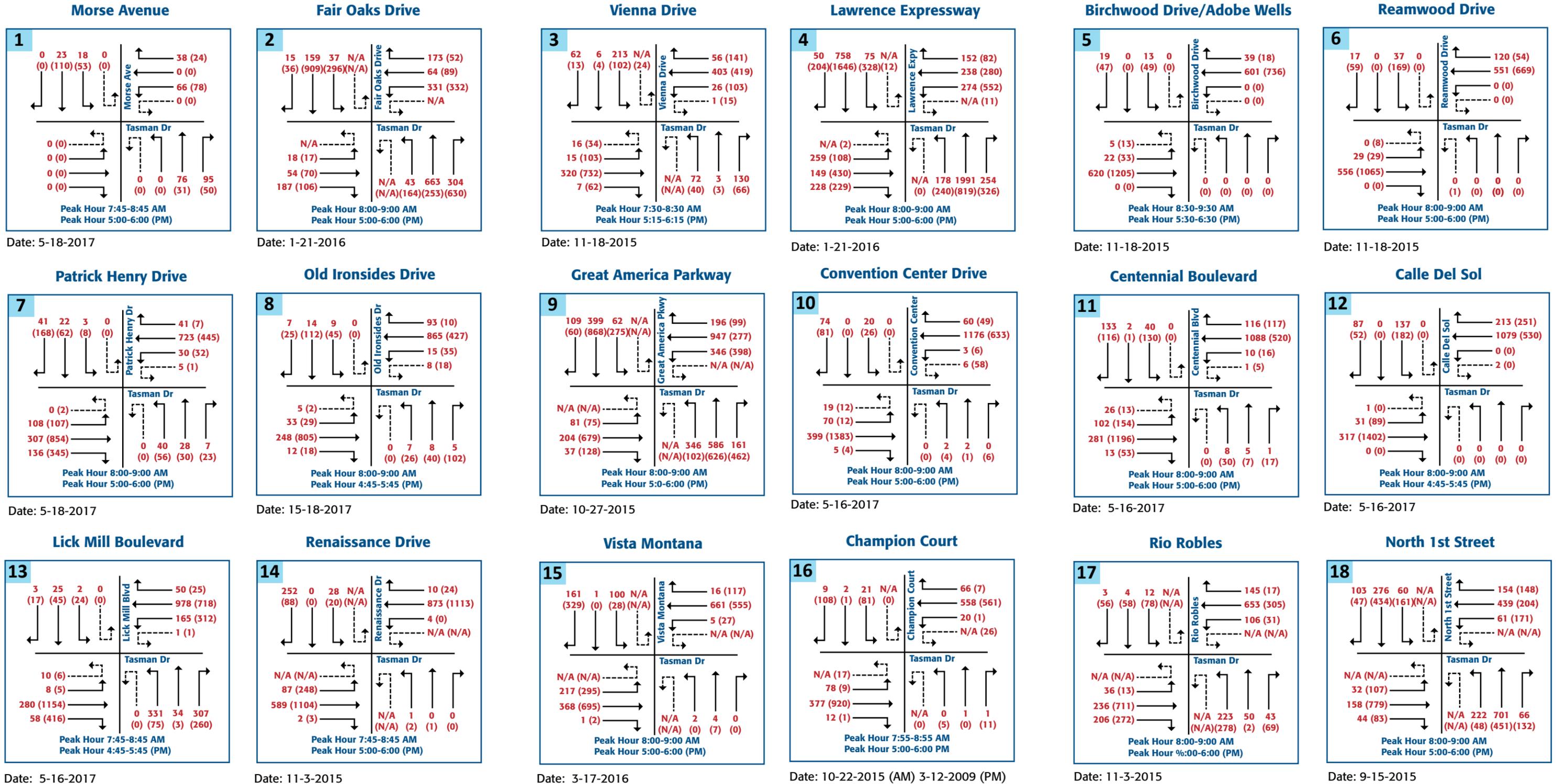
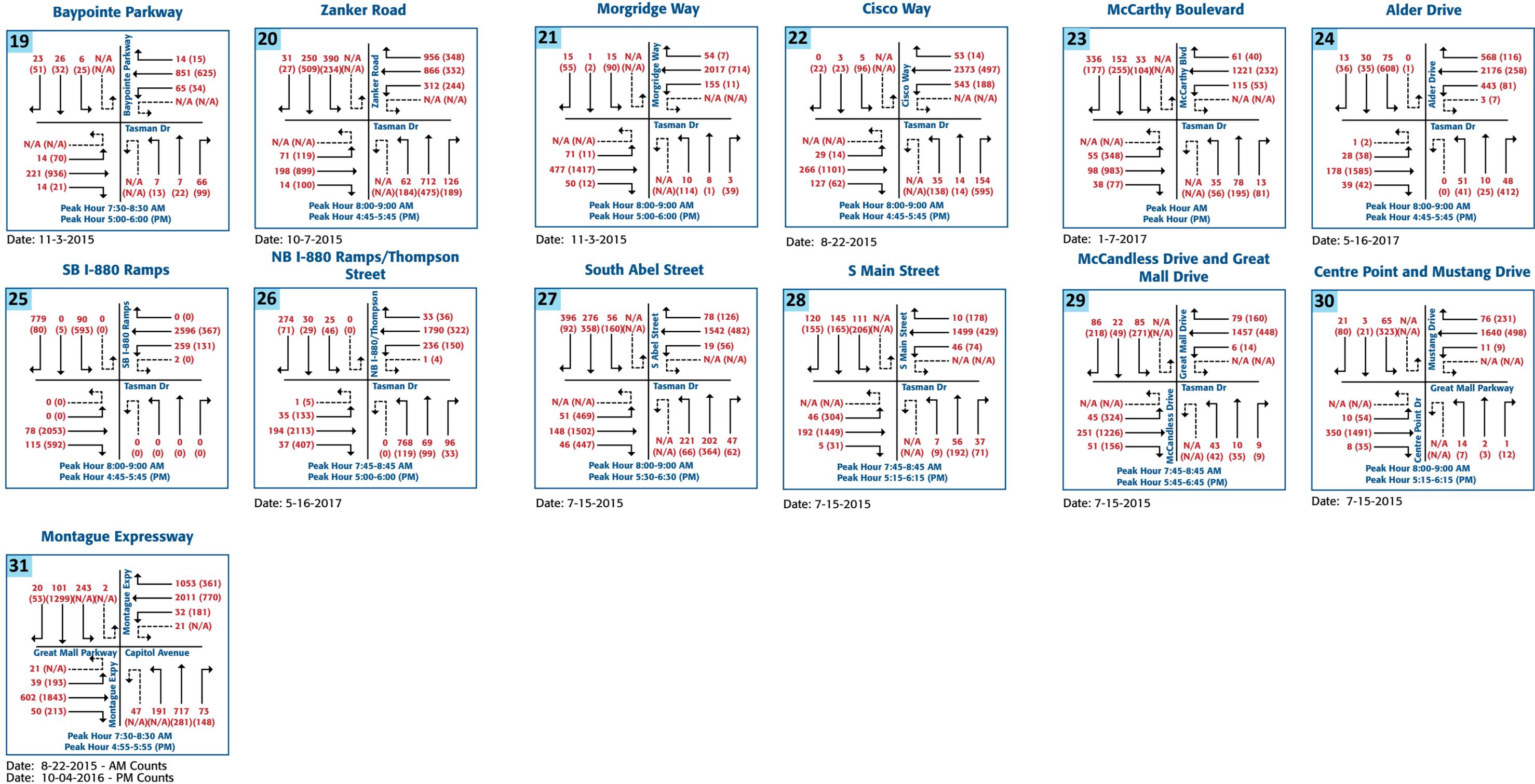


Figure 12- 2015-2016 Intersection Turning Movement Volumes Map Continued



Bicycle and Pedestrian Counts

Bicycle and pedestrian counts are a useful tool to understand which locations are high activity areas for pedestrian and cyclists so that appropriate improvements can be made for safety, comfort, and convenience.

Figure 13: Bicycle and Pedestrian Counts Map provides a visualization of bicycle and pedestrian counts taken at signalized intersections and trailheads along the Corridor. The dates/times that the counts were conducted are noted on the map.

Count Location

Bicycle and pedestrian counts were conducted at signalized roadway intersections and trail intersections along the Corridor. The intersection count data includes turning movements for bicycles but not for pedestrians; therefore, the sum of total pedestrian and total bike counts for each intersection are shown on the map, for the purposes of simplification. The roadway intersection counts for the Corridor were conducted over a 1.5-year span from September 2015 to May 2017. Counts were taken in the mornings and afternoons; the specific times are noted on the map.

Counts were also taken where the following trails intersected with the Corridor. All trailhead counts were conducted on Saturday, May 20, 2017, from 9:00 AM to 2:00 PM. Trail counts included:

- Calabazas Creek Trail
- San Tomas Aquino Creek Trail
- Guadalupe River Trail
- Coyote Creek Trail

Count Analysis

The number of pedestrians and bicyclists counted at the roadway intersections with the Corridor vary from low at Centre Pointe Drive (one pedestrian; 10 cyclists) to high at Centennial Boulevard (458 pedestrians; 10 cyclists on May 18, 2017 from 4-6 PM) and Lick Mill Boulevard (78 pedestrians; 84 cyclists on May 16, 2017 from 7-9 AM). The highest pedestrian and bicycle counts were observed near transit station locations (such as at Centennial Boulevard near the Great American Station and Lick Mill Boulevard near the Lick Mill Station) and generally correspond to high boardings and alighting numbers as seen on the Existing Transit Stops Map. Most of the counts were taken near existing sidewalk and bicycle facilities; however, no sidewalk is located on the north side of the Corridor to the west and east of Gold Street/Lafayette Street near Centennial Boulevard (pedestrian count of 458). This indicates a possible need for this facility.

The most popular trails along the Corridor are the Guadalupe River Trail, with a total of 181 pedestrians and 52 cyclists, and the San Tomas Aquino Creek Trail, with a total of 66 pedestrians and 30 cyclists accessing or exiting the trail on the Corridor. In general, the counts indicate that a high number of people are accessing all trails using the Corridor. The trail counts were conducted on Saturday, May 20th, 2017, from 9:00AM to 2:00PM.

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VI. COLLISION HISTORY

Vehicular Collisions

SWITRS data was collected from a 5-year period (January 2011 to December 2015) for each of the municipalities within the Study Area. This data was used to analyze the collision history of intersections along the Corridor. *Figure 14 – 2011-2015 SWITRS Vehicle Collision Locations Map* on *Page VI-2* displays the crash locations. With the exception of Karlstad Drive in Sunnyvale and Lafayette Street in Santa Clara, every intersection along the Corridor experienced at least one collision within the study period. Over 350 collisions have occurred at or near an intersection with the Corridor during the past 5 years. This is a rate of 0.49 collisions per Motor Vehicle Mile (MVM) as compared to Santa Clara’s County average of 0.79 MVM and the State average of 0.88 MVM.

Two intersections stood out with seemingly high numbers of collisions: Lawrence Expressway with 59 collisions, and Montague Expressway with 40 collisions during the past 5 years. Many of the other larger intersections also experienced higher levels of collisions.

A range of collision types are identified for the collisions shown in *Figure 14*, including sideswipe, broadside, rear-end, hit object, head-on, and other categories. The two most common types of collision for this Corridor are broadside and rear-end collisions.

The center-running light rail has also been involved in accidents along the Corridor. Most of these collisions occurred between the train and an automobile. The intersection of Tasman Drive and Lawrence Expressway maintains the highest number of collisions involving light rail trains, totaling three in the past five years. All three of these incidents reported that the reason for the accident was the traffic signals and signage.

For all collisions between involving LRT, slightly less than half of the collisions between the train and an automobile were categorized as a broadside crash.

In 2015, the intersection of Tasman Drive and Alder Drive experienced a collision between the LRT train and a pedestrian, resulting in a pedestrian fatality. At this intersection, the Corridor maintains three travel lanes in each direction with a left-turn bay for both directions and a right-turn bay for westbound traffic. The Corridor also includes center-running light rail and a bicycle lane for both directions of travel. Southbound Alder Drive at this intersection is comprised of two travel lanes, a double left-turn bay, and a bicycle lane. The northbound counterpart is similarly design with two travel lanes and a bicycle lane, but includes a single left-turn bay.



Bicycle & Pedestrian Collisions

People walking or biking are at greater risk of being seriously injured in a collision with a motor vehicle than as an occupant in a car or other motor vehicles. For this reason, pedestrians and bicyclists are considered vulnerable road users. Data describing the location and nature of crashes involving pedestrians and bicyclists helps to identify locations for improvements and identify ways that other policies and programs could help improve safety for people walking and biking. **Figure 15 – 2011-2015 Bicycle and Pedestrian-Involved Collisions Map** on **Page VI-4** graphically displays the locations of these types of collisions.

The annual number of bicycle- and pedestrian-involved reported crashes are shown on the map 2011-2015 Bicyclist and Pedestrian-Involved Collisions and **Tables 8 and 9**.¹⁹

Bicycle Collisions

As **Figure 15** and **Table 8** indicate, most bicycle collisions occur near intersections and light rail stations. As noted in the Summary of Corridor Needs section of this report, several intersections in the Corridor lack bicycle facilities. Therefore, it is unclear to motorists and cyclists how to interact in intersections, which leads to high levels of conflict. Light rail stations represent areas of high activity and larger numbers of pedestrians. These areas have more collisions than areas that lack pedestrians and cyclists. The Lick Mill Station in Santa Clara has a high number of minor-injury bicycle collisions, and the area between Great Mall/Main and Montague Stations in Milpitas also has many reported collisions, including two fatalities in the period from 2011-2015.

As **Table 8** indicates, the Cities of San Jose and Milpitas have higher bicycle-involved collisions than Santa Clara or Sunnyvale. Forty-six percent of the total report collisions involving bicyclists occurred in Milpitas. Both San Jose and Milpitas have bike lanes along both sides of the Corridor (and more bicycle facilities than in Santa Clara and Sunnyvale). Consequently, more cyclists may be using these facilities, leading to a higher incident of collisions than in areas where fewer cyclists ride.

Designing and implementing a street network throughout the Corridor that keeps all road users in mind can help to clarify expectations for everyone, improve compliance with traffic signals and signage, make road user behavior more predictable so motorists and bicyclists can better understand and anticipate one another's needs, and ultimately lead to fewer collisions.

Pedestrian Collisions

Similar to the bicycle collisions, most pedestrian collisions in the Corridor occur at intersections and near light rail stations. Intersections on the Corridor have long crossing distances, leaving pedestrians exposed for longer time periods when crossing the street. The intersections also have wide turning radii that allow for turning with high speeds by motorists and decreases the amount of time that motorists can yield to pedestrians. For example, the one pedestrian fatality on the Corridor from 2011-2015 occurred at the intersection of Alder Drive and the Corridor; to cross this intersection, pedestrians must cross five to six travel lanes. (The second fatality represented by the chart below occurred on CA-237 which is within a half-mile of the Corridor.)

As **Table 9** indicates, the four cities on the Corridor have similar numbers of reported collisions. All reported collisions occurred at intersections; this is expected, as intersections are where pedestrians are most vulnerable. While there are some gaps along the Corridor, sidewalks can be found throughout the Corridor, and people are walking on all sections of the Corridor which leads to a more even occurrence of collisions.

Table 8: 2011-2015 Bicycle Reported Fatal and Injury Crashes by City on the Corridor and Within a Half-Mile

City	Minor Injury	Severe Injury	Fatality	Total Reported Bicycle Crashes by City
Sunnyvale	2	0	0	2
Santa Clara	7	0	0	7
San Jose	11	0	0	11
Milpitas	14	1	2	17
Overall Total Reported Bicycle Crashes	34	1	2	37

Source: SWITRS, 2011-2015

Table 9: 2011-2015 Pedestrian Reported Fatal and Injury Crashes by City on the Corridor and Within a Half-Mile

City	Minor Injury	Severe Injury	Fatality	Total Reported Bicycle Crashes by City
Sunnyvale	3	0	1	4
Santa Clara	4	1	0	5
San Jose	5	0	0	5
Milpitas	5	1	1	7
Overall Total Reported Pedestrian Crashes	17	2	2	21

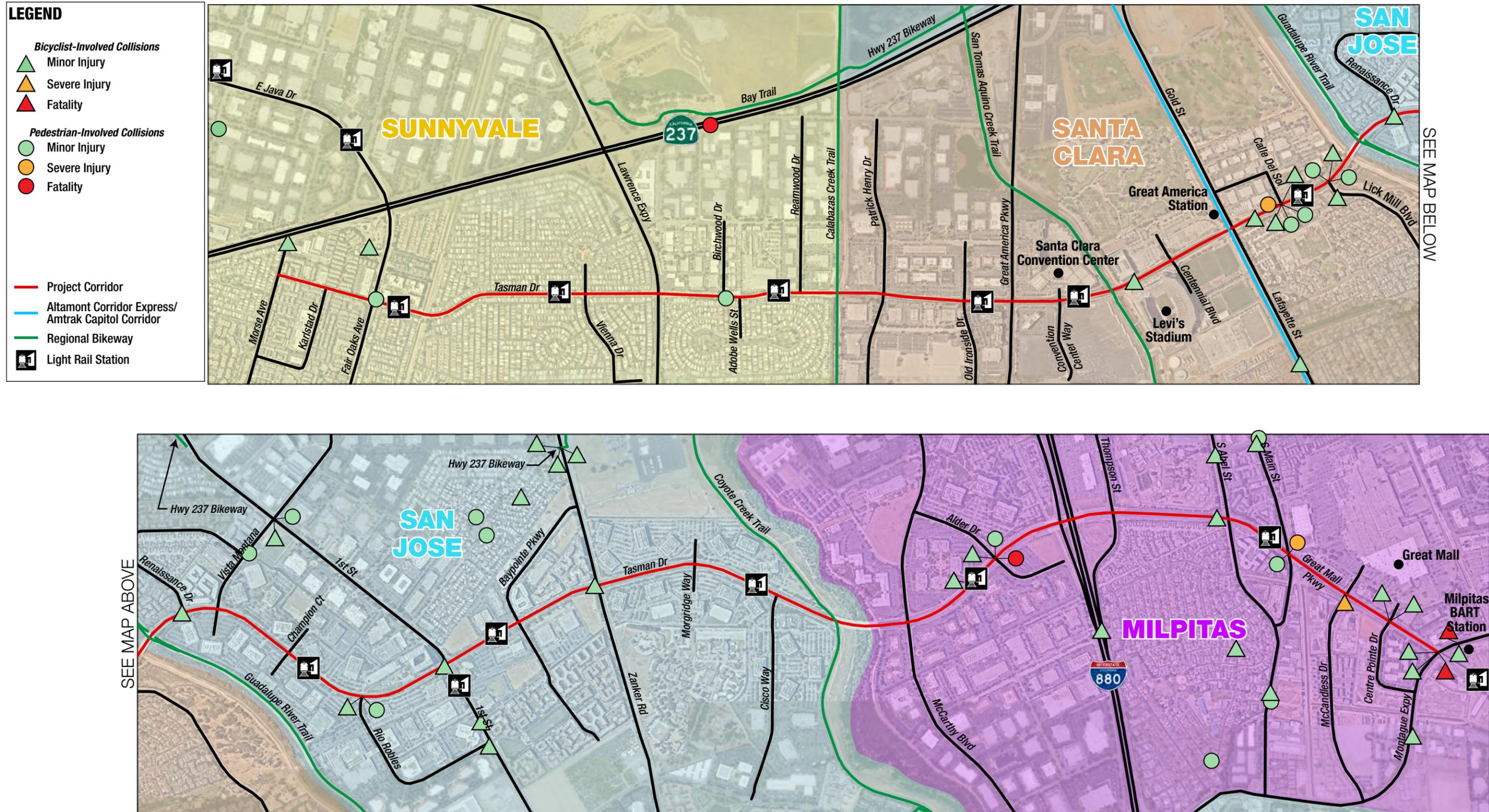
Source: SWITRS, 2011-2015

¹⁹The crash data in this table and figure is from the California Highway Patrol through their Statewide Integrated Traffic Records System (SWITRS). SWITRS is a database of reported crashes collected by law enforcement agencies across the state. Reported crashes represent only those crashes that were documented by a law enforcement officer in the field and represent a portion of all collisions

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Figure 15- 2011-2015 Bicycle and Pedestrian-Involved Collisions Map



Source: SWITRS Collision data 2011-2015



VII. WALK SCORE AND STRAVA DATA ANALYSIS

The physical environment can have a substantial impact on an individual’s choice of the mode of transportation they use for commuting to work or getting to recreational activities. The following information analyzes data pulled from two outside sources—Walk Score and Strava—in order to identify the physical environment from the perspective of a pedestrian or bicyclist.

Tasman Corridor Walk Score and Strava Data

Figure 16: Popular Bicycle Corridors and Light Rail Walk Scores provides a visualization of popular bicycle corridors, using Strava Data, and the Walk Scores of the light rail stations, using Walk Score Data.

Light Rail Stations and Walk Score Data

Walk Score evaluates locations based on their walkability and provides a quantitate number that is used to determine the pedestrian “friendliness” of an area. The Walk Score ranking considers the proximity of amenities such as businesses, shops, schools, parks, and other destinations, and provides a score between 0 to 100 that indicates the walkability of an area. *Table 10: Walk Score’s Metrics* provides an overview of Walk Score’s metrics.

To indicate pedestrian activity along the Corridor, Walk Score values were generated for the VTA light rail stations. Throughout the Corridor, the highest pedestrian activity was observed at the light rail stations. As shown in *Figure 16*, most light rail stations fall into the “Car-Dependent” category with eight stations receiving a Walk Score of 24-49. Two stations are considered “Very Car-Dependent” with Walk Score of 13 (Cisco Way station) and 15 (I-880/Milpitas). Four stations are considered “Somewhat Walkable” with scores between 50-69, and one station (Great Mall/Main) is considered “Very Walkable” with a score of 78.

Most stations are not located near walkable amenities nor are they located near enough businesses or shops to meet people’s everyday needs. The station at Great Mall/Main in Milpitas received the highest score due to its proximity to the Great Mall and associated businesses.

Popular Bicycle Corridors and Strava Data

Strava is a popular activity monitoring program that allows people to log their running and cycling activity using iPhone or Android phones or GPS watches and bicycle mounted head units. This data is useful in transportation planning to analyze the most popular cycling and running/walking routes.

As shown in *Figure 16*, the most popular routes are indicated by the darker color while the less popular routes are indicated by the lighter color. The cycling activity was analyzed using the publicly available Strava heatmaps for 2016. The data represents a fraction of cycling since people must download the application and sign up with an account to log trips with Strava. The data is useful since it shows heavily used routes through an area. The data shows that in 2016, most cyclists traveling through or near the Corridor use alternative, parallel routes when available. For example, the Bay Trail provides a lower-stress, parallel route to the Corridor though Sunnyvale. In Milpitas, alternatives routes are not available; therefore, more cyclists are riding on the Corridor.

Table 10: Walk Score’s Metrics

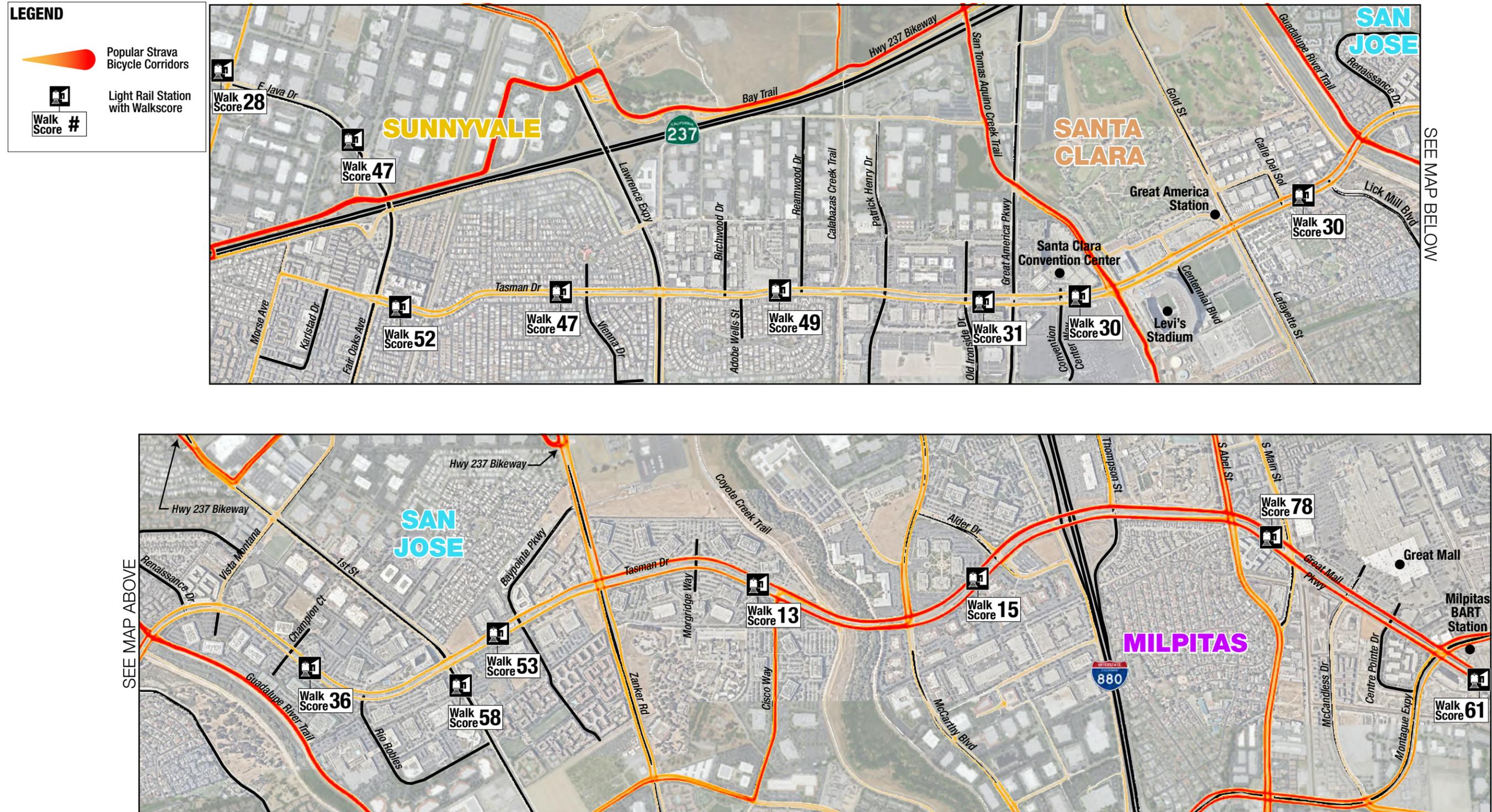
Score	Description
90-100	Walker’s Paradise: Daily errands do not require a car
70-89	Very Walkable: Most errands can be accomplished on foot
50-69	Somewhat Walkable: Some errands can be accomplished on foot
25-49	Car-Dependent: Most errands require a car
0-24	Very Car-Dependent: Almost all errands require a car

Source: “How Walk Score Works,” Redfin.com

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Figure 16- Popular Bicycle Corridors and Light Rail Walk Scores



August 2017



Level of Stress Analysis

Research shows that many people feel safer and more comfortable riding on low traffic streets or on facilities that provide protection from fast-moving traffic. Level of Traffic Stress (LTS) is a way to measure routes that are comfortable for different groups.

Bicycle riders and the level of stress they can bear are often categorized in [Table 11: Level of Traffic Stress and Bicycle Riders](#).

[Figure 17: Bicycle Level of Traffic Stress Map](#) shows the level of traffic stress for bicyclists along the Corridor.

VTA conducted an LTS analysis throughout Santa Clara County. Data from this analysis was mapped for the Corridor. As [Figure 17](#) indicates, most sections of the Corridor are comfortable only for riders who are “enthused and confident” and “strong and fearless,” representing 12 percent of the population who may ride. “Interested but concerned” riders represent about 51 percent of people interested in cycling; these riders are not served by the biking facilities on the Corridor.

Factors such as the presence, or lack of, protected bicycle facilities; the traffic volume; and speed of vehicles are used to estimate level of traffic stress. Facilities that provide high levels of protection, such as trails, have low LTS ratings and are appropriate for “interested but concerned” and “Children and Elderly” (VTA additional ridership category) riders. Roads that provide low levels of protection, such as the section of the Corridor between Centennial Boulevard and the Guadalupe River Trail in Santa Clara, have high LTS ratings; often only “strong and fearless” bicyclists will ride in these areas.

Providing additional protections, such as buffered bike lanes, would help serve the “interested but concerned” population and would likely increase the number of riders on the Corridor.

Table 11: Level of Traffic Stress and Bicycle Riders

Level of Traffic Stress	Rider Description	Percent of Riders in this Category
1 (Lower stress)	Children and Elderly* - Users from 8 (children) to 80 (seniors)	*
2	“Mainstream Population” - Interested but concerned	51%
3	“Enthused and confident” - Adults that are comfortable in shared traffic but may prefer some separation	5%
4 (Higher stress)	“Strong and fearless” - Adults that are comfortable in shared traffic with no separation	7%
Not applicable	Not able or interested	37%

Source: Dill, J McNeil, N. “Revisiting the Four Types of Cyclists: Findings from a National Survey” Transportation Research Board 95th Annual Meeting, 2016.

*This category, identified by VTA, is not included in the national research.

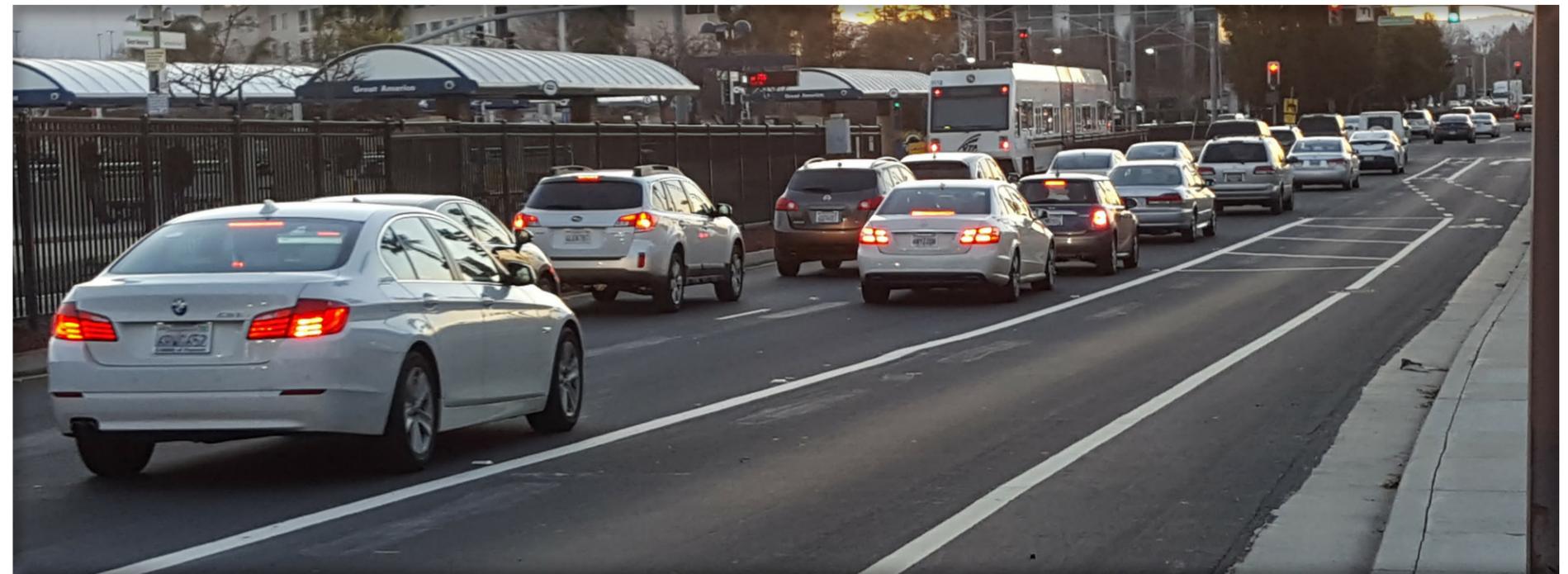
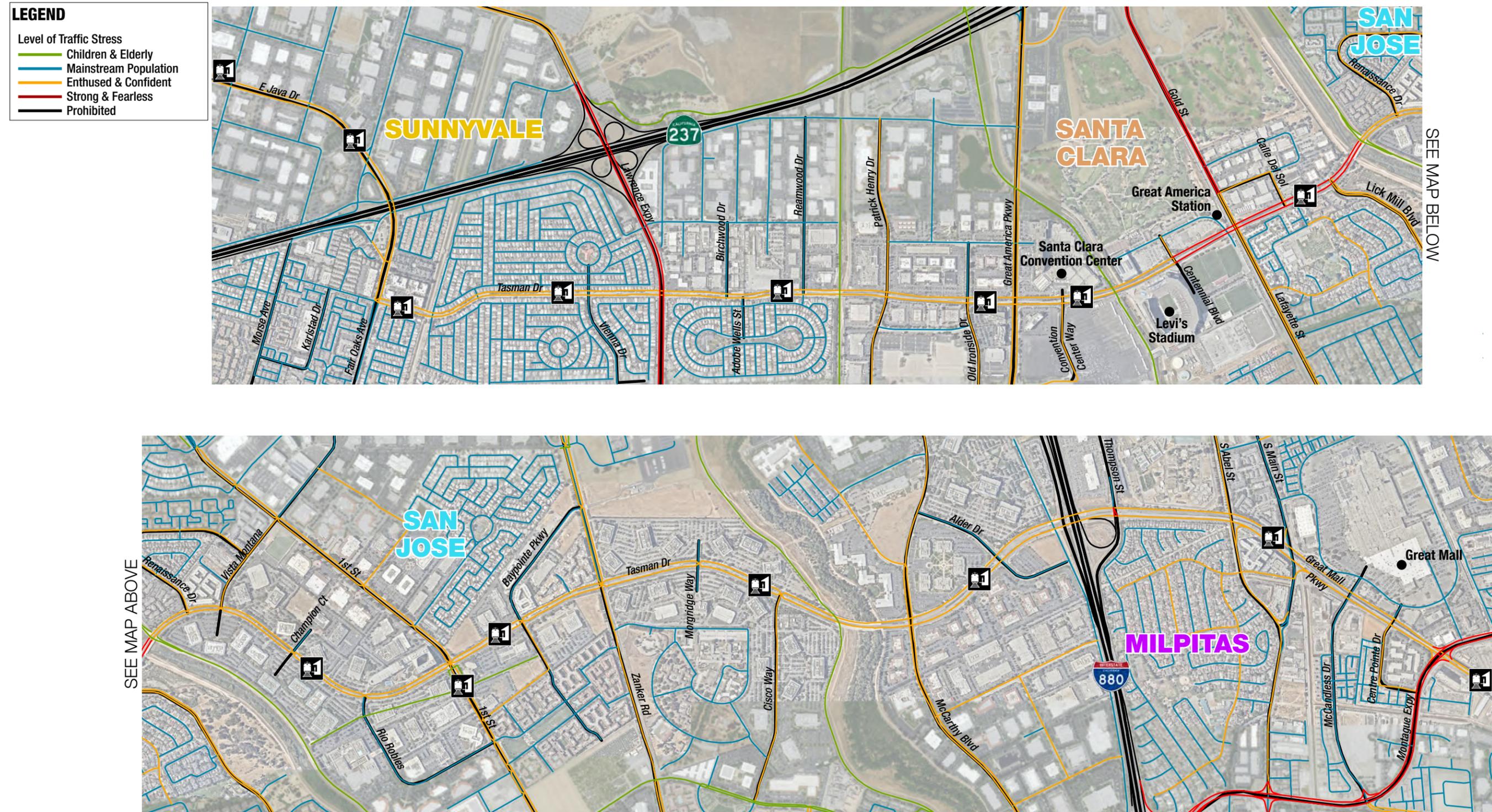


Photo 15: Example of evening congestion along the Corridor

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Figure 17- Bicycle Level of Traffic Stress Map





VIII. DOCUMENT REVIEW/RELEVANT PLANNING AND IMPROVEMENT EFFORTS

Previous studies and existing plans for the Corridor and surrounding area were also considered when evaluating the operation of the Corridor. Improvements associated with development on adjacent or nearby parcels can have just as great an impact on the Corridor as physical improvements within the right-of-way. These documents were used as a reference tool in understanding the current characteristics of the Corridor. In the next stages of the project, they will help inform the development of the improvement alternatives. The following information highlights some of the larger planning documents and projects that impact the Corridor.

Capital Improvements

Capital Improvement Plans (CIP) are developed and updated regularly by municipalities. CIP's generally detail plans for a 5-year span in the future and are used annually to guide the municipalities' projects. CIP projects can be categorized by transportation, land use, and other types of improvements. For the purposes of this study, transportation-related projects were reviewed to understand their role and impact in the existing conditions of the Corridor.

Sunnyvale. The 2016 Sunnyvale CIP includes the Tasman/Fair Oaks Area Streetscape and Sense of Place project which is an outcome of the Tasman/Fair Oaks Pedestrian and Bicycle Circulation Plan. Sidewalk construction, enhancements to intersections and bus stops, improved signage, and other general improvements were listed as part of this project. The Calabazas Creek trail low water crossing would provide for the planning, design, and construction of low water crossings under Tasman Drive and Highway 237; however, both of these projects are listed as unfunded at the time of this study.

Santa Clara. The Santa Clara CIP for 2016-2017 included three projects related to the Corridor. The first project (Street Lighting, Fund 534) plans to replace approximately 200 street lights along Tasman Drive and Great America Parkway. The second project is the installation of a permanent Changeable Message Sign (CMS) at a to-be-determined strategic location along the Corridor. The third project is the Tasman Drive Bicycle Lanes Project. This project will install bicycle lanes along the Corridor to connect existing bicycle lanes from the Eastern City Limit in the City of Sunnyvale to the Western City Limit in the City of San Jose. This project also includes the installation of bicycle detectors at signalized intersections. Construction is anticipated to start in August of 2017.

San Jose. The San Jose 2017-2021 CIP does not contain any transportation specific projects related to the Corridor.

Milpitas. The Milpitas 2016-2021 CIP included a project that would potentially impact the Corridor. The project is a street landscape irrigation repair project for the year 2019. This project highlights that the older irrigation system is not well documented, has leaking issues, is inefficient, and does not provide suitable irrigation to support a healthy landscape. Another project currently underway at the time of this study is a landscaping project under the raised LRT on the eastern section of the Corridor. This project will provide a vehicle maintenance access path and landscaping.

Development Activity

New development along the Corridor can change the corridor context, as well as increase traffic and transportation demands on the corridor. The following highlights some of the more transformative plans, projects, and their relationships with the Corridor.

Milpitas Transit Area Specific Plan. The Milpitas TASP is part of the eastern edge of the Study Area. The TASP area is bisected by Great Mall Parkway and Montague Expressway. The TASP's gross acreage is approximately 437 acres, and centers around the existing light rail stations and future BART station. This plan looks to create a walkable, transit-oriented area with a mix of land uses. The strategic design encourages walking, biking, and transit trips, while potentially minimizing vehicle trips. Numerous development projects totaling several thousand housing units are now under construction or recently completed in the TASP area. The impacts this development could have on the demands and function of the Corridor play an important role in influencing how the modes of transportation along the Corridor tie into the overall transportation network.

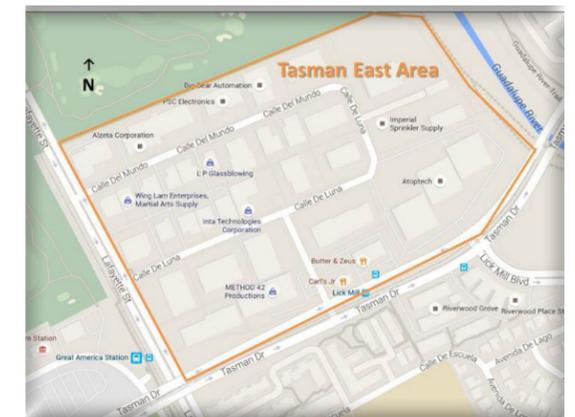


Santa Clara CityPlace Master Community and Development Plan.

The City Place Master Community Plan is located in Santa Clara, north of the Corridor and bounded on the east by the Guadalupe River, the north by Highway 237, and the west by San Tomas Aquino Creek. This development total acreage is approximately 240 acres that was formerly and primarily used as a landfill and is currently used as a golf course. The development of this site will create a vibrant activity center for the City and Silicon Valley region. A mix of land uses and access to outdoor spaces are major components of this plan, including 5.7 million square feet of office, 1.5 million square feet of retail, 700 hotel rooms, and up to 1,680 residential units. Similarly to the Milpitas TASP, the Santa Clara CityPlace Master Community Plan is expected to draw a large number of residents, employers, and other revenue generators to the area, located in the middle of the Study Area. The increase in trips to and from this area will have a major impact on the Corridor, increasing the importance of VTA LRT, the Capitol Corridor rail service, the Altamont Corridor Express, and the use of bicycling and walking as active modes of transportation.



Tasman East Area. The Tasman East Specific Plan comprises 45 acres of existing industrial uses. The area is situated north of Tasman Drive, bounded on the west by Lafayette Street and on the east by the Guadalupe River. At the time of this Study, the Tasman East Specific Plan is still under review by City Council. The draft plan currently outlines a strategy for the development of a high density, transit-oriented neighborhood with residential and supportive retail services.



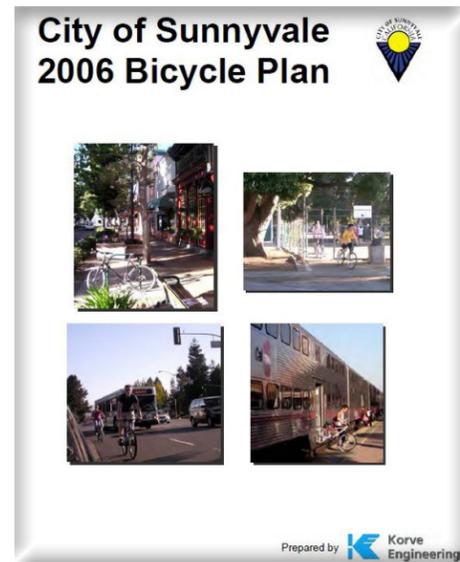
Other Related Studies

Bicycle and transit plans for each municipality and regional agency will affect not only their respective modal networks, but the overall transportation network as well. Plans to enhance connections between pedestrian and bicycle facilities and connections to transit facilities (both bus and light rail) will increase the multi-modality of the Corridor. The following information highlights the upcoming plans for segments of the Corridor.

Bicycle Plans

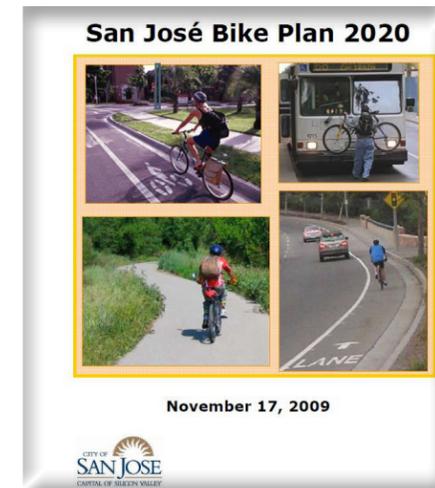
VTA: At the time of this study, VTA is currently in the process of developing a regional bicycle plan. The Santa Clara Countywide Bicycle Plan will build from the previous plan adopted in August of 2008.

VTA also prepares the Bicycle Expenditure Program (BEP), first adopted in 2000. The BEP acts as a funding mechanism for countywide bicycle projects, which are incorporated into the Valley Transportation Plan (Santa Clara County's Long Range Transportation Plan). The BEP is updated every four years with projects listed for the next 25 years.



Sunnyvale: The City of Sunnyvale's 2006 Bicycle Plan displays a map of the existing bikeway network within Sunnyvale, which indicates that the segment of the Corridor within its city limits is not designated as a bicycle facility. This plan indicates that the Corridor from Morse Ave to Fair Oaks Avenue includes a Class II bicycle lane, while the segment from Fair Oaks Avenue to Calabazas Creek Trail is rated as a "route" for advanced riders. Sunnyvale is currently in the process of updating its Bicycle Plan.

Santa Clara. Santa Clara's Bicycle Plan Update 2009 indicates that the Corridor within its City limits (Calabazas Creek to Guadalupe River) is a future Class II buffered bike lane facility. Construction is anticipated to begin in August 2017.



San Jose. In 2009, the City of San Jose developed a Bike Plan 2020 that designates an existing basic bicycle facility along the Corridor, and highlights the existing trails and trailheads which are situated on either end of San Jose's ownership of the Corridor.

Milpitas. Milpitas developed their Bikeway Master Plan Update in 2009, which indicates that Tasman Drive and Great Mall Parkway within its jurisdiction maintain Class II Bike Lanes; this classification provides a striped lane for one-way bike travel. The Proposed Bicycle Network maintains this designation for the Corridor.

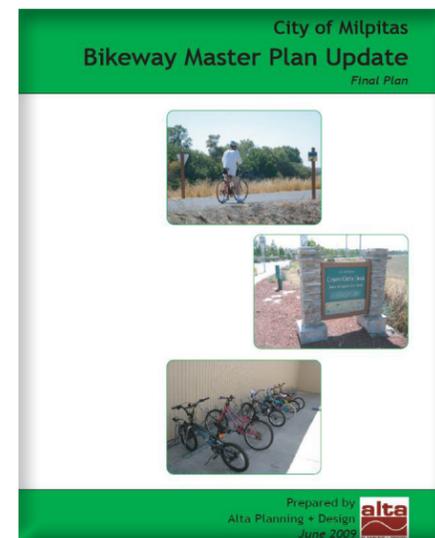


Photo 16: Example of the recently-installed Santa Clara buffered bike lane

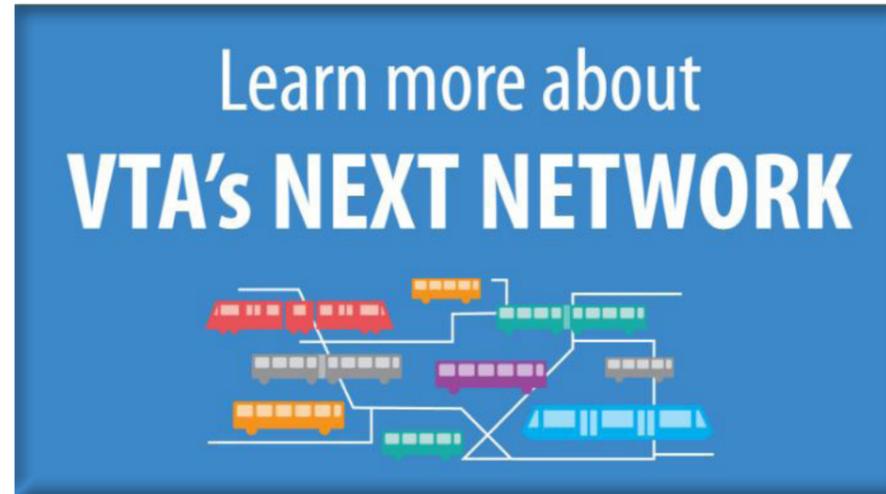


VTA's BART Extension, Next Network, and Light Rail Efficiency Study

VTA's Next Network project was a redesign of the bus and light rail Transit network and an opportunity for VTA to revisit their transit service goals and objectives. The Next Network project concerns VTA's transit operations and seeks to:

- Better connect VTA transit with the Milpitas and Berryessa BART stations;
- Increase overall system ridership; and
- Improve VTA's farebox recovery rate.

Within the Corridor study area, the light rail network will be modified to provide additional service with three light rail lines. The existing Alum Rock – Santa Teresa line that extends through the Study area between North 1st Street in San Jose to the eastern Study limit at Montague Expressway would remain. The existing Mountain View – Winchester line that extends through the study area between Fair Oaks Avenue and North 1st Street would be truncated to terminate at the Old Ironsides Station in Santa Clara. A new light rail line would operate between Mountain View and Alum Rock, extending the length of the Study area between Fair Oaks Avenue and Montague Expressway. The result of these operational changes is expected to include increased light rail ridership throughout the Study Area, reduced transfer activity at the Tasman Station, and increased transfer activity at the Old Ironsides Station.



The current service plan provides two peak-period routes (140 and 330) along Tasman Drive/Great Mall Parkway. Other bus routes cross the Corridor on intersecting streets. The Next Network Plan will maintain a majority of the routes affecting the Corridor with the exception of Route 58, which crosses the Corridor via Zanker Road with 1-hour headways, and will be discontinued. Route 330 will also be discontinued. Bus service along Tasman Drive/Great Mall Parkway will continue with various routes, each generally at 30-minuted frequencies on weekdays. Each of the three light rail lines will offer 15-minutes frequencies on weekdays.

VTA is also expanding the BART system into Santa Clara County with the BART Silicon Valley Berryessa Extension Project. It is extending BART from the Warm Springs Station in Fremont to San Jose with a new station in Milpitas, providing direct service from Santa Clara County to Oakland, the East Bay, and San Francisco. The Milpitas BART Station will be located at the intersection of Montague Expressway and Capital Avenue (the far east end of the Study area). This station is the focal point of the Milpitas Transit Area Specific Plan previously discussed. The station is currently under construction, with a planned opening for the year 2018. The station includes numerous multi-modal facilities in addition to the BART connection, including 17 bus bays, a 1,200-space parking structure, a BikeStation bike parking facility, shuttle and taxi pick-up/drop-off, and pedestrian facilities.

The completion of the BART station in Milpitas will impact bus routes by acting as a transfer point within the network. In addition to the light rail Blue and Orange lines, the following bus routes are planned to use the BART Station as a transfer point: 20, 47, 60, 66, 70, 71, 77, AC217.

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IX. SUMMARY OF CORRIDOR NEEDS

The first round of public outreach for the Corridor Complete Streets study included community meetings, an online survey, and walk audits of the Corridor. Each of these outreach efforts provided feedback on specific challenges and opportunities as well as general vision and goals for the Corridor.

The following provides a summary of these outreach efforts and the needs identified through this first set of feedback from the public and stakeholders.

Summary of Outreach Efforts

Three community meetings were hosted by VTA on April 11, 12, and 13, 2017, at three different locations: the Riverwood Grove Community Room (2150 Tasman Drive in Santa Clara), the Lakewood Park Community Room (834 Lakechime Drive in Sunnyvale), and the Centria Community Room (1101 S. Main Street in Milpitas), respectively. Outreach materials publicizing the meetings, as well as materials provided at the meetings, were provided in English, Spanish, and Chinese.

Approximately 40 community members attended the meetings. City staff supported VTA and Consultant staff at each meeting. The purpose of the meetings was to provide information about the Project purpose, review existing conditions, provide examples of possible project alternatives, collect input from the community regarding areas of concern and challenges, and answer questions from the public. Each meeting was two-fold: Each began with a general presentation of the existing conditions, potential project alternatives, and project timeline and then transitioned to a feedback activity where attendees were asked to provide feedback at four stations.

The feedback provided at each of these meetings can be summarized in [Appendix B: Round 1 Project Outreach Summary](#).

From March 28 to April 5, 2017, the Tasman Crowdsport online survey was open for public comment. This interactive mapping program allowed participants to share specific “spots” of issues they’ve experienced and comment on the types of improvements they would like to see. These comments were available for all to see, and allowed other participants to add on comments if they agreed/disagreed. In total, there were 236 survey responses. Respondents could provide their name or reply anonymously. A total of 98 emails were provided by survey takers.

Two hundred and eighty-one spots were submitted as part of this survey. A portion of these data points (approximately 15 percent) were located away from the Corridor, which for the purpose of this survey was defined as within 100 feet of the Corridor. The following graph represents the breakdown of the type of “spot” by which City jurisdiction it fell under.



Photo 17: Sunnyvale community meeting.



Photo 18: Participants at the community meeting.

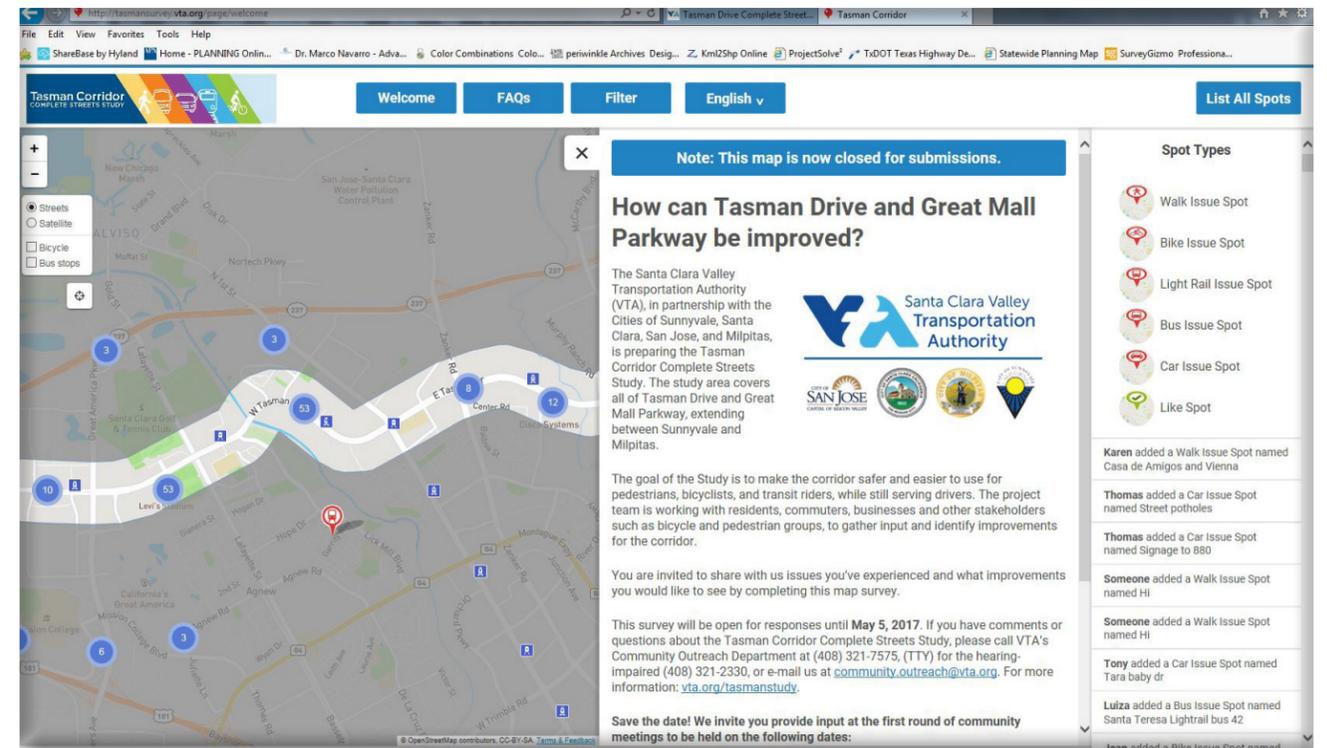


Exhibit 4: Screenshot of the on-line survey

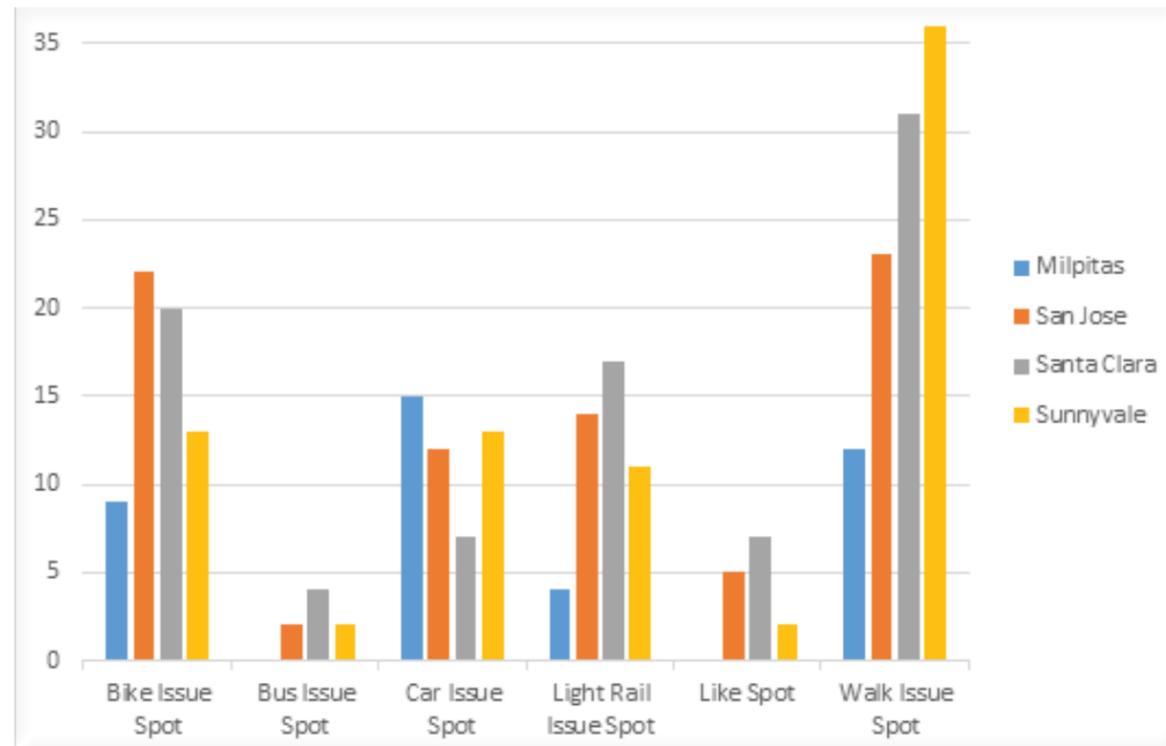


Exhibit 5: Crowdsport Responses by Municipality and Issue Type

In addition to identifying specific locations of interest on the map, a general survey was hosted on the website. The following questions were asked of participants:

- How would you describe yourself in relation to the Tasman Drive/Great Mall Parkway corridor?
- How do you typically travel along the Tasman Drive/Great Mall Parkway corridor?
- Please rank the top three Corridor needs in the order you feel are the most important or are most needed, with #1 being the most important. Respondents are presented with three drop-down lists next to 'most important', '2nd most important', and '3rd most important'.
- When the Milpitas BART Station opens, do you expect to use it? If so, how will you get to and from the station?

The comments and survey responses received, as part of the Crowdsport online survey, provide insight into the public perspective of the existing conditions of Tasman. Many of the concerns expressed relate to missing or poor condition of facilities for alternative modes of transportation.

Congestion and better coordination (via signal timing and transit schedules) was also a reoccurring theme in the public feedback. The general sentiment expressed through the online survey was to enhance the safety and relationships between all modes of transportation.

Question three asked participants to rank the top three Corridor needs in the order they felt are the most important or are most needed, with #1 being the most important. Respondents were presented with three drop-down lists to select their 'most important', '2nd most important', and '3rd most important' choices. Attachment 2 contains the full list of choices for this question. The ranking of each need is displayed in the following chart. The following table assigns points to each of the listed need options. Each instance when it was ranked at Most Important, the need was assigned three points. Two points were assigned to each time it was ranked second most important, and one point for it being the third most important.

A more detailed summary of this feedback can be found in [Appendix B: Round 1 Project Outreach Summary](#).

Also held during this time were four walk audits at representative locations in Milpitas, Santa Clara, Sunnyvale, and San Jose conducted on April 27 and 28, 2017. These audits had multiple purposes:

- Identify specific issues impacting the pedestrian and bicycle environment and travel along the walk audit routes;
- Catalog issues within each city along Tasman Drive for presentation in the Existing Conditions Report;
- Create a shared understanding of infrastructure and behavioral issues that create a challenging, uncomfortable, or unsafe pedestrian and bicycling environments; and
- Discuss potential countermeasures and/or policy and programmatic changes that can address identified issues.

VTA staff, local municipality staff, and key stakeholders accompanied the consultant team on the respective walk audits and answered questions about specific existing and planned infrastructure within the walk audit areas, as well as general practices with respect to complete streets projects and policies. The group stopped at designated points

along the route to note observations about roadway geometry, lane markings, signage, and other issues that affect transportation.

A detailed summary of the observation of these walk audits can be found in [Appendix C: Walk Audit Summary](#).

Table 12: Crowdsport Survey Results

Ranking needs of Tasman Drive/Great Mall Parkway Corridor	Point Tally
Add bicycle detection at intersections	62
Better access to bus stops	7
Better access to light rail stations	35
Better amenities at bus stops (e.g. signs, benches, shelters)	9
Better landscaping	16
Better lighting	19
Faster light rail service	182
Faster or more frequent bus service	31
Improvements for people with disabilities	31
More frequent light rail service	72
More signal time to cross the street for pedestrians	19
Reduce vehicle congestion	105
Safer or more comfortable bike facilities and completing missing bike facilities	233
Safer or more comfortable sidewalks and completing missing sidewalks	289
Safer or shorter crossing at intersections for pedestrians	79
Wayfinding signage to major destinations	15
Other	84



Connectivity/Gaps

The general survey ranked as the highest need for the Corridor “safer or more comfortable sidewalks and completing missing sidewalks” and “safer or more comfortable bike facilities and completing missing bike facilities” as the second highest priority need for the Corridor.

Sunnyvale. In general, Sunnyvale was highlighted the most for its gaps in connectivity between bicycle and pedestrian infrastructure. For example, Sunnyvale has the largest segments of missing sidewalk including (on the south side of the Corridor) from east of Fair Oaks Avenue to Vienna Drive, and (on the north side of the Corridor) from east of Fair Oaks Avenue to Lawrence Expressway, from east of Lawrence Expressway to west of Reamwood Avenue, and from Reamwood Avenue to the Calabazas Creek Trail.

Additionally, bike lanes are marked from Patrick Henry Drive, but drop at the bridge crossing over Calabazas Creek and then resume on Reamwood Avenue. The remainder of the Corridor does not have a designated bicycle facility.

Santa Clara. In addition to prioritizing sidewalk improvements and the providing connections where there are currently gaps in the network in Santa Clara, residents and stakeholders also commented on the uncomfortable length of crossings and lack of pedestrian refuges at intersections.

On the north side of the Corridor, a bike lane exists between Patrick Henry Drive and Old Ironsides Drive, but it is disconnected from other bicycle facilities along the Corridor. Gaps in the bike network occur (on the north side of the Corridor) between Calabazas Creek Trail and Patrick Henry Drive, between Old Ironsides Drive and Great America Parkway, and between Marie P DeBartolo Way and Lick Mill Boulevard. Gaps are present on the south side of the Corridor between Calabazas Creek Trail and Great America Parkway, and between Marie P DeBartolo Way and Lick Mill Boulevard. The planned Class II buffered bike lane facility will address these gaps in the network.

San Jose. No gaps in the pedestrian and bicycle infrastructure were observed during the outreach portion of the project.

Milpitas. In Milpitas, gaps in the sidewalk were observed on the south side of the Corridor drive between McCarthy Boulevard and Alder Drive, and to the east of South Main Street due to ongoing construction. The City of Milpitas Conditions of Approval require that the developments install sidewalks along the Corridor, so this gap is expected to be completed along with the completion of the current construction.



Exhibit 6: Comments from the Santa Clara Walk Audit

Safety and Comfort

As mentioned previously, the general survey ranked as the highest need for the Corridor “safer or more comfortable sidewalks and completing missing sidewalks” and “safer or more comfortable bike facilities and completing missing bike facilities” as the second highest priority need for the Corridor. Below are examples of areas where facilities do not provide a high sense of security as discussed in the public outreach.

Sunnyvale. In Sunnyvale, general comments were made regarding the need for a buffer between the pedestrian walkways and fences. Additionally, it was discussed that there are blind spot on the roads where additional lighting would improve visibility.

The intersection with Lawrence Expressway was noted for several reasons: 1) lack of shade, 2) unpleasant atmosphere, and 3) the crossing to get to the Tasman LRT seems dangerous.

Santa Clara. In Santa Clara, the bike lanes were described as need more frequent street sweeping as debris regularly builds up in the lanes, causing them to be unsafe for bicyclist.

Also noted was the overpass connection with Lafayette Street and the pedestrian/bicycle activity produced here. The comment was made that many vehicles do not expect to see this type of activity at this location and heading toward the Lick Mill Station; this location can sometimes be dangerous.

The wide and busy intersection of Tasman Drive and Great America Parkway was identified as unsafe for pedestrians and bicycle riders, and vehicle turning movements were indicated as a major factor in this.

San Jose. The intersection section of Tasman Drive and Zanker Road was noted as a “nightmare to cross.”

Milpitas. Crossing the Corridor in Milpitas on the eastern edge of the Study Area was noted as specifically a safety concern for pedestrians. Public feedback included a desire for pedestrian overcrossing at Great Mall Parkway and Main Street.

Reliability/Travel Time

Reliability of the Corridor is typically described by the public in terms of observed levels of congestion. Of the survey responses, “reduce vehicle congestion” was ranked as the fourth highest need for the Corridor. The following highlights some of the key feedback for specific locations provided during the outreach process.

Sunnyvale. Observations from the public in Sunnyvale highlighted an issue for vehicles turning south onto Fair Oaks Avenue citing a short yellow cycle length and causing a build-up in waiting vehicles.

Santa Clara. Congestion in the City of Santa Clara was noted for being extremely high during events at Levi’s Stadium. Additional concerns were raised for poor signal timing at the intersection of Tasman Drive and Great America Parkway.

San Jose. The intersection of Tasman Drive and Vista Montana noted that the left-turning traffic trying to access Highway 237 will typically back up during the evening rush hour and impede traffic in the through travel lanes.

On the bridge between San Jose and Milpitas, eastbound travel-lanes narrow from three to two, but widen back to three after the bridge. Feedback on this transition related heavy congestion as people merge on the bridge during peak hours.

Milpitas. Feedback regarding the signalized intersections near the Cisco complexes in Milpitas were noted for their long delays with longer cycle lengths being given to the Cisco exits. The intersections between Tasman and the I-880 ramps were described as constantly congested because of the signal timing and the light rail train.

Wayfinding, Signage, and Lighting

Visible and well-lit signage identifying features of the Corridor and wayfinding are crucial in the operations of Corridor. General observations of the Corridor noted a lack of consistent wayfinding and transit signage. This makes it challenging to locate destinations and identify the most direct, comfortable routes. Wayfinding with directions and distances to key destinations such as trails, light rail, bus, and BART stations and other amenities would help orient all users along the Corridor and contribute to a sense of place.

Sunnyvale. Wayfinding at the intersection of Tasman Drive and Fair Oaks Avenue is difficult for individuals trying to access the light rail station, due to the configuration of crosswalks and signage. Additionally, there is not signage leading to the trail.

Santa Clara. During games at Levi’s Stadium, San Tomas Aquino Creek Trail is closed near the stadium and people are directed through a well-signed detour through the neighborhoods on the south side of the stadium.

San Jose. There is a general lack of wayfinding signage directing people to and from the Champion, Tasman, and Lick Mill stations from the office buildings in the area. The City of San Jose is about to develop a wayfinding program and should work with VTA to integrate the program with station access.

Milpitas. Signage at the intersection of Tasman and South Main Street acts as wayfinding for pedestrians and bicycles crossing the Corridor to reach the LRT Station and/or the Great Mall area.

The intersection with McCarthy Boulevard does not have any signage indicating its connection to the Coyote Creek Trail. The trailheads are easy to miss and could benefit from enhanced signage as well.

When the BART station is completed, wayfinding signage to and from this station will be critical to help orient users to neighboring amenities and other key destinations.



X. APPENDICES

- A. CAD Base Maps
- B. Round 1 Project Outreach Summary
- C. Walk Audit Summary

A. CAD BASE MAPS



B. ROUND 1 PROJECT OUTREACH SUMMARY

C. WALK AUDIT SUMMARY



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