

CITY OF CUPERTINO PEDESTRIAN TRANSPORTATION PLAN

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Draft
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Prepared for:



City of Cupertino

Pedestrian Transportation Plan

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Chapter 1: Introduction and Purpose

Introduction

The City of Cupertino is undertaking a number of ambitious initiatives to improve pedestrian and bicycling conditions throughout the city. This Pedestrian Transportation Plan (PTP) will be the blueprint for Cupertino to achieve its vision of an inviting, safe, and connected pedestrian network that enhances the quality of life for all community members and visitors.

This Plan serves as an update to the first Cupertino Pedestrian Transportation Plan that was adopted in 2002. Since that time, communities now have better tools and metrics to evaluate areas of opportunity and conflict and to envision and implement improvements that will have a measurable impact. The purpose of this PTP is to establish a guiding framework for the development and maintenance of pedestrian facilities throughout Cupertino and recommend policies, programs, and messaging to support and promote walking.

The PTP builds upon the City's comprehensive strategies to create a connected, multimodal transportation network and enhance quality of life throughout Cupertino. For example, the Cupertino Bicycle Transportation Plan (adopted 2016) envisions a citywide multimodal bicycle network, and this document complements the proposed bicycle network to create comprehensive active transportation options of safe routes for pedestrians and bicyclists.

The PTP also builds upon the regional and national awareness of the importance of pedestrian safety. No matter which mode of transportation one uses, at some point during a trip, every person is a pedestrian. Policies such as Vision Zero, which seeks to eliminate all traffic fatalities and injuries, underscore the importance of creating safe, functioning, and connected pedestrian networks.

The development of the PTP is a testament to the City's focus and commitment to these issues. This and other efforts have a great potential to positively influence the City's vibrancy, transportation safety and equity, and quality of life.

Vision and Goals

Vision Statement

The City of Cupertino envisions an inviting and safe walking environment that promotes active living and healthy transportation choices, enhances the quality of life for all community members and visitors, and is a seamless and integral part of the City's connected, multi-modal transportation network.

The goals described in Table 1 aim to achieve this vision.

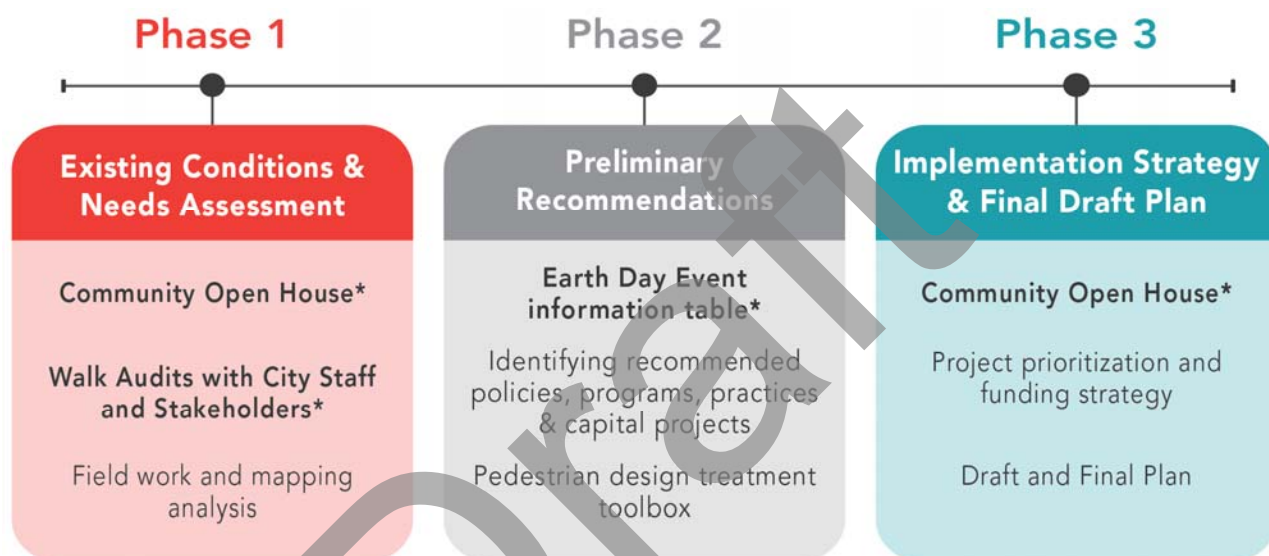
Goals	
Safety	Improve pedestrian safety and reduce the number and severity of pedestrian-related collisions, injuries, and fatalities.
Access	Increase and improve pedestrian access to community destinations across the City of Cupertino for people of all ages and abilities.
Connectivity	Continue to develop a connected pedestrian network that fosters an enjoyable walking experience.

Table 1. PTP Goals

Planning Process

This update to the original 2002 Pedestrian Transportation Plan was developed over an eight-month period, beginning in early 2017. Major focus areas of this PTP were guided by the City's desire to create data-driven practices to identify, prioritize, and implement capital improvements and support programs for pedestrians and pedestrian facilities. The PTP was also guided by strategic input provided by the Bicycle Pedestrian Commission on stakeholder concerns and priorities, and by feedback from the community-at-large on specific locations and issues of concern and preferred types of pedestrian improvements.

The process to develop the PTP was organized into three Phases as seen in Figure 1 below. The City conducted a robust community outreach effort and engaged with the community during each phase of the PTP's development, as noted by the asterisks in Figure 1.



* Indicates community engagement event

Figure 1. PTP Planning Process

The input gathered throughout the planning process complimented a data-driven analysis of existing conditions and a needs assessment (see Chapter 2) to develop the recommendations and improvements detailed in the PTP.

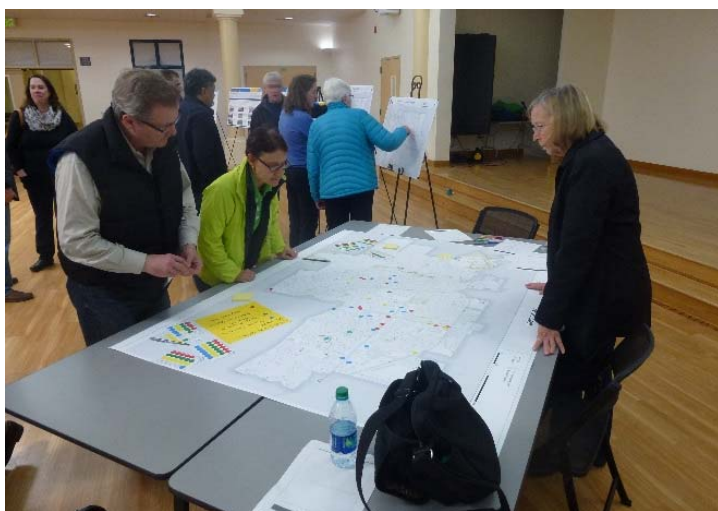


Figure 2. Community members share their ideas at the Community Open House on how to make Cupertino more walkable.

Chapter 2: Walking in Cupertino Today

This chapter presents existing conditions data that formed the basis for drawing conclusions about the current challenges to pedestrian travel in Cupertino. These challenges are addressed through policy and program recommendations in Chapter 3 and project recommendations in Chapter 4.

The existing conditions include:

- Land Use, Community Demographics, and Travel Patterns
- Destinations and Demand
- Pedestrian Network
- Street Types
- Collision Analysis

A review of relevant plans and policies is provided in Appendix A.

Land Use, Community Demographics, and Travel Patterns

Land Use

Cupertino is a suburban city that has been largely developed since the 1960s to today. The city has many single-family, residential neighborhoods, several distinct retail corridors along arterial streets, and major employment centers. As a percentage of total area, 65.6 percent of the city is single-family residential; 7.1 percent is multi-family residential; 11.1 percent is mixed-use; and 16.2 percent is classified as “other.”¹ The more intensive development is mostly located in the flatter areas of the city, while the foothills are lower density and feature open spaces. Cupertino’s built form also reflects suburban values of vehicular access, such as wide, high-speed roadways and ample vehicle parking in front of set-back businesses and office buildings.

The City is making significant investments to improve access, safety and comfort for people to walk and bike. Newer development, such as Main Street Cupertino, also reflect a change in community values that places a premium on walkable, bikeable places.

While the walking environment varies throughout Cupertino, five pedestrian typologies or zones may be considered for planning purposes to identify appropriate treatments and levels of investment:

- Cupertino’s Priority Development Area, along the Stevens Creek and DeAnza Boulevard corridors
- Commercial and employment centers
- Residential neighborhoods
- Schools
- Access to parks, trails, and open spaces

Community Demographics

The most recent American Community Survey (ACS) five-year estimate from 2015 puts the City’s population at just over 60,000 residents. Of those residents, approximately 65 percent of the population is Asian and 30 percent white; approximately 50 percent of residents are immigrants. Many Asian households speak a language other than English at home (43 percent), and approximately 25 percent of households have limited English spoken at home.

¹ Source: General Plan: Community Vision 2015-2040 (Adopted 2015).

As shown in Figure 3, over 20 percent of residents are school-age children, and nearly 27 percent of households in the city have a member who is under 18 years old. Additionally, seniors make up a sizable proportion of the community at 13.5 percent of residents.

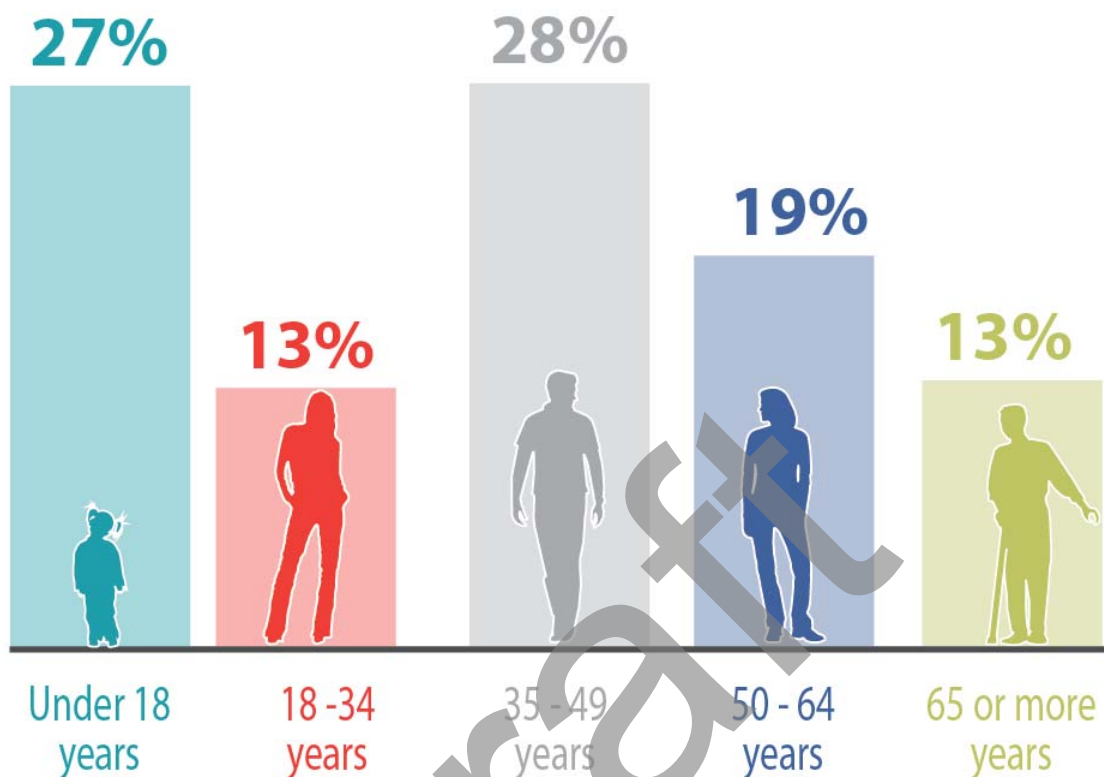


Figure 3. Cupertino's Population by Age (Source: 2015 American Community Survey)

Cupertino is a relatively affluent community with a median household income of \$141,953, which is nearly 40 percent higher than the area median income for the San Jose region.² Cupertino housing costs are high for the region, with a median listing price per square foot of \$941 for homes, versus a San Jose area regional median of \$593.³

The majority of Cupertino households have two or more motor vehicles available, as shown in Figure 4 below.

² San Jose MSA area median income was \$101,980 in 2015.

³ Zillow data, accessed 29 September 2017.

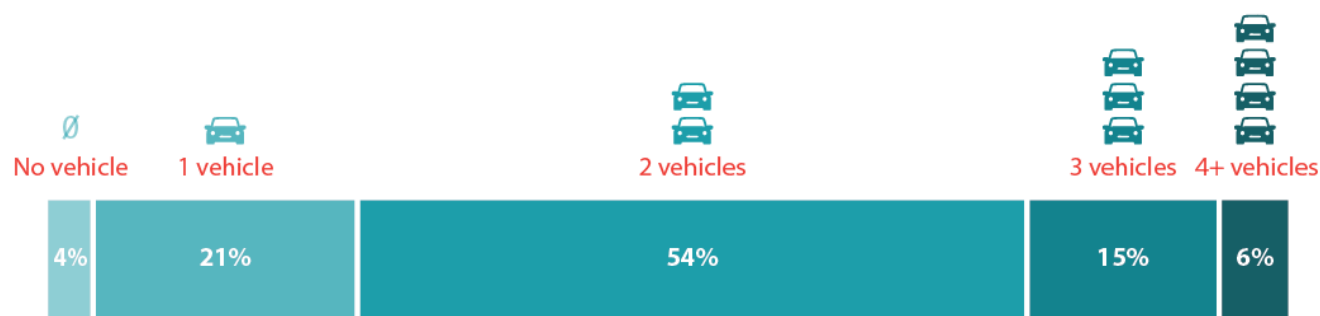


Figure 4. Vehicles Available per Household (Source: 2015 American Community Survey)

Travel Patterns

Most data available about travel in Cupertino relate to commute trips. All of the data presented below should be evaluated with the understanding that commute trips generally only account for 10 to 15 percent of all trips, based on state and national surveys.⁴ Other trip purposes include visiting friends and family, errands, entertainment outings, and recreation. Lastly, the data does not include student travel to DeAnza College which is another major generator of daily travel to Cupertino.

Work Travel Trends

A majority of Cupertino residents commute today using single-occupancy vehicles, as shown in Table 2. Commuting by walking is not common in Cupertino. These trends are similar to other regional mid-sized cities, though transit mode share is lower in Cupertino than other neighboring cities, likely because Cupertino is not on the Caltrain line. Notably, a relatively high percentage of residents work from home (6.1 percent) which means they may take trips by foot in residential neighborhoods at any time of day outside of commute times. Additionally, those commuters who take transit from Cupertino may walk to get to and from the bus stop at the beginning and end of the work day.

	Cupertino	Mountain View	Santa Clara	San Jose	California
Drive Alone	80.0%	72.3%	76.5%	77.1%	73.4%
Carpooled	8.9%	8.0%	9.7%	11.3%	10.8%
Public Transit	2.3%	6.0%	4.0%	3.9%	5.2%
Bicycle	0.7%	6.0%	1.7%	1.0%	1.1%
Walked	1.2%	2.5%	3.2%	1.6%	2.7%
Other	0.8%	1.6%	0.9%	1.2%	1.4%
Worked at Home	6.1%	3.5%	4.1%	3.9%	5.3%

Table 2. Commute Trip Mode Split (Source: 2015 American Community Survey)

⁴ Cupertino-specific data is unavailable; this range references the National Household Travel Survey (15 percent) (nation-wide data) and California Household Travel Survey (9.9 percent) (state-wide data).

The numbers in Table 2 are also reflective of the fact that very few (9.2 percent) of employed Cupertino residents also work in the city. Cupertino residents generally travel at least 20 minutes to get to work, and many work in nearby communities of San Jose, Sunnyvale, Santa Clara, Mountain View and Palo Alto.⁵

While most residents leave Cupertino for work, the daytime population triples based on City Economic Development data from March 2017.

School Travel Trends

The City of Cupertino has a robust Safe Routes to School Program, and partners with the County, local school districts, schools, parents, and students to promote safety and access. The Safe Routes to School program collects travel data at 14 schools within Cupertino, and this data is key to understanding school travel trends. Data is collected twice per year, via student travel tallies conducted in classrooms. The tallies indicated that a majority of students are driven to school in a family vehicle or carpool (59 percent in the morning, and 47 percent in the afternoon). Around 20 percent of students walk to school in the morning, and 25 percent walk home in the afternoon, which is notably high when compared to other communities.

Destinations and Demand

Destinations

There are several destinations throughout the city that attract people by foot, as shown in Figure 5. Many retail hubs are located in the “Heart of the City,” Cupertino’s primary commercial corridor, including Main Street, Vallco Shopping Center, The Oaks, and several shopping centers along Stevens Creek and DeAnza Boulevard. The City’s Civic Center is a hub for community life and an inviting place to walk. Apple is the most prominent employer in Cupertino and has office buildings throughout Cupertino. The new Apple Park campus on North Wolfe Road will generate new pedestrian activity in the northeast area of the city. Within residential neighborhoods, schools and parks are the main destination for walking trips. These destinations are illustrated in Figure 5.

⁵ 2015 American Community Survey

Cupertino Pedestrian Transportation Plan

Pedestrian Activity Generators

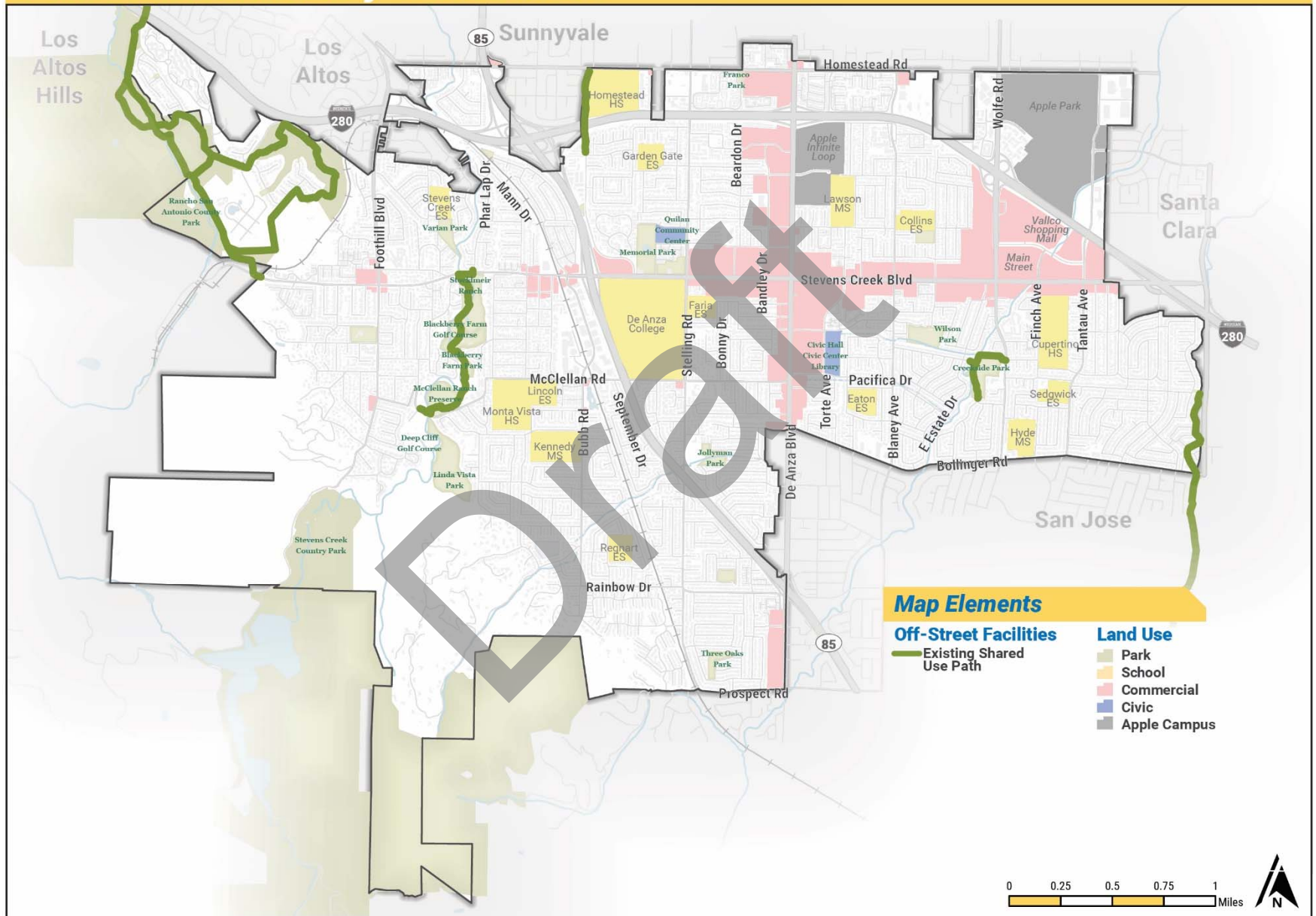


Figure 5. Pedestrian Destinations/Activity Generators

Pedestrian Demand

Identifying pedestrian demand and activity patterns helps the City better understand where pedestrian activity is most likely to be. Analyzing pedestrian demand allows the City to focus improvements in areas that will have the greatest impact and benefit the most people.

Potential demand (or locations where pedestrians can be expected) may be based on factors such as the location of employment and population centers (densities); land uses including open space, trail, sidewalk, and crosswalk network connectivity; proximity to transit, schools and other activity centers; and demographics.

Cupertino is home to many interesting and popular destinations, including retail and community hubs, and pedestrian activity is expected to be highest in these areas. Based on a technical analysis of these factors, the areas that have been identified as having high potential pedestrian demand include:

- Stevens Creek Boulevard retail district between Stelling Road and De Anza Boulevard
- Stevens Creek Boulevard adjacent to DeAnza College
- Stevens Creek Trail/Blackberry Farm Park area
- School areas

Figure 6 shows the areas of potentially high pedestrian activity. These locations could have higher pedestrian traffic in the future if infrastructure is improved so that residents and visitors can better connect to these areas. Additional information about the Pedestrian Demand Analysis methodology can be found in Appendix B.

Cupertino Pedestrian Transportation Plan

Pedestrian Demand Index

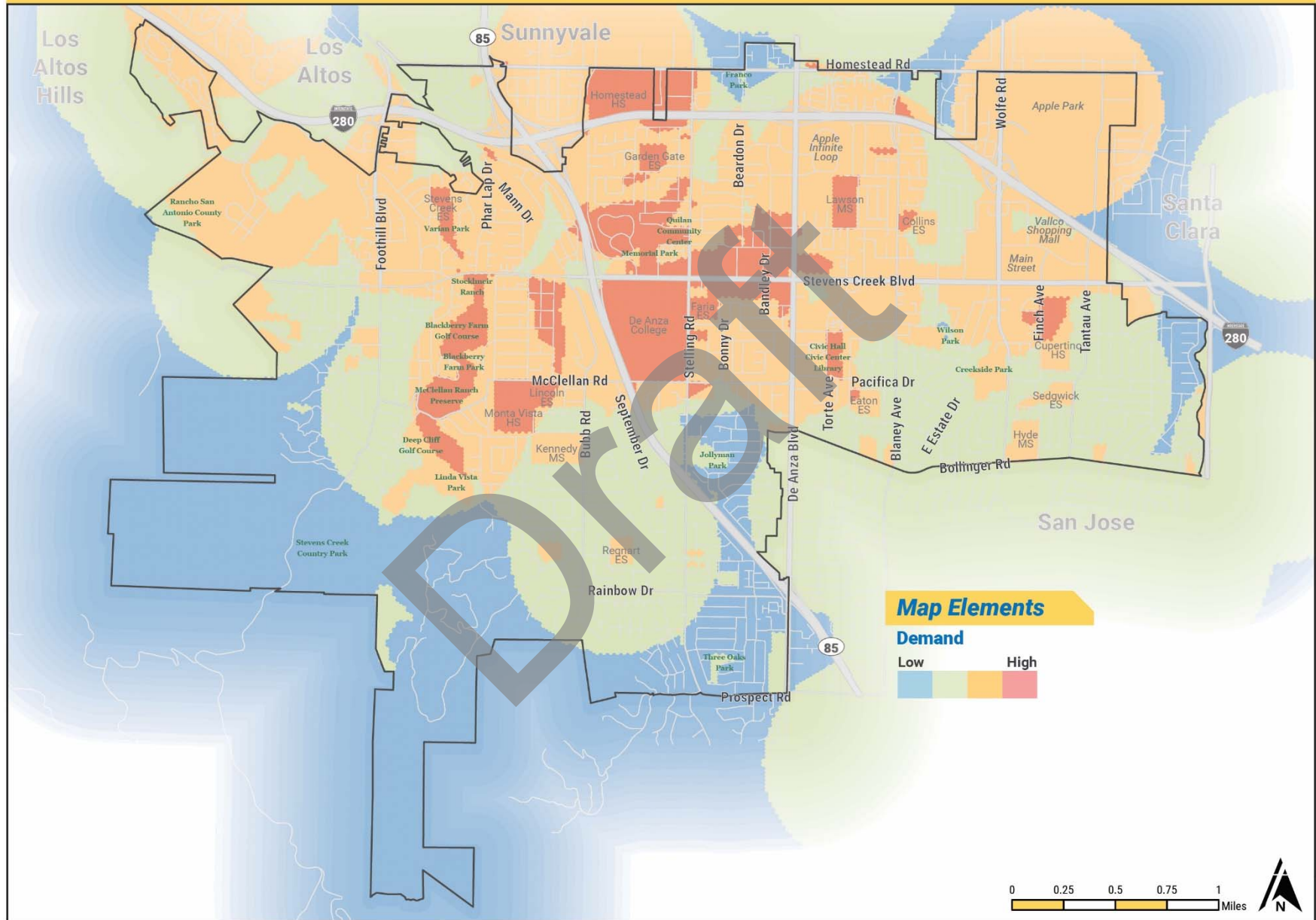


Figure 6. Composite pedestrian demand index map

Pedestrian Network

A well-connected pedestrian network is a vital component to livable communities, which thrive on multimodal travel options for all, regardless of age, background or ability. Multimodal travel incorporates the needs of pedestrians, bicyclists, and transit users in street design – not just motor vehicles.

Well-designed streets accommodate pedestrians through a variety treatments which enhance the safety, convenience, and mobility of pedestrians. The following are several key elements for a safe, connected, attractive and comfortable pedestrian network: sidewalks, crossings, traffic calming, and off-street facilities.

Sidewalks

Sidewalks provide a dedicated space with the primary purpose of accommodating pedestrian travel. On streets without curbs, striped shoulders or pedestrian lanes can delineate pedestrian space from vehicle space; these work best in residential areas with low volumes of vehicle traffic.

Sidewalks are the most essential piece of pedestrian infrastructure, and the coverage and quality is very good in Cupertino. Private streets and semi-rural areas identified in Figure 9 are not required to provide sidewalks but are good candidates for pedestrian lanes. Most of these areas consist of local streets that are more likely to be low-volume and low-speed environments.

Crossings

Crossing intersections and roadways often present conflicts and stressful environments for pedestrians. Marked crosswalks, and other treatments such as advance yield lines and median crossing islands, help motorists anticipate the presence of pedestrians. These treatments also provide increased legitimacy and comfort to people crossing streets.

In Cupertino, pedestrians are accommodated at intersections through various treatments such as marked crosswalks, pedestrian signal heads and push buttons (at signalized intersections), curb ramps and median islands. While crossing is legal at all intersections whether or not it is marked (unless signed to prohibit crossings), marked crosswalks help make drivers aware of the likelihood of pedestrians crossing. Crosswalks are marked on all legs of most major intersections in the city. Some intersections lack pedestrian crossings where signal timing does not provide a phase, such as Stevens Creek Boulevard at Finch Avenue.

In an FHWA study that evaluated marked crosswalks and unmarked crossings, the authors emphasized the importance of identifying appropriate solutions to improve safety and access, not only through the use of marked crosswalks; therefore, Cupertino should consider a variety of treatments in addition to marked crosswalks to facilitate safe and comfortable street crossings.

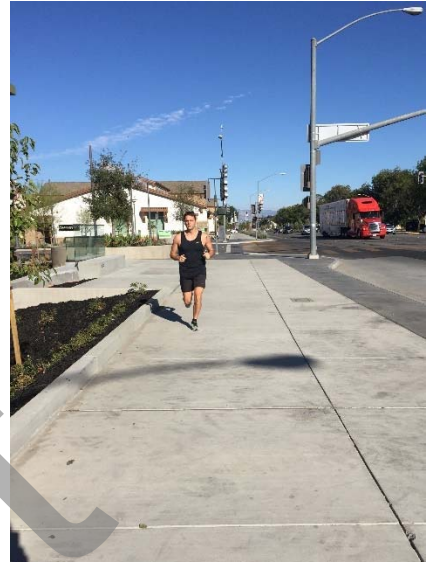


Figure 7. Wide, landscaped sidewalks are provided in the commercial areas of the city.



Figure 8. Marked Crosswalks increase visibility for pedestrians.

Cupertino Pedestrian Transportation Plan

Sidewalk Inventory

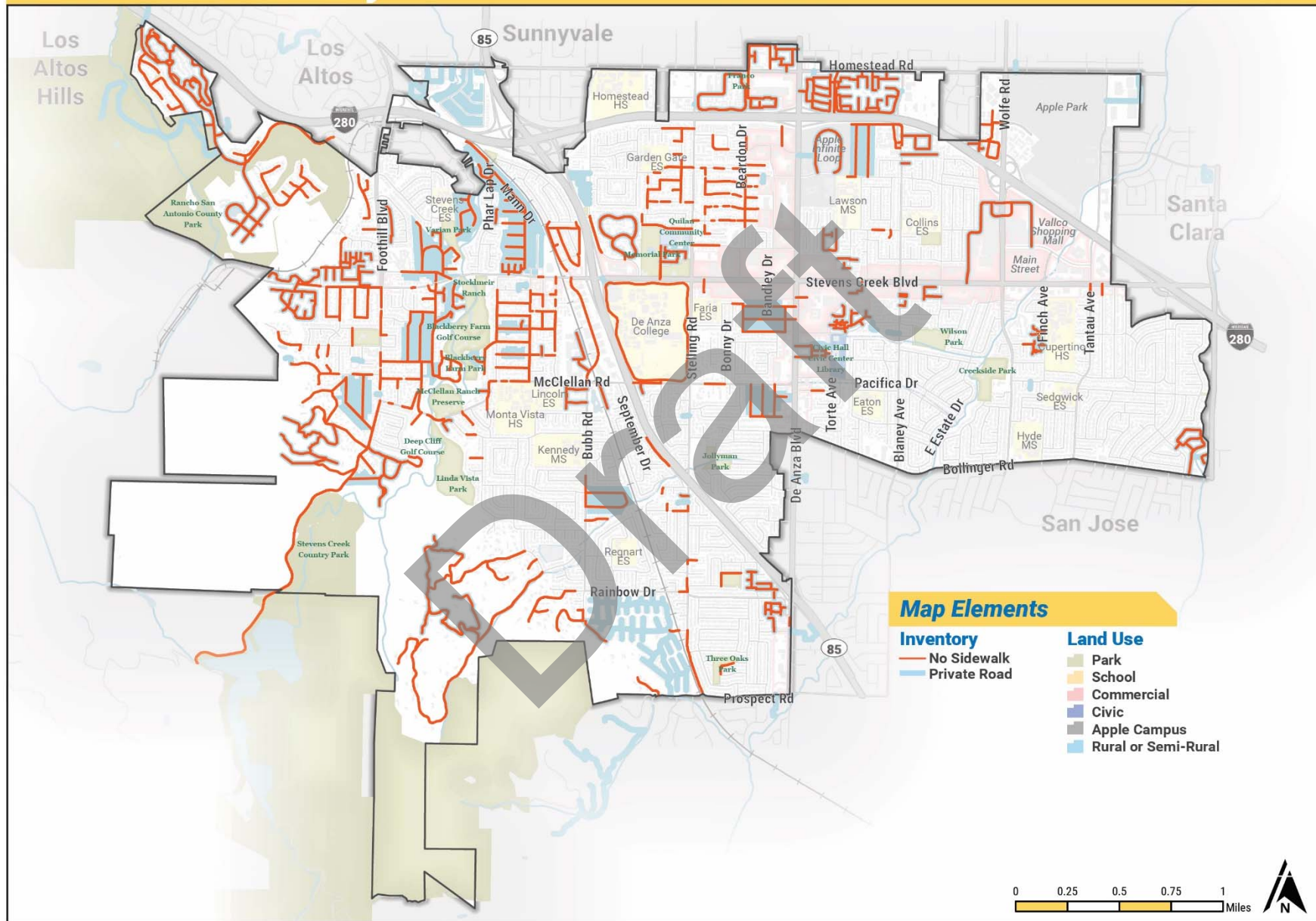


Figure 9. Sidewalk Inventory with Semi-Rural Areas and Private Streets

Traffic Management

Traffic management strategies, such as slowing vehicle speeds and volumes, are key to creating a safer pedestrian environment. Roadway treatments such as installing speed humps/tables and traffic circles can help in slowing traffic speed. Other design elements such as truck aprons, pinch points, and curb extensions can extend the sidewalk and reduce the amount of time pedestrians are in crosswalks.

The City had a Neighborhood Traffic Management Program that installed traffic calming treatments to improve neighborhood livability based on collected data regarding traffic speeds and volumes. Approved traffic calming treatments included speed humps, traffic bars, traffic circles, chokers, and diverters. Slow traffic speeds also make for a more comfortable walking environment and also give drivers more time to react to a potential conflict with another road user, and slower speeds can mitigate the severity of a crash, especially between an automobile and a pedestrian.



Figure 10. Traffic calming treatments help to reduce vehicle speeds and make walking safer and more comfortable.

Off-Street Facilities

Off-street facilities, such as shared-use paths or pedestrian bridges over busy roadways, provide more protection for pedestrians and an increased level of comfort.

Existing off-street facilities include the Stevens Creek Trail and Mary Avenue Bridge which are popular among Cupertino pedestrians. The 2016 Bicycle Transportation Plan recommended construction of a number of additional trails and bridges to serve bicyclists that will also serve pedestrians. These projects are also recommendations of this plan. See Figure 11 for the location of proposed and existing off-street facilities.

Stevens Creek Trail Extension

In 2009, a coordinated Stevens Creek Trail planning effort was undertaken between the cities of Cupertino, Los Altos, Mountain View and Sunnyvale. An advisory body composed of council members from each city (the Joint Cities Working Team (JCWT)) was installed, and a trail consultant engaged to assess the feasibility of potential route options. The consultant subsequently published a Feasibility Study in March 2015. It identified three route options through Cupertino, but made no specific recommendation. These options were:

- Mary Avenue to Stevens Creek Blvd, utilizing the Don Burnett Pedestrian Bridge
- Foothill Blvd to Stevens Creek Blvd
- Construction of a new pedestrian bridge across I-280 connecting Cupertino's Homestead Villa and Oakdell Ranch neighborhoods. A tunnel under I-280 was found to be infeasible.

A series of public outreach events then followed, intended to gauge public reaction to the study. After considering both the feasibility study and public input, the JCWT issued its recommendation to the four cities in September 2015. No specific route recommendation was made for Cupertino. However, the JCWT did recognize the need for a long term trail vision, and that should circumstances change regarding the availability of land in the area that further studies be undertaken to identify a feasible route. For further information, refer to the Four Cities Coordinated Stevens Creek Trail Feasibility Study (September 2015 final version).

Cupertino Pedestrian Transportation Plan

Existing and Planned Off-Street Facilities

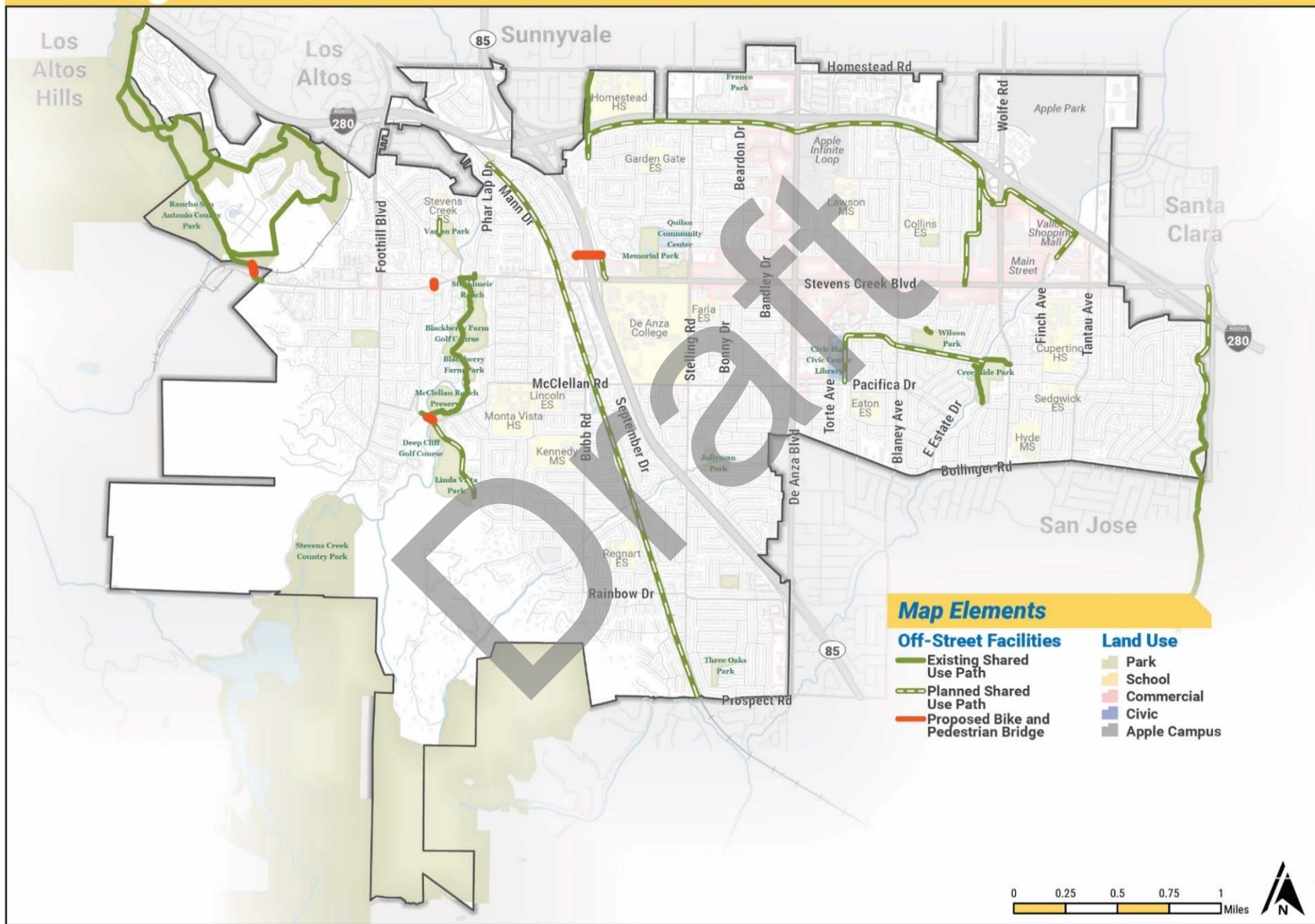


Figure 11. Existing and planned off-street facilities

Street Types

Cupertino's pedestrian network spans a range of place and street types. The following street types have been defined by the City in the Mobility Element of the General Plan.

- Freeways and Expressways
- Boulevards (Arterials)
- Main Street
- Avenue (Major and Minor Collector)
- Neighborhood Connector
- Residential Street
- Regional Pedestrian/Bike Pathway
- Local Pedestrian/Bike Pathway

All street types other than Freeways and Expressways are intended to serve pedestrians as well as other modes. Higher activity areas are centered on Boulevard street types (Stevens Creek and DeAnza) which are intended to be regional transportation corridors. These streets have many demands on them from multiple modes: automobiles, trucks, transit, pedestrians and bicyclists. Figure 12 on the following page shows street classifications from Cupertino's General Plan.

Avenues and neighborhood connectors also serve pedestrians and are expected to accommodate all modes. Residential streets, marked as yellow on Figure 12, prioritize pedestrian and bicycle travel and are good candidates for traffic calming since the volume of traffic is lower on these streets than along arterial roads. Many of these local streets are disconnected or discontinuous, making trips more circuitous than they would be with a more connected street network. Trips that are even a quarter-mile long may prevent people from considering walking as a transportation option.

The street network is not the only route of travel available to pedestrians; people also walk on local and regional pathways. The Stevens Creek Trail is an example of a regional pathway that currently connects Stevens Creek Boulevard to McClellan Road for non-motorized users. Local trails function as cut-throughs in City parks and as small connectors from the ends of cul-de-sacs to adjacent streets.

Since pedestrians are not constrained to the road or path network, they can and do cut across parking lots and other private property. These informal connections allow walking trips to be shorter and may be considered as part of pedestrian transportation.

Cupertino Pedestrian Transportation Plan

Street Typology

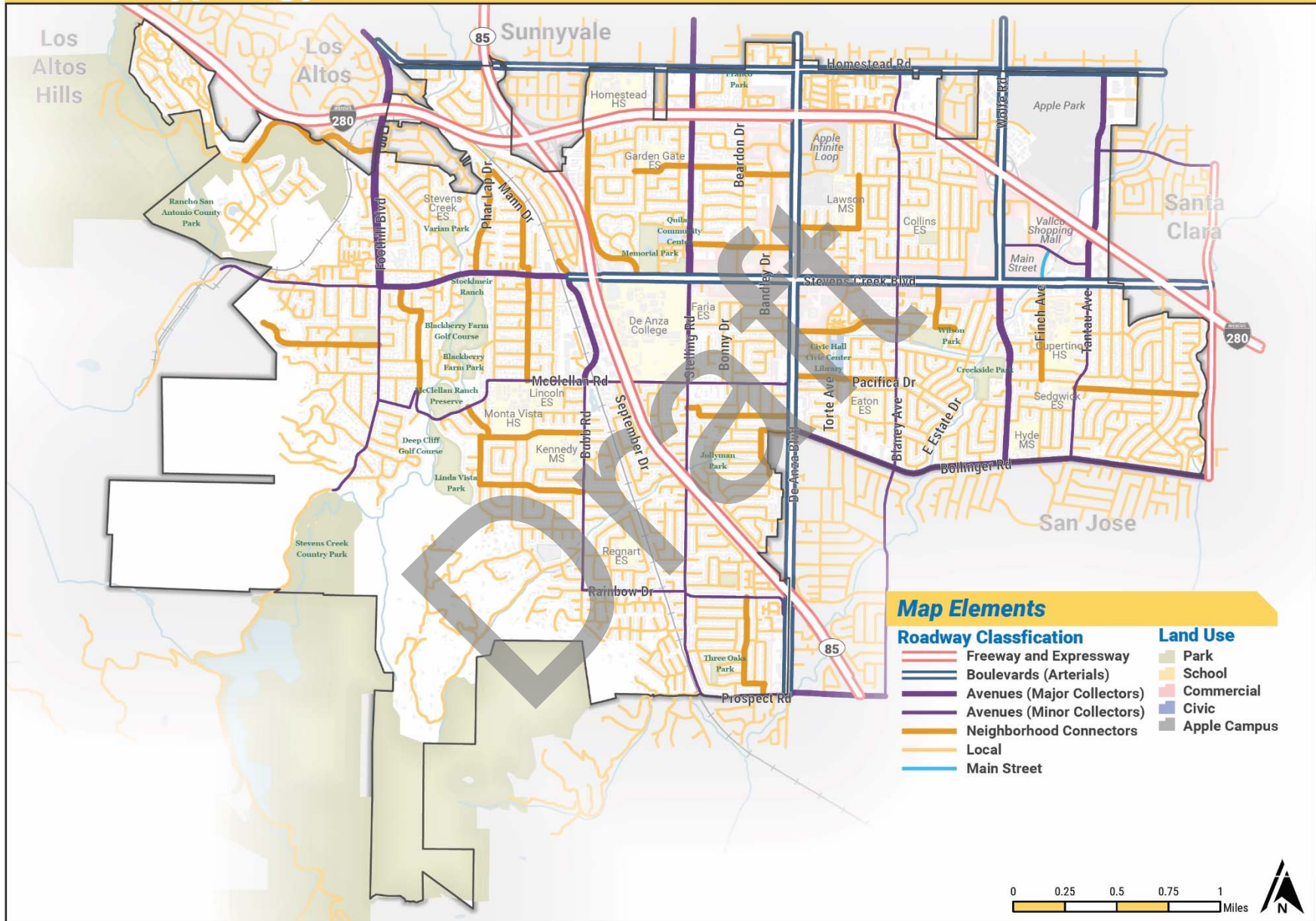
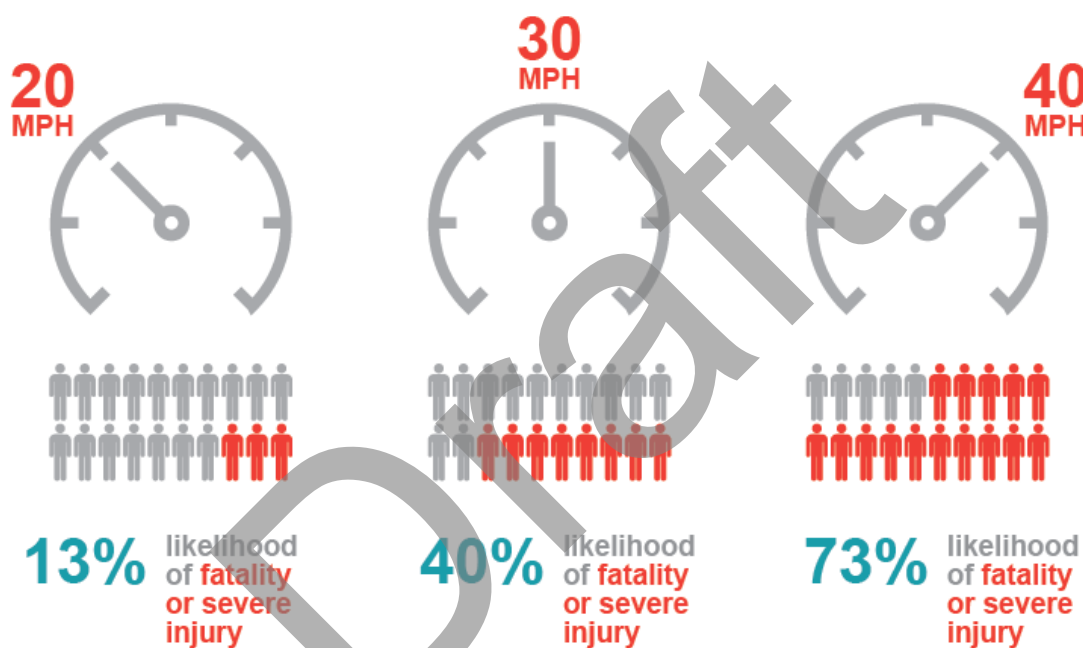


Figure 12. Street Typology Map (Source: Cupertino General Plan Mobility Element - Adopted 2015)

Collision Analysis

Preventing and mitigating the severity of pedestrian crashes is a key goal of the PTP. While many parts of Cupertino are highly walkable and provide a safe and comfortable walking environment, even locations with sidewalks and crossing treatments can experience pedestrian/automobile collisions.

Traffic speed directly impacts the chances of surviving a crash. While this is true for all modes, pedestrians are especially vulnerable and have a high chance of being seriously injured or killed when speeds reach moderate levels. A pedestrian involved in a crash with a vehicle traveling 25 mph has a 30 percent chance of suffering a serious injury or being killed, while at 40 mph the risk is 80 percent, as illustrated in Figure 13. Higher speeds also increase the likelihood of a crash as stopping distances are greater at higher speed. As a result, speed reduction is a critical strategy for reducing pedestrian injuries.



Source: Tefft, B. C. *Impact speed and a pedestrian's risk of severe injury or death. Accident Analysis & Prevention*. 50. 2013.

Figure 13. Greater impact speeds increase the risk of severe injury or death.

To better understand the collision history in Cupertino, injury crash data from 2005 to 2014 were reviewed. This data comes from police reports. It is possible that some additional pedestrian crashes occurred during this period which were not reported. Near misses are also not included in this data. However, they may impact how comfortable a person feels walking and subsequently how likely s/he is to choose to walk.

Over the ten-year period, 137 pedestrian injury crashes occurred. Overall, pedestrian crashes were likely to be more severe than other modes, as shown in Table 3. It should be noted that these percentages only include injury crashes.

Crash Severity	Pedestrian	Bicyclist	Motorist
Fatal	3.7%	1.0%	0.5%
Serious Injury	17.5%	9.5%	4.5%
Moderate Injury	35.0%	57.7%	21.0%
Minor Injury	43.8%	31.9%	74.0%

Table 3. Injury Crash Severity by Mode, 2005-2014

Geographic Crash Analysis

The majority of crashes in Cupertino occur on the Arterials and Major Collectors. Table 4 shows a summary of pedestrian crashes from 2005 to 2014 and includes a tally of crashes that occurred on streets with five or more crashes.⁶ During this time period, 71 percent of pedestrian injury crashes occurred on eight streets. These eight streets are considered “High-Injury Corridors” and improvements to these streets could significantly reduce motor vehicle and pedestrian crashes in Cupertino. See Figure 14 for a geographic illustration of these corridors.

Street Name	Crashes ⁷
Stevens Creek Boulevard	39
Stelling Road	18
Miller Avenue/Wolfe Road	15
Homestead Road	12
DeAnza Boulevard	11
McClellan Road	7
Bollinger Road	6
Foothill Boulevard	5

Table 4. High-Injury Corridors with the most frequent pedestrian collisions resulting in injury

⁶ Tally includes number of crashes where the street is identified in the crash data either as the Primary Road or Secondary Road and includes instances where the crash occurred on a cross street within 25’ of the intersection.

⁷ Crash totals by corridor include those crashes occurring on the streets or at intersections with those streets. Crashes occurring at the intersection of two high-crash corridors are counted on *both* corridors.

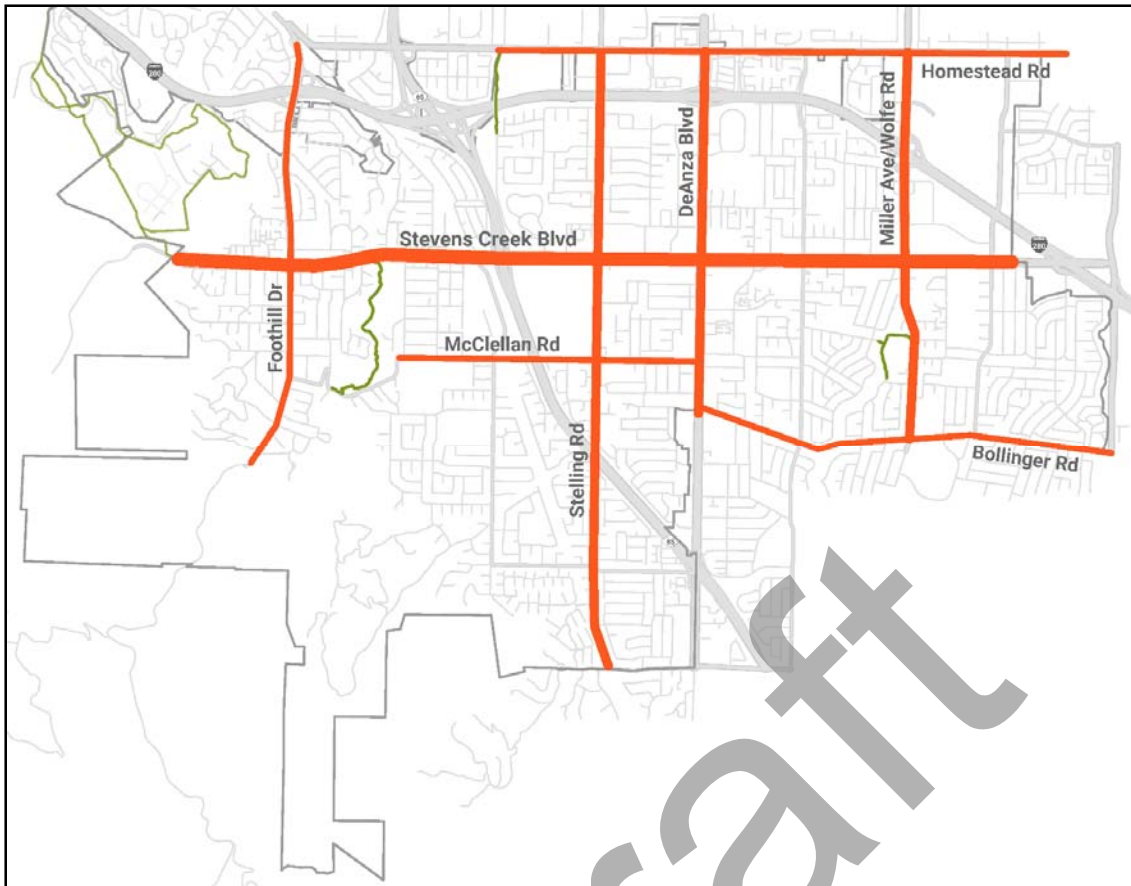


Figure 14. High-injury corridors: From 2005 to 2014, 71 percent of pedestrian injury crashes occurred on eight corridors.

In particular, there are ample opportunities to improve pedestrian safety on Stevens Creek Boulevard. Twenty-nine of the crashes occurred at intersections on Stevens Creek Boulevard or within 25' of an intersection. The same number of crashes on Stevens Creek Boulevard involved a driver violating a pedestrian's right of way, meaning that the driver did not yield appropriately to a pedestrian when s/he was in a crosswalk or on a sidewalk.

A majority of crashes where pedestrians are injured in Cupertino occur when the pedestrian is in a crosswalk at the intersection. In most of these crashes, a driver failed to yield, as shown in Figure 15.

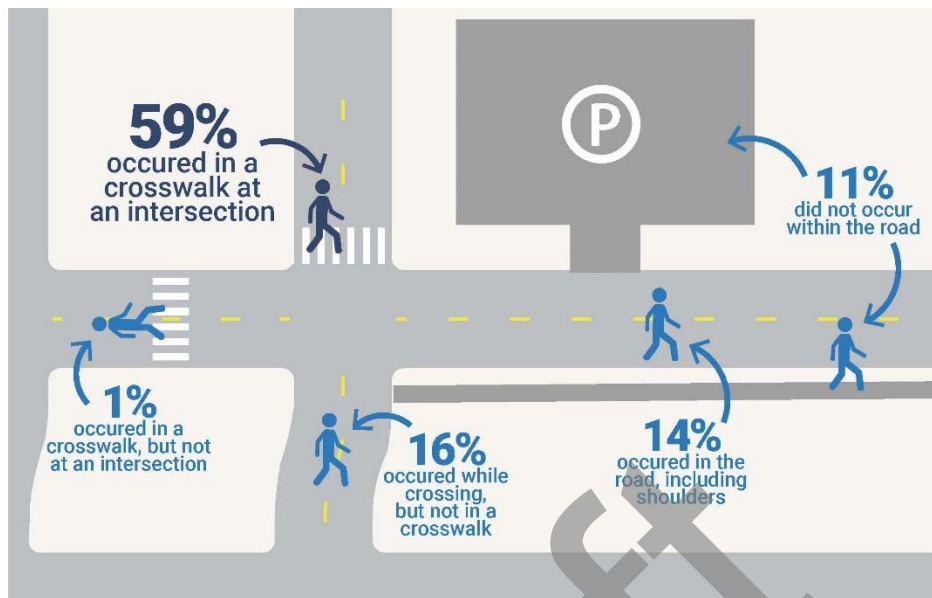


Figure 15. Location of pedestrian crashes.

See Figure 16 for the location of all pedestrian crashes between 2005-2014.

Cupertino Pedestrian Transportation Plan

Pedestrian Collisions 2005-2014

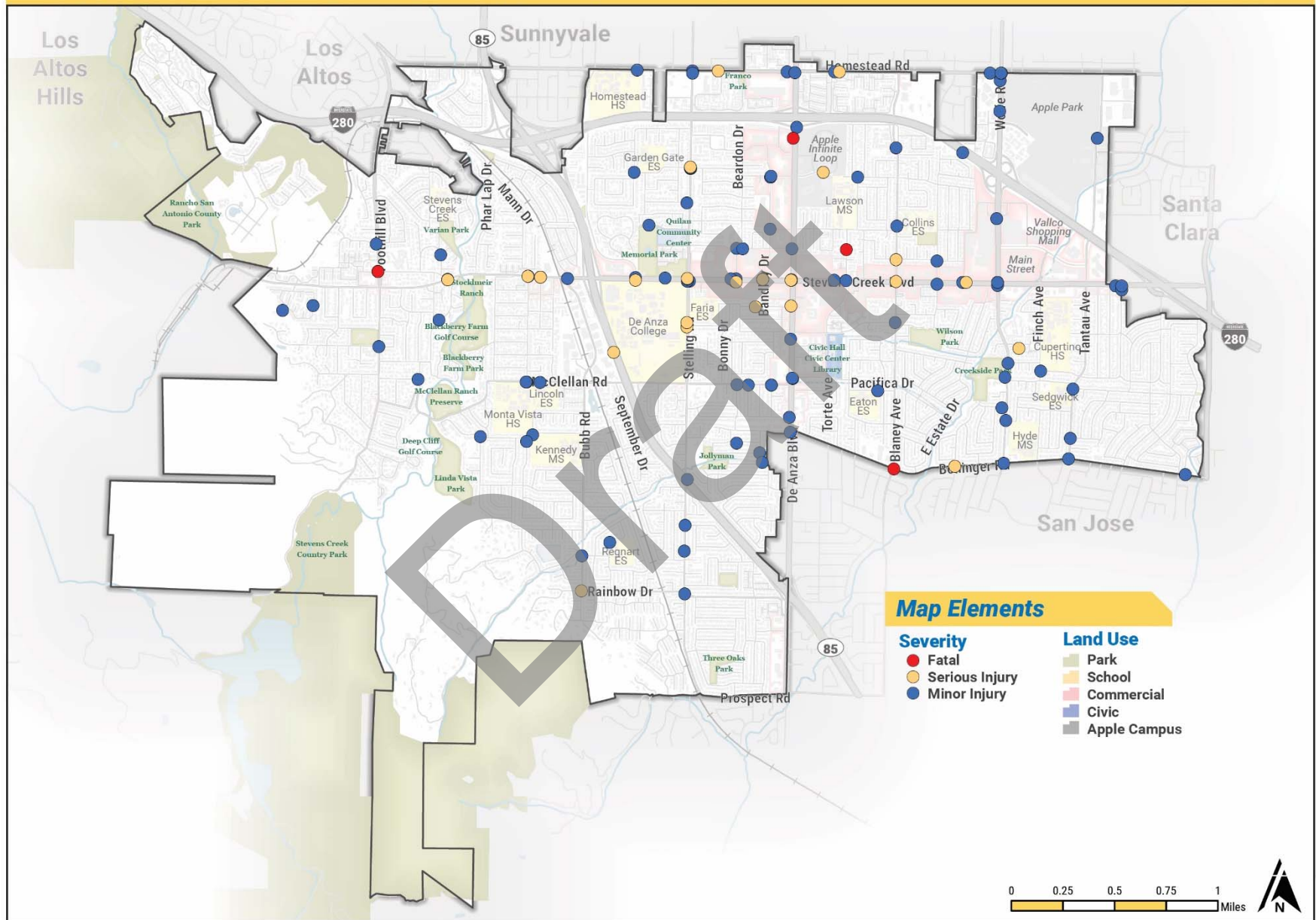


Figure 16. Pedestrian Collisions in Cupertino, 2005 to 2014

Non-Geographic Crash Analysis

The largest number of pedestrian crashes (50 percent) were the result of a driver's violation of the pedestrian right of way, and most of these crashes occurred when a pedestrian was in the crosswalk at an intersection. This finding will help focus engineering, education and enforcement recommendations. It appears that fewer pedestrians are struck when crossing the street where a marked crosswalk does not exist. This may be because fewer pedestrians are crossing at unmarked locations, thus fewer are exposed to the risk of a crash. Additionally, a pedestrian was found at fault in only 15 percent of crashes. More crashes happened on weekdays and during the half of the year from October to March (64 percent).

Lastly, the data indicates that children and young adults (ages 5 to 17 and 18 to 24) and elderly pedestrians (ages over 74) are over-represented in injury crashes. Figure 17 compares the percentage of population represented by each age group, as well as the percentage of pedestrian victims from 2005 to 2014. Note that child pedestrians included here are ages 5 to 17; only one pedestrian victim in that time frame was under the age of five.

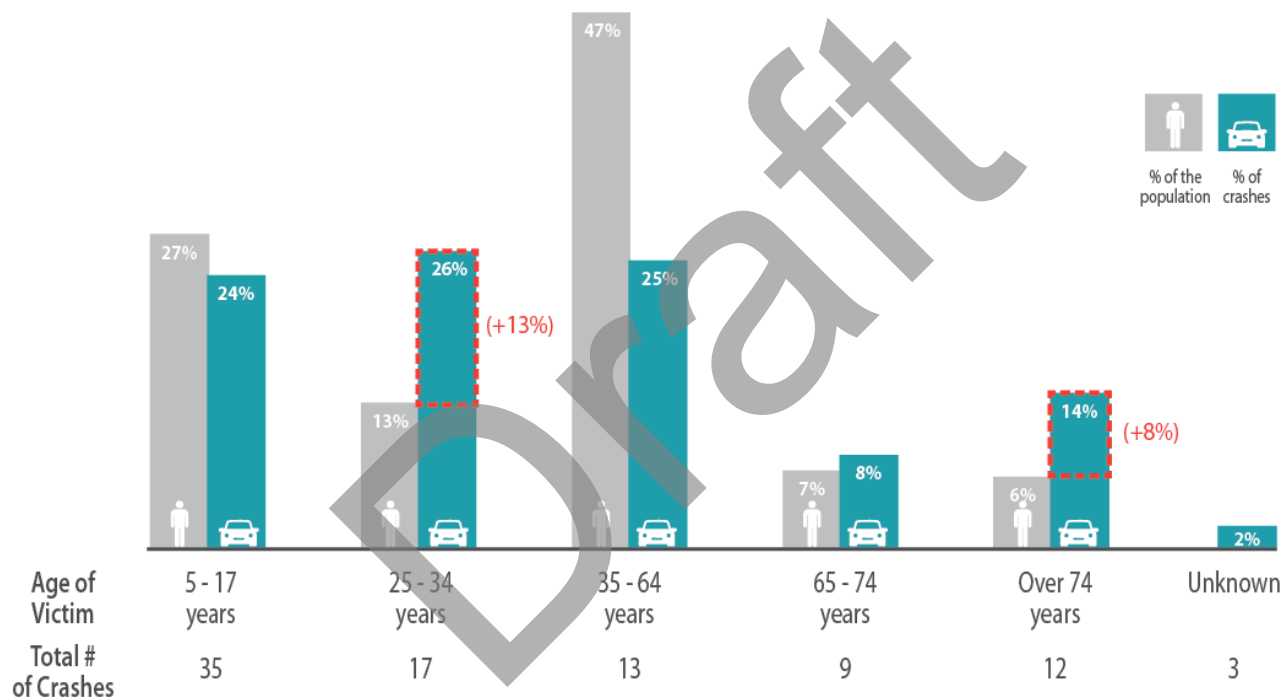


Figure 17. Percentage of Population Compared to Percentage of Pedestrian Victims, 2005-2014.

Chapter 3: Policy and Program Recommendations

Cupertino has already made significant investments in making its streets friendlier to pedestrians. This chapter identifies a series of focused policies, programs, and practices to further promote pedestrian safety and access. These recommendations were developed based on a review and evaluation of the City's current operations and compared with national best practices.

This chapter includes recommendations on the following topics and are summarized in Table 5:

- Infrastructure and Operations
- Evaluation and Planning
- Project Implementation
- Education and Enforcement

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Category	Topic Area	Recommendations
Infrastructure and Operations	Street Design	• Develop and adopt a Complete Streets Design Manual • Ensure design standards/design speeds in pedestrian areas do not contribute to a routine need for traffic calming • Adopt a Complete Streets internal process checklist for project development, design, review and approval, and operations and maintenance
	Neighborhood Traffic Management	• Formalize the City's traffic calming practices • Employ traffic calming strategies in locations where traffic speeds are too high for pedestrian areas • Expand the City's traffic calming toolbox • Reconsider criteria for setting speed limits • Consider establishing 15 mph school zones and other slow zones near parks, community facilities, or senior housing • Use new radar speed signs and other technologies to collect speed data
	Accessibility	• Establish an accessible design checklist for design projects • Conduct ADA trainings for City staff • Encourage representation of people with disabilities in pedestrian-related projects and programs
Evaluation and Planning	Pedestrian Volume	• Include pedestrian and bicycle counts as a routine element of motor vehicle counts • Conduct annual pedestrian volume counts along the City's high-injury corridors. • Collect pedestrian volume data before and after installation of new pedestrian facilities • Conduct pedestrian volume counts at specific pedestrian crosswalk locations to determine where warrants for Pedestrian Hybrid Beacons (HAWK signals) and other traffic control devices may be met
	Pedestrian Safety	• Develop crash report (Annual collision analysis to identify trends and problems areas) • Evaluate pedestrian safety outcomes • Conduct Road Safety Audits (RSAs) and/or Walk Audits
Education and Enforcement	Safety Education	• Continue to promote walking and bicycling to school through the Safe Routes to School program • Consider developing and implementing a targeted safety campaign for other groups (adults, seniors, drivers, etc.)
	Enforcement	• Use enforcement as an opportunity for education by distributing pedestrian safety pamphlets in-lieu of, or in addition to, citations • Implement sustained enforcement efforts and involve the media
Project Implementation	Funding (See Chapter 5)	• Continue to fund high-priority sidewalk gap closure projects through the Capital Improvement Program (CIP) • Develop a line item in the CIP for implementation of the PTP • Ensure that pedestrian improvements are included in other street projects, such as resurfacing, bridge replacement, or lane reconfiguration • Explore the possibility of obtaining Highway Safety Improvement Program (HSIP) funds • Secure a funding source to be used for broader pedestrian safety education efforts that could target traffic safety education and awareness
	Agency Coordination (See Chapter 5)	• Continue to collaborate with related agencies (transportation, health, schools, emergency services) within and adjacent to Cupertino • Explore opportunities for improving coordination with major employers

Table 5. Summary of Recommendations for Pedestrian-related Policies, Programs and Practices

Infrastructure and Operations

Street Design

Development and implementation of policies and standards that govern the design of streets can be one of the most effective ways to improve conditions for pedestrians throughout the transportation system. Cupertino has established guidelines for the Stevens Creek Boulevard (Heart of the City Specific Plan) and the Monta Vista Commercial Area (Monta Vista Design Guidelines). However, the City does not currently have comprehensive design standards that apply to all streets. The City currently uses national and state guidance such as the California Manual on Uniform Traffic Control Devices (CA MUTCD) and the National Association of City Transportation Officials' (NACTO) Urban Street Design Guide.

Goals and strategies in the Cupertino General Plan, adopted in 2015, support the need for Cupertino to develop multimodal street design standards (Policy M-2.1). The need for improving walkability through better connectivity and context-sensitive street design is outlined in the Plan (Policies M-2.2, M-2.3, and M-2.4). The General Plan also establishes a policy to limit street widening for the sole purpose of improving vehicular traffic flow (Policy M-3.4).

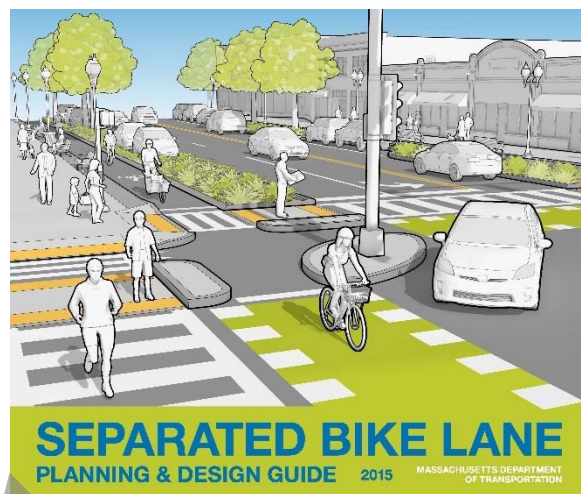


Figure 18. The Massachusetts DOT's Separated Bike Lane Planning & Design Guide shows how to best accommodate bicycle facilities in pedestrian realms.

Recommendations

- **Develop and adopt a Complete Streets Design Manual.** Building on the policy established in the General Plan, adopting street design standards that promote pedestrian safety and comfort would ensure that pedestrian improvements are implemented systematically throughout the city during new construction and street retrofits. While existing design resources such as the NACTO Urban Design Guide are valuable and should continue to be used to inform the City's design practices, adopted City standards hold more weight, are easier to enforce and provide more design details.
- **Adopt a Complete Streets internal process checklist for project development, design, review and approval, and operations and maintenance.** The Complete Streets process ensures a greater maintenance and enforcement program to ensure the public right-of-way remains accessible.
- **Ensure design standards/design speeds in pedestrian areas do not contribute to a routine need for traffic calming.** Wide streets provide a visual cue to drivers that speeding is safe and expected, which predictably results in speeding problems that must then be managed through traffic calming or enforcement. Street design standards that address this problem proactively would be a more effective long-term approach.

Best Practice Examples

- San Francisco Better Streets Plan, 2011. <http://www.sf-planning.org/ftp/BetterStreets/>
- Boston Complete Streets Guide, 2013. <http://bostoncompletestreets.org/>
- City of Alexandria Complete Streets Design Guidelines, 2016. <https://www.alexandriava.gov/localmotion/info/default.aspx?id=91090>

Resources

- NACTO Urban Street Design Guide. <http://nacto.org/publication/urban-street-design-guide/>

Neighborhood Traffic Management

As discussed in Chapter 2, vehicle speed directly impacts the chances of surviving a crash, especially for pedestrians who are especially vulnerable and have a high chance of being seriously injured or killed when speeds reach moderate levels.

Systematic reduction of speeds on Cupertino streets would improve safety for all modes, while also helping to meet other City goals. The Cupertino General Plan includes a recommendation to reduce speeds through traffic calming on Cupertino streets (Policy M-2.6). The City has an informal neighborhood traffic management program, and primarily responds to community members concerns on a case-by-case basis. The City has not recently used other traffic management tools such as diverters and speed humps, due to concerns that traffic issues may be diverted to other streets.

The City currently evaluates speed limits every 10 years and is planning to review established speed limits citywide in 2019. As part of this process, speed studies are conducted to determine current operating speeds. Speed studies are also conducted in response to resident concerns.

Recommendations

- **Formalize the City's traffic calming practices.** A neighborhood traffic management program would provide a transparent process for developing area-wide traffic calming improvements. Ideally, this program would have dedicated funding to allow for a more proactive approach.
- **Employ traffic calming strategies in locations where traffic speeds are too high for high priority pedestrian travel areas.** Due to the original design of many Cupertino streets, high speeds occur on many streets. The City should prioritize and implement traffic calming on streets near parks, trails, and schools that have observed speeding problems.
- **Expand the traffic calming toolbox.** As part of a formalized traffic calming program, criteria and considerations for the use of various traffic calming treatments should be documented. For example, the City currently uses speed humps only on a limited basis (e.g., on bicycle boulevards), due to traffic diversion concerns. While this concern may be valid in some areas, speed humps or other vertical treatments such as raised intersections may be included as part of a menu of traffic calming options. Before and after counts may be taken on the treated streets as well as on parallel streets to monitor impacts and potential diversion.
- **Reconsider criteria for setting speed limits.** Some cities, such as Seattle and Boston, are experimenting with approaches for setting speed limits that better align with community goals. For example, Cupertino could consider pedestrian safety when setting speed limits. The California



Figure 19. Traffic calming devices enhance the pedestrian environment and allow pedestrians to feel safer and more comfortable.

Vehicle Code (CVC) allows speed limits to be set at 5mph lower than the 85th percentile speed.⁸ Changes to the speed limit should be accompanied by geometric changes and enforcement.

- **Consider establishing 15 mph school zones and other slow zones near parks, community facilities, or senior housing.** To protect the most vulnerable members of society, Cupertino should consider reducing speed limits in school zones or other slow zones. Lower speeds in such zones would greatly reduce the chance of a fatality or serious injury if a pedestrian is hit by a motor vehicle.
- **Use new radar speed signs and other technologies to collect speed data.** The City owns and regularly installs radar signs that display vehicle speeds and can also record speed data. Other portable technologies, such as StealthStat, a pole-mounted radar system, could be used to expand coverage of speed data collection without the use of pneumatic tubes.

Best Practice Examples

- City of San Ramon. Residential Traffic Calming Program: Policies, Procedures, Resources. <http://www.sanramon.ca.gov/transp/images/rtc.pdf>
- City of Seattle. Speed Limits. <https://www.seattle.gov/visionzero/speed-limits>

Resources

- PEDSAFE. <http://pedbikesafe.org/PEDSAFE/countermeasures.cfm>
- ITE Traffic Calming Website. <http://www.ite.org/traffic/index.asp>
- Federal Highway Administration. Methods and Practices for Setting Speed Limits: an Informational Report, 2012. https://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa12004/fhwasa12004.pdf

Americans with Disabilities Act (ADA) Accessibility

The City's ADA Transition Plan was completed in 2014. It includes recommendations for removal of programmatic and policy barriers to accessibility (e.g., changes to City Municipal Code allowing the use of service animals in City facilities) as well as removal of physical barriers for City-owned facilities. The Transition Plan establishes a policy and prioritization framework for the use of City funds to improve accessibility. While the Plan includes criteria for how to prioritize projects in the public right-of-way (ROW), it does not provide a comprehensive recommendation for sidewalks throughout the City's street network.

The City updates curb ramps in routine CIP resurfacing projects. In 2016, the City was awarded Community Development Block Grant (CDBG) funds to replace curb ramps that do not meet ADA guidelines. Sidewalk gap closure projects are ongoing and typically funded through the City's CIP.



Figure 20. In Seattle, WA, ADA-compliant crossings ensure mobility for people with disabilities.

⁸ Caltrans. California Manual for Setting Speed Limits. 2013. <http://www.dot.ca.gov/trafficops/camutcd/docs/california-manual-for-setting-speed-limits.pdf>

Recommendations

- **Establish an accessible design checklist for design projects.** A checklist will help to ensure ADA considerations are covered at all level of designs, thereby helping to improve compliance.
- **Conduct ADA trainings for City staff.** To effectively implement ADA changes across the city, the City should focus on ADA trainings for current employees while working to dedicate more staff to ADA compliance review, planning, and engineering. FHWA provides numerous training modules on this and related topics.
- **Improve representation of people with disabilities.** Representation of people with disabilities and other accessibility advocates on the Cupertino Planning Commission, advisory boards, and as community advisors for planning projects will help to bring greater awareness and attention to ADA concerns.

Best Practice Example

- Howard County, Maryland. WalkHoward. <https://walkhoward.org/resources/>

Resources

- U. S. Access Board. Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way. 20911. <https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines>
- American Planning Association. Complete Streets: Best Policy and Implementation Practices. <https://www.smartgrowthamerica.org/app/legacy/documents/cs/resources/cs-bestpractices-chapter5.pdf>

Evaluation and Planning

Collection and analysis of pedestrian-related data helps agencies prioritize resources, make more informed decisions, establish need when submitting grant applications, and evaluate trends and outcomes. Prior to collecting new data, it is important to have a clear sense for how the data will be used and managed. Ideally, data collection and analysis would be closely tied to established goals and policies and would help Cupertino monitor progress implementing the PTP.

Pedestrian Volume Data Collection

Cupertino does not routinely collect pedestrian volume data. Collection of pedestrian volume data can help the City prioritize investments over time or demonstrate the impact of infrastructure investments such as new sidewalks.

A variety of count methods can be used; generally, automated methods that collect continuous count data over a period of a week or more are preferred to ensure reliable estimates. Short-duration counts can be extrapolated to annual averages using expansion factors that account for daily and seasonal fluctuations in



Figure 211. Infrared counter on multi-use trail in Denver, CO.
Credit: Colorado Department of Transportation.

pedestrian activity. This process is discussed in NCHRP Report 797 and the Federal Highway Administration (FHWA) Traffic Monitoring Guide (see the “Resources” section).

Recommendations

- **Collect pedestrian and bicycle volumes as part of every traffic count**, both for private development transportation impact studies and City-led data collection.
- **Conduct annual pedestrian volume counts along the City’s high-injury corridors.** As mentioned above, pedestrian intersection (or midblock) volume data would help the City understand the relative safety of different intersections. This would provide insight into the likely benefit of making infrastructure improvements. For example, an intersection with a high number of pedestrian crashes and low pedestrian volumes indicates a likely design problem whereas an intersection with a similar number of crashes and high pedestrian volume may not have obvious design deficiencies.
- **Collect pedestrian volume data before and after installation of new pedestrian facilities.** Data collected before and after installation of pedestrian facilities, such as sidewalks and crossing treatments, can demonstrate the impact of infrastructure investments, which may lead to greater support for future investment.
- **Conduct pedestrian volume counts at existing pedestrian crosswalk locations to determine where warrants for Pedestrian Hybrid Beacons (HAWK signals) or other traffic control devices may be met.** HAWK signals have been proven to be one of the most effective pedestrian crossing treatments for multilane roads. However, they are subject to warrant criteria, as outlined in the MUTCD. Some existing midblock crossing locations may meet those warrants and be suitable candidates for implementation of HAWK signals.

Best Practice Example

- Alameda County Transportation Commission. Bicycle and Pedestrian Count Program. http://www.alamedactc.org/app_pages/view/9644

Resources

- NCHRP Report 797. Guidebook on Pedestrian and Bicycle Volume Data Collection. 2014. <http://www.trb.org/Publications/Blurbs/171973.aspx>
- FHWA. Traffic Monitoring Guide. 2016. <https://www.fhwa.dot.gov/policyinformation/tmguid/>

Pedestrian Safety Analysis and Planning

Review and analysis of pedestrian crashes is an important strategy for saving lives and reducing injuries across the city. Cupertino staff typically receives collision reports from the Santa Clara County Sheriff’s Office, but lacks an established, ongoing process for reviewing crashes and developing solutions.

Recommendations

- **Develop an annual crash report.** Many cities undertake a periodic analysis of crashes which can help identify trends and problem areas. A collision analysis has been conducted for the PTP; to understand and respond to emerging needs, crash analysis should be conducted on a routine basis, such as every year or every two years.
- **Evaluate pedestrian safety outcomes.** As projects stemming from this PTP are implemented, the City should evaluate the pedestrian safety outcomes, particularly projects that respond to a safety concern. Since pedestrian crashes are rare in many locations, field observations could be used to determine the safety impact. For example, the City could evaluate yielding behavior before and after the addition of enhanced crossing treatments to an existing crosswalk. Over time, such information could help the City select and prioritize which treatments to use based on their effectiveness in Cupertino.
- **Conduct Road Safety Audits (RSAs).** RSAs can be used to identify multidisciplinary strategies at locations and corridors with a history of pedestrian crashes. Such locations may not have had fatalities in the past, but have a risk for future fatalities based on higher than expected levels of non-fatal crashes. RSAs are typically focused on low-cost improvements. RSAs should be considered for the streets identified as high-injury corridors in the collision analysis in Chapter 2.
- **Conduct Walk Audits.** Walking audits provide an interactive opportunity to receive feedback from key stakeholders about the study area as well as discuss potential solutions and their feasibility. They can be led by City staff, advocacy groups such as Walk Bike Cupertino, neighborhood groups, or consultants. Multiple walk audits were conducted as part of the development of the PTP, including sections of Stevens Creek Boulevard and DeAnza Boulevard (see Appendix C). Specific locations identified for future walk audit locations include segments of the high-injury corridors identified through analysis of recent collisions in Chapter 2:
 - Bollinger Road from DeAnza Boulevard to the City limit
 - DeAnza Boulevard from Homestead Road to Bollinger Road
 - Foothill Blvd and Stevens Canyon Road from Foothill Expressway to Stevens Creek County Park
 - Miller Avenue/Wolfe Road from Homestead Road to Bollinger Road
 - Stelling Road from Homestead Road to the City limit



Figure 22. Road Safety Audits bring together planners and engineers to address high-crash locations.

Best Practice Examples

- City of Fort Collins. Traffic Safety Report, 2015. <http://www.fcgov.com/traffic/pdf/traffic-safety-summary-2016.pdf?1476201877>
- City of Boston. Vision Zero: Rapid Response <http://www.visionzeroboston.org/rapidresponse>
- Massachusetts Department of Transportation. City of New Bedford, Coggeshall Street Road Safety Audit. https://www.massdot.state.ma.us/Portals/8/docs/traffic/SafetyAudit/District5/New_Bedford_Coggeshall_St_RSA.pdf

Resources

- FHWA. Road Safety Audit Guidelines, 2006. <https://safety.fhwa.dot.gov/rsa/guidelines/>
- FHWA. Pedestrian Road Safety Audit Guidelines and Prompt Lists, 2007. http://www.pedbikeinfo.org/pdf/PlanDesign_Tools_Audits_PedRSA.pdf

Education and Enforcement

Safety Education

Cupertino has a well-developed Safe Routes to School program that includes participation across all public schools in the city.⁹ A wide variety of materials and resources are made available, including safety tips for all modes, walking and bicycling maps, drop-off instructions for individual schools, and other education and encouragement ideas.

Recommendations

- **Continue to promote walking and bicycling to school through the Safe Routes 2 School program.**
- **Consider developing and implementing a targeted safety campaign.** As suggested in Chapter 5, Cupertino may explore the possibility of obtaining funding to conduct a broad safety campaign, targeting all modes and user groups, such as drivers and seniors. This campaign should address key issues affecting pedestrian safety such as traffic speed and yielding at crosswalks. A combination of education and enforcement strategies is likely needed and most effective.



Figure 23. Safe Routes to School programs educate students while encouraging active trips to and from school.

Best Practice Examples

- StreetSmart. <http://beststreetsmart.net/index2.php>
- Bike Arlington. PAL. Safety on Our Streets. <http://www.bikearlington.com/pages/pal-safety-on-our-streets/>

Resources

- National Center for Safe Routes to School. <http://www.saferoutesinfo.org/>.

Enforcement

The Santa Clara County Sheriff's Office works closely with schools in Cupertino to educate children on traffic safety laws. They have also conducted focused enforcement to increase yielding to pedestrians at crosswalks.

Recommendations

- **Implement sustained enforcement efforts and involve the media.**
- **Use enforcement as an opportunity for education by distributing pedestrian safety pamphlets in-lieu of, or in addition to, citations.**

⁹ City of Cupertino. What is Safe Routes 2 School (SR2S)? www.cupertino.org/saferoutes

Best Practice Example

- National Highway Traffic Safety Administration. Evaluation of the Miami-Dade Pedestrian Safety Demonstration Project. http://www.pedbikeinfo.org/collateral/PSAP%20Training/gettraining_references_Miami-Dade.pdf

Resources

- National Highway Traffic Safety Administration. Pedestrian Safety Enforcement Operations: A How-To Guide. <https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/812059-pedestriansafetyenforceoperahowtoguide.pdf>

Draft

Chapter 4: Project Recommendations

Implementation of the project recommendations in this chapter will result in a more livable Cupertino, where residents and visitors can more safely and comfortably walk for transportation and recreation.

Development of Recommendations

Location-specific project recommendations were identified in four ways:

- Walk audits: areas defined through demand analysis, staff input and geographic/street type diversity
- WikiMap comments: responses to comments received on the PTP online map
- Public workshop comments: responses to comments received at the first public workshop
- City staff input: locations identified by City staff in response to known issue areas and existing in-process street design projects

The recommendations included in this chapter focus on targeted locations of high need and opportunity, but there are similar challenges that exist in other parts of the city. *As such, the project list and maps do not represent the entire realm of projects that could be completed to improve pedestrian travel in Cupertino.* In addition, specific recommendations for infrastructure projects in school areas are being addressed through a separate, parallel Safe Routes to School process. More information can be found at <http://www.cupertino.org/our-city/departments/public-works/transportation-mobility/safe-routes-2-school>

Walk Audits

Walk Audits were conducted of six areas, identified through demand analysis and representing a range of street types throughout the city. Consultant and City staff visited these areas on March 14 and 15, 2017. The areas were:

Arterials

- Route 1: De Anza Boulevard, between Mariani Avenue and Rodrigues Avenue and Bandle Drive, from Valley Green Drive to Stevens Creek Boulevard
- Route 4: Stevens Creek Boulevard, between SR 85 and Stelling Road
- Route 5: Stevens Creek Boulevard, between Finch Avenue and Tantau Avenue

Local Streets

- Route 2: Phar Lap Drive and Mann Drive
- Route 3: Miller Avenue, Vicksburg Drive, La Mar Drive
- Route 6: Monta Vista neighborhood

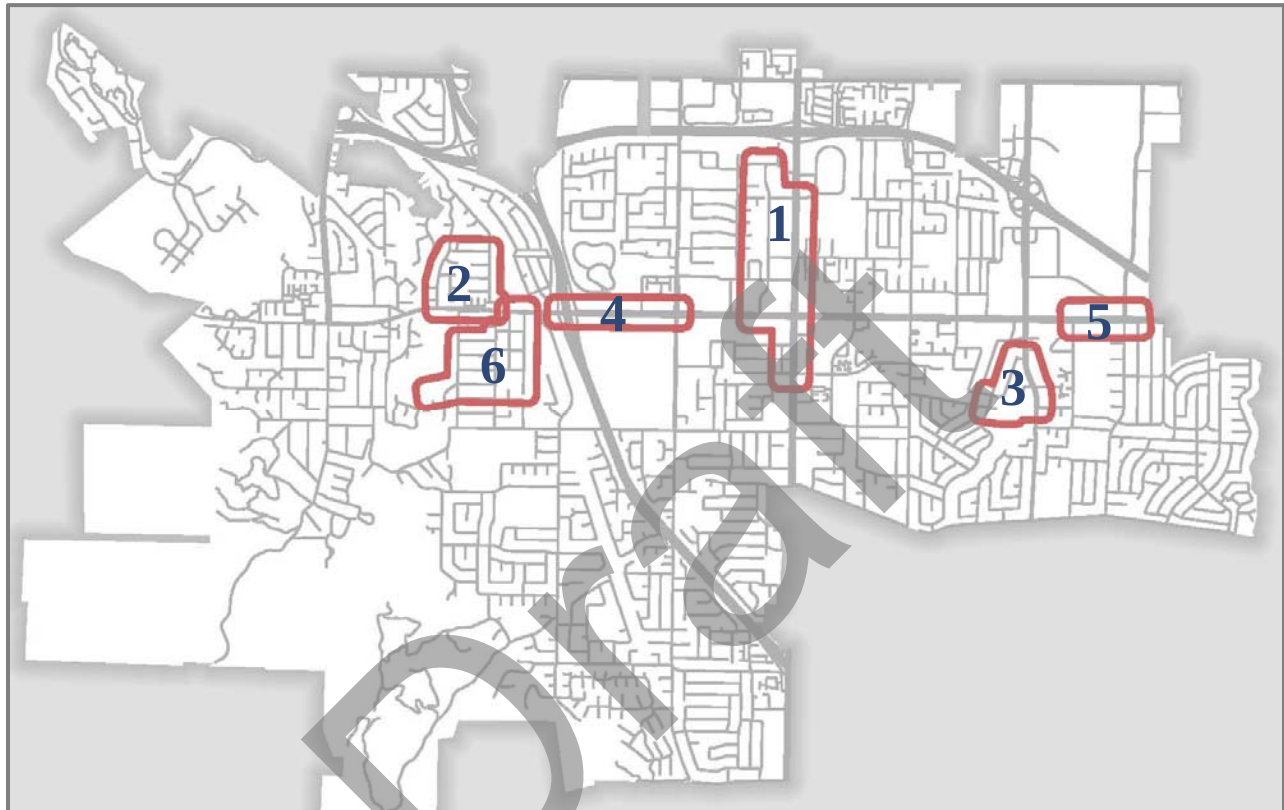
These audits had multiple purposes:

1. Identify specific issues impacting the pedestrian environment and travel along the walk audit routes,
2. Catalog issues by street type or place within Cupertino for presentation in the PTP,
3. Create a shared understanding of infrastructure and behavioral issues that create a challenging, uncomfortable or unsafe pedestrian environment, and
4. Discuss potential countermeasures and/or policy and programmatic changes that can address identified issues

City staff accompanied consultants on all walk audits and answered questions about specific existing and planned infrastructure within the walk audit areas, as well as general City practices with respect to

pedestrian projects and policies. Site-specific issues within these areas were noted for recommended improvements. A complete summary of the walk audits can be found in Appendix C.

Many of the walk audit recommendations along the high-crash corridors are included in the prioritized project list. Additional audits are recommended along all the high-crash corridors for a more comprehensive evaluation. Recommended treatment types for the remaining walk audit routes are intended to serve as model applications of the toolkit facilities that appear in this chapter. These treatments will guide the City's response to future requests and studies on local and collector street types. Figure 24 illustrates the walk



audit locations.

Figure 24. Walk Audit Locations

WikiMap and Public Workshop Comments

Comments received on the WikiMap and at the Public Workshop are listed in Appendix D. Comments from these sources that address high-priority locations are included within the prioritized list of project recommendations. Remaining locations have been catalogued for review by City staff and should be considered in future development efforts.

Staff Input

City of Cupertino staff are routinely contacted by residents with concerns about the pedestrian environment and observe issues around the city. This institutional knowledge contributed locations to the analysis of potential recommendations. Crossing treatments and sidewalk installation projects were made for locations based on this staff input. Additionally, staff recognized the pedestrian benefits of some elements in the Class IV bikeway design for Stevens Creek Boulevard and McClellan Road, and those project elements are included here as pedestrian projects.

Identified Issues

These four sources of information about pedestrian issues in the city centered on a few key areas. These issues can be mitigated by applying treatments in the pedestrian toolbox identified later in this chapter.

1. Boulevard intersections: Boulevard intersections are likely locations of pedestrian/automobile conflict. This was observed during walk audits, has been reported by residents, and is borne out in the collision data presented in Chapter 2. The following issues are most critical.

- **Marked crosswalks:** Lack of marked crosswalks on all legs at signalized intersections creates delay and inconvenience for pedestrians who must cross multiple legs to reach their destination. It also exposes them to more potential conflicts with automobiles.
- **Concurrent pedestrian/automobile movements:** During walk audits, drivers were observed encroaching on crosswalks to make right turns on red. Right turns on red may be restricted at some intersections (e.g., the Stevens Creek Boulevard Class IV bikeway design includes separate phasing), but most locations will likely continue to experience this conflict. This issue should be addressed through education efforts for residents and daily visitors.
- **Signal timing:** Signal phases along boulevards are very long in part due to accommodation of high traffic volumes. This leads to long wait times for pedestrians crossing. People were observed running to make a green signal or to complete a crossing even when a pedestrian countdown timer indicated too-short time remaining to make the full crossing.
- **Driveway proximity to intersection:** Some retail locations on boulevard corners have driveways within the functional area of the intersection. Turning movements into and out of these driveways create more opportunity for conflict between automobiles and between pedestrians and automobiles. The City has updated standards regarding proximity of driveways to the intersection since some of these were constructed, but retrofitting of existing locations may be warranted.
- **Curb radii:** Drivers turning off a higher-speed boulevard onto a local street do not receive a visual cue that they are entering a slower speed environment. They are also not forced to slow making right turns because curb radii are generally wide coming off the boulevard streets.

2. Along boulevards: Even with sidewalks provided, some additional issues exist on boulevards for pedestrians.

- **Sidewalk width and placement:** The current five-foot sidewalk standard does not create a comfortable walking environment when the sidewalk is adjacent to the curb. This condition is present on segments of Stelling Road, DeAnza Boulevard, Stevens Creek Boulevard and Homestead Road. Though pedestrians are somewhat buffered from automobile traffic by standard bike lanes, the sidewalk is still not of adequate width to be comfortable or to accommodate side-by-side pedestrian travel. Buffered sidewalks on boulevards were significantly more conducive to pedestrian comfort.
- **Crossing spacing:** Enhanced, comfortable, safe crossings are widely spaced along boulevards, up to nearly 0.5 miles in some locations. This can present challenges for accessing transit stops or other destinations located between crossings.
- **Driveway frequency:** Frequent driveways create potential conflicts between pedestrians and drivers accessing businesses. These are sometimes the result of smaller retail parcels all having their own access, and sometimes the result of multiple driveways to access a single parcel. Shared parking agreements may mitigate the need for frequent driveways.

- **Driveway cross slope:** Driveways in locations without a sidewalk buffer often create an unacceptable cross slope for the sidewalk. Some of these locations were identified in the ADA Transition Plan, but others exist throughout the city and create a hazard for people in wheeled mobility devices or pushing strollers and carts.
3. **Neighborhood speeds:** Local streets in neighborhoods tend to be wide (38' typical) with wide curb radii. These characteristics, along with generally low occupancy of on-street parking, can lead to higher-than-posted speeds for drivers. These issues can be compounded when a local street does not have frequent traffic control requiring drivers to stop. Residents have expressed concern about high speeds in several locations recently, and the City has addressed them with speed radar signs. La Mar Drive is a typical example.
 4. **Missing sidewalk:** Lack of sidewalks on one or both sides of the street was noted by several community members on local, neighborhood connector and avenue streets. This was also observed in walk audits. Recommended locations for sidewalk construction do not represent *all* locations of missing sidewalk on streets in Cupertino. Sidewalk gaps occur from parcel to parcel and along longer segments of some streets. Missing sidewalks are more of a concern where traffic volumes and speeds are high because of the greater potential for conflict and greater severity when crashes do occur.
 5. **Placement of curb ramps:** Many locations were observed across a range of street types that did not have curb ramps or had diagonal curb ramps. The City has been working on a program of ramp replacement, but even some new ramps were replaced as diagonal ramps when two directional ramps should be standard.
 6. **Lack of connectivity:** Cupertino's street network is often disconnected and indirect at the local neighborhood level. This can result in fewer people choosing to walk for trips because distances are longer or because the most direct route is on a busier street that is less pleasant for walking. Some public comments noted specific new connection points that would make school, park or retail access more convenient.

Pedestrian Facility Toolbox

The pedestrian facility toolbox includes general design considerations for pedestrian facilities recommended in this Plan to make Cupertino a more pedestrian-friendly community. The guidance provided here is intended for engineers and planners within Cupertino to reference and to incorporate into their own design guidelines or standards as appropriate.

The toolkit provides an explanation of the different facilities, their purpose, and application. Some additional facility types have been included that, though not recommended to address issues identified in this plan, may be used in the future to address issues in other parts of the city.

Sidewalks

Sidewalks play a critical role in the character, function, enjoyment, and accessibility of neighborhoods, main streets, and other community destinations. Sidewalks provide a dedicated space with the primary purpose of accommodating pedestrian travel.

All sidewalk gaps should be filled, except for private streets and semi-rural areas.

Benefits

- Provide dedicated space while improving mobility and access for pedestrians.
- Can encourage walking and promote fitness and the general health of a community.



Figure 25. Detached Sidewalk

Challenges

- Often difficult/costly to retrofit streets to add sidewalks.
- Sidewalks need to be maintained and often that responsibility is passed onto adjacent property owners.

Applicability and Use

- Providing continuous sidewalks is critical to the development of a complete pedestrian network in Cupertino. Therefore, closing existing sidewalk gaps should be prioritized for implementation.
- Sidewalks should have a minimum width of five feet if set back from the curb, or six feet if at the curb face. However, sidewalk and street buffer width should both increase in proportion to adjacent motor vehicle volumes and pedestrian-use volumes.
- Preferred width: six feet in residential areas, but in commercial areas, near schools, at transit stops, downtown, near parks, or anywhere where high concentrations of pedestrian activity exists, the minimum width for a sidewalk should be eight feet.

Striped shoulder/Pedestrian lane

Curbless streets exist in some Cupertino neighborhoods that have a semi-rural street typology or in privately-developed neighborhoods. Although sidewalks are the best way to provide separation from motor vehicles, adding a striped shoulder/pedestrian lane to curbless streets can work well in residential settings with low levels of vehicle traffic.

Benefits

- Visually narrows the roadway to encourage drivers to slow down.



Figure 26. Striped pedestrian lane

Challenges

- Must restrict on-street parking fully or to one side of street if space available. The latter necessitates marking parking, and both necessitate enforcement.

Applicability and Use

- This condition is most appropriate for local streets with lower volumes and speeds.
- Not yet used in Cupertino, however recommended on streets that serve as a low-volume collector street, such as Mann Drive.
- While a striped shoulder/pedestrian lane can increase comfort for all people within the street right-of-way, traffic calming may be needed to ensure slow vehicle speeds that are appropriate for curbless streets.

Traffic Calming

Traffic calming uses physical engineering measures to reduce speeds, alter driver behavior, and improve conditions for non-motorized street users. Traffic calming aims to slow the speeds of motorists to a “target speed,” usually 20 miles per hour or less for residential streets and 25 to 35 mph for collectors and minor arterials. A suite of infrastructure treatments are presented below.

Curb Extensions

Curb extensions extend the sidewalk or curb line into the roadway and are intended to improve safety by slowing turning speeds, improving sight lines, shortening crossing distances, reducing exposure time, and increase visibility between roadway users.

Benefits

- Shortens pedestrian crossing distance
- Prevents vehicles from blocking the crosswalk
- Extended sidewalk space can be used for plantings, street furniture, or green stormwater infrastructure.

Challenges

- Can alter the drainage characteristics of the street
- May present challenges in accommodating existing and future bicycle facilities and large vehicle turning movements
- Landscaped curb extensions should only feature low-growing plants to preserve sight distances.

Applicability and Use

- Valuable in locations with high volumes of pedestrian traffic
- Can be used as a traffic-calming element
- Can be used at: intersections and mid-block pedestrian crossings, but only where on-street parking is present
- May be used at transit stops (i.e., bus curb extensions) to increase transit stop waiting area capacity and facilitate in-lane stopping of transit vehicles
- May provide space for utilities, signs and amenities such as bus shelters or waiting areas, bicycle parking, public seating, public art, street vendors, newspaper stands, trash and recycling receptacles and green infrastructure elements
- Already used on some streets in Cupertino



Figure 29. Curb extensions

Curb Radii

Curb radii are important to consider for slowing speeds of turning vehicles. A tighter curb radius forces drivers to slow in making right turns. For left turns, drivers have less room for error entering the cross street and so are also forced to slow. Curb radii can be adjusted through extension of an existing curb as in Figure 27.

Truck Aprons

Truck Aprons may also be used to extend the curb. They are paving treatments that create the illusion of “moving the curb.” They are used to narrow the street at intersections to calm traffic without restricting the movement of larger vehicles. For most vehicles, they will function similarly to extending the entire curb, slowing right turns and narrowing the street. However, they are designed such that they do not restrict turning movements of larger vehicles that may need to access local streets periodically.

Benefits

- Encourages slower vehicle turning speeds and increases driver awareness of crossing pedestrians
- Shortens pedestrian crossing distance
- Improves sight distance

Challenges

- Retrofit installations may require drainage and utility relocation
- May not be feasible on steep grades

Applicability and Use

- Truck aprons used on some local streets in Cupertino
- Often used on roundabouts, they can also be used as chicanes and curb extensions
- Curb radii generally in Cupertino could be narrowed



Figure 27. Narrowed curb radius

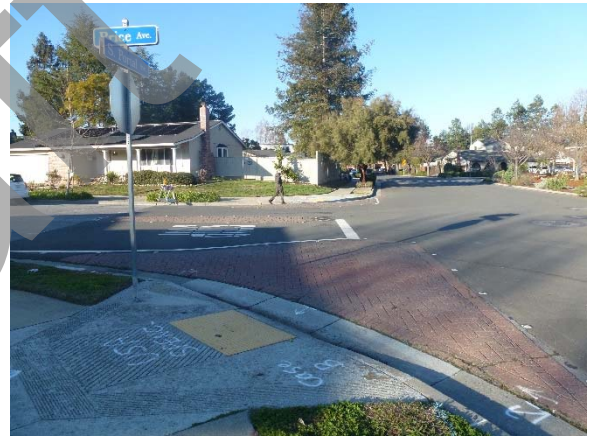


Figure 28. Truck apron, Cupertino

Vertical Deflection

Speed Humps/Tables provide a gentle rise on the roadway, and consist of raised pavement approximately three to four inches high at the center, extending nearly the full width of the street. Speed humps/tables are very effective at slowing traffic. The height of a speed hump/table should taper near the gutter to maintain drainage and allow unimpeded bicycle travel.

Benefits

- Highly effective method for slowing motor vehicles
- Can be relatively inexpensive and easy to maintain

Challenges

- May impact traffic patterns
- Concerns about emergency vehicle speed may arise from installation of speed humps; however, proper design of the hump profile or use of channels in humps can mitigate impacts on emergency vehicles and other large vehicles such as buses

Applicability and Use

- Grade should be considered; do not use on roadways with greater than 5 percent grade
- Speed tables are preferred by City of Cupertino (Standard Detail 1-17A)
- Already used on many local streets in Cupertino
- Design consideration should be given for large vehicles and bikes when determining approach angle and profile



Figure 30. Speed hump, Cupertino

Horizontal Deflection

Traffic circles are circular islands that force drivers to slow at intersections and navigate around the center island. Circles may be used at uncontrolled or two-way stop controlled intersections. When properly design they reduce the speeds of motorists, which reduces collisions and improves bicycle and pedestrian safety. They can also encourage through traffic to stay on arterial streets, reducing the impact of cut through traffic on neighborhoods.

They are typically installed in the center of street intersections with three or four approach legs. Larger vehicles such as school buses that make wider turns can be accommodated by building traffic circles with a mountable exterior truck aprons.



Figure 31. Traffic circle

Benefits

- May enhance the attractiveness of the street through opportunity for landscaping
- Visually narrows the roadway

Challenges

- May impact traffic patterns
- May impact street drainage

Applicability and Use

Traffic circles may be considered in the following situations:

- At intersections of residential streets to reduce speeds and/or to mitigate a history of angle crashes
- Already used on some local streets in Cupertino

Chokers/Pinch points/Chicanes can take the form of curb extensions, center islands, or staggered on-street parking placed mid-block. Chokers and pinch points narrow the roadway such that drivers must yield to oncoming traffic passing before proceeding, and/or create a winding travel path that encourages slower speeds. Chicanes compel drivers and bicyclists to navigate a narrowed “s” shaped pathway along the street created by the placement of curb extensions that alternate from one side of a street to the other, typically in groups of three.

Benefits

- Narrows the roadway both physically and visually which slows vehicle speeds and increases safety/decreases severity of traffic crashes for all users, especially pedestrians
- Stormwater and greenspace elements can be combined to calm traffic while also making the street more attractive

Challenges

- Requires removal of on-street parking to implement effectively
- May impact traffic patterns
- May impact street drainage

Applicability and Use

Chokers, pinch points, and chicanes may be considered on residential streets where:

- There is a high volume of high speed cut through traffic
- A comprehensive neighborhood traffic calming program is present and other traffic calming measures have been implemented
- More effective at reducing speeds where on-street parking is not present and already forces the automobile's path of travel away from the curb
- Children frequently walk or bicycle to and from school
- Already used on some local streets in Cupertino



Figure 32. Chicane

Shared Use Paths

Shared use paths are physically separated from motor vehicle traffic and are for pedestrians, bicyclists, and other non-motorized users. Shared use paths, also referred to as multiuse trails, are often located in independent alignments, such as a greenbelt or riparian corridors. However, they are also regularly constructed along roadways.

Benefits

- Separated from motor vehicle traffic
- Comfortable for less-confident adults, children, seniors, and persons with disabilities
- Provides recreational opportunities in addition to transportation

Challenges

- Potentially costly and complicated right-of-way acquisition
- Topography and drainage can greatly impact design
- Can present safety concerns when placed adjacent to a roadway with frequent driveway or intersection crossings

Applicability and Use

- Creating connections exclusively for people walking and biking, such as at the end of a cul de sac or along an independent alignment to create a new corridor
- Especially useful to create connections where parallel automobile connection is not comfortable or appealing for people walking or biking

Pedestrian/Bicycle Bridges

Pedestrian/bicycle bridges provide complete separation of pedestrians and bicyclists from vehicular traffic, often where no other pedestrian or bicycle facility is available, and connect transportation networks across barriers such as railroads, freeways, or other major transportation corridors.

Benefits

- Can provide a critical link in the transportation system by overcoming comfort and/or safety barriers.

Challenges

- People are not likely to use the bridge if a more direct route is available.
- Must maintain wheelchair accessibility, resulting in longer approach ramps or elevator access.
- Very expensive



Figure 33. Shared use path



Figure 34. Pedestrian and bicycle bridge

Applicability and Use

- Most appropriate over high-volume, high-speed highways, railroad tracks, or natural barriers.
- Appropriate where moderate to high pedestrian/bicycle demand exists to cross at a specific location that cannot be addressed through an at-grade solution.
- May be appropriate in locations where large numbers of school children cross busy streets, or where high volumes of seniors or mobility-impaired users need to cross a major roadway.

Crossings

Well-designed marked crosswalks provide legitimacy and comfort to pedestrians crossing streets. Drivers are legally required to yield to pedestrians at intersections, even when there are no pavement markings, though providing marked crosswalks communicates to drivers that pedestrians may be present. At mid-block locations, a crosswalk exists only if it is marked.

Benefits

- Increase the visibility of pedestrians crossing at intersections and mid-block crossings
- Crosswalks marked with continental, ladder, or zebra patterns have been found to be significantly more visible to motorists¹⁰ and to reduce crashes by 48 percent¹¹
- Guide pedestrians to crossing locations

Challenges

- Enforcing stop-bar compliance so drivers do not stop in crosswalks

Applicability and Use

- Installation of marked crosswalks should be completed per guidance in the Crosswalk Installation Policy found in Appendix E of this plan
- Marked crosswalks should be at least 10 feet wide or the width of the approaching sidewalk. In areas of heavy pedestrian volumes, marked crosswalks can be up to 25 feet wide
- To maintain visibility near crossings, parking should be prohibited within 20 feet of a crosswalk



Figure 35. Crosswalk (with Median Island)

¹⁰ K. Fitzpatrick, S. Chrysler, V. Iragavarapu, and E.S. Park. Detection Distances to Crosswalk Markings: Transverse Lines, Continental Markings, and Bar Pairs. Transportation Research Record: Journal of the Transportation Research Board, No. 2250. Transportation Research Board of the National Academies, Washington, DC, 20011.

¹¹ L. Chen, C. Chen, R. Ewing, C. McKnight, R. Srinivasan, and M. Roe. Safety Countermeasures and Crash Reduction in New York City—Experience and Lessons Learned. Accident Analysis and Prevention. In print, 2012. Retrieved August 14, 2015. <http://dx.doi.org/10.1016/j.aap.2012.05.009>

Raised Crossings

Raised crosswalks use vertical deflection to reduce motorist speeds upon approach of the crosswalk. **Raised intersections** are created by raising the roadway to the same level as the sidewalk, which creates a speed table across an entire intersection. Both treatments are intended for locations where desired approach speeds are 25mph or less.

Benefits

- Similar to speed humps and other vertical speed control elements, raised crosswalks and intersections reinforce slow speeds and encourage motorists to yield to pedestrians at the crosswalk
- Increase visibility between motorists and pedestrians
- Raised intersections create a safe, slow-speed crossing and public space at minor intersections

Challenges

- Potential coordination with emergency responders
- Potential drainage impacts
- Very expensive

Applicability and Use

- Applying raised crossings at the crosswalks of right-turn slip lanes can improve pedestrian safety by encouraging improved yielding behavior and slowed turning speeds.
- Raised intersections are most appropriate in areas of high pedestrian demand.
- Raised intersections are flush with the sidewalk and ensure that drivers traverse the crossing slowly. Crosswalks do not need to be marked unless they are not at grade with the sidewalk.



Figure 36. Raised midblock marked crosswalk



Figure 37. Raised intersection

Advance Yield Lines

Advance yield lines, which are composed of solid white triangles (often referred to as “shark’s teeth”), indicate where drivers should yield to pedestrians in crosswalks.

Benefits

- Provide advance warning of pedestrian crossing to drivers before reaching crossing location
- By slowing traffic, improve visibility for pedestrians and drivers whose view might otherwise be blocked by a vehicle in the adjacent lane on multi-lane approaches

Challenges

- On-going maintenance owing to wear on markings located within the wheel path

Applicability and Use

- Typically used on street approaches with two or more lanes.
- When applied to midblock crosswalks, advance yield lines should be 20 to 50 feet from the crosswalk depending on speed.
- Parking should be restricted between the stop or yield line and the crosswalk to improve visibility
- Effective to combine with RRFBs.



Figure 38. Advance yield lines

Median Crossings Islands

Median crossing islands (also known as center islands, refuge islands, and pedestrian safety islands) are raised islands installed in the center of a street at intersections or midblock. Median crossing islands reduce pedestrian exposure time and allow pedestrians to deal with only one direction of traffic at a time by providing a protected space in the middle of the street.

Benefits

- Improve safety and comfort for children, the elderly, the disabled, and others who travel slowly, as well as bicyclists.
- Improve crossing experience at unsignalized locations, as pedestrians are only required to negotiate one direction of traffic at a time.
- Provide traffic calming effects.



Figure 39. Median crossing island

Challenges

- Availability of space within the roadway.
- Identification of applicable locations where island does not prevent a left turn movement.

Applicability and Use

- May be appropriate at: signalized intersections and crossings where there is a high proportion of young, elderly, and other slower-moving pedestrians.
- Should also be considered at all uncontrolled intersections and midblock crossings where vehicle speeds and volumes make crossing the street difficult due to lack of adequate gaps, or where four or more lanes of traffic make pedestrians feel exposed or unsafe.
- Appropriate for consideration on collector and arterial streets.

In-Street Signs

In-street signs are placed in the roadway to remind roadway users of the state law that the driver of a vehicle must yield the right-of-way to a pedestrian crossing the roadway within any marked crosswalk or at intersections. California's in-street Yield to Pedestrians signs bring roadway awareness to crosswalks, thereby helping to increase yield behavior.

Benefits

- Improves motorist yielding at crossings
- Improves crosswalk visibility

Challenges

- Easily damaged, though placing signs on medians may prevent this

Applicability and Use

- Appropriate for unsignalized two-lane low-speed streets
- Signs should be placed at the location of the crosswalk
- Signs can be permanently installed in the roadway or mounted on a portable base to allow them to be taken in and out of the street during high-pedestrian activity times (e.g., during arrival/dismissal at a school or during a sporting event)



Figure 40. Yield to pedestrian signage

Rectangular Rapid Flash Beacons

Rectangular Rapid Flashing Beacons (RRFB) are a pedestrian warning signal used at unsignalized street or mid-block crossings to assist people crossing the street. RRFBs consist of yellow LED lights in two rectangular clusters, or beacons, that employ a stutter flash pattern.

Benefits

- Improves motorist yielding at crossings and decreases delay for people waiting for a gap to cross the street
- Relatively inexpensive compared to installation of a Pedestrian Hybrid Beacon or full signal

Challenges

- Appropriate placement with respect to the proximity of a signalized intersection maybe difficult due to existing pedestrian patterns and interrupting traffic patterns.

Applicability and Use

- RRFBs must be pedestrian actuated either by a push-button or passive detection
- RRFBs are appropriate at: uncontrolled intersections, mid-block crossings, areas with high pedestrian volumes or a significant number of vulnerable pedestrians (e.g., near schools, senior centers, at trail crossings, or other locations where additional crossing protections are needed due to high volumes and speeds
- RRFBs should be used on multilane streets only when posted speeds are < 35 mph. A crossing island may be needed on four-lane roadways and must be included for roadways with more than four lanes
- To maintain visibility near RRFBs, parking should be prohibited within 30 feet of the crosswalk
- RRFBs should be installed with a high-visibility crosswalk



Figure 41. Rectangular rapid flashing beacon

Pedestrian Hybrid Beacon

Pedestrian Hybrid Beacons (also known as HAWK Beacons, “High Intensity Activated Crosswalks”), are similar to overhead half signals. The beacon display remains dark until activated by a pedestrian or bicyclist, at which time the signal phase begins with a flashing yellow and proceeds to double red.

Benefits

- Improved safety and visibility for pedestrians.
- Provides dedicated crossing time for pedestrians.

Challenges

- As pedestrian hybrid beacons are not currently used in Cupertino, some education regarding their use will be required. Initial compliance at new installations may be low.

Applicability and Use

- Where standard traffic signal warrants prevent the installation of a full signal, the pedestrian hybrid beacon provides an alternative to meet pedestrian crossing needs.
- On multi-lane crossings with speeds equal to or greater than 35mph where yielding compliance has been poor, pedestrian hybrid beacons are more effective than RRFBs or crosswalks alone.



Figure 42. Pedestrian hybrid beacon

Leading Pedestrian Interval

The Leading Pedestrian Interval (LPI) initiates the pedestrian WALK indication three to seven seconds before motor vehicles traveling in the same direction are given the green indication. This signal timing technique allows pedestrians to establish themselves in the intersection in front of turning vehicles, thereby increasing visibility and safety between all modes.

Benefits

- Improves safety and visibility for pedestrians.
- Reduces pedestrian-vehicle crashes at intersections.

Challenges

- May increase signal cycle length or reduce green time available to other users.

Applicability and Use

- Use at intersections with high volumes of pedestrians and conflicting turning vehicles or at locations with a large population of elderly or school children who need the extra visibility and crossing time.



Figure 43. Leading Pedestrian Interval. Note that the pedestrian has been given the “Walk” signal prior to giving the motor vehicles the green indication.

- Minimum interval of three seconds needed to allow pedestrians to establish their position ahead of turning traffic.
- At intersections with a vehicular protected left, a lagging protected left arrow should be used for vehicular movements to accommodate the LPI.

Curb Ramps

Curb ramps provide a transition between sidewalks and streets.

Benefits

- Serve a wayfinding function for visually impaired pedestrians.
- They allow people using wheelchairs, strollers, walkers, crutches, bicycles, or people with mobility restrictions to more easily navigate the city.

Challenges

- Potential difficulties in retrofitting curbs with compliant curb ramps, especially where utility relocation is necessary to provide directional ramps.

Applicability and Use

- Must be installed at all intersection, midblock pedestrian crossings, and as mandated by federal law.
- Curb ramps are required to have landings and detectible warning surfaces (such as truncated domes) to meet ADA Standards.
- Consider providing wider curb ramps in areas of high pedestrian volumes and crossing activities; and at trail crossings.
- Ramps should provide direct connection to each crosswalk leg; and should not direct pedestrians diagonally into the intersection.

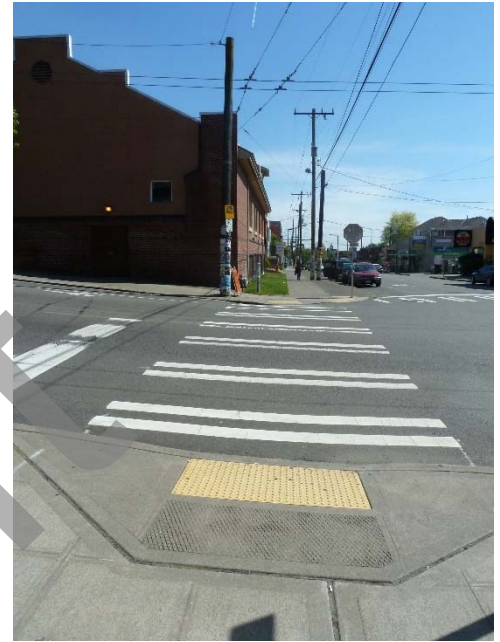


Figure 44. Curb ramp

Chapter 5: Implementation Strategy

Implementation of the recommendations included in this Plan will require funding from multiple sources and coordination with various agencies. To facilitate this, this chapter presents a method of prioritizing pedestrian improvement projects, construction cost estimates for the proposed improvements, a brief overview of funding strategies and sources, and implementation strategies.

Routine Accommodation

Pedestrian projects can be developed either as stand-alone projects or as part of other projects through routine accommodation (e.g. including a crosswalk as part of a repaving project). Routine accommodation should be the first prioritization strategy for pedestrian projects; pedestrian facilities should routinely be included with all public and private projects, from roadway resurfacing to redevelopment.

Project Prioritization

The project list is the result of several efforts completed during the plan process; however, it is not the full suite of projects that would make walking safer and more comfortable in Cupertino. Staff will continue to receive requests for implementation of pedestrian infrastructure projects, and staff will also want to continue moving forward with making Cupertino a more walkable city.

Recommended Projects Prioritization

Within the scope of the PTP, the prioritization criteria presented in Table 6 was used to score the project list to identify a high-priority project list, displayed in table. Projects in these tables include recommendations from five sources:

- Cupertino 2016 Bicycle Transportation Plan
- The walk audits that occurred along high crash corridors (two along Stevens Creek Boulevard and one along DeAnza Boulevard/Bandley Drive)
- Sidewalk infill projects identified as a result of community comments
- Pedestrian components of the Class IV bikeway designs on Stevens Creek Boulevard and McClellan Road, and
- Staff-identified projects in locations with recurring community comment about pedestrian challenges.

Prioritizing projects from these sources results in the list and map shown in Table 6 and Figure 45. Most of these projects are on high-crash corridors with a high density of pedestrian destinations, both of which are key areas for the Safety and Access goals of this Plan. Projects in these locations will improve pedestrian safety and access in areas where people are likely to walk to schools, retail, parks and transit. However, this is not a comprehensive list of projects for these streets, or for Cupertino as a whole. This list represents the types of projects in select locations that should be high priorities for implementation by the City. The remaining high-crash corridors will be evaluated in more detail as part of the recommended walk audits, and the list of projects will expand.

Category	Measure	Pts	Notes
Schools		40	Total Possible Points
Schools/ Public Library	Within ¼ mi	30	Distance is from school parcel, not point
	Between ¼ and ½ mi	20	Distance is from school parcel, not point
	Between ½ mi and ¾ mi	15	Distance is from school parcel, not point
School connector route	On a route	10	Routes defined by SR2S program
Safety		20	Total Possible Points
Street classification*	Along high-injury corridor	15	Stevens Creek, De Anza, Foothill, McClellan, Stelling, Miller/Wolfe, Homestead, Bollinger
	Along boulevard or Avenue (not high-injury)	10	
	Along neighborhood connector	5	
	Along local	0	
Traffic speed	Slows traffic speeds	5	Includes traffic calming, new warning device or control, driveway consolidation, turn lane access shortening
Destinations		25	Total Possible Points
Parks, Quinlan Center	Within 1/4 mi	10	Distance is from parcel polygon
Transit stop	Within 500' of high volume stop	10	Based on VTA ridership data
	Within 500' of other stop	5	Based on VTA ridership data
Retail/business/ employment	Within 250' of parcels	5	Same parcels as indicated on Activity Generators map in Commercial and Apple Campus polygons
Connectivity		15	Total Possible Points
Pedestrian pathway	Adds new network connection	15	Includes bridges, Class I shared use paths and pedestrian cut-throughs, new sidewalk
TOTAL PRIORITIZATION SCORE		100	

Table 6. Project Prioritization Scoring Rubric

Cost Estimate Assumptions

Pedestrian projects are typically implemented in one of two ways: as part of a larger roadway project, or as a standalone effort. The former is often more efficient, as costs for materials and labor can achieve economies of scale when folded into a larger project. Pedestrian facilities are typically a relatively small portion of a roadway project, whether it is a restriping, resurfacing or reconstruction project. While planned and programmed street improvements can help guide the implementation schedule for this plan, the City of Cupertino should also consider prioritizing improvements on streets where pedestrian projects are recommended.

A list of unit costs was developed based on recent projects and cost estimates throughout the Bay Area and input from Cupertino staff. These unit costs provided the basis for total cost estimates for each recommended project. Table 7 provides a unit cost summary for the construction of pedestrian and traffic calming facilities in Cupertino.

Treatment	Unit Cost	Unit
24" White (Thermo)	\$12.00	LF
24" Yellow (Thermo)	\$12.00	LF
12" White Crosswalk/Limit Line (Thermo)	\$7.00	LF
8" Channelization Line (Thermo)	\$5.00	LF
4" Shoulder Stripe (Thermo)	\$3.00	LF
Painted Curb	\$3.00	LF
Color Epoxy	\$6.00	SF
Thermoplastic Pavement Legend	\$8.00	SF
Soft Hit Posts	\$8.00	LF
Concrete Curb	\$30.00	LF
Concrete Curb and Gutter	\$40.00	LF
Concrete Sidewalk	\$15.00	SF
ADA Curb Ramp	\$3,500.00	EA
Hot Mix Asphalt, 1/2" Maximum Type A	\$90.00	TN
Sign Install	\$750.00	EA
Raised Pavement Markings	\$8.00	EA
RRFB (Double Sided, one side of street)	\$15,000.00	EA
Mini Traffic Circle (30' diam. With 8' apron)	\$12,000.00	EA
Curb Extension (Single bulb-out)	\$40,000.00	EA
Narrow Curb Radii (10' radii)	\$23,000.00	EA
Narrow Curb Radii (25' radii)	\$20,000.00	EA
Raised Intersection	\$100,000.00	EA
Median Refuge (New)	\$10,000.00	EA
Median Refuge (Improve Existing)	\$6,000.00	EA

Table 7. Summary of Unit Costs for Construction of Pedestrian and Traffic Calming Facilities

While they reflect typical costs, unit costs do not consider project-specific factors such as intensive grading, landscaping, or other location-specific factors that may increase actual costs.

These unit costs were used to develop costs for each high-priority project. These costs are shown in Table 7.

Cupertino Pedestrian Transportation Plan

Priority Projects

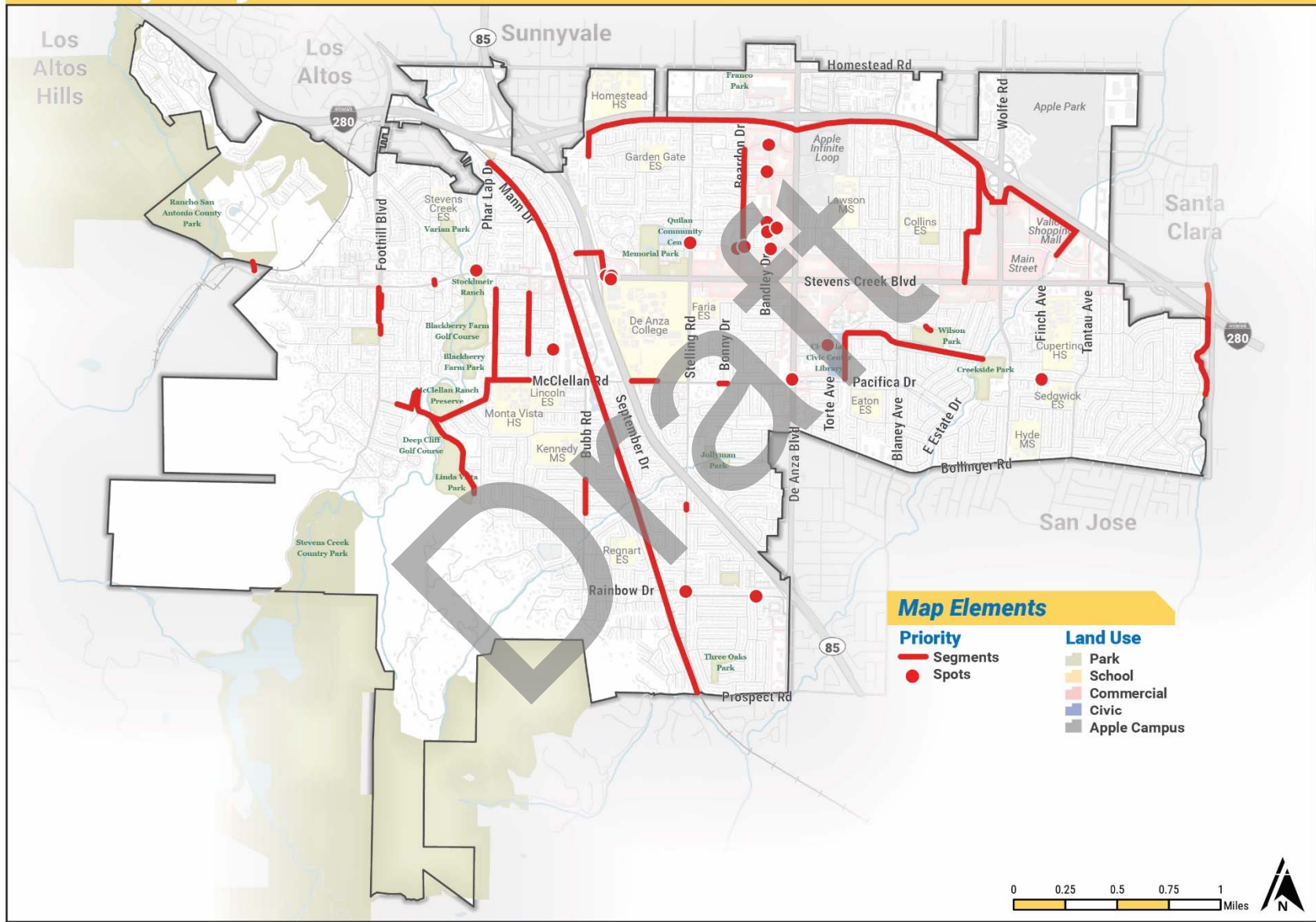


Figure 45. Priority Projects

	Project	Location	Total Score	Cost
Tier 1	Sidewalk	McClellan Rd: Leandro Ave to Orange Ave construct sidewalk	80	\$1,360,000
	Sidewalk	McClellan Rd: south side, Bonny Dr to McClellan Pl construct sidewalk	80	\$57,000
	Shift crosswalk to N leg Install median island and RRFB	Stelling Rd at Alves Dr	75	\$80,000
	Grade Separated Crossisng	Highway 85 Crossin: Grand Ave to Mary Ave	75	\$20,000,000
	Sidewalk	Orange Ave: Granada Ave to Alcazar Ave construct sidewalk	75	\$1,370,000
	Shorten turn lane access	Stevens Creek Blvd at Oaks entrance (part of Class IV design)	75	\$100,000
	Add right-turn phase	Stevens Creek Blvd at SR 85 NB on ramp (from Class IV design)	75	\$150,000
	Shorten turn lane access	Stevens Creek Blvd at west entrance to De Anza College (part of Class IV design)	75	\$100,000
	Sidewalk	Byrne Ave: McClellan Rd to Granada Ave construct sidewalk	70	\$1,700,000
	Grade Separated Crossisng	Carmen Rd Bridge at Stevens Creek Blvd Bike/Ped Bridge	70	\$2,000,000
	Sidewalk	Foothill Blvd: east side, btwn Stevens Creek Blvd and Rancho Ventura St construct sidewalk	70	\$900,000
	Sidewalk	Foothill Blvd: west side, Stevens Creek Blvd to Rancho Ventura St construct sidewalk	70	\$90,000
	Shared-Use Path	I-280 Canal Path Shared-Use Path	70	\$2,293,000
	Bike/Ped Bridge	McClellan Rd at McClellan Ranch crossing Stevens Creek	70	\$1,800,000
	Shared-Use Path	Regnart Creek, Shared-Use Path	70	\$2,000,000
Tier 2	Sidewalk	Stelling Rd: west side, Catalano Ct to Orion Ct construct sidewalk	70	\$40,000
	Class 1 Path	The Oaks Development Shared-Use Path	70	\$102,000
	Construct curb extensions	Phar Lap Dr at Stevens Creek Blvd	65	\$150,000
	Sidewalk	Bubb Rd: east side, Edward Way to Krzich Pl construct sidewalk	60	\$211,000
	Reconfigure intersection	De Anza Blvd at McClellan Rd	60	\$1,500,000
	Sidewalk	McClellan Rd: north side, SR 85 to Rose Blossom Dr construct sidewalk	60	\$158,000
	Construct curb extensions	Phil Ln at Finch Ave	60	\$109,000
	Reconfigure intersection	Torre Ave at Town Center Ln	60	\$271,000

	Project	Location	Total Score	Cost
Tier 2	Shared-Use Path	Union Pacific ROW Shared-Use Path	60	\$1,678,000
	Shared-Use Path	Vallco West Pathway Shared-Use Path	60	\$470,000
	Shared-Use Path	Deep Cliff Golf Course Shared-Use Path	55	\$4,000,000
	Sidewalk	Foothill Blvd: east side, btwn Rancho Ventura St and Walnut Cir construct sidewalk	55	\$63,000
	Shared-Use Path	Wilson Park Shared-Use Path	55	\$100,000
Tier 3	Consider stop control for Alves Dr	Alves Dr at Saich Way, westbound	45	\$3,000
	Construct curb extension	Bandley Dr at Mariani Ave (southeast corner)	45	\$217,000
	Create ped/bike connection	Imperial Ave btwn Alcadar Ave and Almaden Ave	45	\$20,000
	Construct curb extensions and Mark high-visibility crosswalk	Rainbow Dr at Gardenside Ln	45	\$222,000
	Shared-Use Path	San Tomas Aquino Creek Trail Extension Shared-Use Path	40	\$4,000,000
	Bike/Ped Bridge	West Cupertino UPRR Crossing Bike/Ped Bridge	40	\$3,000,000
	Consider stop control for Alves Dr	Alves Dr at Beardon Dr, eastbound	35	\$3,000
	Construct curb extensions	Bandley Dr at Alves Dr (south leg)	35	\$150,000
	Sidewalk	Beardon Rd: Alves Rd to Valley Green Dr construct sidewalk	35	\$1,187,000
	Construct curb extensions Consider all-way stop control	Bandley Dr at Lazaneo Dr	30	\$445,500
	Mark high-visibility crosswalk			
	Install RRFB	Valley Green Dr at Bandley Dr (west leg)	30	\$41,000

Table 8. Prioritized Projects, Project Score and Cost

On-going Prioritization

In the future, these criteria should also be used to score project requests as they are received from residents.

One possible distinction to use in future planning is whether a project affects curb lines and drainage or not. Projects that do not impact curb lines (signage, striping, traffic control, some traffic calming) should be scored and added in their prioritized order to a project list funded by a CIP line item dedicated to on-going pedestrian infrastructure improvement. These lower cost projects can be implemented on an on-going basis.

Projects that do impact curb lines should be scored and considered for addition to the CIP as stand-alone items, or bundled by neighborhood (sidewalk construction) or corridor (curb radii changes). Projects scoring in the top tier should be considered for inclusion in the next two-year funding cycle. Those projects scoring lower should be added to a list and considered as funding is available. The requested projects list should be updated as requests are received, and the list should be re-scored every two years with updated crash data potentially defining new high-crash corridors.

Draft

Agency Coordination

Coordination with other agencies can help Cupertino leverage resources to make a greater impact on the community's walkability. Cupertino staff currently work closely with the Santa Clara Valley Transportation Authority (VTA) to create links between transit stops and the sidewalk network. The Cupertino General Plan supports this collaboration, noting that transit use should be encouraged through the design of rights-of-way and provision of amenities such as shelters and trash receptacles (Policies M-4.4 and M-4.5).

Cupertino also coordinates with the school districts and the Santa Clara County Public Health Department on shared objectives and routinely works with partnering agencies such as Caltrans and neighboring jurisdictions.

Recommendations

- **Continue to collaborate with transportation-related agencies within and adjacent to Cupertino.**
- **Explore opportunities for improving coordination with major employers.**

Resources

- **FHWA. Pedestrian Safety Guide for Transit Agencies. 2008.**
- **VTA Santa Clara Countywide Bicycle Plan. Scheduled for adoption in fall 2017.**

Funding Sources

Pedestrian projects in Cupertino, including sidewalk construction, are typically funded through the City's General Fund and are documented in its Capital Improvement Program (CIP). For instance, in the 2016-2017 CIP, a total of \$1,888,000 was allocated to the Orange and Byrne sidewalk project. Projects of similar magnitude, such as the McClellan Road sidewalk gap closure, have been implemented in previous years.

Funding for Americans with Disabilities Act (ADA) improvements identified in the City's ADA Transition Plan are also included in the CIP. Expenditures for these improvements are projected at \$75,000 annually for fiscal years 2017 through 2021.¹²

Potential funding sources include competitive state and federal grant opportunities which may be considered for future high-priority projects identified in the PTP.

Traffic impact fees are another potential source of funding for pedestrian infrastructure projects, and Cupertino is in the process of developing a traffic impact fee program. Funds from the program are intended to be applied to bike and pedestrian improvements, including projects identified in the Pedestrian Transportation Plan.

Most local, state, and federal funding for transportation can be used for the design and construction of pedestrian-specific facilities or the inclusion of these facilities as part of larger programs, such as transit projects.

Below are recommendations for implementing the Pedestrian Transportation Plan and additional information for possible funding sources.

¹² City of Cupertino Public Works Department. Capital Improvement Program. Adopted FY 2017, Planned FY 2018-2021.
<http://cupertino.org/Modules/ShowDocument.aspx?documentid=12098>

Recommendations

- **Ensure that pedestrian improvements are included in other street projects, such as resurfacing, bridge replacement, or lane reconfiguration.** One of the most effective ways to build a complete, connected network of pedestrian routes is by implementing pedestrian facilities within the scope of larger projects. Resurfacing likely offers the greatest opportunity, and all projects within the public right-of-way should be reviewed for the potential to improve conditions for pedestrians
- **Continue to fund high-priority sidewalk gaps through the CIP.**
- **Develop a line item in the CIP for implementation of the Pedestrian Transportation Plan.** The PTP includes recommendations for sidewalks in addition to important pedestrian crossings, proactive traffic calming strategies, signal modifications, and other measures. To achieve the goals of the Plan, a reliable funding source is needed.
- **Explore the possibility of obtaining Highway Safety Improvement Program (HSIP) funds.** HSIP funds may be used to address high-crash locations or to systematically implement improvements that reduce the risk of pedestrian crashes. The City should initiate a conversation with Caltrans to better understand how these funds may be accessed.
- **Secure a funding source to be used for broader pedestrian safety education efforts that could target traffic safety education and awareness.** Funds dedicated by the City or from grants administered by the California Office of Traffic Safety could be used to develop and implement a pedestrian safety education campaign targeting both pedestrians and motorists (and potentially including bicyclists). To the extent possible, educational messages should be based on safety issues determined from previous crashes or other observed issues, such as failure to yield to pedestrians at crosswalks or pedestrian signal noncompliance.

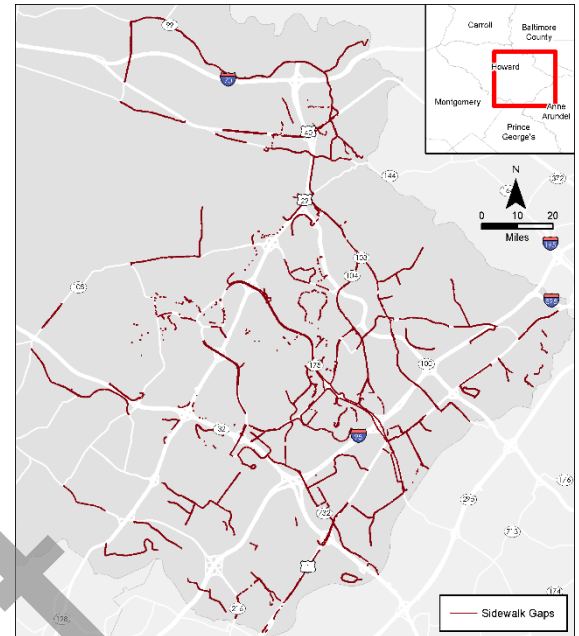


Figure 46. Simple sidewalk gap maps show where new infrastructure can best connect communities.

Best Practice Example

- City of Pasadena Department of Transportation. California Office of Traffic Safety Grant for the Safer Streets Pasadena – School Area Safety Program. <http://ww5.cityofpasadena.net/commissions/wp-content/uploads/sites/28/2016/09/2016-09-22-Transportation-Advisory-Commission-Agenda-Item-6A-Presentation.pdf>

Resources

- Advocacy Advance. Highway Safety Improvement Program. http://www.advocacyadvance.org/docs/highway_safety_improvement_program.pdf
- California Office of Traffic Safety. Pedestrian and Bicycle Safety Grants. http://www.ots.ca.gov/Grants/Pedestrian_and_Bicycle_Safety.asp

Funding Sources

Federal Funding Opportunities

Several federal funding sources are available for pedestrian and bicycle-only projects, or for the inclusion of these facilities in other projects. Funding is primarily available through the Federal Highway Administration and the Federal Transit Administration via the Fixing America's Surface Transportation (FAST) Act, which was signed in 2015 and supports funding until 2020, and in previous transportation funding bills. The Department of Health and Human Services and the Department of Housing and Urban Development also provide funding support.

The Federal Highway Administration maintains a data table to assist communities in understanding which Federal funding programs could be used for bicycle and pedestrian projects. Specific program requirements must be met and eligibility must be determined on a case-by-case basis. For example, transit funds must be used to provide access to transit, and Congestion Mitigation and Air Quality Improvement (CMAQ) funds must benefit air quality in eligible areas. More detailed information can be found in the link below.

Resources

- **FHA's Bicycle and Pedestrian Program webpage.**
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/

Federal Highway Administration (FHWA) Grant Programs

Transportation Investment Generating Economic Recovery (TIGER) Grant

TIGER grants fund a broad array of road, rail, transit, and bicycle and pedestrian projects. The program focuses on capital projects that generate economic development and improve access to reliable, safe, and affordable transportation, especially for disadvantaged communities. The grant funds projects that have gone through preliminary design stages, and prioritizes projects with broad stakeholder support. Applicants are required to demonstrate that project benefits outweigh the costs. Projects in urban areas must request at least \$10 million (with a 20% match).

Resources

- **Tiger Discretionary Grants.** www.transportation.gov/tiger

Section 402 State and Community Highway Safety Grant Program

The Section 402 program provides grants to states to improve driver behavior and reduce deaths and injuries from motor vehicle-related crashes. The program is jointly administered by the National Highway Traffic Safety Administration (NHTSA) and the Federal Highway Administration (FHWA) at the federal level and by State Highway Safety Offices at the state level. Funds may be used to reduce impaired driving, reduce speeding, improve pedestrian and bicycle safety, and reduce school bus deaths and injuries, among other programs. Child and adult bicycle safety education is also eligible for funding.

Resources

- **Section 402 State and Community Highway Safety Grant Program.** <http://www.ghsa.org/about/federal-grant-programs/402>

Section 405 National Priority Safety Programs

Section 405 grants provide funding on a competitive basis to states to improve highway safety in a number of areas including impaired driving, occupant protection, distracted driving, and more. States are eligible to apply if they have met certain qualifications that pertain to each subgrant. Under this section, Nonmotorized Safety grants are eligible to states where pedestrian and bicyclist fatalities exceed 15 percent of the state's total annual crash fatalities. The funds may be used for law enforcement training, enforcement campaigns, and public education to improve pedestrian safety.

Resources

- Section 405 National Priority Safety Programs. <http://www.ghsa.org/about/federal-grant-programs/405>

Federal Transit Administration (FTA) Grant Programs

Fixing America's Surface Transportation (FAST) Act Funding

The Fixing America's Surface Transportation (FAST) Act supports transit funding through fiscal year 2020; reauthorizes FTA programs; and includes changes to improve mobility, streamline capital project construction and acquisition, and increase the safety of public transportation systems across the country. The FAST Act's five years of predictable formula funding also includes funding for new grant programs for buses and bus facilities, innovative transportation coordination, workforce training, and public transportation research activities.

Resources

- FTA's Grant Programs. https://www.transit.dot.gov/grants/13093_3549.html
- FTA's Bicycles & Transit. <https://www.transit.dot.gov/regulations-and-guidance/environmental-programs/livable-sustainable-communities/bicycles-transit>

Transit Oriented Development (TOD) Planning Pilot Grants (5309)

This program provides funding for:

- Advanced planning efforts that support transit-oriented development (TOD) associated with new fixed-guideway and core capacity improvement projects
- Projects that facilitate multimodal connectivity and accessibility
- Projects that increase access to transit hubs for pedestrian and bicycle traffic

Resources

- FTA's Pilot Program for Transit-Oriented Development Planning. <https://www.transit.dot.gov/TODPilot>

Bus and Bus Facilities Program (Ladders of Opportunity Initiative) (5309)

Funds from this program may be used to modernize and expand transit access specifically for the purpose of connecting disadvantaged and low-income individuals, veterans, seniors, youths, and others with local workforce training, employment centers, health care, and other vital services.

Resources

- Bus and Bus Facilities Program (Ladders of Opportunity Initiative). <https://www.transit.dot.gov/funding/grants/applying/5309-bus-and-bus-facilities-program-ladders-opportunity-initiative>

Enhanced Mobility of Seniors and Individuals with Disabilities Program

This program is intended to enhance mobility for seniors and persons with disabilities by providing funds for programs to serve transit-dependent populations beyond traditional public transportation services and Americans with

Disabilities Act (ADA) complementary paratransit services. (This program consolidates New Freedom eligible projects.) Bicycle and pedestrian improvements that provide access to an eligible public transportation facility and meet the needs of the elderly and individuals with disabilities are eligible for funding.

Resources

- Enhanced Mobility of Seniors & Individuals with Disabilities. <https://www.transit.dot.gov/funding/grants/enhanced-mobility-seniors-individuals-disabilities-section-5310>

New Freedom Program (5217)

The New Freedom grant program funds projects that help Americans with disabilities access jobs and participate in the work force. Lack of adequate transportation is a primary barrier to work for individuals with disabilities, and this program seeks to provide funding to facilitate transportation connections.

Resources

- New Freedom Program Guidance and Application Instructions. <https://www.transit.dot.gov/regulations-and-guidance/fta-circulars/new-freedom-program-guidance-and-application-instructions>

Mobility on Demand (MOD) Sandbox Program

This program (funded by the FTA and Office of Research, Demonstration, and Innovation) provides funding for new service options in combination with available technologies that allow for greater individual mobility.

Resources

- Mobility on Demand (MOD) Sandbox Program. <https://www.transit.dot.gov/research-innovation/mobility-demand-mod-sandbox-program.html>

Additional Federal Funding Opportunities

Community Services Block Grant Program (CSBG)

The Community Services Block Grant provides funds to alleviate the causes and conditions of poverty in communities; transportation projects are eligible for funding. Administered by the Department of Health and Human Services, funding is allocated to states who pass the funding along to local communities. Funded projects have included: commercial district streetscape improvements; sidewalk improvements; safe routes to school; and neighborhood-based bicycling and walking facilities that improve local transportation options or help revitalize neighborhoods.

Resources

- Community Services Block Grant. <https://www.acf.hhs.gov/ocs/programs/csbg>

Sustainable Communities Regional Planning Grants and the Partnership for Sustainable Communities

This grant program, administered by the Department of Housing and Urban Development (HUD), supports locally-led collaborative efforts that bring together diverse interests to determine how best to target housing, economic and workforce development, and infrastructure investments to create more jobs and regional economic activity.

The program places a priority on investing in partnerships, including nontraditional partnerships (e.g., arts and culture, recreation, public health, food systems, regional planning agencies and public education entities). The program focuses on six livable principles, the first of which is “Providing more transportation choices: Develop safe, reliable and economical transportation choices to decrease household transportation costs, reduce our nation’s dependence on foreign oil, improve air quality, reduce greenhouse gas emissions and promote public health.”

The program is a key initiative of the Partnership for Sustainable Communities, in which HUD works with the U.S. Department of Transportation (DOT) and the U.S. Environmental Protection Agency (EPA) to coordinate and leverage programs and investments.

Resources

- Partnership for Sustainable Communities – Partnership Grants, Assistance & Programs. <https://www.sustainablecommunities.gov/partnership-resources>
- Sustainable Communities Initiative. <https://portal.hud.gov/hudportal/HUD?src=/hudprograms/sci>

State Funding Opportunities

Active Transportation Program (ATP)

In 2013, Governor Brown signed legislation creating the Active Transportation Program (ATP). This program consolidated the Federal Transportation Alternatives Program (TAP), California's Bicycle Transportation Account (BTA), and Federal and California Safe Routes to School (SRTS) programs. The ATP program is administered by Caltrans Division of Local Assistance, Office of Active Transportation and Special Programs. A portion of the funds are administered by MPOs in the state which issue their own call for projects typically at the same time as the state call. In 2017, SB 1 augmented the ATP by \$100 million per year. Caltrans has typically issued a call for projects every year.

Resources

- Active Transportation Program (ATP). <http://www.dot.ca.gov/hq/LocalPrograms/atp/>

System Safety Analysis Report Program (SSARP)

The SSARP program was established by Caltrans in 2016, and is designed to assist local agencies in performing collision analysis and the identification of safety issues on roadway networks for all modes. The program focuses on systemic safety analysis for motor vehicles with an emphasis on pedestrian and bicycle collisions. This analysis should result in a list of systemic, low-cost countermeasures that can be used to prepare designs to be used in applications for future HSIP funding cycles.

Resources

- Systematic Safety Analysis Report Program (SSARP). <http://dot.ca.gov/hq/LocalPrograms/HSIP/SSARP.htm>

Highway Safety Improvement Program (HSIP)

HSIP funds are available for safety projects aimed at reducing traffic fatalities and serious injuries. Bike lanes, roadway shoulders, crosswalks, intersection improvements, underpasses and signs are examples of eligible projects. Projects in high-crash locations are most likely to receive funding. This program is funded through the Federal Highway Administration and is administered by Caltrans; all projects must result in the complete construction of safety improvements.

Resources

- Highway Safety Improvement Program (HSIP). <http://dot.ca.gov/hq/LocalPrograms/hsip.html>

California Office of Traffic Safety (OTS)

The California Office of Traffic Safety (OTS) has grants available to reduce motor vehicle fatalities and injuries in specific areas of pedestrian and bicycle safety, roadway safety, community based organizations, police traffic services, alcohol and drugs, occupant protection, emergency medical services and traffic records.

Resources

- California Office of Traffic Safety – Grants. <http://www.ots.ca.gov/Grants/>

Regional Funding Opportunities

One Bay Area Grant

Metropolitan Transportation Commission's One Bay Area Grant (OBAG) combines the Surface Transportation (STP), Congestion Mitigation and Air Quality Improvement (CMAQ), and the Transportation Alternatives (TA) program funds into one program for focused growth in the Bay Area.

The program is in its second cycle, known as "OBAG 2," and is divided into a Regional Program which is managed by MTC and a County program which is managed by the nine Bay Area Congestion Management Agencies (CMAs) in the region. The regional program commits \$530 million over five years and the County Program consists of \$386 million over the same timeframe from fiscal years (FY) 2017-18 through FY 2021-2022.

Projects funded by the program must be in a Priority Development Area (PDA) or have a connection to a PDA. Jurisdictions that apply to the program must have a Complete Streets Resolution or have an updated General Plan that meets the California Complete Streets Act of 2008. The program funds:

- Local streets and roads maintenance
- Streetscape enhancements
- Bicycle and pedestrian improvements
- Safe Routes to School projects
- Transportation planning

Resources

- One Bay Area Grants. <http://mtc.ca.gov/our-work/invest-protect/focused-growth/one-bay-area-grants>

Regional Active Transportation Program (ATP)

A portion of the statewide Active Transportation Program (ATP) is administered by the Metropolitan Transportation Commission (MTC) for projects within the nine-County Bay Area. Projects that wish to be considered for the MTC ATP must submit a regional supplemental application. The supplemental application includes a change to the scoring criteria for state Disadvantaged Communities, instead asking how projects will benefit people living in the regionally defined "Communities of Concern." The supplemental application also awards additional points for projects in jurisdictions that meet the OBAG Complete Streets policies. Other criteria include: project delivery, local match requirements, environmental review, and the listing of a project in a Community Based Transportation Plan (CBTP).

Resources

- Active Transportation Program (ATP). <http://www.dot.ca.gov/hq/LocalPrograms/atp/>

Transportation Fund for Clean Air Regional Fund (TFCA)

The Bay Area Air Quality Management District (BAAQMD) administers a grant program based off a \$4 surcharge on cars and trucks registered within the Bay Area, known as the Transportation Fund for Clean Air (TFCA). This program funds projects that reduce criteria pollutant emissions from cars such as trip reduction programs and services, clean vehicle and clean fuel infrastructure and bicycle facilities. The program is split between the Regional Fund administered directly from the BAAQMD and the County Manager's Fund which is administered by CMAs. While the project funds Class I-IV bikeways, pedestrian paths could be funded if constructing a Class I trail project, which is shared between bicycles and pedestrians.

Resources

- Bay Area Air Quality Management District – Bicycle Facilities. <http://www.baaqmd.gov/grant-funding/public-agencies/bikeways-roads-lanes-paths>

Santa Clara County Funding Opportunities

Transportation Development Act Article 3

The Transportation Development Act Article 3 (TDA-3) provides annual funding for bicycle and pedestrian projects, and in Santa Clara County, the funds are managed by the Valley Transportation Authority (VTA). MTC gives each of the CMAs the authority on how to use the funds within their county. The distribution of funds varies, with some counties issuing a competitive call for projects while other counties distribute the funds based on the population share of each jurisdiction.

TDA-3 funds can be used for bicycle or pedestrian capital projects, maintenance of a multi-use path, bicycle safety education programs, development of a bicycle or pedestrian plan, and restriping Class II bicycle lanes. In Santa Clara County, VTA distributes the funds in two ways:

- Bicycle Expenditure Program (BEP) – Projects must be on the Board-adopted BEP list
- Guarantee Funds – Funds are allocated to cities within Santa Clara County based on population

Resources

- Transportation Development Act Article 3. <http://mtc.ca.gov/out-work/fund-invest/investment-strategies-commitments/transit-21st-century/funding-sales-tax-and-0>

Valley Transportation Authority Measure B

In 2016, Santa Clara County voters approved Measure B, a 30-year half-cent countywide sales tax to enhance transit, highways, expressways, pedestrian, bicycle and complete streets projects. VTA, the county Congestion Management Agency (CMA), will manage the funds which are expected to generate between \$6 billion and \$6.5 billion in 2017. VTA expects to spend \$250 million on bicycle and pedestrian projects over the 30-year period.

Resources

- 2016 Measure B. <http://www.vta.org/measure-b-2016>

Transportation Fund for Clean Air (TFCA) - County Manager Fund

The TFCA fund allocates 40 percent to VTA which administers Santa Clara County's portion of the TFCA program. The goal of the program is to reduce air pollution, conserve energy and reduce greenhouse gases, improve water quality by decreasing contaminated runoff from roadways, improve transportation options, and reduce traffic congestion. Projects are evaluated on the amount of Vehicle Miles Traveled (VMT) reduced based on the mode shift from single occupant vehicles to other modes. Projects also must demonstrate the cost-effectiveness of reducing criteria pollutants based on a formula provided by the BAAQMD. Funds can be used for the following project types:

- Design and construction of physical improvements that support motor vehicle emission reductions (bicycle and pedestrian facilities)
- Bicycle facility improvements
- Arterial traffic management including signal timing, transit signal pre-emption, bus stop relocation and smart streets
- Telecommuting and congestion pricing
- Rideshare programs
- Purchase of clean fuel buses and local feeder bus or shuttle service
- Rail-bus integration and regional transition information services
- Clean vehicle purchase or retrofits
- Automobile buy-back programs

Resources

- **TFCA Program Documents.** <http://www.vta.org/projects-and-programs/programs/call-for-projects-tfca-program-documents>

Draft

Appendix A. Plan and Policy Review

As part of the existing conditions analysis, all applicable local, regional, state, and federal plan and policy documents were reviewed. Many of the documents endorse the development of safe, connected pedestrian networks, and some include specific project-level recommendations that have been considered as a part of the development of the PTP.

Local Plans and Policies

Cupertino Municipal Code and Standard Details

The Cupertino Municipal Code covers all aspects of City regulations, including zoning and various development-related requirements. Regarding sidewalks, the Subdivision Code (which is a part of the Municipal Code) states that “formal” sidewalks are not required in semi-rural developments; sidewalk alternatives such as curb-separated walking areas may be provided.

The Cupertino Standard Details indicate sidewalk widths: 4.5 feet sidewalks are standard, and 10 feet sidewalks may be required in commercial areas. Both monolithic and detached sidewalk options are provided.

Cupertino General Plan/Community Vision 2015 – 2040 (2014)

Cupertino’s General Plan is very supportive of increased pedestrian comfort and access. The Vision statement of the Cupertino General Plan calls for a “walkable” and “bikeable” community with a “vibrant, mixed use Heart of the City.” Overall Plan goals that relate to walking include “Improve Connectivity” and “Enhance Mobility.” More specifically, the Mobility Element gives policy direction to transportation planning, including walking, within the City of Cupertino. Following California’s Complete Streets Act, the City of Cupertino seeks to enhance the transportation system for all modes of transportation. The Mobility Element addresses key challenges, such as the need to link land use and transportation, enhance connectivity, and reduce demand for single occupancy vehicles.

The following General Plan goals relate to walking:

- Goal M-2: Promote improvements to city streets that safely accommodate all transportation modes and persons of all abilities.
 - Complete Streets policies and strategies direct the City to develop multimodal street standards and design City streets to complement surrounding land uses. Additionally, policies support bicycle and pedestrian connectivity and accessibility, such as discouraging street closures and considering traffic calming strategies.
- Goal M-3: Support a safe pedestrian and bicycle street network for people of all ages and abilities.
 - Walkability and bikeability policies and strategies include adopting Bicycle and Pedestrian master plans, and enhancing the walking environment through roadway design and improvements (i.e., with new development, bicycle and pedestrian crossings) and planning for improvements and addressing network gaps in the City’s Capital Improvement Program.
- Goal M-5: Ensure safe and efficient pedestrian and bicycle access to schools while working to reduce school-related congestion.
 - Safe Routes to School policies and strategies include encouraging the Teen Commission to encourage walking and biking to school, prioritizing safe access to school in pedestrian projects, and connecting schools to shared use paths.
- Goal M-10: Ensure that the city’s transportation infrastructure is well-maintained for all modes of transportation and that projects are prioritized on their ability to meet the city’s mobility goals.

Transportation infrastructure policies call for the City to develop and implement transportation improvements that accommodate users of all modes of transportation.

Cupertino ADA Transition Plan (2014)

In 2014, the City of Cupertino adopted an ADA Self-Evaluation and Transition Plan in accordance with the requirements of the Americans with Disabilities Act for public entities. The ADA Transition Plan reviews the programs, activities, and services provided by the City and identifies and prioritizes removal of current barriers to accessibility. The Transition Plan also includes a ten-year plan for accessibility barrier removal (15-year schedule for barrier removal within the public rights-of-way). The Plan prioritizes the criteria for barrier removal on public rights-of-way as follows:

1. Government offices and facilities
2. Bus stops and transportation facilities
3. Places of public accommodation such as commercial and business areas
4. Facilities containing employers
5. Other areas such as residential neighborhoods and underdeveloped regions of the City

The Plan notes that the City has an annual curb ramp program, and that a park accessibility project was completed, including curb ramps installed at Varian Park, Hoover Park, Three Oaks Park, Jollyman Park, and at Homestead Road and Barranca Drive. The Appendix of the ADA Transition Plan reviews public right-of-way accessibility compliance adjacent to City properties; the largest projects include Stevens Creek Boulevard and Monta Vista Park.

Cupertino Pedestrian Transportation Plan (2002)

The City of Cupertino developed its first Pedestrian Transportation Plan in 2002, which identifies a set of goals, policies, and actions to improve safety and encourage more walking trips. The Plan recommends that the City pursue funding opportunities, support the Cupertino Bicycle and Pedestrian Advisory Committee (now called the Bicycle Pedestrian Commission), and develop bicycle and pedestrian safety programs and promotional activities.

The Pedestrian Transportation Plan establishes four overarching goals:

- Implement pedestrian-friendly land use planning and design policies
- Encourage and support non-motorized school access
- Adopt traffic engineering/planning policies that are pedestrian-friendly
- Implement safety education and encouragement programs

Related to traffic impact studies for new development, the Plan recommends the following criteria to determine if a development project had a significant impact on pedestrians:

- Consistency with the General Plan and other plans
- Permanent travel pattern or access changes
- Impact on existing pedestrian facilities
- Pedestrian safety (conformity with accepted design guidelines)
- Impact on pedestrian crossings

The Plan also includes design guidance for pedestrian facilities based on ADA guidance, including traffic signal policy recommendations.

In addition to guidance at the policy level and the development review process, the Pedestrian Plan identifies several recommended infrastructure projects. The Plan recommends 36 pedestrian capital projects, including crossing improvements, sidewalk infill, pathways, traffic calming, and pedestrian safety/circulation projects. Criteria that were

used to prioritize projects include safety, connectivity, demand, commuter/transportation trips, and local support. Some projects have been implemented since adoption of the plan document.

Heart of the City Specific Plan (2014)

The Heart of the City Specific Plan guides development and redevelopment of the Stevens Creek Boulevard corridor to implement the vision of “pedestrian-inclusive gathering places” to support a sense of place for Cupertino residents and visitors. According to the Specific Plan, new development projects “should include pedestrian and bicycle pathways.” The Specific Plan also includes streetscape design guidelines that emphasize improving the pedestrian environment. Plan Bay Area, the 2013 long-range regional transportation plan adopted by the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC), identified the Heart of the City area as a Priority Development Area. Figure 47 shows the Heart of City Plan area and activity clusters.

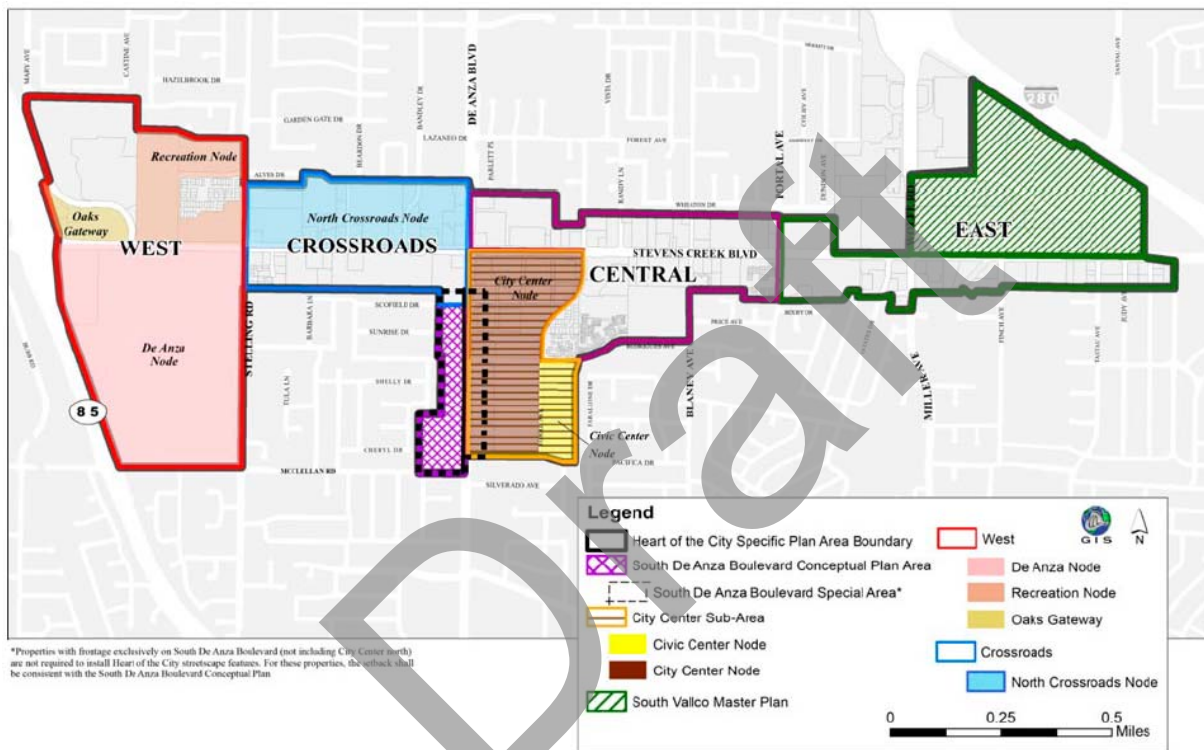


Figure 47. Heart of the City Special Centers Map, Heart of the City Specific Plan (2014)

North Vallco and South Vallco Master Plans (2008), and South Vallco Connectivity Plan (2014)

The City of Cupertino has adopted one master plan for the North Vallco planning area and two plans for the South Vallco planning area.

North Vallco Planning Area

- This plan governs the 240-acre area bounded by Homestead Road, Tantau Avenue, I-280 and Wolfe Road.
- The North Vallco Master Plan develops a vision for the North Vallco area, which the General Plan identifies as a “Special Center” retained for employment, lodging, and neighborhood commercial uses. The Plan states that new development in the area is to “Provide connectivity for all modes, pedestrian and vehicular – including automobile, bicycle, shuttle and Segway.” Additionally, the Plan directs new development to “consider providing more through-streets to Pruneridge, Wolfe and Tantau to foster walking and bicycling between in-district destinations.”

South Vallco Planning Area

- This plan governs the 125-acre area bounded by I-280 to the north, Stevens Creek Boulevard to the south, including Cupertino Square shopping center (formerly Vallco Fashion Park) along the east and west side of Wolfe Road and the office development along the east side of Tantau Avenue.
- The South Vallco Master Plan recommends enhancing streetscape and crosswalks landscaping, lighting, wayfinding, and other elements such as street furniture. To enhance the pedestrian environment and connections, the Plan recommends strategies such as traffic calming, consistent streetscape design, and implementing a network of shared-use paths.
- The South Vallco Connectivity Plan provides goals, objectives, and guidelines to support connectivity, safety, and design objectives for the South Vallco area. Related to pedestrian circulation, the Plan identifies connectivity-oriented goals to enhance multimodal transportation connections (including pedestrian connections) within the study area.

Cupertino Bicycle Transportation Plan (2016)

The Bicycle Transportation Plan envisions “an exceptional bicycling environment” that facilitates people of all ages and abilities accessing their destinations on a bicycle.

Policy recommendations related to pedestrian transportation include:

- Expansion of the Safe Routes to School (SR2S) program
- Promote active transportation benefits through messages in City media and with tourism and economic development agencies (to promote Cupertino as a destination for active living).
- Establish a citywide Vision Zero policy with a target date of 2026, and study a potential policy of 15 mph school zone speed limits.

Some existing bicycle infrastructure noted in the plan also benefits pedestrians. This includes the Stevens Creek Trail, as well the Hammond Snyder Loop Trail, the San Tomas Aquino Creek Trail, and the Don Burnett Pedestrian Bridge. The plan makes recommendations for additional Class I trail facilities, and these recommendations are included in the PTP update as projects, too. All spot and linear projects in the Bicycle Plan are prioritized for implementation. Tier I projects that would also benefit pedestrians include the Union Pacific Trail, Highway 85 crossing, and I-280 Channel Trail.

The Plan also describes existing programs that have overlap benefitting pedestrians, such as the Safe Routes to School program and existing enforcement and evaluation activities. Programmatic recommendations relevant to pedestrian transportation include:

- Back-to-school encouragement messaging and parent surveys
- Walk & roll days and walking school buses
- Suggested walking routes to school maps
- Vision Zero targeted enforcement
- Annual review of bicycle and pedestrian data
- Student walking and bicycling hand tallies and electronic counts

McClellan Road Sidewalk Feasibility Study

The McClellan Road Sidewalk Feasibility study assesses the feasibility of constructing sidewalks along McClellan Road between Orange Avenue and San Leandro Avenue, near three schools. The report evaluates potential sidewalk construction at sixteen locations, including detailed cost estimates. As shown in **Error! Reference source not found.**⁴⁸, sidewalk improvements were prioritized at Mira Vista Road and at Byrne Avenue. The report recommends

that the City pursue VTA funding (Transportation Development Act funds) and HSIP funding to implement these sidewalk improvements. This project is going to final design in 2017.



Figure 48. McClellan Road Project Map

Regional Plans and Policies

Stevens Creek Trail Extension (2015)

In 2009, a coordinated Stevens Creek Trail planning effort was undertaken between the cities of Cupertino, Los Altos, Mountain View and Sunnyvale. A Feasibility Study was completed in March 2015 that identified the following three route options through Cupertino, but made no specific recommendation.

- Mary Avenue to Stevens Creek Blvd, utilizing the Don Burnett Pedestrian Bridge
- Foothill Blvd to Stevens Creek Blvd
- Construction of a new pedestrian bridge across I-280 connecting Cupertino's Homestead Villa and Oakdell Ranch neighborhoods - A tunnel under I-280 was found to be infeasible.

After considering the feasibility study and public input, the Joint Cities Working Team (an advisory body of council members from each city) issued its recommendation to the four cities in September 2015; no specific route recommendation was made for Cupertino. However, the JCWT did recognize the need for a long-term trail vision, and that should circumstances change regarding the availability of land in the area, further studies be undertaken to

identify a feasible route. For further information, refer to the Four Cities Coordinated Stevens Creek Trail Feasibility Study (September 2015 final version). The Stevens Creek Trail extension is not included as a project in this Plan.

VTA Valley Transportation Plan 2040 (2014)

The Valley Transportation Plan 2040 sets the long-range vision for Santa Clara County's transportation system, and as a part of the Plan, Valley Transportation Authority (VTA) added a new category of projects for Multimodal Transportation Investments. VTA will begin a process for developing a pedestrian funding program, which may focus on transit access, Safe Routes to School, addressing network gaps, and urban design improvements. The Expressway Pedestrian Funding program also funds pedestrian improvements throughout the County's expressway network, and the Community Design and Transportation program funds pedestrian improvements and Complete Streets projects.

VTA Union Pacific Rail Trail Feasibility Study (2001)

The VTA Union Pacific Rail Trail Feasibility Study assessed constructing a rail trail on the 8.7-mile Union Pacific Rail corridor. The proposed trail would connect to the Los Gatos Creek Trail and link the Rancho San Antonio County Park to the Vasona County Park. The study analyzes existing conditions, identifies opportunities and constraints and proposed alternative alignments. Due to funding constraints, the study recommends that VTA implement the trail in phases. The study recommends that a trail alignment through the City of Cupertino be located on-street north of Stevens Creek Boulevard, then shifts to the rail right-of-way south of Stevens Creek Blvd until the border with Saratoga.

State and Federal Plans and Policies

Assembly Bill 32: Global Warming Solutions (2006)

The Global Warming Solutions Act (AB 32) has a goal of California reaching 1990 greenhouse gas emission levels by 2020 by reducing emissions, including those caused by motor vehicles.

Assembly Bill 1358: Complete Streets (2008)

All California Cities and Counties must include accommodations for all street users (pedestrians, bicyclists, transit riders, motorists, children, persons with disabilities, and elderly persons) in circulation element updates.

Senate Bill 375: Sustainable Communities (2009)

SB 375 directs the Air Resources Board to set regional targets for the reduction of greenhouse gases. Metropolitan planning organizations must develop land use plans to meet these emission reduction goals by tying together regional housing needs and regional transportation planning to reduce greenhouse gas emissions from motor vehicle trips.

Senate Bill 743: Environmental Quality: Transit Oriented Infill Projects, Judicial Review Streamlining for Environmental Leadership Development Projects, and Entertainment and Sports Center in the City of Sacramento (2013)

Senate Bill 743 eliminates motor vehicle-based measures (such as level of service and auto delay) in determining significant environmental impacts, including parking impacts when determining significant impacts in transit oriented infill projects. According to the legislative intent described in the bill, the intent of these changes was to balance congestion management goals with other policy goals focused on reducing greenhouse gas emissions, infill development, and promoting active transportation.

Senate Bill 99: Active Transportation Program Act (2013)

The Active Transportation Program distributes federal funds for local and regional efforts to increase walking and bicycling. The funding is intended to increase the number of walking and bicycling trips, increase safety for those modes, and provide support for disadvantaged communities to achieve transportation equity.

California Strategic Management Plan (2015)

This plan provides strategic direction for Caltrans, including targets of doubling walking trips and tripling bicycling trips by 2020. Additionally, the plan calls for reducing user fatalities and injuries, promoting community health through active transportation, and improving the quality of life for all Californians by increasing accessibility to all modes of transportation.

California Transportation Plan 2025 (2006)

The California Transportation Plan's Vision Statement calls for California to have a "safe, sustainable, world-class transportation system that provides for the mobility and accessibility of people, goods, services, and information through an integrated, multimodal network that is developed through collaboration and achieves a Prosperous Economy, a Quality Environment, and Social Equity." The first goal of the plan includes enhancing modal choice and connectivity.

Smart Mobility 2010 (2010)

The California Smart Mobility Call to Action provides new approaches to implementation and lays the groundwork for an expanded State Transportation Planning Program. It enhances the scope of the existing California Transportation Plan by analyzing the benefits of multi-modal, interregional transportation projects. The Smart Mobility framework emphasizes travel choices and safety for all users, supporting the goals of social equity, climate change intervention, energy security, and a sustainable economy.

California Statewide Bicycle and Pedestrian Plan (forthcoming)

A process is underway to develop the California Statewide Bicycle and Pedestrian Plan. The plan will be a visionary and comprehensive policy to support active modes of transportation. Policies that stem from this plan will guide decisions about future bicycle and pedestrian investments, and support local governments in creating a safe active transportation network.

Caltrans Complete Streets Policy (2001) and Deputy Directive 64 (2008)

The California Complete Streets Policy states that the California Department of Transportation "views all transportation improvements as opportunities to improve safety, access, and mobility for all travelers and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system."

To support the Deputy Directive, Caltrans adopted the Complete Streets Implementation Action Plan in 2010. Various people across Caltrans contributed ideas and projects to include in the Complete Streets Implementation Action plan to make Complete Streets a reality in California.

US DOT Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations (2010)

On March 15, 2010, the United States Department of Transportation announced a policy statement, included below, with a list of recommended actions.

"The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide — including health, safety, environmental, transportation, and quality of life — transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes."

Recommended actions to support the policy statement include considering walking and biking equal to other modes, ensuring that there are transportation choices for people of all ages and abilities, going beyond minimum design

standards, collecting data on walking and biking trips, and several other actions that make it easier for people to walk and bike.

FHWA Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts

This publication highlights ways that designers can apply design flexibility found in current national design guidance to reduce multimodal conflicts and achieve “connected networks so that walking and bicycling are safe, comfortable, and attractive options for people of all ages and abilities.”

Draft

Appendix B. Pedestrian Demand Analysis

Pedestrian demand analysis identifies locations where pedestrians are likely to be; see Chapter 2 for additional information.

Via an online survey and at a public workshop in January 2017, the community was asked where they would most like to see pedestrian improvements. The weighting used in this analysis (see Table 9) is based on this community feedback regarding priorities for pedestrian access. The data collected via the online survey and during the public workshop demonstrated that the community is most interested in pedestrian improvements that connect to schools, parks and trails. Respondents were less interested in connections to commercial areas and transit. Because this analysis is grounded in stated community values and attempts to measure potential demand, the output may not reflect pedestrian traffic as observed in the city today, or where people actually are.

Factor	Weighting (maximum points for the Factor)	Scoring within Factor
Within 1/3 mile of transit stop	15	Based on ridership at stop (1= low ridership stops, 15= highest ridership stops/lots of stops nearby)
Land Use	20	Based on type of land use (20=parks/public; 10=high-density residential; 5=medium-density residential; 1=low-density residential) <i>Note: Parks/public includes City parks plus community center such as Quinlan Community Center and the Public Library</i>
Major Employer	15	Based on size of employer (e.g. 15=Apple, 10=DeAnza College, 5=high schools, etc.)
Trail and Campus access points	20	20 if within a half mile of a major trail or campus access point; 10 if within a half mile of a minor trail or access point <i>Note: Access points were manually created for DeAnza College and trails</i>
Within half mile of school	10	10 if within a half mile of one or more schools
Maximum Score for Grid Overlay	80	

Table 9. Pedestrian Demand Factors

Areas of Highest Pedestrian Demand

Figures 49 through 53 illustrate the component parts that were summed to result in the composite demand analysis (see Chapter 2 for areas of high potential pedestrian activity).

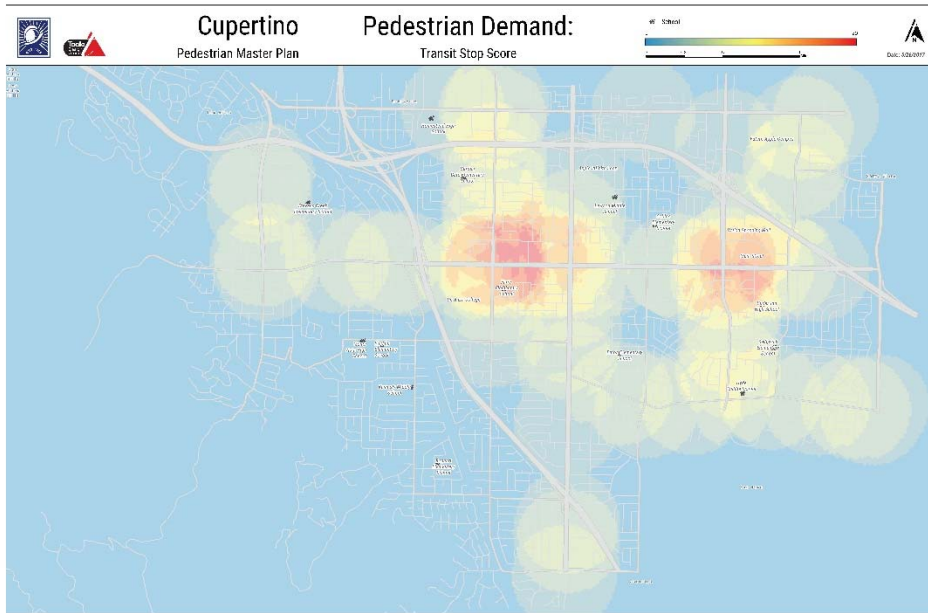


Figure 49. Transit demand component map

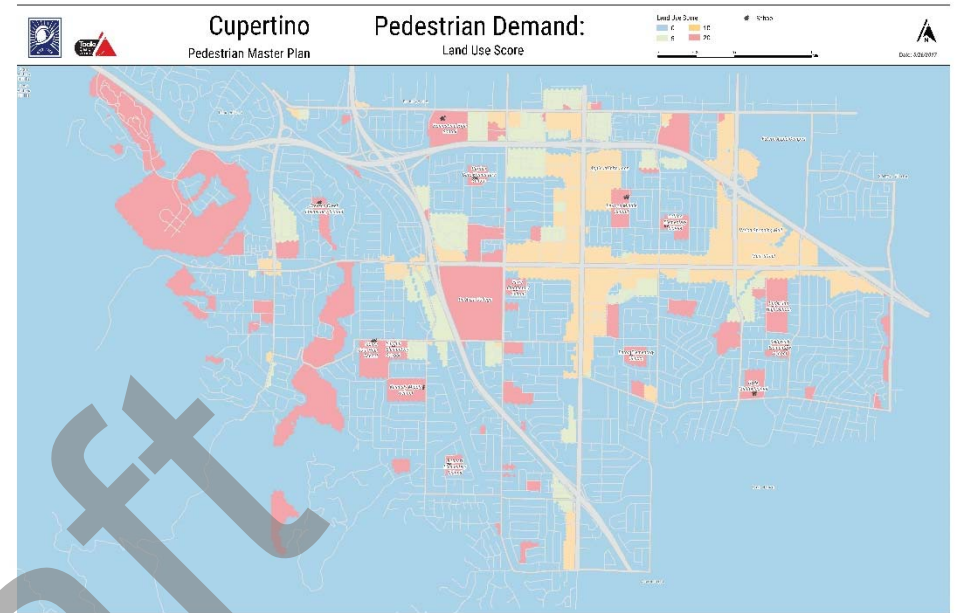


Figure 50. Land use demand component map

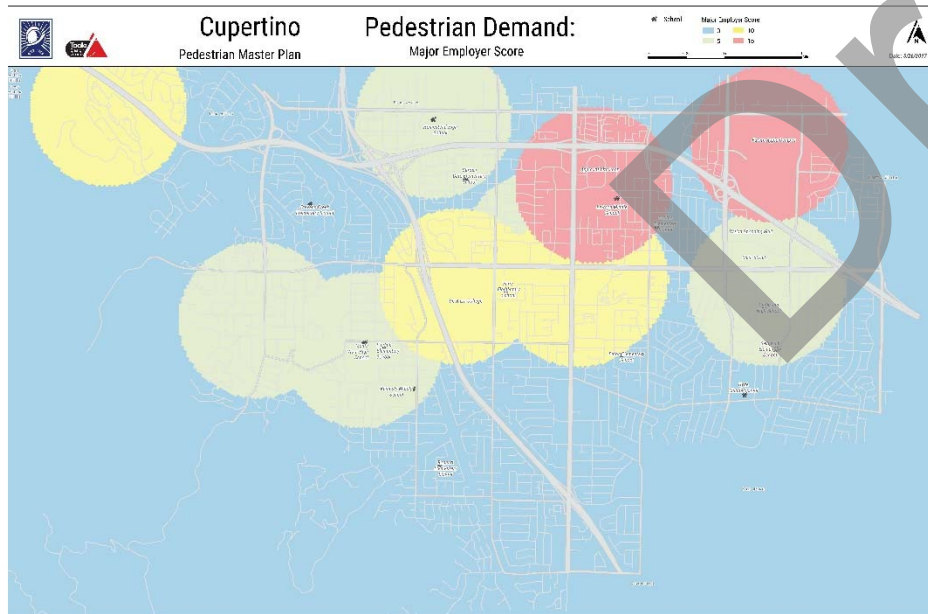


Figure 51. Major employer demand component map

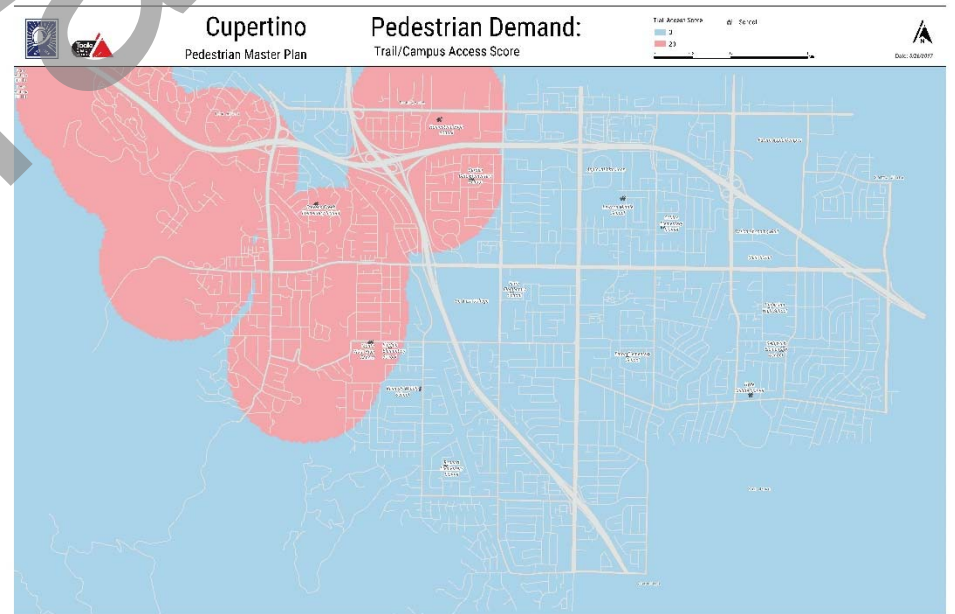


Figure 52. Trail and campus access demand component map

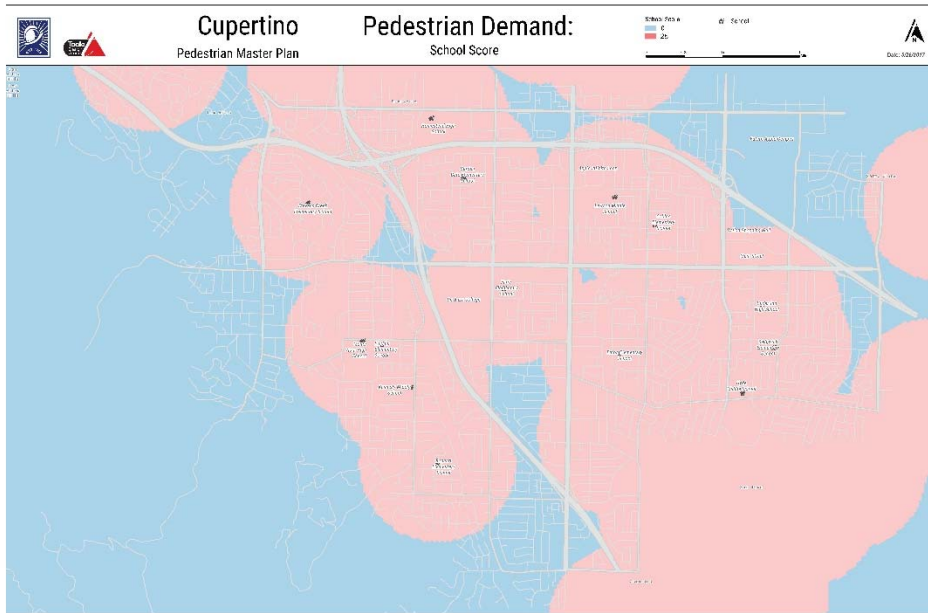


Figure 53. School demand component map

Appendix C. Walk Audit Summary

This Appendix summarizes the findings of six walk audits performed on March 14 and 15, 2017 as part of the existing conditions analysis for the Pedestrian Transportation Plan (PTP). These audits had multiple purposes:

1. Identify specific issues impacting the pedestrian environment and travel along the walk audit routes,
2. Catalog issues by street type or place within Cupertino for presentation in the PTP,
3. Create a shared understanding of infrastructure and behavioral issues that create a challenging, uncomfortable or unsafe pedestrian environment, and
4. Discuss potential countermeasures and/or policy and programmatic changes that can address identified issues

City staff accompanied consultants on all walk audits and answered questions about specific existing and planned infrastructure within the walk audit areas, as well as general City practices with respect to pedestrian projects and policies. Identified issues and opportunities from the walk audits are summarized by street type below and followed by specific write-ups of each audit location.

Citywide Observations

Generally, walking in Cupertino is reasonably comfortable and safe. There are, however, several issues that occur across the city that may cause people to choose not to walk for a given trip or for exercise. These issues arise along the two main types of streets in the city: arterials (boulevards) and local streets.

Arterials¹³

Issues for pedestrians along arterials center at intersections, not along street segments. The two major issues along segments are: driveway crossings and the long distances between marked or signalized crossings. Driveways interrupt the pedestrian path of travel and present the opportunity for conflicts with automobiles. Large curb radii allow turning drivers to maintain higher speeds across the sidewalk at driveways. Some driveways also pre-empt the sidewalk, with asphalt paving through the pedestrian path of travel rather than a continuous concrete treatment through the driveway. Long distances between crossings, over a quarter mile in some locations, may spur pedestrians to choose unsafe locations to cross the street if destinations are located on both sides of the street.

Generally, sidewalk coverage along arterials is comprehensive. People have a place to walk along the road, and in many cases, this sidewalk is separated from automobile travel by a planted buffer. Some locations lack this buffer—much of Homestead Road, some of DeAnza Boulevard—but in those locations, pedestrians are still separated from automobile traffic by the presence of a bike lane. The lack of buffer also contributes to lower pedestrian comfort because there are no street trees to provide shade.

Intersections in Cupertino present problems for pedestrians with two features: large curb radii and turn conflicts at signalized intersections. The first feature is present at most cross streets with arterials; wide radii allow drivers to maintain speed as they turn onto a local street, across the path of pedestrian travel.

¹³ Though not classed as arterials, the issues identified here also apply to major collectors Stelling Road, Miller Avenue and Foothill Boulevard.

Analysis of recent crash data in Cupertino show that many pedestrian/vehicle collisions actually occur at signalized intersections when the pedestrian is in a crosswalk. This means drivers are failing to yield to pedestrians who have the right of way when they make turns. This type of behavior was observed during walk audits, both with drivers turning right on red (conflict with pedestrians crossing in front of them) and turning right on green (conflict with pedestrians traveling in the parallel direction).

Local Streets

Issues on local streets in Cupertino occur at both intersections and along street segments. One of the biggest issues is that there is no clear message to drivers entering a local street from an arterial that they should slow speeds. While a speed limit sign or on-pavement speed marking may be present, the width of local streets connecting to arterials (typically at least 38') provide an unconstrained throughway that invites fast travel. The lack of pavement markings—centerlines, crosswalks, bike lanes—also contributes to the wide-open feeling of many local streets. This issue is compounded when streets are straight with few intersections where driver must stop. La Mar Drive is an example of this type of street and a location where residents frequently express concerns regarding speeding.

A higher percentage of local streets also do not have sidewalks. In most cases, these are streets where residents have elected to remain “semi-rural” or they are private streets; in both cases, sidewalks are not required. However, there are also local streets with intermittent sidewalk coverage as a result of annexation and subsequent installation of sidewalk only at the time of parcel development, for example Hermosa Avenue in Monta Vista. While automobile speeds and volumes are not high on many of these streets, pedestrians are still forced to share space with traffic, and in those situations pedestrians likely feel uncomfortable and vulnerable.

The issues of wide curb radii exist on local streets as well. When not stop-controlled, local-to-local street turns can be taken at higher speeds. Drivers may not be able to see and react to children playing in the street, for instance, in these situations.

Traffic calming measures are present on some local streets that can mitigate issues created by the infrastructure identified above. Speed humps are probably the most effective traffic calming infrastructure used in Cupertino today. Speed humps introduce vertical deflection that forces drivers to slow. Whereas traffic calming devices that rely on horizontal deflection (e.g., chokers) are more effective at slowing larger vehicles than smaller, more nimble cars. The few existing truck aprons that narrow curb radii can also be quite effective in slowing turning traffic on local streets.

Walk Audit Routes

The list of audit locations reflects the two major street types mentioned above, plus some collector streets, and include locations in multiple neighborhoods within the city. Each route was between 0.75 and 1 mile in length. The routes are:

Arterials (Boulevards)

- Route 1: De Anza Boulevard and Bandley Drive, from Valley Green Drive to Rodrigues Avenue
- Route 4: Stevens Creek Boulevard, between SR 85 and Stelling Road
- Route 5: Stevens Creek Boulevard, between Finch Avenue and Tantau Avenue

Local Streets

- Route 2: Phar Lap Drive and Mann Drive
- Route 3: Miller Avenue, Vicksburg Drive, La Mar Drive
- Route 6: Monte Vista neighborhood



Figure 54. Reference map for route locations

Route 1: DeAnza Boulevard and Bandley Drive

Summary Observations

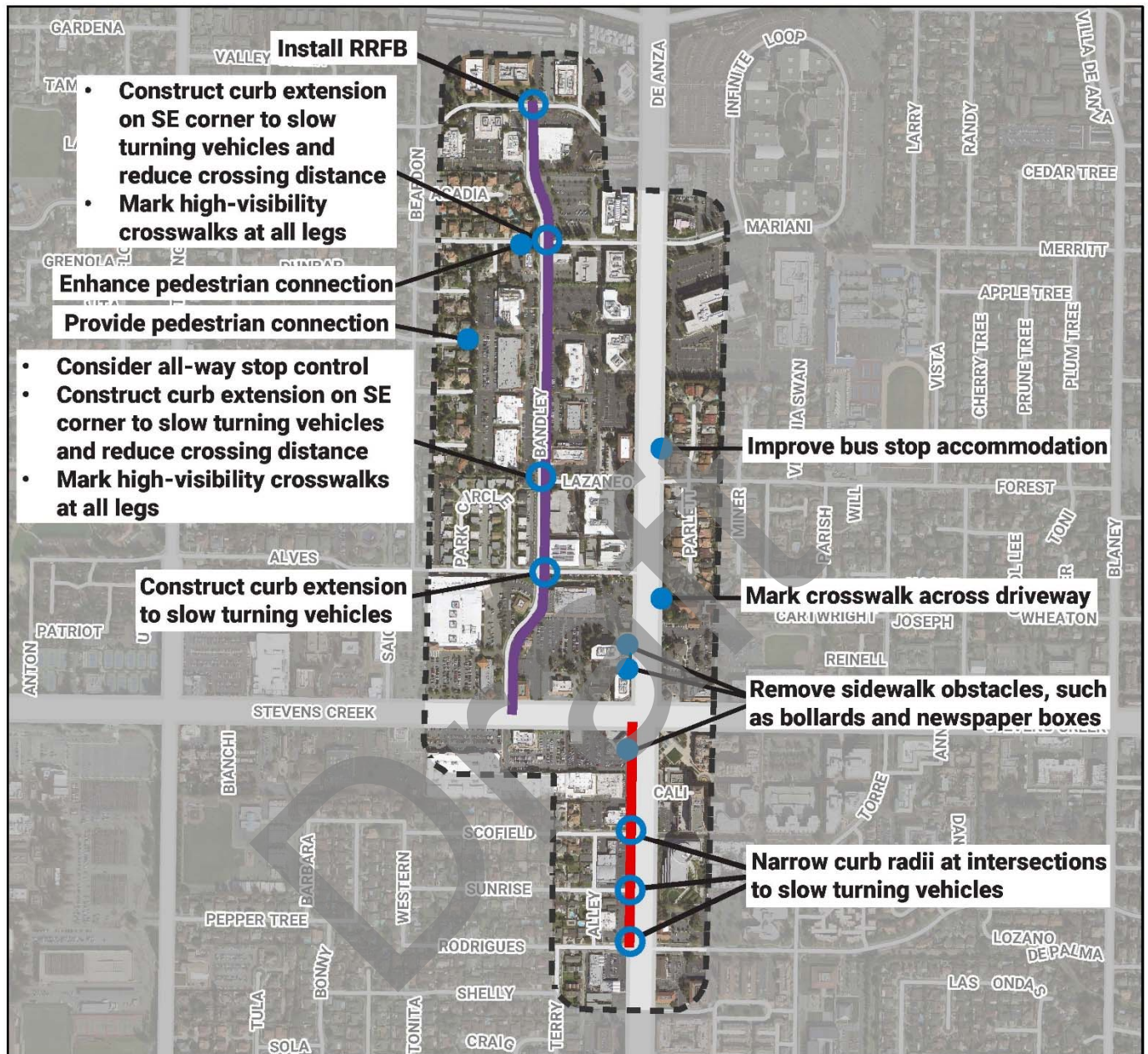
This area of the city has a significant amount of pedestrian activity, especially around the lunch hour when nearby employees walk to retail and dining destinations in shopping centers on Stevens Creek and DeAnza Boulevards, and to the Apple café on Bandley Drive. Generally, walking conditions are comfortable with sidewalk present on all streets and separated from the street by a buffer in many locations. However, the curb adjacent sidewalk on DeAnza south of Stevens Creek is less comfortable, and the minimum sidewalk widths on Bandley do not adequately accommodate larger groups of people walking together.

The intersection of DeAnza and Stevens Creek Boulevards is uncomfortable during most hours of the day due to turning vehicle conflicts and poor driver yielding behavior. This is also the case at Bandley and Valley Green Drives where the drivers do not stop consistently for people attempting using the crosswalk to cross at Valley Green Drive. Other intersections could benefit from smaller curb radii or crossing improvements.

Issues and Treatment Highlights

The maps on the following pages show issues observed during the walk audits. The current area least friendly to pedestrian travel is probably also the one that will take the longest to change: DeAnza Boulevard from Stevens Creek Boulevard to Rodrigues Avenue. This area has curb adjacent sidewalk on the west side of the street that puts pedestrians closer to high-speed, high-volume traffic. The area also does not have any shade trees, and wide curb radii make it easy for drivers to make relatively fast right turns onto side streets. Changes to the sidewalk on this route would entail major construction and cost and are not likely until this area redevelops.

Driver yielding issues with right turns observed at the Stevens Creek/DeAnza intersection will be addressed with signalization phasing changes proposed in the Class IV bikeway design for Stevens Creek. Though issues at this particular intersection will be addressed with those changes, similar situations exist elsewhere in Cupertino, and a focused marketing campaign regarding driver yielding at intersections may help change behavior.



Route 1: De Anza Boulevard and Bandlely Drive, from Valley Green Drive to Rodrigues Avenue

Recommendations

Segment

- Construct sidewalk buffer
- Widen sidewalks

Spot

- Intersection
- Other

Figure 55. Route 1

Route 2: Phar Lap Drive and Mann Drive

Summary Observations

This route was chosen because it includes both typical local streets and local streets falling into the semi-rural characterization. The main issues observed on Phar Lap Drive are typical of other local streets in the city: wide curb radii, wide cross section overall, and a lack of curb ramps. The width of Phar Lap Drive is somewhat mitigated by the presence of mature street trees and sidewalk, neither of which are present on Mann Drive which, though the same pavement width, feels wider and more prone to inducing driver speeding behavior. Neither street serves a major network purpose as both end slightly north of our study area, so low traffic volumes may make speeds less of an issue and on Mann Drive, the lack of sidewalk less of a concern.

Issues and Treatment Highlights

The issue of street width on Mann Drive could be addressed by adding markings to the street to delineate shoulder areas and parking. This would provide defined space for pedestrians walking along the street in lieu of a sidewalk, and designating parking areas will reduce the need for parking in the shoulder area. This would be a new treatment for Cupertino and would necessitate cooperation of adjacent neighbors and an education campaign to familiarize all street users with the changes.

One issue not noted in the maps is that this area, though served by nearby Stevens Creek Elementary School, is cut off from it by a lack of connected streets and Stevens Creek itself. It is currently at least a ¾-mile walk to the school, a distance that is at the upper end of what an elementary school student can reasonably be expected to walk daily. If any opportunity arises for a connection between Phar Lap Drive and Creston Drive to the west, that would be advantageous to spur more student travel by foot.



Route 2: Phar Lap Drive and Mann Drive

Figure 56. Route 2

Route 3: Miller Avenue, La Mar Drive and Creekside Park

Summary Observations

This route provides access to and through Creekside Park, a popular destination for neighborhood residents and Citywide for many types of outdoor activities. Access from the neighborhood to the west is provided via a canal-adjacent trail that is well-maintained and lit, and access from the Miller Avenue side is provided at a signalized intersection with marked crosswalks at all legs. Local streets in the neighborhood are typical of Cupertino: approximately 38 feet wide, no marked centerlines (other than Estates Drive), few marked crosswalks, and little on-street daytime parking occupancy. Unlike other locations, a median island is present at the entrance to Vicksburg Drive from Miller Avenue which provides some traffic calming and a type of gateway to the neighborhood. However, residents still cite speeding as a concern on this street which led to recent installation of a radar speed read-out sign.

Issues and Treatment Highlights

Speeding concerns have been reported on neighborhood local streets in this area as mentioned above on Vicksburg Drive and also on La Mar Drive. The aforementioned median island is the only traffic calming currently present in the audit area, and the addition of a mini circle at La Mar Drive and Estates Drive is an example of a project type that could help slow traffic. A circle may actually be more effective elsewhere along the stretch of La Mar Drive between Estates Drive and Blaney Avenue, perhaps at Lindsay Avenue; breaking up this long, straight stretch without traffic control could help slow speeds, but it lies outside this walk audit area.

Crosswalks are not marked consistently in the neighborhood and may have been added to emphasize pedestrian paths to Creekside Park, but they are not currently present on all legs of the intersections of Estates Drive with Vicksburg Drive and La Mar Drive. Consistent marking of crosswalks could reinforce pedestrian priority in these locations. Crosswalk marking will be separately addressed in the Pedestrian Transportation Plan through development of a Crosswalk Policy.

Lastly, bus stops located on Miller Avenue are located one block north of the signalized intersection at Calle de Barcelona. There is no marked or enhanced pedestrian crossing provided to access these stops. Transit riders need to walk to the signal to cross safely which is somewhat unlikely. Given that bus riders likely make a round-trip, they need to cross the street once, and some type of enhanced crossing should be provided for them.



Route 3: Miller Avenue, Vicksburg Drive, La Mar Drive

Recommendations

Segment

 Shared-use path

Spot

 Intersection

 Other

Figure 57. Route 3

Route 4: Stevens Creek Boulevard – SR 85 to Stelling Road

Summary Observations

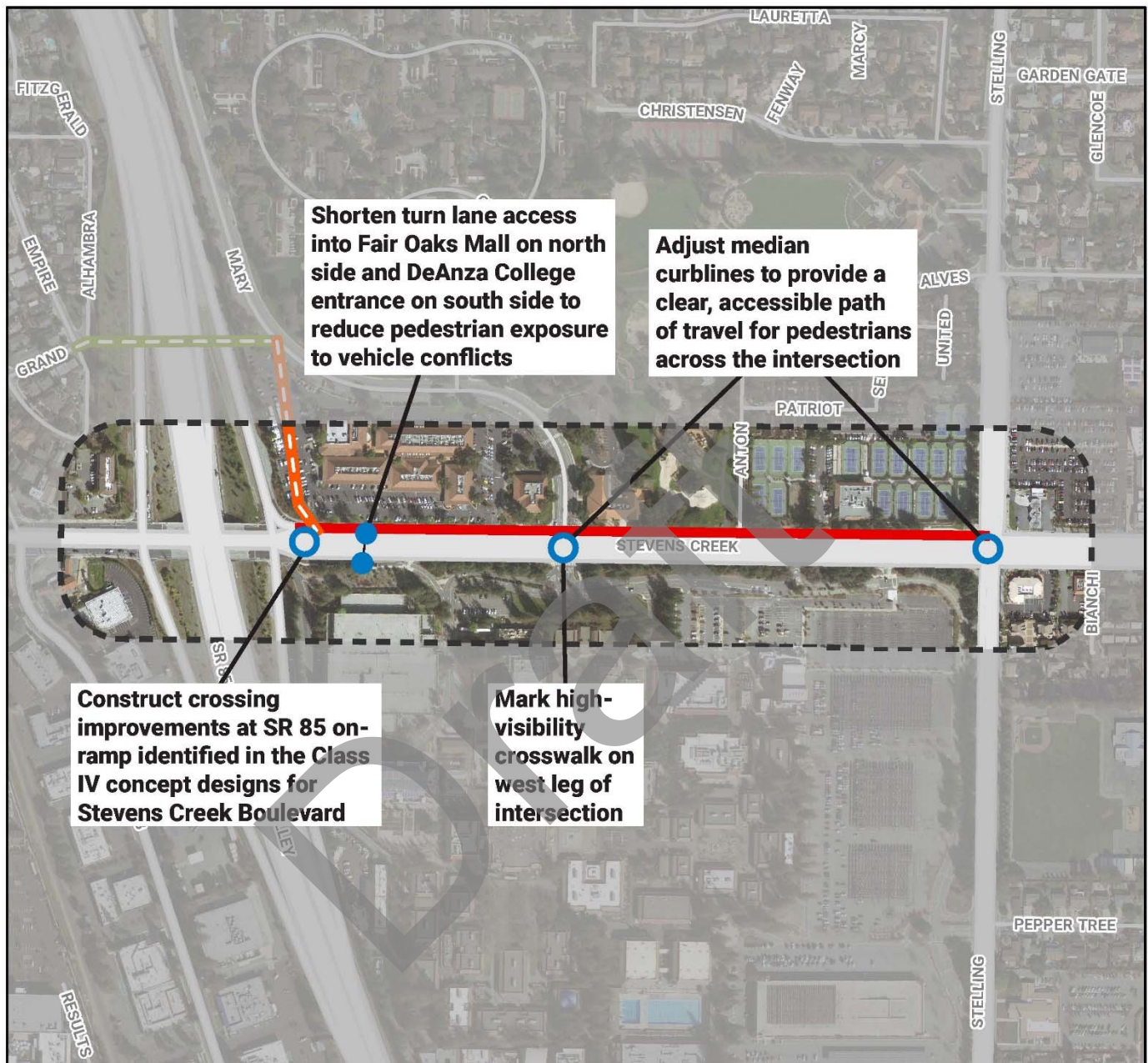
Pedestrians along this segment of Stevens Creek Boulevard face a number of challenges to safety and comfort, mostly related to intersections. Some of these issues will be addressed through implementation of the Class IV bikeway design and others will not. Sidewalks are provided on both sides of the street, with the north side curb-adjacent and the south side along DeAnza College separated from the street by a large planted buffer in most locations. Issues occur where high-speed automobile traffic can cross the pedestrian path of travel at driveways and an on-ramp.

Issues and Treatment Highlights

Issues related to potential pedestrian/vehicle conflicts are present at three locations: the SR 85 northbound on-ramp, the west driveway entrance to The Oaks shopping center, and the west driveway entrance to DeAnza College. Movement onto the SR 85 on-ramp is currently uncontrolled for drivers, and though the City has installed signage to reinforce driver yielding behavior, the location remains a challenge. The recommended addition of a right-turn signal here as a part of the Class IV bikeway design will largely remedy this issue for pedestrians. In the interim, additional warning and yield signage may increase driver compliance and pedestrian safety.

Both driveway entrances of concern have long dedicated deceleration lanes to exit from Stevens Creek Boulevard to the destination. Drivers can maintain high speeds across the pedestrian path of travel in these locations. The implementation of the Class IV bikeway design will shorten the distance over which a driver can access the driveways, slowing speeds. In the interim, it may be desirable to install a temporary bulb out at The Oaks driveway. There is less opportunity for an interim treatment at the DeAnza driveway.

Inadequate street lighting was noted by citizens and observed at the intersection of Stelling Road and Stevens Creek Boulevard. Bus stops adjacent to this intersection are used during low light hours, and pedestrian traffic is likely also generated by nearby land uses. Additional lighting at this intersection would help drivers see pedestrians and may help avoid conflicts between crossing pedestrians and turning vehicles.



Route 4: Stevens Creek Boulevard, between SR 85 and Stelling Road

Recommendations

Segment	Spot
Shared-use path	Intersection
Bike/ped bridge	Other
Construct sidewalk buffer	

Figure 58. Route 4

Route 5: Stevens Creek Boulevard – Finch Road to Tantau Avenue

Summary Observations

This segment of Stevens Creek Boulevard was selected because of proximity to the Main Street shopping area. Pedestrian accommodation along the street here is quite good: The Main Street development installed wide sidewalk on the north side of the street which will be shaded as street trees mature, and sidewalk along the south side is separated by a wide planter strip with mature street trees. Issues are concentrated at the intersections with Finch Road and Tantau Avenue.

Issues and Treatment Highlights

The intersection with Finch Avenue is a critical connection for students at Cupertino High School accessing shopping and dining at Main Street, and traffic is heavy during before- and after-school times. Hundreds of students were observed crossing through this intersection at the lunch hour. There is currently no marked crosswalk on the east leg of this intersection which would provide the most direct access from the school across Stevens Creek Boulevard. The feasibility of adding a crosswalk here should be studied. Additionally, there is a channelized right turn movement from Finch Avenue onto Stevens Creek which is channelized by a small island. This creates a situation where driver movements are prioritized and pedestrians are dependent upon drivers yielding to cross Finch Avenue. Studying removal of the channelized right turn lane is recommended.



Route 5: Stevens Creek Boulevard, between Finch Avenue and Tantau Avenue

Recommendations

Spot

- Intersection
- Other

Figure 59. Route 5

Route 6: Monta Vista Neighborhood

Summary Observations

The Monta Vista Neighborhood has minimal sidewalk coverage because it was developed to less stringent County standards, and was only later annexed to the City of Cupertino. The County standards also led to most of the streets (except Pasadena Avenue) being narrower than typical Cupertino local streets, closer to 24 feet than 38 feet. This limited street size makes the lack of sidewalks more pronounced, forcing pedestrians to be in close contact with vehicles. That said, narrower roads tend to encourage drivers to be more cautious and drive slower, providing more natural traffic calming.

While the neighborhood is primarily residential and has low traffic volumes, it provides access to Monta Vista High, Kennedy Middle and Lincoln Elementary schools by foot, bike, and vehicle. The neighborhood also serves as an access point to Blackberry Farm Park and the Stevens Creek Trail via San Fernando Avenue

Issues and Treatment Highlights

Additional traffic calming in the neighborhood could help lower speeds on wide streets or at intersections. Pasadena Avenue sees some higher speeds, which could be mitigated by adding a mini circle at the currently yield-controlled intersection with Lomita Avenue. Though the intersection with Granada Avenue is also wide, the all-way stop control serves to slow traffic there. The intersection at San Fernando and Byrne Avenues is also very wide owing to the angle of San Fernando, the large radii and lack of curbs. Tightening radii here with striping and flexposts could serve to create more of a gateway to this access point for Blackberry Farm Park. This could also reinforce the message to drivers that this is a location where additional awareness is warranted. Existing speed humps and the stop control already slow travel.

The lack of connection between the northern and southern portions of Imperial Avenue was also noted as an issue. There is currently a wall preventing access by all modes here. This street could provide a more direct connection from the neighborhood to schools on McClellan Avenue, especially from the higher density housing north along Imperial Avenue. The City should begin to explore the possibility of creating pedestrian (and bicycle) access through this location by removing at least a portion of this wall. Outreach to and close communication with neighbors would be necessary for this project.



Route 6: Monta Vista neighborhood

Recommendations

Segment

- Construct sidewalk
- - - Shared-use path

Spot

- Intersection
- Other

Figure 60. Route 6

Appendix D. Public Comments from Outreach Events/Activities

This appendix summarizes community responses from the PTP outreach events and activities, including:

- WikiMap Response Summary
- January 25, 2017 Public Workshop
- April 22, 2017 Earth Day Public Outreach Event

WikiMap Response Summary

The WikiMap online outreach exercise was used to determine where participants experience pedestrian-related issues, where they typically walk, and where they would like to be able to walk to in the future. The WikiMap was open from January 22 to March 1, 2017.

This summary provided an overview of the responses. The data collected will be used to inform recommendations for policies, programs, and locations and types of pedestrian-related infrastructure projects.

Survey Responses

Respondents were asked for five pieces of information: 1) to provide their demographic information, 2) identify barriers to walking, 3) locate where they have been involved in a crash or near miss, 4) where would they like to walk to and what prevents them from walking there today, and 5) where do they walk to today.

Respondent Information

A total of 37 individuals contributed to the WikiMapping public outreach tool; however, not all respondents contributed to each individual section of the WikiMap. Demographic data collected (see Figure 61) indicate a fairly representative sample based on gender, but a skewed sample based on age with under-representation from younger residents and over-representation from seniors, based on recent Census data. Approximately 78 percent of people have at least two vehicles available at their household, equaling 2.32 vehicles per household, as shown in Figure 62.

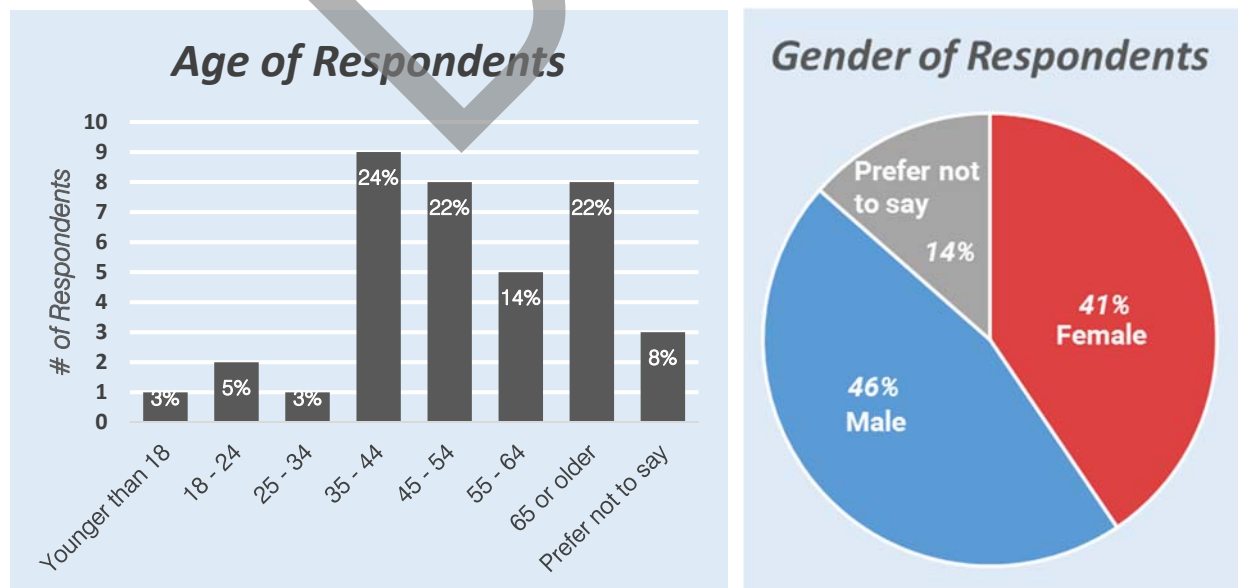


Figure 61. Age and Gender of WikiMap Respondents

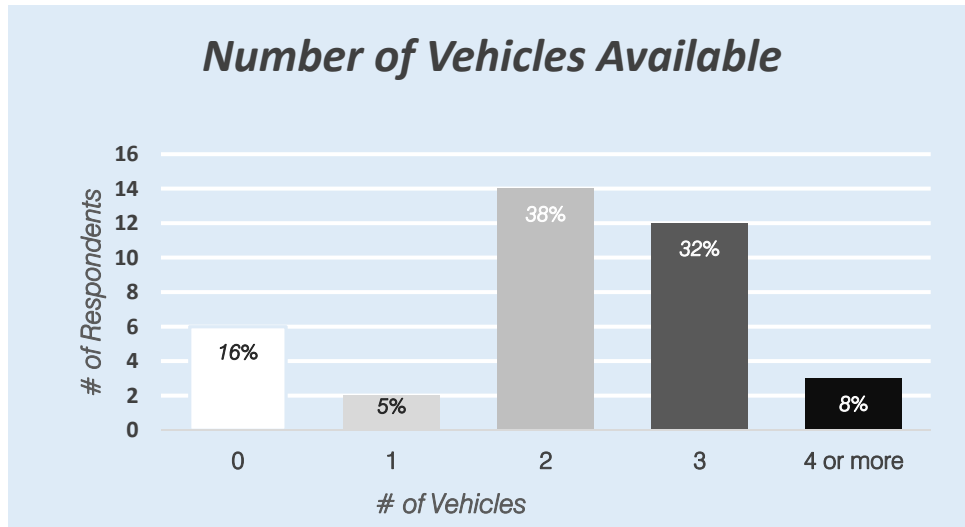


Figure 62. Number of Vehicles Available to Respondents

Barriers to Walking

Attendees were asked to identify locations where barriers to walking exist. After placing a barrier point on the map, users were prompted to respond to the question “What type of barrier is located here?” with the following choices provided:

1. Dangerous intersection
2. Fast-moving traffic
3. Lack of traffic signal
4. Lack of marked crosswalk
5. Disconnected streets
6. Lack of sidewalk
7. Linear barrier (e.g., freeway)
8. Other (explain below)

Respondents could select multiple issues for a single location. Table 10 lists the findings from the barrier survey. A total of 13 respondents contributed 79 comments. Two individuals contributed a combined total of 25 comments, or 32 percent of all comments. Excluding those two individuals, the average number of comments is 3.2 per respondent. Nearly half of the respondents stated they believe there a lack of sidewalks, lack of marked crosswalks, and fast-moving traffic are barriers to walking.

Barrier Type	Share of Total Comments (%)	Comments (count)	Respondents (count)	Share of Total Respondents (%)
Lack of Sidewalk	39%	31	6	46%
Fast-Moving Traffic	13%	10	6	46%
Dangerous Intersection	10%	8	4	31%
Lack of Marked Crosswalk	10%	8	6	46%
Disconnected Streets	5%	4	2	15%
Lack of Traffic Signals	5%	4	2	15%
Linear Barrier	0%	0	0	0%
Other	18%	14	4	31%
Total	100%	79	30	

Table 10. Identify Barriers to Walking (13 total respondents)

“Lack of Sidewalks” had the highest number of total comments accounting for a total of 39 percent of all comments and 46 percent of respondents contributed. Responses were concentrated along McClellan Road, Stevens Creek Boulevard west of Foothill Boulevard, and along Starling Drive east of Foothill Boulevard.

“Fast-Moving Traffic” accounted for 13 percent of all comments and 46 percent of respondents contributing. Identified locations were predominantly along minor collectors and arterial roadways, typically along commercial corridors and near interstate on/off ramps.

There were eight “Dangerous Intersections” identified on the WikiMap by four individuals. Two intersections were located on arterial roadways, three on minor collectors, and three on local roadways. Issues on arterials were related to turning vehicles and potential conflicts with pedestrians. Minor Collector streets have visibility issues due to poor lighting, a sharp turn on McClellan Road, and motorist compliance. Local roadway concerns were related to school pickup/drop-off operations contributing to low crosswalk compliance rates, and motorists driving in unsafe manners.

“Other” barriers included seven comments that were correctly categorized as “other” and seven additional comments that further described barriers that have their own category type (lack of sidewalk, dangerous intersection, etc.). Figure 63 indicates locations of all comments received regarding barriers to walking.

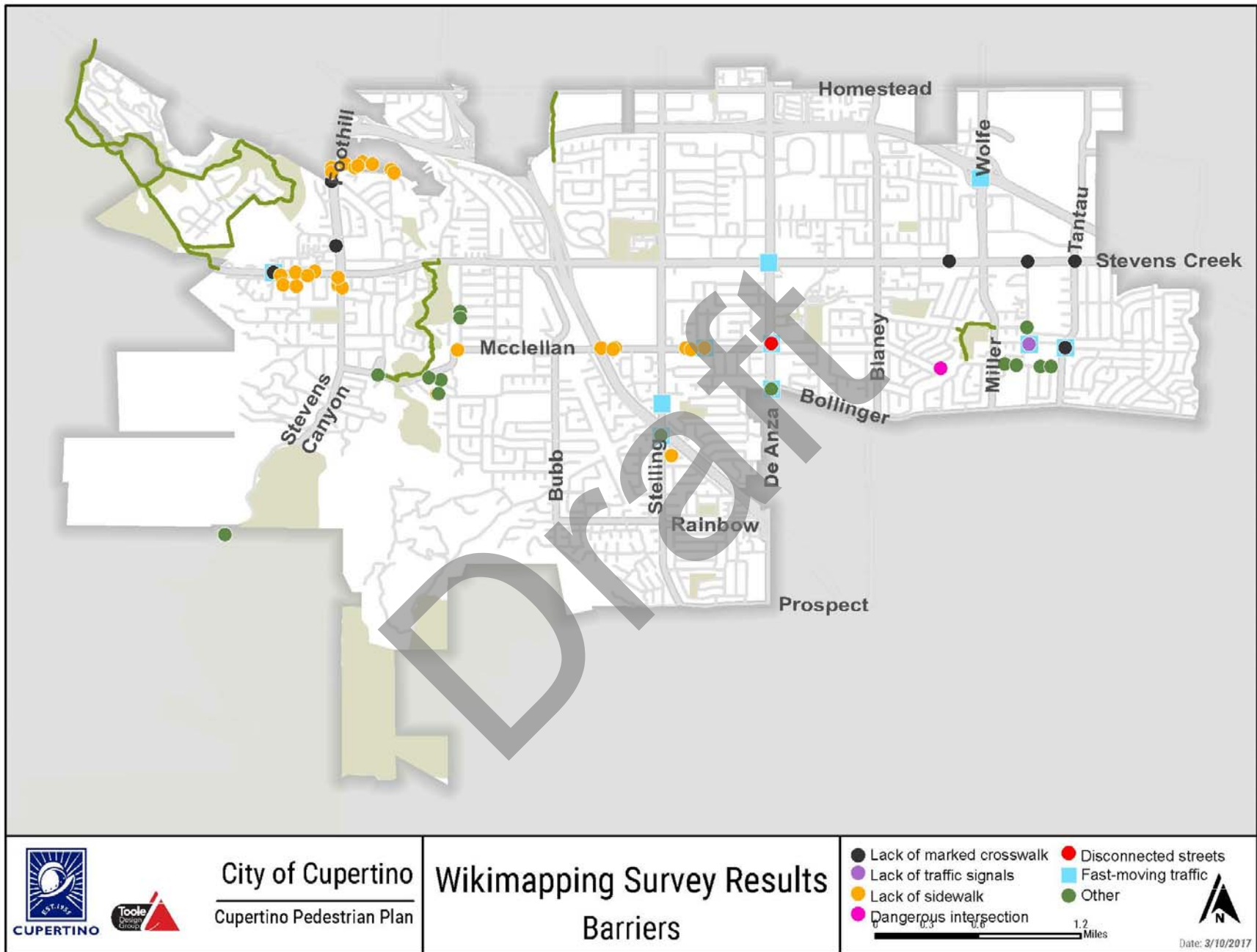


Figure 63. Barriers to Walking

Draft

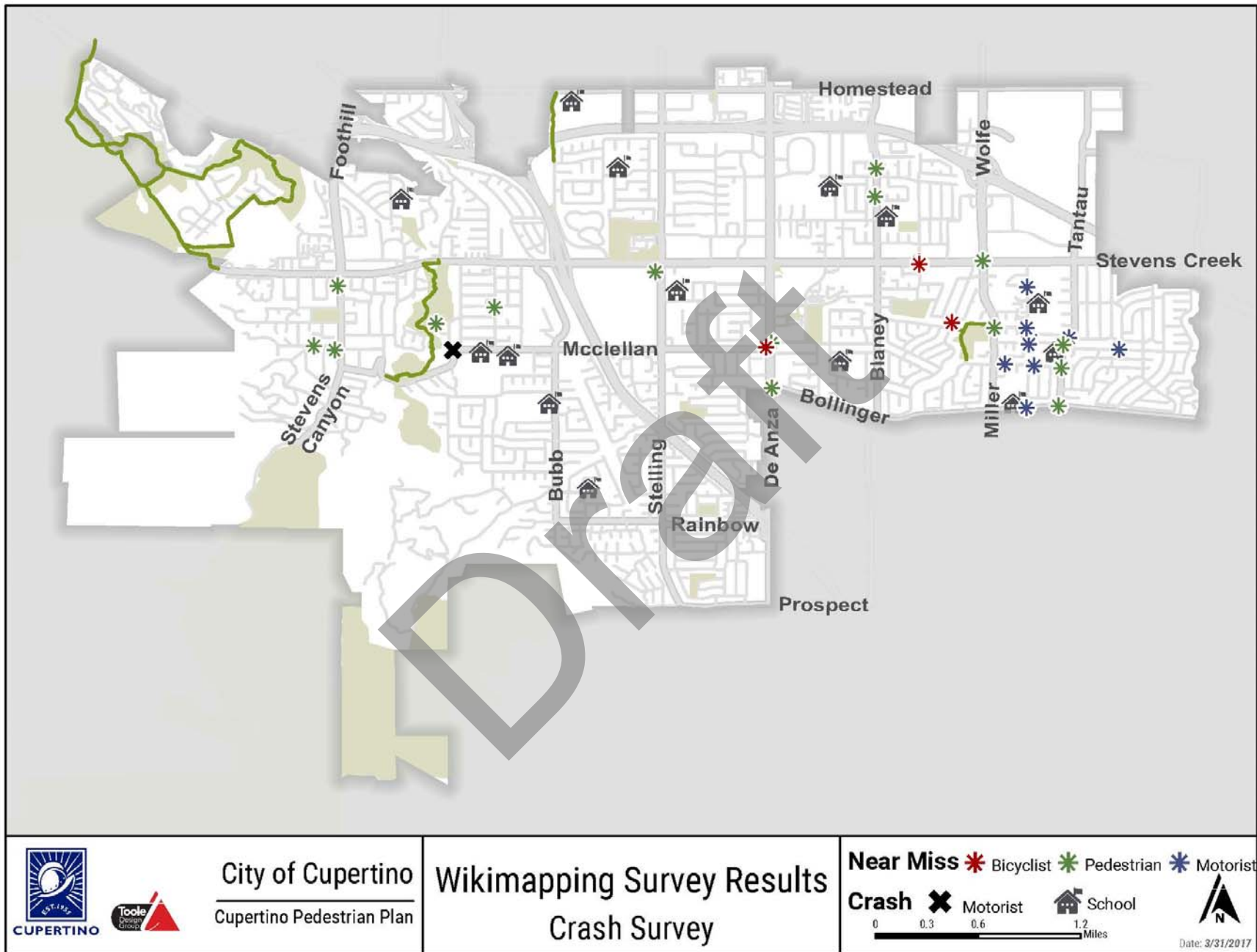
Crash and Near Miss Locations

Users were asked to identify locations where they were involved in either a crash or a near miss event. Crashes and near misses are displayed roadway user type (bicyclist, pedestrian, motorist) on the following map. There were 11 respondents who contributed 32 comments identifying where the event occurred, whether the event was a crash or near miss; if they were a motorist, a bicyclist, or a pedestrian, and if they reported the crash/near miss. There was one instance of a reported crash that occurred which involved a motorist. The remaining 31 comments were near miss events.

Table 11 identifies the type crash or near miss location for each type of participant. In the 32 events identified, 53 percent of respondents were pedestrians, 34 percent were motorists, and the remaining 13 percent were bicyclists. There is a concentration of near misses on the east side of Cupertino (east of Miller), however 10 of these 15 were identified by one individual (see Figure 64). This self-reported data about near misses echoes findings from the analysis of SWITRS crash data that indicated a concentration of pedestrian crashes occurring at intersections.

Location	Bicyclist	Motorist	Pedestrian	Total	Percent
Along Roadway		3	4	7	22%
Driveway	1		1	2	6%
Intersection	3	8	12	23	72%
Total	4	11	17	32	100%
Percent	13%	34%	53%		

Table 11. Roadway User and Location of Event (11 total respondents)



User: bafmdale Path: H:\P0001\F013_P_Cupertino_Ped_Plan\PRODUCT\01\GIS\MXD\12017_021Cupertino_Ped_Plan_Wikimap_results.mxd

Figure 64. Crash Survey

Draft

Places I Walk To

Survey respondents were asked to locate on the WikiMap where they currently walk to using the following six categories:

1. Dining
2. Recreation
3. School
4. Shopping
5. Social/Entertainment
6. Work

There was a total of 15 respondents who contributed a total of 79 responses (see Table 12). Forty-four percent of the comments identified recreational destinations, followed by school destinations accounting for 18 percent of comments. Figure 65 illustrates where people currently walk to. Destinations are concentrated along major roadways and along off-street trails. Two roadways have many destinations where people are walking to: Stevens Creek Boulevard and McClellan Road.

Destination	Share of Total Comments (%)	Comments (count)	Respondents (count)	Share of Total Respondents (%)
Dining	13%	10	3	20%
Recreation	44%	35	11	73%
School	18%	14	5	33%
Shopping	10%	8	4	27%
Social/Entertainment	10%	8	5	33%
Work	5%	4	2	13%
Total	100%	79	30	

Table 12. Typical Walking Destinations (15 total respondents)

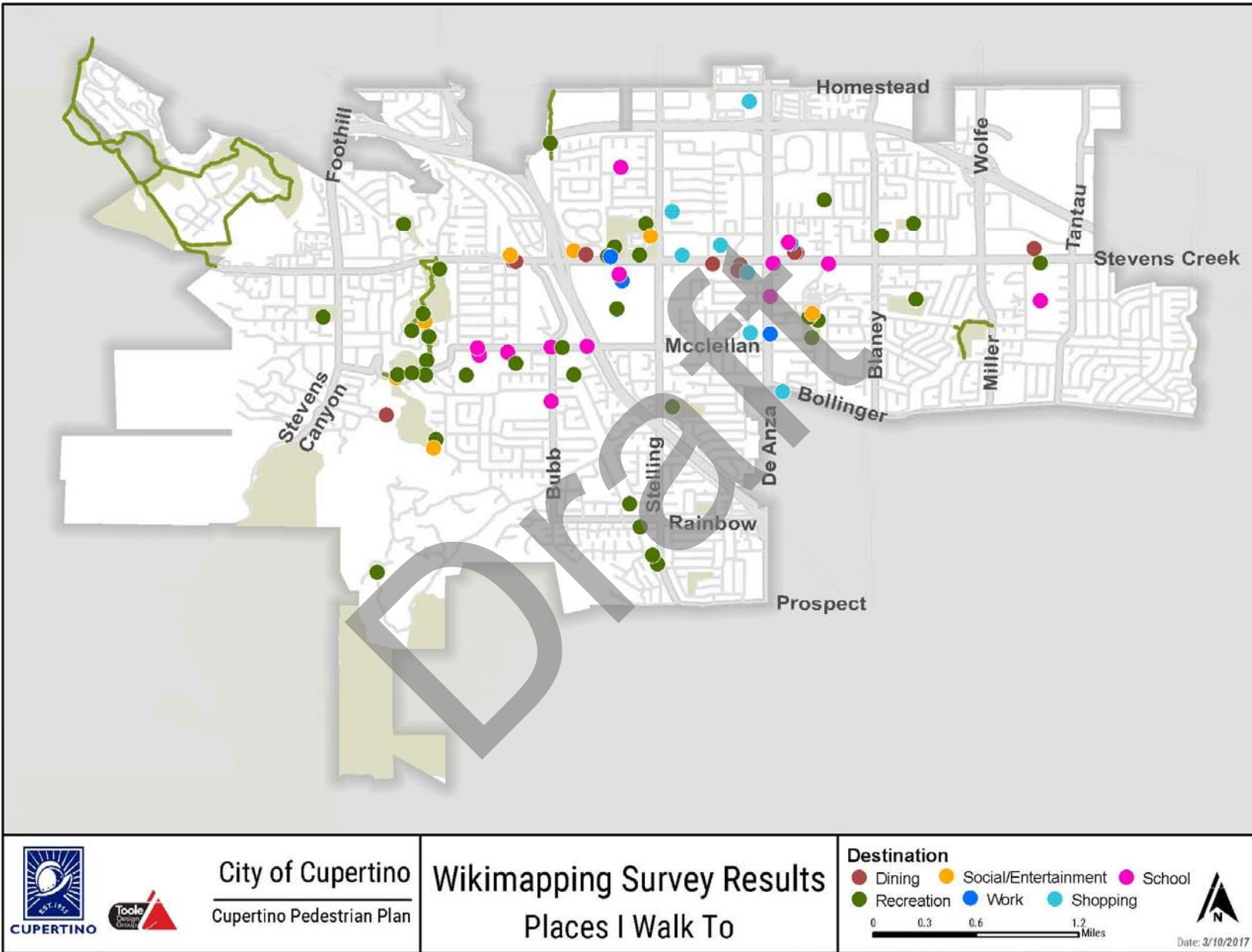


Figure 65. Places I Walk To

Draft

Places I Would Like to Walk To

A total of eight people entered 12 comments regarding destinations they would like to be able to walk to and listing which barrier prevented them from walking. The same destinations asked previously for the typical destinations surveyors walk to were used, and Figure 66 shows the locations of those would-be destinations.

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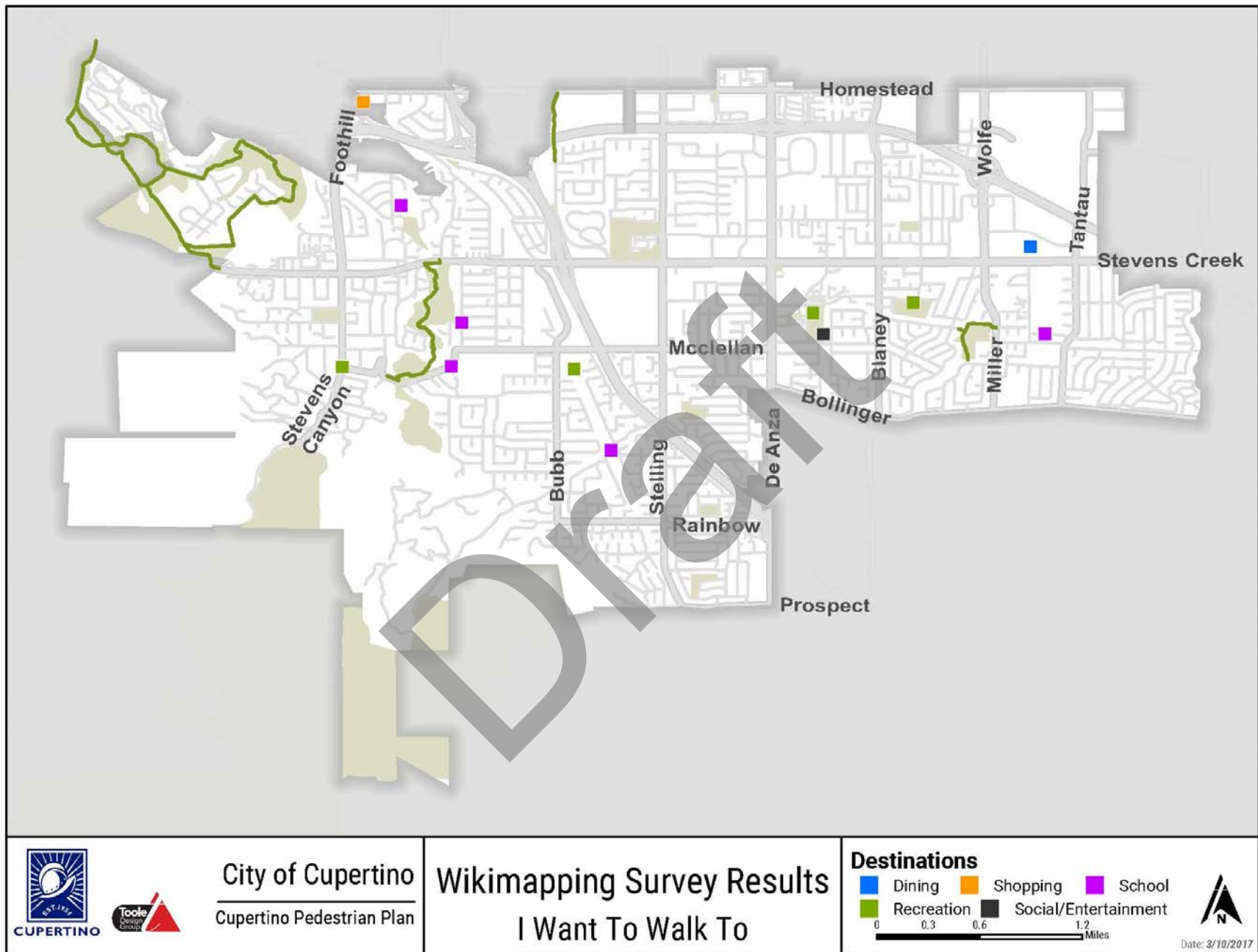


Figure 66. Places I Want to Walk to

Draft

Respondents were also asked to identify which of the following factors prevent them from walking to that destination today:

1. Lack of Sidewalk
2. No Convenient Pedestrian Entrance
3. Too Much Traffic
4. Streets Don't Connect
5. Difficult to Cross Street
6. Feels unsafe for Children

Draft

Table 13 lists the issues influencing why these individuals may not be choosing to walk to certain destinations. A lack of sidewalk and presence of too much traffic were chosen most frequently as the barriers preventing people from walking to these destinations today.

Barrier Type	Total	Share of Total
Lack of sidewalk	7	30%
No convenient pedestrian entrance	3	13%
Too much traffic	6	26%
Streets don't connect	1	4%
Difficult to cross street	2	9%
Feels unsafe for children	4	17%
Total	23	100%

Table 13. Barriers Preventing Walking to Selected Destinations (8 total respondents)

Public Workshop Summary

At the first workshop for the Pedestrian Transportation Plan held on January 25, 2017 from 6:00-7:30pm in the Cupertino Room at the Quinlan Center, Toole Design Group (TDG) provided a high-level overview of the project and planning process, and gathered input from the community about their interests and priorities related to walking. Informational and interactive boards and an on-line survey station were used to gather feedback and introduce the project. TDG staff also solicited feedback from workshop participants through individual and small group conversations. While the input discussed below came from a relatively small group of residents, it is anticipated that the online input vehicles of the survey and WikiMap will provide additional input that can guide the plan development process.

Public Input

Public input was recorded in the following formats:

1. A map exercise to find out where participants think there are current pedestrian-related issues and opportunities in Cupertino.
2. A dot access exercise to determine which types of pedestrian trips are most important to community members to improve.
3. Survey station with a laptop for participating in the online project survey.

Map Exercise

Participants were invited to place color-coded dots on a large scale citywide map in four categories. Table 14 shows the total number of dots mapped for the four categories.

Type of Place	Number of Comments
Place I walk	24
Place I'd like to walk	6
Barrier to Walking	12
Crash/Near Miss	14

Table 14. Map Exercise Comment Summary

Dots were placed in the following locations:

- Places I like to walk
 - Parks
 - Elementary and middle schools
 - Businesses near Vallco Pkwy and next to the intersection of Stevens Creek Blvd and N Wolfe Rd
- Places I'd like to walk
 - North side of the intersection of West Valley and Stevens Creek Blvd
 - Canyon Oak Park
 - De Anza Baseball Field
 - Between Varian Park and Stockmeir Ranch if a pedestrian connection were added
- Barriers to walking
 - Stevens Creek needs pedestrian crossings, especially between Stockmeir Ranch and Varian Park and near Carmen Rd
 - Railroad tracks between Madera Dr. and Somerset Park
 - Lack of sidewalks
 - Lack of pedestrian connectivity between residential streets
 - Lack of crosswalks on Stevens Creek Blvd and N De Anza Blvd
- Crash/Near Miss: Responses clustered around the areas identified below.
 - Stevens Creek Blvd
 - N De Anza
 - Bubb Rd south of Stevens Creek Blvd
- Other Comments
 - Will the trail from Stevens Creek to Canyon Oak Park trail be opened up to bikes?

Dot Access Exercise

Table 15 summarizes the pedestrian trip types that workshop attendees felt were most important to developing a safe and connected pedestrian network in Cupertino. Of the eight trip types mentioned, safe crossings of major roadways, and access to schools and greenspaces were the most frequently cited trip types.

Trip Type	Number of Votes
Safe Crossings of Major Roadways	8
Access to Schools	7
Access to Greenspace	7
Access to Multi-Use Paths (i.e., trails)	6
Access to Transit	4
Access to Shopping	4
Access to Jobs	4
Directness (i.e., shortest distance between destinations)	3

Table 15. Pedestrian Trip Types

General Comments

TDG staff discussions with workshop attendees revealed a few issues that were not otherwise brought up through the map or voting exercise.

- There are issues with street connectivity that make it too far, unappealing or not possible for some trips to be made by foot.
- The most direct pedestrian routes are sometimes limited due to lack of access through private property. Note: Although access is not legally required across a private property, the preponderance of large parcels for office or retail use in the City also contribute to the disconnected nature of the network.



Figure 67. Attendees at the Public Workshop

Bikeway Design Project

TDG presented a set of workshop boards and corridor roll plots in order to provide the public with an overview of design development process and schedule, as well as the conceptual designs of the proposed bikeways, intersection treatments, buffer types, driveways and bus stop zones.

Public Input

Attendees were invited to add their comments to the conceptual plans and informational boards to provide feedback on intersections, “hot spot” areas, concerns about safety, and how people might use the potential street designs.

General Comments

The following feedback applies to both the Stevens Creek Boulevard and McClellan Road corridor plans.

- There was broad support and excitement for the installation of Class IV bike lanes.
- Participants had questions about how cyclists would be able to make left turns at controlled and uncontrolled intersections, and the mechanics of how to pass slower cyclists while riding in Class IV bike lanes.
- There was a desire to ensure that the push buttons for activated signals at intersections are placed in a way so that they are easily accessible to bicyclists.
- Specific suggestions:
 - Add bike boxes at controlled intersections.
 - At driveways, install signage to warn drivers about pedestrians and cyclists, in addition to conflict markings and raised crossings.
 - Several suggestions were provided on buffer treatment options, including:
 - Instead of using planter boxes as barriers, use a narrow curb-like barrier.
 - Instead of using concrete barriers, use visual barriers, like the low fences used in some Asian counties.
 - Use bollards instead of a curb.
 - The barriers between pedestrians and cyclists should be visible.
 - The buffer treatment should be more permeable, to allow exit/entrance mid-block and ahead of left-turns

Stevens Creek Boulevard

The most frequent questions among participants were how to protect bicyclists from right-turning vehicles and how to safely allow bicyclists to turn left at intersections. Attendees advocated for increased separation between bike lanes and vehicle lanes.

Stevens Creek Boulevard Intersections of Concern for Cyclists Turning Left

- Foothill Blvd
- Pharlap Dr.
- Saich Way
- Mary Ave
- Finch Ave

Intersections of Concern for Right-Turning Vehicles

- Hwy-85 NB on-ramp interchange (West of Mary Ave)

Intersections in Need of Additional Crosswalks

- Pharlap Dr.
- Saich Way
- Mary Ave
- Finch Ave

Other Comments

- Consider a separated trail from Foothill Blvd to Orange Ave.
- Bike lane leading up to Mary Ave (from the East, South side) should be 8ft, not 7ft.
- Foothill Blvd is a popular bike route.
- How will cars be prevented from crossing through bike lane when cyclists are present (De Anza College)?
- Adjust signal timing to favor walking/biking students over driving parents (Intersection w/ Finch Ave).
- Consider long-term, secure bike parking at express bus stops.

McClellan Road

Two design concepts were presented for McClellan Road: Class IV bikeways in both directions (Concept 1) and a two-way Class IV bikeway on the north side of McClellan Road (Concept 2). Based on feedback from community members, there was no clear preference between these options.

Concept 1: Class IV bikeways in both directions

McClellan Road Intersections of Concern

- Bubb Rd
 - The entire intersection is a conflict zone for vehicles and bikes in all directions.
- Rose Blossom Drive
 - Currently no stop on McClellan when turning into De Anza Entrance. Traffic then stays across the intersection causing a grid lock on De Anza inner road.
- S Stelling Rd
 - Conflict zone for buses and cars that want to make a right-turn and bikes that want to go straight to reach the school.
- S De Anza and Pacifica Drive



Figure 68. Attendees discussing the bikeway designs

Other Comments

- Beyond McClellan Rd and Byrne Ave: Very Challenging area, but please extend bikeway to McClellan Preserve
- How will sidewalks be added when there are obstructions at property lines?

Concept 2: Two-way Class IV separated bikeway on the north side of McClellan Road

General Comments

- In certain locations, such as near Bubb Rd, the two-way cycle track may be a better option.
- Overpass between Rose Blossom and September Drive: show crossings on both sides of street (kids need to cross from all side streets).
- How will bicyclists get in and out of the two-way cycle track on the north side of the street if they have origins/destinations on the south side?
- How will bicyclists respond to a two-way cycle track at intersections?
- Intersection of Bubb Rd, south side: show crossing to go south side at Bubb to access the middle school.



Figure 69. Participant at the Public Workshop

Earth Day Outreach Event Summary

This summary provides an overview of the second outreach event for the PTP which was held at the Cupertino Earth Day & Arbor Day Festival at the Civic Center Plaza on Saturday, April 22, 2017 11am-3pm.

Public Workshop

This earth day event provided an opportunity to share with the public and stakeholders *what we have learned so far, initial recommendations, different types of pedestrian improvements, and trade-offs and priorities*. The goal of this event was to engage the public about walking in Cupertino and build momentum for future pedestrian efforts.

Information and Interactive Boards

There was a series of four boards designed to provide information and gather input. Board #1 displayed the project schedule and indicated where the project was up to the point of the Earth Day Event.

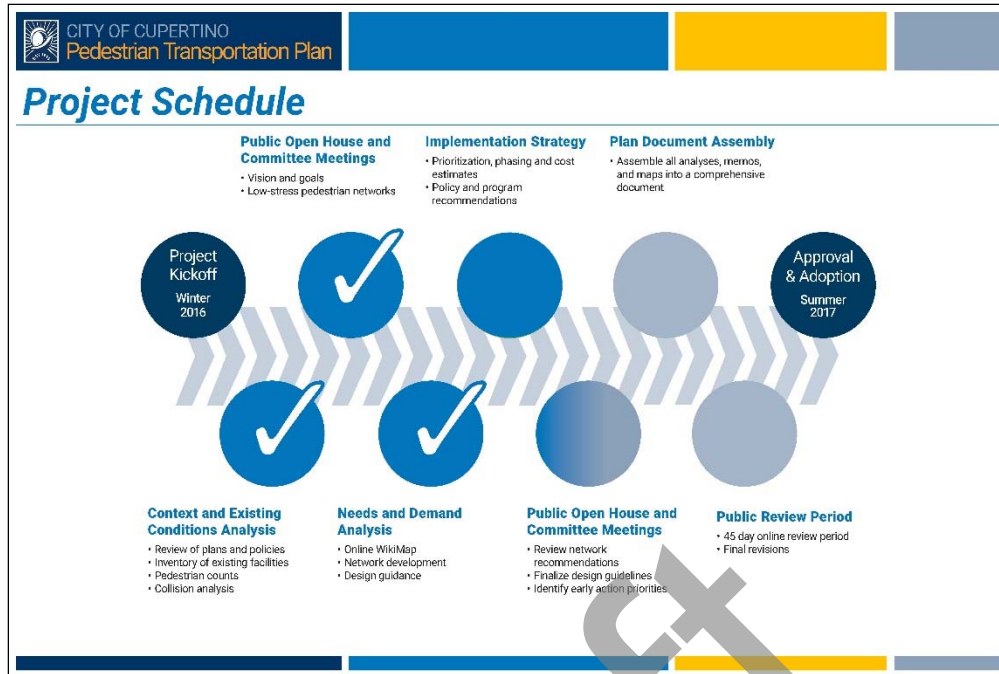


Figure 70. Board #1 - Project Schedule

Board #2 displayed a series of infographics and facts that framed the conversation about walking and existing conditions in Cupertino. The board included a word cloud, key facts on crash data, reasons people choose not to walk, and where improvements should be focused in Cupertino. This data was drawn from input received via the survey, online map and first public outreach event.

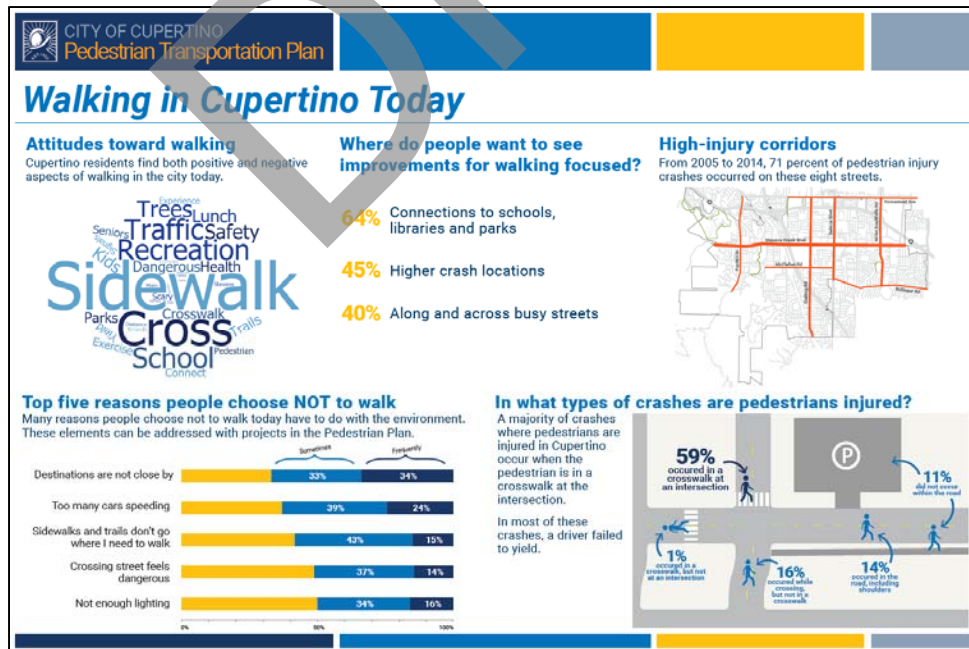


Figure 71. Board #2 - Walking in Cupertino Today

Board #3 provided an opportunity for people to vote on their preferred pedestrian facilities, including sidewalks, curb extensions, marked crosswalks, street lighting, traffic calming, and rapid flashing beacons, that will be found as recommendations in the BMP. Further, this board provided an opportunity for the public to share their opinion on priorities for facility types based on full trade-offs between cost and the level of comfort.

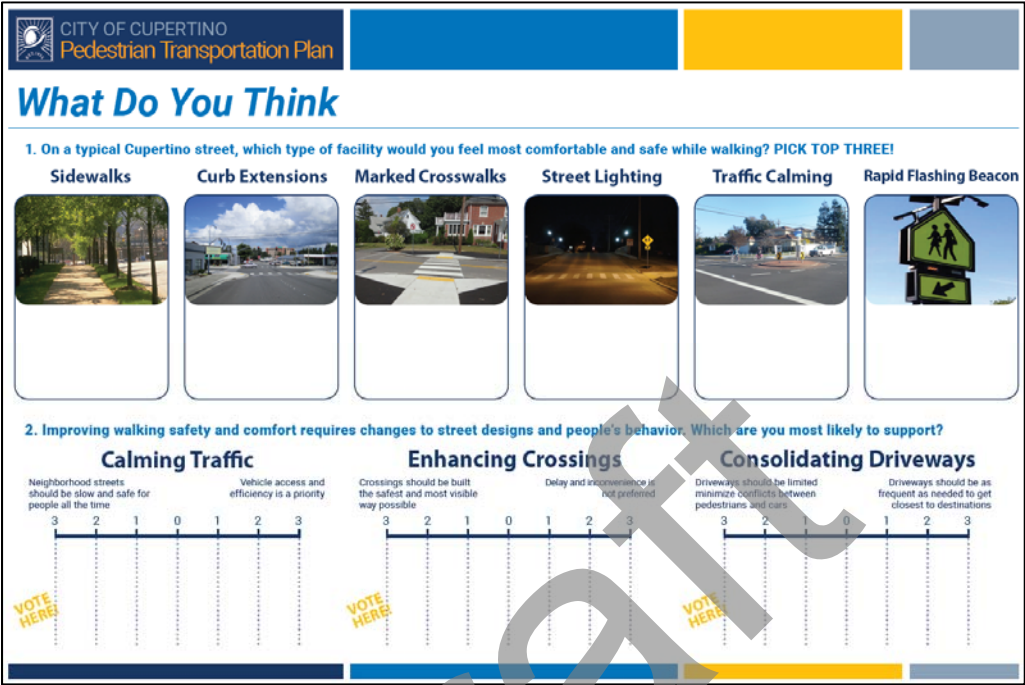


Figure 72. Board #3 - What do you think?

When asked on a typical Cupertino street, which type of facility would you feel most comfortable and safe while walking, over a third of responses were sidewalks, followed by marked crosswalks.

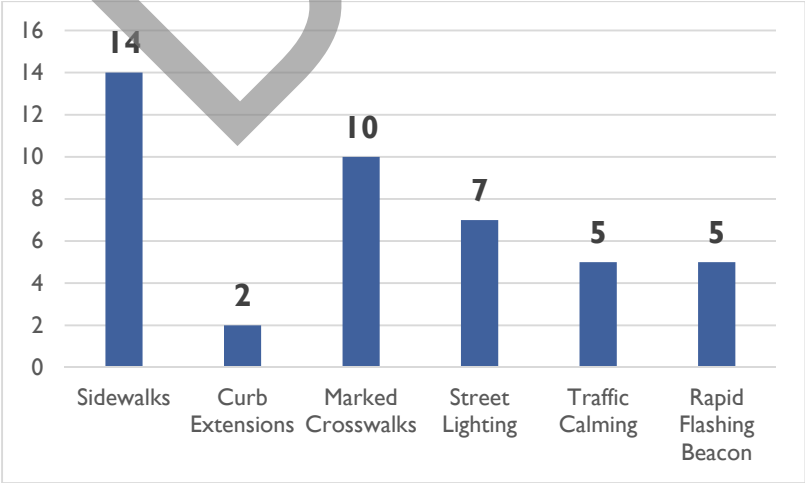


Table 16. Responses to Board #3
What do you think? “Which facility would you feel most comfortable and safe” Results (n=43))

When asked, which facility are you most likely to support, respondents overwhelmingly preferred safe and visible crosswalks over delay and convenience. Further respondents preferred slow and safe neighborhood streets over access and efficiency six to one.

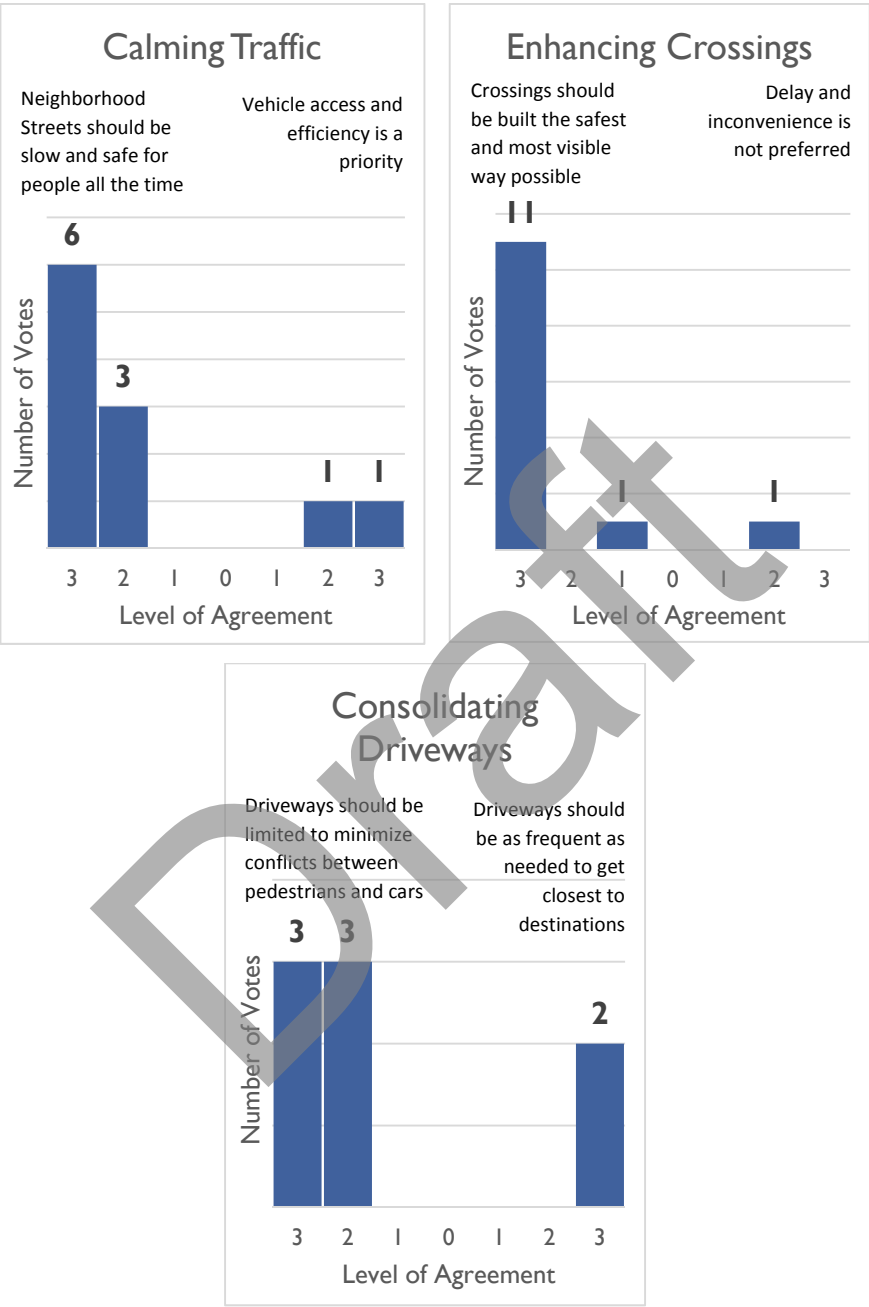


Table 17. Board #3 - What do you think? “Which are you most likely to support” Results (n=43)

Board #4 included a citywide map and “example” facility recommendations from the walk audits. Coupled with board three and facilitated conversations with staff, the public provided their input on what they thought of the proposed network and recommendations, if there was anything missing, and if they had any further ideas, questions or concerns.

Example Pedestrian Improvements

Neighborhood Streets & School Access

This area of the city includes two unique features: narrower local streets in Monta Vista as a result of annexation, and semi-rural designation on Mann Drive and nearby streets. Enhancements to the pedestrian network are needed in both areas.

Central Cupertino

The area near DeAnza and Stevens Creek Boulevards has some of the highest pedestrian activity in the city with workers walking between offices, and to lunch and shopping. Trips by foot will become easier with wider sidewalks and calmer traffic.

Local Streets, Parks & Bus Access

Wide local streets (40') can contribute to higher traffic speeds in neighborhoods. This is especially a concern where destinations like encourage walking trips. Bus stops on larger streets like Miller Avenue will benefit from enhancements for better access.

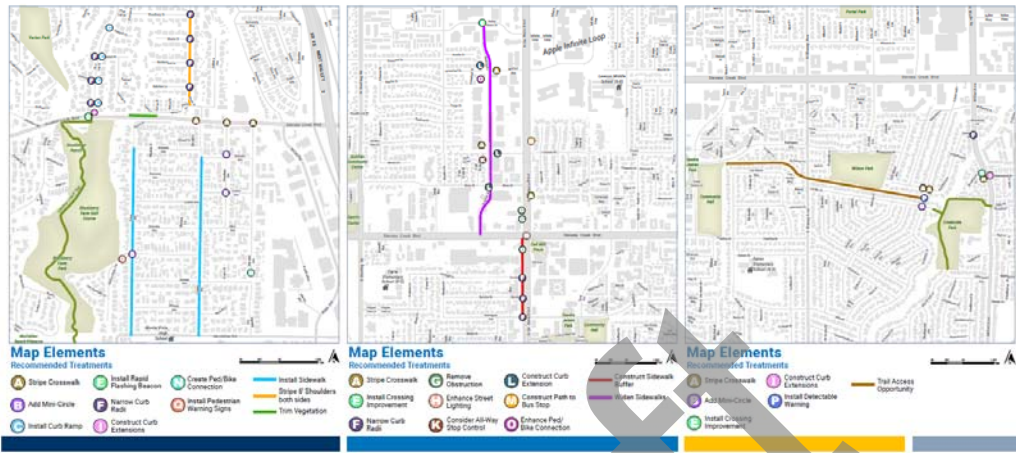


Figure 73. Board #4 - Example Pedestrian Improvements

Children's Activity

Children were given a handout that asks them to “walk” from home, to school, to a park and back along the existing pedestrian infrastructure. This helped them understand how having crosswalks and sidewalks in place enables them to move around the city.



Figure 74. Children's Handout: Help Taylor Find Their Way!

Appendix E. Crosswalk Installation Policy

Pedestrian crossings are an essential part of a safe, connected pedestrian network. Well-designed crossings ensure pedestrians have a comfortable and convenient place to cross, which is particularly important for streets with higher volumes of traffic or high speeds. However, crossings should not be installed indiscriminately, as they can be expensive to install and maintain, and should be implemented based on predictable criteria. This Appendix provides guidance to the City of Cupertino for evaluating locations for the potential installation of crosswalks. In general, this guidance is not intended to be used to justify removal of crosswalks, which requires a public hearing under California state law.¹⁴

Background

Pedestrian crossings are often requested where pedestrians have trouble crossing the road. In most cases, the desire is for new crosswalks to be installed at uncontrolled midblock locations or an uncontrolled leg of two-way stop intersections. At such locations, crossing the street without the benefit of crossing features can be more difficult and potentially more dangerous.

Pedestrian crossings have been studied extensively. An FHWA study completed in 2001 evaluated 1,000 marked crosswalks and 1,000 unmarked crossings in 30 U.S. cities to determine the impact of marked crosswalks on pedestrian safety.¹⁵ The study reviewed pedestrian crash history, daily pedestrian volume estimates, average daily traffic (ADT) volumes, number of lanes, speed limit, area type, type of median, type and condition of crosswalk marking patterns, and other site characteristics. The results of the Zegeer study have since been used to inform national guidelines for use of marked crosswalks. Key findings include:

- Marked crosswalks alone are not recommended for the following situations:
 - Uncontrolled crossing locations on roads with four or more lanes where traffic volumes exceed approximately 12,000 vehicles per day (if no raised medians present) or approximately 15,000 vehicles per day (with raised medians that serve as refuge areas).
 - Two-lane roads if traffic volumes exceed 12,000 vehicles per day or on multi-lane roads with traffic volumes above 9,000 vehicles per day (with no raised median).
 - Roadways with speed limits above 40 mph. Enhanced crossing mechanisms, such as traffic and pedestrian signals, are recommended instead.
- Many types of pedestrian crossing problems cannot be addressed properly with only one treatment, such as a marked crosswalk. Installing crosswalks without other substantial treatments, such as traffic signals or traffic calming treatments, does not increase pedestrian safety.
- On two-lane roads and lower volume multi-lane roads, marked crosswalks were not found to have any positive or negative effect on pedestrian crash rates. The benefit of installing marked crosswalks at these sites is to indicate the desired location at which to cross the street and, in some situations, help consolidate multiple crossing points.

The guidance contained in the California MUTCD supports the need for implementation of additional measures at crosswalks on high-speed multilane roadways. However, it contains more permissive criteria for implementing

¹⁴ California Vehicle Code §21950.5

¹⁵ Zegeer et al. *Safety Effects of Marked versus Unmarked Crosswalks at Uncontrolled Locations: Final Report and Recommended Guidelines*. Federal Highway Administration.
<https://www.fhwa.dot.gov/publications/research/safety/04100/>

crosswalk markings alone across multilane streets, despite the recommendations in the Zegeer report.¹⁶ Cities can go beyond MUTCD minimum requirements and follow more conservative recommendations that favor implementation of protective measures at crosswalks on a wider range of street types.

In delivering the recommendations against the use of unmarked crosswalks alone in many cases, the study authors noted that “the results of this study should not be misused as justification to do nothing to help pedestrians to safely cross the streets. Instead, pedestrian crossing problems and needs should be routinely identified, and appropriate solutions should be selected to improve pedestrian safety and access. Deciding where to mark or not mark crosswalks is only one consideration in meeting the objective.”

While the Zegeer report remains the most important guidance for whether a crosswalk should be installed, more recent research sheds light on the types of treatments that should be implemented under different circumstances. NCHRP Report 562 includes descriptions of pavement markings, pedestrian signals, flashing beacons, and roadway design elements that can be used to promote safer crossings. The study also notes that treatments are often implemented in combination to inform the actions of both pedestrians and motorists.¹⁷ The findings reiterate the need for more complex treatments on multilane, high-speed roadways, where motorist yielding was observed to decrease with treatments such as crosswalks and signage alone.

Another NCHRP Report, *Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments*, published in 2017, quantifies the safety benefits associated with installation of refuge islands, advanced yield or stop markings and signs, rectangular rapid flashing beacons (RRFBs), and pedestrian hybrid beacons (PHBs).¹⁸ Among these, PHBs and RRFBs were found to offer the most significant pedestrian crash reduction (55 percent and 47 percent, respectively). Refuge islands and advanced yield markings were also shown to reduce pedestrian crashes by 31 percent and 25 percent, respectively.

Pedestrian Crossing Installation Guidelines

As noted above, crosswalks are often requested by members of the public. To respond to such requests in a consistent and predictable fashion, a clear process and decision-making criteria are needed. A process for determining whether to install a crosswalk and the appropriate treatment type is provided as part of this Appendix and is explained here. This process does not apply to crosswalk markings along school routes, which should consider the unique needs of school-aged children. Additionally, engineering judgment is always needed to account for site-specific factors.

Crosswalk Decision Process

The decision-making process begins with the identification of a candidate crossing location. This location may be based on a request from residents or through proactive identification of potential crossing locations. Existing crossings may also be evaluated to determine whether additional enhancements are needed or whether, in extreme circumstances, the crossing should be considered for removal due to safety concerns.

Candidate locations at signalized intersections (unmarked legs of the intersection) should generally be marked as a crosswalk, unless engineering judgment determines the pedestrian crossing should be prohibited due to safety concerns. Guidance to this effect is provided in FHWA’s *PEDSAFE: Pedestrian Safety Guide and Countermeasure*

¹⁶ Caltrans. *California Manual on Uniform Traffic Control Devices, 2014 Edition, Revision 2*. Chapter 3B.18 Crosswalk Markings. 2017.

¹⁷ Fitzpatrick, et al. *NCHRP Report 562: Improving Pedestrian Safety at Unsignalized Crossings*. 2006.

¹⁸ Zegeer, et al. *NCHRP Research Report 841: Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments*. 2017.

Selection System, which states that “Pedestrians are sensitive to out-of-the-way travel, and reasonable accommodation should be made to make crossings both convenient and safe at locations with adequate visibility. At signalized intersections, this means that all four legs of the intersection should have crosswalks.”¹⁹ The National Association of City Transportation Officials reiterated this recommendation in its Urban Street Design Guide.²⁰ If needed, curb ramps should be installed or improved in conjunction with new markings installed at signals. For stop-controlled locations, it is typically not necessary to install a marked crossing.

Uncontrolled intersection or midblock locations should be given further consideration for installation of a crosswalk. Locations with very low traffic volumes do not require a marked crosswalk, as pedestrians are easily able to find a gap in traffic. A minimum threshold of 1,500 vehicles per day is proposed for this purpose; however, the City could determine a higher threshold is appropriate, particularly after reviewing site conditions.

For uncontrolled locations that meet minimum vehicle volume thresholds, a crosswalk should be implemented if the location is a multi-use path crossing and sight distance is adequate. For other locations, it is necessary to determine whether pedestrian activity can be expected on a regular basis. This determination can be made based on the location’s proximity to pedestrian generators such as parks or commercial areas. Pedestrian volume estimates could also be used to determine use levels; however, existing use may be low relative to the number of people who would use a new crossing facility.

An additional consideration for new crosswalks is whether there is an existing controlled intersection or improved crossing within 300 feet of the proposed location. If so, pedestrians should typically be directed to use the existing crossing. As for multi-use path crossings, it is important to ensure that all pedestrian crossings meet minimum sight distance standards.

Crossing Treatment Guidance

Once a location has been determined to require a crosswalk, a variety of treatment options should be considered. The factors to be considered include: number of lanes, presence of a median, traffic speed, and vehicle volume. The ‘Uncontrolled Crossing Treatment Selection Guidelines’ matrix identifies four possible treatment categories based on combinations of these features. These include:

- High-visibility marked crossing with crosswalk warning signs
- High-visibility marked crossing with geometric enhancements that reduce crossing distance and advanced yield markings²¹
- High-visibility marked crossing with active warning devices such as Rectangular Rapid Flashing Beacons (RRFBs)
- High-visibility marked crossing with Pedestrian Hybrid Beacons (HAWK signals) or full signals

Crossing treatments are further documented in the Facility Toolbox contained in the PTP. Additionally, the resources below document the recommended use of various treatments and their impacts on pedestrian safety.

¹⁹ Federal Highway Administration. *PEDSAFE: Pedestrian Safety Guide and Countermeasure Selection System*. http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=4

²⁰ National Association of City Transportation Officials: Urban Street Design Guide. <https://nacto.org/publication/urban-street-design-guide/intersection-design-elements/crosswalks-and-crossings/>

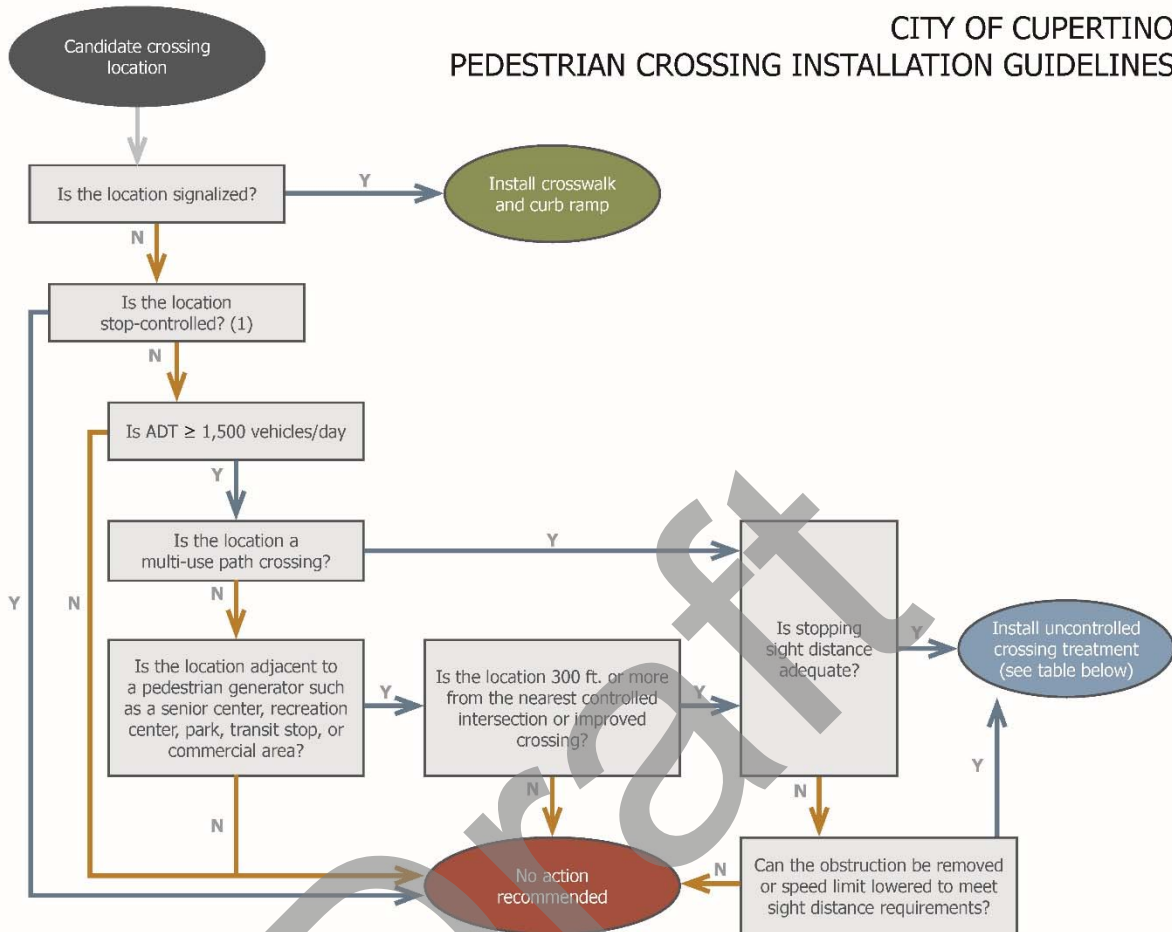
²¹ Advanced yield markings are particularly important on multi-lane streets to reduce the risk of multiple-threat crashes.

Resources

- Caltrans. *California Manual on Uniform Traffic Control Devices: 2014 Edition, Revision 2*. 2017.
http://www.dot.ca.gov/trafficops/camutcd/docs/2014r2/CAMUTCD2014_rev2.pdf
- Fitzpatrick, et al. *TCRP Report 112/NCHRP Report 562: Improving Pedestrian Safety at Unsignalized Crossings*. 2006.
- Zegeer, et al. *NCHRP Research Report 841: Development of Crash Modification Factors for Uncontrolled Pedestrian Crossing Treatments*. 2017.
- Zegeer et al. *Safety Effects of Marked versus Unmarked Crosswalks at Uncontrolled Locations: Final Report and Recommended Guidelines*. 2005.

Draft

CITY OF CUPERTINO PEDESTRIAN CROSSING INSTALLATION GUIDELINES



Uncontrolled Crossing Treatment Selection Guidelines (2)

Average Daily Vehicle Traffic	2 Lanes or 3 Lanes with Median Refuge			3 Lanes without Median Refuge			4+ Lanes with Median Refuge			4+ Lanes without Median Refuge		
	≤ 30mph	35mph	≥ 40mph	≤ 30mph	35mph	≥ 40mph	≤ 30mph	35mph	≥ 40mph	≤ 30mph	35mph	≥ 40mph
≤ 9,000	a	a	c	a	b	d	b	b	d	c	c	d
9,000-12,000	a	a	c	b	c	d	b	c	d	c	c	d
12,000-15,000	b	b	c	c	c	d	c	c	d	c	c	d
≥ 15,000+ (3)	b	c	c	c	c	d	c	c	d	d	d	d
Treatment Categories												
a	High-visibility marked crossing with crosswalk warning signs											
b	High-visibility marked crossing with geometric enhancements that reduce crossing distance and advanced yield markings											
c	High-visibility marked crossing with active warning devices such as Rectangular Rapid Flashing Beacons (RRFBs)											
d	High-visibility marked crossing with Pedestrian Hybrid Beacon (PHB) or full signal											

Notes:

- (1) Stop-controlled intersections on school walking routes should be marked according to the City's current school zone crosswalk marking practices.
- (2) Appropriate treatments for school crossings should be evaluated separately and consider the limitations of young pedestrians such as slower walking speeds and limited peripheral vision.
- (3) At higher traffic or pedestrian volumes, MUTCD warrants for PHBs or full signals may be met and should be considered. Treatment categories shown represent minimum recommendations.

Figure 75. Pedestrian Crossing Installation Guidelin

Appendix F. Project Scoring

	Project	Location	SCHOOLS		SAFETY		DESTINATION			Pedestrian Pathway	Total Score
			Schools/Public Library	School Connector Route	Street Classification	Traffic Speed	Parks, Quinlan Center	Transit Center	Retail/business Employment		
Tier 1	Sidewalk	McClellan Rd: Leandro Ave to Orange Ave construct sidewalk	30	10	15	0	10	0	0	15	80
	Sidewalk	McClellan Rd: south side, Bonny Dr to McClellan Pl construct sidewalk	30	10	15	0	0	10	0	15	80
	Shift crosswalk to N leg Install median island and RRFB	Stelling Rd at Alves Dr	30	10	15	0	10	10		0	75
	Grade Separated Crosssing	Highway 85 Crossinng: Grand Ave to Mary Ave	30	0	15	0	10	0	5	15	75
	Sidewalk	Orange Ave: Granada Ave to Alcazar Ave construct sidewalk	30	10	5	0	10	5	0	15	75
	Shorten turn lane access	Stevens Creek Blvd at Oaks entrance (part of Class IV design)	30	0	15	5	10	10	5	0	75
	Add right-turn phase	Stevens Creek Blvd at SR 85 NB on ramp (from Class IV design)	30	0	15	5	10	10	5	0	75
	Shorten turn lane access	Stevens Creek Blvd at west entrance to De Anza College (part of Class IV design)	30	0	15	5	10	10	5	0	75
	Sidewalk	Byrne Ave: McClellan Rd to Granada Ave construct sidewalk	30	0	15	0	10	0	0	15	70
	Grade Separated Crosssing	Carmen Rd Bridge at Stevens Creek Blvd Bike/Ped Bridge	20	10	15	0	10	0	0	15	70
	Sidewalk	Foothill Blvd: east side, btwn Stevens Creek Blvd and Rancho Ventura St construct sidewalk	20	0	15	0	10	10	0	15	70
	Sidewalk	Foothill Blvd: west side, Stevens Creek Blvd to Rancho Ventura St construct sidewalk	20	0	15	0	10	10	0	15	70
	Shared-Use Path	I-280 Canal Path Shared-Use Path	30	0	15	0	0	5	5	15	70
	Bike/Ped Bridge	McClellan Rd at McClellan Ranch crossing Stevens Creek	20	10	15	0	10	0	0	15	70
	Shared-Use Path	Regnart Creek, Shared-Use Path	30	10	0	0	10	0	5	15	70
	Sidewalk	Stelling Rd: west side, Catalano Ct to Orion Ct construct sidewalk	20	10	15	0	10	0	0	15	70
	Class 1 Path	The Oaks Development Shared-Use Path	30	0	0	0	10	10	5	15	70

Table 18. Project Scoring

	Project	Location	SCHOOLS		SAFETY		DESTINATION			Pedestrian Pathway	Total Score
			Schools/Public Library	School Connector Route	Street Classification	Traffic Speed	Parks, Quinlan Center	Transit Center	Retail/business Employment		
Tier 2	Construct curb extensions	Phar Lap Dr at Stevens Creek Blvd	20	10	15	5	10	5	0	0	65
	Sidewalk	Bubb Rd: east side, Edward Way to Krzich Pl construct sidewalk	30	10	5	0	0	0	0	15	60
	Reconfigure intersection	De Anza Blvd at McClellan Rd	20	10	15	0	0	10	5	0	60
	Sidewalk	McClellan Rd: north side, SR 85 to Rose Blossom Dr construct sidewalk	30	10	15	0	0	0	5		60
	Construct curb extensions	Phil Ln at Finch Ave	30	10	5	5	10	0	0	0	60
	Reconfigure intersection	Torre Ave at Town Center Ln	30	10	0	5	10	0	5	0	60
	Shared-Use Path	Union Pacific ROW Shared-Use Path	30	0	0	0	10	5	0	15	60
	Shared-Use Path	Vallco West Pathway Shared-Use Path	30	0	0	0	10	0	5	15	60
	Shared-Use Path	Deep Cliff Golf Course Shared-Use Path	30	0	0	0	10	0	0	15	55
	Sidewalk	Foothill Blvd: east side, btwn Rancho Ventura St and Walnut Cir construct sidewalk	15	0	15	0	10	0	0	15	55
	Shared-Use Path	Wilson Park Shared-Use Path	20	10	0	0	10	0	0	15	55
Tier 3	Consider stop control for Alves Dr	Alves Dr at Saich Way, westbound	20	0	5	5	10	0	5	0	45
	Construct curb extension	Bandlely Dr at Mariani Ave (southeast corner)	20	10	5	5	0	0	5	0	45
	Create ped/bike connection	Imperial Ave btwn Alcadar Ave and Almaden Ave	30	0	0	0	0	0	0	15	45
	Construct curb extensions and Mark high-visibility crosswalk	Rainbow Dr at Gardenside Ln	15	10	5	5	10	0	0	0	45
	Shared-Use Path	San Tomas Aquino Creek Trail Extension Shared-Use Path	15	0	0	0	10	0	0	15	40
	Bike/Ped Bridge	West Cupertino UPRR Crossing Bike/Ped Bridge	0	0	15	0	10	0	0	15	40
	Consider stop control for Alves Dr	Alves Dr at Beardon Dr, eastbound	20	0	5	5	0	0	5	0	35
	Construct curb extensions	Bandlely Dr at Alves Dr (south leg)	20	0	5	5	0	0	5	0	35
	Sidewalk	Beardon Rd: Alves Rd to Valley Green Dr construct	20	0	0	0	0	0	0	15	35
	Construct curb extensions Consider all-way stop control	Bandlely Dr at Lazaneo Dr	20	0	0	5	0	0	5	0	30
	Mark high-visibility crosswalk										
	Install RRFB	Valley Green Dr at Bandlely Dr (west leg)	20	0	0	5	0	0	5	0	30

Table 18. Project Scoring