Cupertino Pedestrian Transportation Guidelines

Prepared for the City of Cupertino

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Cupertino Pedestrian Transportation Plan

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INTRODUCTION

This first Cupertino Pedestrian Transportation Plan presents goals, policies and specific recommendations to increase the walkability of Cupertino. This Plan is a companion document to the City of Cupertino Bicycle Transportation Plan. Walking and cycling go foot in foot toward building a sustainable city environment with reduced transportation costs. The Cupertino Bicycle and Pedestrian Advisory Committee provided suggestions and public input was also solicited through the Cupertino Scene. The full implementation of recommendations contained in the Cupertino Pedestrian Transportation Plan will significantly improve the safety of walking in the City as well as provide new opportunities for pedestrian trips that did not exist before. An increase in the number of pedestrians will improve the quality of life of all Cupertino residents in many ways due to the resulting reduction in traffic congestion and neighborhood traffic impacts; the improved air quality, improved pedestrian safety and a greater sense of community.

CONTENTS OF THE PLAN

The Cupertino Pedestrian Transportation Plan is composed of five chapters. Chapter 1 describes the Cupertino setting and a discussion of walking as transportation. Chapter 2 presents the policy framework and background for the Cupertino Pedestrian Transportation Plan. Chapter 3 describes the existing conditions and policies in Cupertino and an analysis of pedestrian collisions. Chapter 4 presents the need assessment for pedestrian improvements in Cupertino. Chapter 5 presents the recommendations and the implementation plan, including a list of projects and their priorities.

The members of the Cupertino Bicycle and Pedestrian Advisory Committee (CBPAC) believe this Plan will lead to sustainable development of the community, new opportunities for continued innovation in this community, and the ability to compete in the world economy. Last but not least, this will only work with buy-in from the community. It will take time and mistakes will be made, but a clear ongoing plan will emerge with the support of all.

GENERAL RECOMMENDATIONS

General recommendations to further Cupertino's progress into a walkable and bikeable city are:

1. Pursue funding and inter-agency cooperation in the development of the pedestrian network.
2. Continue the active involvement of the CBPAC in the traffic engineering and transportation planning decisions that affect the safety of pedestrians on Cupertino's streets and intersections.
3. Expand and develop new safety programs to address the issues faced by pedestrians and bicyclists of all ages as well as motorists.
4. Expand and develop promotion programs to encourage pedestrian trips for work, school, shopping, errands and other utilitarian trips.

SPECIFIC RECOMMENDATIONS

Specific recommendations to improve pedestrian conditions fall into three main categories: policies and programs, citywide capital projects and site specific recommendations at three study locations. These recommendations are described below:

1. Action Steps for the Goals and Policies for the Cupertino Pedestrian Plan

Goals and policies were developed that will help guide the future of transportation planning and engineering in Cupertino. These goals and policies fall into four main areas: Land Use Planning and Design, School Access, Pedestrian Friendly Traffic Engineering and Education and Encouragement. Specific action steps to help implement each policy were developed and are listed below by category.

Land Use Planning and Design:

- **Action**: Ensure pedestrian connectivity to all projects.
- **Action**: Encourage mixed-use development to reduce dependency on motor vehicles for short trips.
- **Action**: Encourage infill housing and transit-oriented development.
- **Action**: Give traffic reduction and parking credit for "walkable and transit friendly" developments.
- **Action**: Provide well-lighted, wide sidewalks along all arterials and collectors and into all retail, institutional and employer sites.
- **Action**: Provide landscaping wherever possible along pedestrian walkways.
- **Action**: Prohibit large curb radii and high-speed channelized right turns across crosswalks.

Non Motorized School Access

- **Action**: Support walking school buses
- **Action**: Support residential parking permits to discourage students from driving to school
- **Action**: Encourage and support carpooling to magnet schools
- **Action**: Evaluate the effect of school busing to ameliorate traffic problems at schools.

Pedestrian Friendly Traffic Engineering

- **Action**: Evaluate trade-offs for improvements to pedestrian and bicycling even when it would cause deterioration in intersection LOS or vehicle mobility.
- **Action**: **Mid-block crossings with pedestrian-activated signal –** Signals should be responsive to pedestrian use with a lag-time to turn green of no more than ten seconds. Pedestrian signal phases should timed at no faster than 4 feet per second (fps), and slower

pedestrian speeds of 2.5 to 3.0 fps should be used on schools routes and near senior centers.

- Action: **Traffic signals at intersections** – Though traditional intersection level of service calculations do not assess non-motorized traffic, there are still several things that can done to improve the quality of the experience for the pedestrian; these are itemized in Appendix F.
- Action: Require all transportation impact analyses to address the potential impact of development involving construction/renovation projects on pedestrian safety, access and circulation.

Education and Encouragement

- Action: Teach that riding a bicycle on the sidewalk is hazardous to both bicyclists and pedestrians, and is illegal except for children 12 years of age and younger.
- Action: Teach that pedestrians walking on the shoulder of the road should face the oncoming vehicle traffic.
- Action: Teach that bicyclists riding on the road should ride in the same direction as the vehicle traffic on the right hand side of the road.

2. Citywide Capital Projects

Thirty-six recommended pedestrian projects have been identified that would improve pedestrian connectivity and safety through the City. These fall into five categories:

- Pedestrian Circulation/Safety Projects
- Improvements to Help Pedestrians Cross Streets
- Missing Sidewalks
- Short-cuts/Pathways/Bridges
- Traffic Calming / Bike Lanes

These 36 projects are described in Chapter 5. They have been prioritized into high, medium and low categories, which will help the City staff focus their efforts on the projects of most importance. The identified funding sources and the assistance of the CBPAC will also help City staff in bringing these projects to fruition.

List of Recommended Pedestrian Capital Projects

Pedestrian Circulation/Safety Projects

1. Vallco Fashion Park
2. Intersection of Bubb at Stevens Creek
3. Bubb at McClellan
4. Mervyns Crossroads Shopping Center
5. DeAnza College at McClellan
6. The Oaks Shopping Center at Stevens Creek and Mary

Crossing Streets

1. All Freeway interchanges
2. Stevens Creek at Saich connecting Target and Mervyns
3. Bubb at Caltrans Maintenance Yard
4. Bollinger midway between Blaney and Miller
5. McClellan at Orange
6. Homestead at Forge

Missing Sidewalks

1. Stevens Creek at Bret
2. De Anza in front of Yamagami Nursery
3. De Anza between Homestead and Stevens Creek
4. The east side of Bubb from Columbus to Kennedy Middle School
5. West side of Stelling at Rainbow
6. East side of Stelling, north of the Armenian Church
7. East side of Stelling, north of Jollyman Park
8. Citywide

Shortcuts/Pathways/Bridges

1. Vallco Fashion Park
2. Western perimeter of De Anza College site
3. Maintenance road on Regnart Creek between Pacifica and Rodriguez.
4. Southeast corner of the Longs Drug Store/Orchard Valley property
5. Railroad tracks from Prospect to Stevens Creek Blvd. -west side
6. The walkway between Lincoln Elementary and Monte Vista High School from McClellan to Presidio
7. Miramonte to the Deep Cliff Golf
8. Miramonte to Stevens Creek Park.
9. Blackberry Farm
10. Existing diverters/barriers on Orange at Granada, on Olive between Imperial and Pasadena, and on Festival Drive along Route 85.
11. Phar Lap/Mann neighborhood across Stevens Creek
12. Miller and Bollinger – small center with the Tin-Tin market
13. De Anza Blvd at telescope store by Cigarettes Cheaper

Traffic calming/Bike lanes

1. Pasadena and Orange Speed Humps

3. Recommendations for the Three Study Sites

1. Recommendations for De Anza College – Western perimeter route for bicycles/pedestrians

Option 1:Multi-use trail: minimum ten-foot paved area with two foot graded area on either side. Trees adjacent to the freeway right-of-way may need to be removed and/or relocated. Where a minimum ten-foot wide multi-use path is not possible, right-of-way may need to be acquired from the freeway right-of-way or bikes may need to be directed onto the perimeter campus roadway. Alternatively, Option 2 should be pursued for the entire length, see below.

Option 2: Construct five-foot sidewalk for pedestrians; install signage and pavement markings on the perimeter roadway for bicycles.

- Signage: The Facilities Master Plan states that "campus wayfinding is limited and a comprehensive signage program is needed." Signage should be installed to direct pedestrians from the western perimeter pathway to campus buildings and attractions such as the planetarium and Flint Center.
- Lighting for the trail /sidewalk: The Facilities Master Plan states that there should be "large scale lighting along vehicular routes and parking lots" and "pedestrian scale lights in campus core." It is recommended that all pedestrian entrances and major pathways into the interior have pedestrian scale lighting.
- Emergency Phone/call boxes should be strategically placed along the western perimeter pathway.

2. Recommendations for Mary Avenue at Memorial Park

- Realign pathway within Oaks Shopping Center to provide direct access to Memorial Park. Provide pathway/signage on the park site to access the pathway over the pond to the picnic tables and playground.
- Mary Avenue - Construct high visibility crosswalk, speed table and/or median pedestrian refuge (under design)

3. Recommendations for McClellan/Bubb Roads and the Fronting Schools

- A strong Transportation Demand Management (TDM) plan is needed to encourage walking, transit and carpooling. Altrans has developed pro-active trip plans for all middle and high schools that sends customized information on carpooling and transit directly to the parents of each student.
- The two crosswalks on McClellan have been improved with the installation of in-roadway flashing lights. Pedestrians are passively detected by microwave sensors. Additional measures to encourage walking and bicycling are:
  - Develop a "Walking School Bus" program in which parent volunteers walk a prescribed route to school picking up other children as they go.

  - Provide additional adult crossing guards to supervise designated pedestrian crosswalks, thereby decreasing the level of parental concern in allowing children to walk to school
  - Widen sidewalk on southside of McClellan Road to 11-feet, where possible
  - Provide sidewalk on the north side of McClellan Road west of Bubb Road
  - Provide adult crossing guard at Orange Avenue to encourage high school students to use this access point
  - Enhance the visibility of the existing Orange Avenue crosswalk further by installing a speed table with colored pavement.

- Traffic congestion: Those who are part of the traffic congestion problem should have an opportunity to be part of the solution. Parents who drive their children to school should be requested to help direct traffic by volunteering to station themselves at corners and serve as observers and informal chaperones.
- Bike lane awareness: Warn motorists of need to watch for cyclists in bike lanes. This could be accomplished by the use of a sign such as "*Right-Turning Vehicles Enter Bike Lane When Safe*" and/or dashing the bike lane stripe through all the driveway locations. Innovative treatments such as colored bike lanes may be useful, but such a treatment may have the opposite effect and discourage motorists from entering the bike lane in preparation for making a right turn.

Chapter 1
INTRODUCTION AND THE VALUE OF WALKING

BACKGROUND

Walking is the oldest form of transportation; the first cities were based on walking as the predominant mode of travel. Walking is also the cheapest, healthiest, and, to a large number of people, the most enjoyable. The size of Cupertino is not much larger than early cities in which you could (and still can in many cases) walk from home to work, to stores, to recreation, and more recently to transportation centers. Yet Cupertino was developed during the 1950's and 1960's as a typical auto-oriented suburban city and its streets are treated as space for cars rather than community space. Consequently it has its share of auto-traffic problems and a low pedestrian mode split.

While detailed recommendations regarding specific pedestrian - friendly developments or how to create a walkable town center is beyond the scope of this study, this section will outline some of the benefits and some of the community desires as expressed by the Cupertino Bicycle and Pedestrian Advisory Committee (CBPAC).

As a fairly typical 1950's suburban city, Cupertino lacks a downtown. The City's suburban strip malls and commercial areas are accessible by walking to only a small number of residents. For the most part, they are also uninviting places that some would consider dangerous places to which to walk. Although there are many existing walkable features in Cupertino such as school pathways and sidewalks along most streets, much of the land-use patterns and developments have been designed assuming that all access would be by motor vehicle.

Attractive vehicular entrance to Crossroads Shopping Center

FUTURE POTENTIAL

The existing infrastructure and land use in Cupertino is not static; new developments are constantly proposed and present opportunities to make local improvements to pedestrian connectivity. With the vision of a walkable community as a guiding principle, these projects could be designed to reverse the dependency on the automobile (while still accommodating access by car). In fact there are over a dozen projects that have recently been approved or are pending approval. These are listed in Table 1-1 and a description and their locations are presented in Appendix A. Each of these developments has a varying degree of potential to

improve the pedestrian network. These should be evaluated at the application stage to ensure that pedestrian access is maximized.

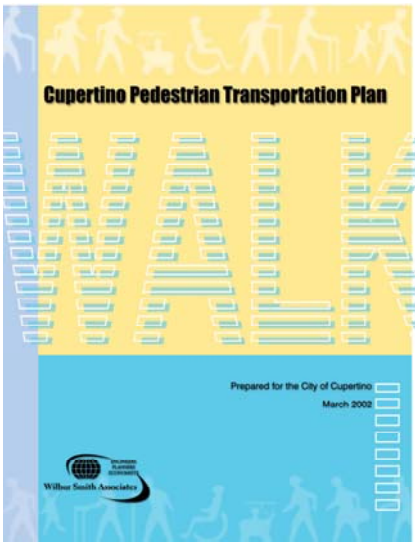
Incorporating pedestrian-friendly features in every redevelopment and development project - both land-use decisions and infrastructure design - would help bring about a slow evolution in the framework of Cupertino, eventually resulting in enough walkable development that much of the City will become accessible by foot.

Table 1-1
Approved and Pending Developments

Approved Developments	Pending Developments
City Center	SummerHill townhouses
Kimpton Hotel	Civic Park (Town Green)
Andronico's	Villa Serra -
Adobe Inn	De Anza College Expansion
Hewlett-Packard Campus	Compaq Computer Campus
P.J. Mulligan's	Cupertino Gateway -
Oak Valley	
Market Place -	
Cupertino Community Services	
Plaza Cupertino (Vallco Fashion Park Redevelopment) -	
City Public Library	

PURPOSE OF THE PLAN

This first Cupertino Pedestrian Transportation Plan presents goals, policies and specific recommendations to increase the walkability of Cupertino. This plan has several purposes. It serves as a benchmark for future projects by documenting existing conditions, both infrastructure as well as policies and programs. It recommends new policies, capital projects and programs that will improve pedestrian safety and circulation. Finally it serves as a vision for the future by providing examples of model communities, best practices and design guidelines to guide the City in the implementation of the recommendations.



This Plan is a companion document to the City of Cupertino Bicycle Transportation Plan. Walking and cycling go foot in foot toward building a sustainable city environment with reduced transportation costs. In addition, a long-term plan for an

integrated auto-bus-rail-cycling-walking transportation system in Cupertino and the surrounding community is needed for sustained growth of walking and cycling.

WALKABLE COMMUNITIES

Newman and Kenworthy[1] present much interesting data and many thought provoking ideas on walking, cycling and transportation. From data collected in Boston, MA, the cost of travel by biking or walking is 13-14 cents/mile, by carpool is 33-43 cents/mile, and by solo car is 79 to 94 cents/mile. Electric powered rail/light-rail systems are the most cost-effective inter/intra city transportation for distances beyond comfortable walking and cycling. A city with an effective, integrated transit system has more community activity, a more effective government, and even more economic strength. These cities also have far fewer traffic-related deaths. For example, Amsterdam has 5.7 traffic-related deaths/100,000/year compared to the average of 14.6 traffic related deaths/100,000/year in the United States; yet Amsterdam has one of the highest uses of cycling and walking in the world and among the lowest transportation costs.

According to Andres Duany of the Miami architectural firm responsible for many neo-traditional developments across the country, "A genuine town has housing integrated into the shopping and office areas or close enough to it that residents can reach the commercial center without driving." The neo-traditional design concepts not only encourage sociability and a less harried way of living but also make financial sense. "The newest idea in planning is the nineteenth-century town," Duany told a conference of Florida apartment developers in 1987. "That's what is really selling[2]."

The elements of walkable communities are:

1. A compact, urban space;
2. Shopping and employment close to housing;
3. Inviting public spaces that promote and stimulate social interaction;
4. Urban design that preserves/enhances the natural environment;

Unattractive pedestrian access through center of Crossroads Shopping Center

5. Human-scaled roadways that are not intimidating to walk on or to cross;
6. Sufficient parking without being a sea of asphalt. "One of the most difficult challenges for any development that intends to offer a compact, stimulating, and walkable environment is the problem of providing sufficient parking." Robert Stern points out that: "To make retail viable, you must attract more than the people who can walk to it. The struggle is to get all those cars there and yet retain the quality that you want. Stern believes this can be accomplished by providing:
   - On-street parking with sidewalks.

[1] Peter Newman & Jeffrey Kenworthy, Sustainability and Cities, Island Press, Washington, DC, 1999

[2] Philip Langdon, *A Good Place to Live*, The Atlantic Monthly, March 1988

- Parking lots broken into sections by rows of landscaping and by sidewalks, which reduces the conflict between pedestrians and automobiles. At a minimum, developers should create parking lots that are walkable by painting or building walkways crisscrossing the lots. "The goal is to get people walking past storefronts, rather than through undifferentiated stretches of asphalt, as soon as possible."

7. An additional element in creating a walkable community is the integration of the transportation infrastructure, e.g. walk to transit stop, take transit, walk to destination, return via transit.

Additional discussion on walkable communities that can serve as models for Cupertino is presented in Appendix B.

WALKING IN THE TRANSPORTATION SYSTEM

Trip Purposes

Walking as a mode of transportation is practical and time competitive for many trip-purposes. In fact for those who do not drive (children, some seniors and others without drivers licenses or access to cars), it is, along with biking, the only mode that allows a user complete independence and freedom at their own schedule. Walking can also be the safest mode, particularly when combined with a traffic-calming plan (See Page 4-6). While many parents drive their children to school thinking it is safer, the risk of injury from riding in a car in an auto accident is quite real. A study by Alan Thein Durning[3] concluded that the risk of injury is actually higher in the suburbs than in cities due to increased death and injury from automobile accidents (see Figure 1).

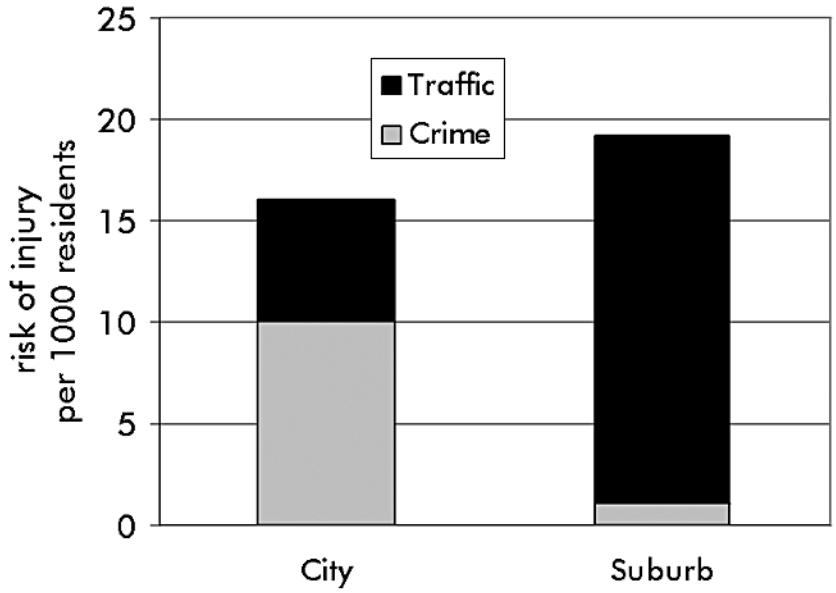


Figure 1: Risk of Injury – Cities vs. Suburbs

[3] Durning, Alan Thein *The Car and the City*, Northwestern Environment Watch, 1996

In car-oriented Santa Clara County, auto accidents are the leading cause of death (not including illness) for ages 5-44. Auto accidents are also the first or second leading cause of injury for all age groups (see Figure 4, page 3-3).

The trip purposes and trip lengths that are served well by walking are:

1. **Work** - up to two miles
2. **Elementary School** - up to one mile
3. **Middle School, High School and College** - up to two miles
4. **Utilitarian and personal business** - up to one mile
5. **Transit access** - up to one mile
6. **Recreational-fitness-walking the dog** – no upper limit
7. **Non-home-based linked trips** - up to one mile

Pedestrian-Oriented Areas

Regardless of the mode of access to the following areas, once there, the primary circulation mode is on foot. The following areas should be designed to not only accommodate pedestrians but to facilitate and encourage pedestrian access and circulation:

1. Downtown areas - high density land use
2. Pedestrian malls and auto free zones
3. Transit stations/transit malls
4. Parks and recreational areas
5. Schools / campuses

Chapter 2
POLICY FRAMEWORK

RELATION TO CITY GENERAL PLAN

The Cupertino General Plan, Circulation Element adopted in 1993, contains several policies that support walking and non-motorized modes as transportation. The most pertinent are:

Policy 4-6: Neighborhood Traffic Management

Develop traffic management plans for neighborhoods affected by unacceptable levels of through traffic. Design these plans based on the concept that commute or through traffic should be redirected from local residential streets and minor collectors to the freeway, expressway and arterial and major collector streets.

Policy 4-7: Abusive Driving

Continue to study and carry out techniques that discourage abusive driving on local neighborhood streets, including intensified enforcement of speed laws, enforcement of State muffler laws and review of traffic management strategies.

Policy 4-8 Reliance on Usage of Private Cars

Promote a general decrease in reliance on private cars by accommodating and encouraging attractive alternatives.

Policy 4-9 Regional Trail Development

Continue to plan and provide for a comprehensive system of trails and pathways consistent with regional systems, including the Bay Trail, Stevens Creek Corridor and Ridge Trail. The general alignment of the Bay Trail, as shown in the Association of Bay Area Governments Bay Trail planning document, is incorporated in the General Plan by reference.

Non-motorized transportation modes could be further encouraged by addressing circulation impacts under *Policy 4-2 Traffic Capacity and Land Use Limitations.* Non-motorized modes should be specifically mentioned under *Policy 4-3 Tiered Traffic Mitigation* under examples of aggressive Transportation Demand Management Programs.

POLICY FRAMEWORK

The city continues to evolve and expand upon its General Plan. The CBPAC takes an active role and has developed a detailed list of goals for the year 2001. A Community Congress was held in October 2000 to discuss city wide issues and develop strategies to address them. About 140 residents attended this two day workshop and identified eight key issues the city must address in order to maintain and increase its livability: These issues are: Affordable Housing, Traffic and Transportation, a "Downtown", Growth and the Environment, Education, Intergenerational

Issues, Community Values and Volunteerism. A summary of the Congress is presented in Appendix C.

GOALS, POLICIES AND ACTIONS

The first step in creating a pedestrian-friendly city is to have a vision of the future. The following four goals express this vision in terms of four major elements that affect pedestrian issues in Cupertino: 1) land use planning and design, 2) school access, 3) traffic engineering and 4) education and encouragement. Each goal has several policies that are measurable elements to achieve each goal. Finally, specific action steps have been identified for each objective, where appropriate, that will guide City staff implementing each policy.

Goal 1 – Implement Pedestrian-Friendly Land Use Planning and Design

Policies:

1. Consider the accessibility and convenience of pedestrians in the planning and design of all transportation projects.
   - **Action**: Require pedestrian connectivity to all projects.
   - **Action**: Encourage mixed-use development to reduce dependency on motor vehicles for short-trips.
   - **Action**: Audit the City zoning practices and change those that are in conflict with pedestrian-friendly community goals.
2. All redevelopment areas should be designed as walkable places.
   - **Action**: Encourage infill housing and transit-oriented development.
   - **Action**: Give traffic reduction and parking credit for "walkable and transit friendly developments.
3. Measures that encourage or facilitate motor vehicle access and/or improve motor vehicle level of service should not be implemented to the detriment of pedestrian access or safety.
   - **Action**: Provide well-lighted, wide sidewalks along all arterials and collectors and into all retail, institutional and employer sites.
   - **Action**: Provide landscaping wherever possible along pedestrian walkways.
   - **Action**: Prohibit large curb radii and high-speed channelized right turns across crosswalks.

Goal 2 - Encourage and Support Non-motorized School Access

Policies:

1. Kids and their parents should feel safe walking to school
   - Action: Support walking school buses
2. Parking policies should discourage the number of people who drive to school
   - Action: Support residential parking permits to discourage students from driving to school
3. Support alternative modes of access to school, since reduced traffic will improve pedestrian safety.
   - Action: Encourage and support carpooling to magnet schools.
   - Action: Evaluate the effect of school busing to ameliorate traffic problems at schools.

Goal 3 - Adopt Traffic Engineering/Planning Practices that are Pedestrian-Friendly

Policies:

1. Equalize the treatment of motorized and non-motorized modes in the planning and design of all transportation and development projects.
   - Action: Implement improvements to pedestrian and bicycling even if it causes slight deterioration in intersection LOS or vehicle mobility.
   - Action: Include target commute mode shares for non-motorized (walking, biking and transit access) as part of Circulation Element of the General Plan.
2. Signal timing should consider the needs of non-motorized users
   - Action: **Mid-block crossings with pedestrian activated signal**: Signals should be responsive to pedestrian use with a lag-time to turn green of no more than ten seconds. Pedestrian signal phase should timed at no faster than 4 feet per second (fps), and slower pedestrian speeds of 2.5 to 3.0 fps should be used on schools routes and near senior centers.
   - Action: **Traffic signals at intersections** – Though traditional intersection level of service calculations do not assess non-motorized traffic, there are still several things that can done to improve the quality of the experience for the pedestrian.
     - Initial walk time: The initial walk time is the “window of opportunity" for the pedestrian to begin his/her walk across the street before the phase turns to

"Flashing Don't Walk." It is recommended that this be a minimum of seven seconds.

- Assumed walking speed: Typical pedestrian signal phases are set at four feet per second. In areas near schools and senior centers, slower speeds of 2.5 to 3.0 fps should be used.
- Shorter signal cycles reduce overall delay for pedestrians.
- Location of pedestrian push buttons: Signal activation buttons should be conveniently located and marked with a sign so that they are easy to find.
- Push-button design: Use push buttons that have a larger surface area that is easier for elderly and disabled persons to depress. Other designs have a light that indicates that the detection signal has been received.

3. Transportation Impact Analyses should specifically address the impact of development and construction projects on pedestrian safety, access and circulation.

   - **Action**: Require all transportation impact analyses to address the potential impact of development involving construction/renovation projects on pedestrian safety, access and circulation.

Significance Criteria for Impacts on Pedestrians

To determine if a development involving either a construction or a renovation project would have a significant impact on pedestrian safety, pedestrian access to the area, or circulation through the area, the following criteria should be considered:

1) Consistency with the General Plan and Other Plans:
Does the project conform to policies and best practices as described in the City's General Plan or other pertinent adopted plans?

2) Permanent Travel Pattern or Access Changes:
Does the project eliminate any pedestrian facilities or otherwise alter pedestrian travel patterns due to any change to the roadway, sidewalks or pathway network (including but not limited to permanent roadway or sidewalk closures; elimination or relocation of sidewalks and crosswalks; elimination of official or historical easements or short-cuts used by pedestrians) or otherwise affect the routes pedestrians use to travel as directly as possible from origin to destination with no circuitous travel requirements?

3) Impact on Existing Pedestrian Facilities:
Does the project affect the design of any existing pedestrian facility including but not limited to the width and/or design of sidewalks, roadway shoulders, bridges/overpasses or tunnels/underpasses?

4) Pedestrian Safety:
Does the project provide new pedestrian facilities that conform to accepted design standards and guidelines, as promulgated by responsible agencies such

as the City of Cupertino, State of California, or AASHTO?

5) **Impact on Pedestrian Crossings:** Does the project impact the ability to easily and safely cross the street including the location and design of crosswalks; length of pedestrian phasing and signal cycle, pedestrian delay at signalized intersections; crossing difficulty caused by roadway widening, additional turn lanes, elimination of a median, provision for free right-turn lanes etc.?

Goal 4 – Implement Safety Education and Encouragement Programs

Policies:

1. Instruct students in safe behaviors as pedestrians and bicyclists.
   - Action: Teach that riding a bicycle on the sidewalk is hazardous to both bicyclists and pedestrians, and is illegal except for children 12 years of age and younger.
   - Action: Teach that pedestrians walking on the shoulder of the road should face the oncoming vehicle traffic (on the pedestrian's left side of the road.)
   - Action: Teach that bicyclists riding on the road should ride in the same direction as the vehicle traffic on the right hand side of the road.
2. Encourage walking by public information campaign.
   - Action: Install signs that direct pedestrians to pedestrians paths and shortcuts

Chapter 3
EXISTING CONDITIONS AND COLLISION ANALYSIS

EXISTING LEVEL OF WALKING IN CUPERTINO

1990[1] census revealed that 2.0 percent of Cupertino residents walk to work, another 1.7 percent take transit and 0.7 percent bike to work. Of those who live and work in Superdistrict[2] 10, 4.7 percent walk to work, 1.2 percent take transit and 2.0 percent bike to work. In terms of car ownership, 2.8 percent of Cupertino households have no cars.

School commuting data is not recorded by the census. Although the school districts do not keep records of how students commute to school, a few schools have enough data to provide estimates of the student mode split. For example, Cupertino High School estimates that twenty-five percent of their students walk to school while Homestead High School estimates only ten percent walk to school. Other mode splits are presented in Appendix D.

EXISTING POLICIES, PROCEDURES, AND PRACTICES

The City of Cupertino's existing policies, procedures, and practices that affect pedestrian circulation and safety were reviewed, along with the policies of other agencies that affect pedestrian trips such as transit service. The information was obtained by talking with City staff, Valley Transportation Authority (VTA) staff, and school district staff. In addition, a letter was sent to the principals of the three Cupertino high schools to determine parking policies and mode-split data.

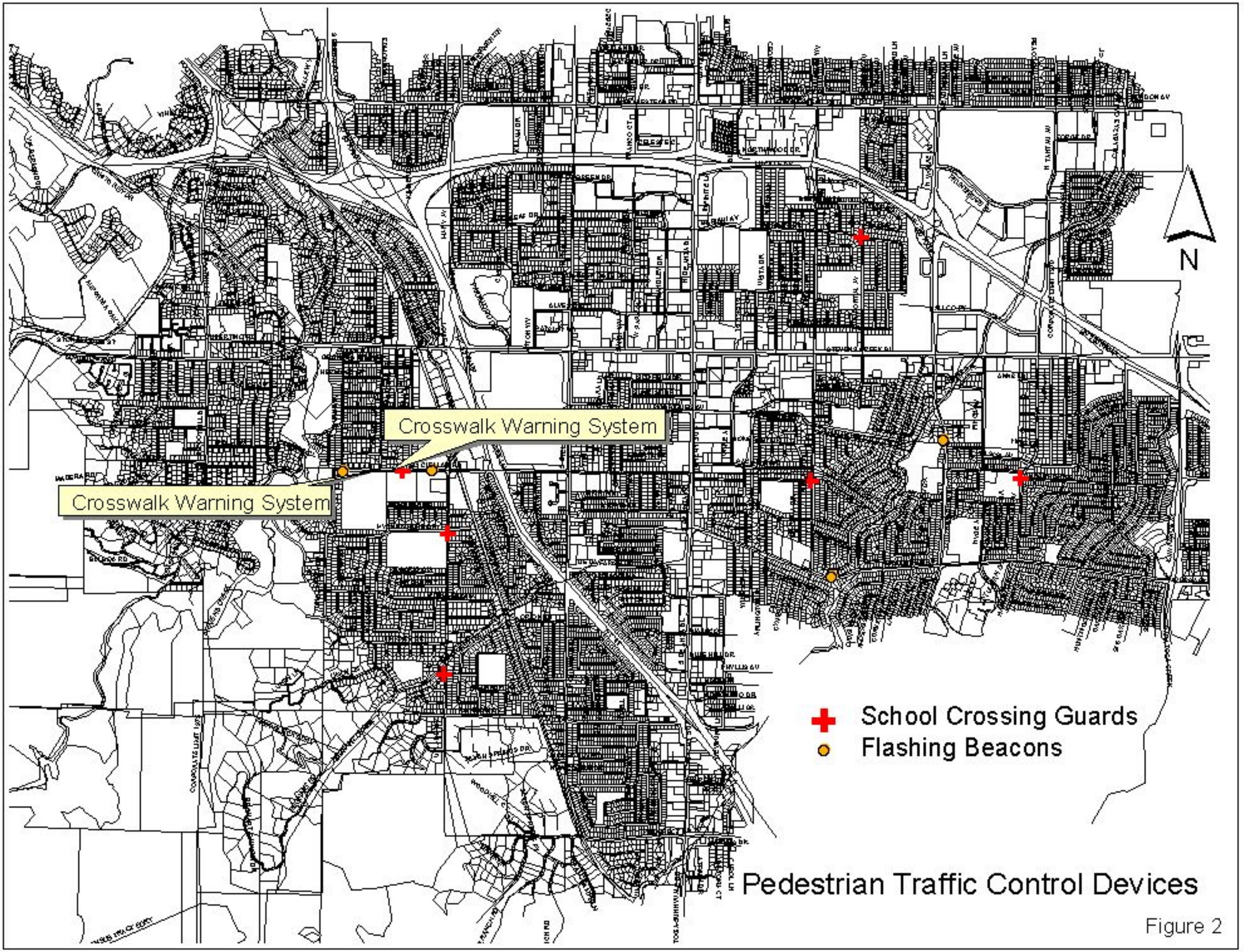
These policies affect one of four categories:

- General pedestrian issues (including traffic signals)
- Transit
- School-related
- American with Disabilities Act (ADA)

The existing City policies, procedures, and practices relating to the above categories are described in Appendix D-Table 3. Since De Anza College is one of the biggest traffic generators in Cupertino, staff from Wilbur Smith Associates (WSA) met with college officials to learn more about their parking and commute policies. This information is presented in Appendix E-Site Specific Recommendations.

[1] Unfortunately, 2000 Census mode split data was not yet available at the time this report was published.

[2] The nine county Bay Area is divided into 34 superdistricts for planning purposes; Santa Clara County is composed of seven superdistricts, SD 10 includes Cupertino, Saratoga. Monte Sereno, Los Gatos and parts of Campbell, San Jose and Santa Clara.



Pedestrian Traffic Control Devices

Figure 2

EXISTING LOCATIONS OF PEDESTRIAN/ADA DEVICES

The existing locations of traffic control devices that aid pedestrian circulation are depicted in Figure 2. These are:

Adult Crossing Guards

There are adult crossing guards at the following intersections:

- Barnhart and Tantau
- Blaney and Suisun
- Blaney and Merritt
- Bubb and Folkstone
- Bubb and Hyannisport
- McClellan and Imperial

In addition, there are unofficial parent volunteers who help out during peak times as well as school safety patrols that help on site.

In-roadway Flashing Lights

There are new crosswalk warning systems at:

- McClellan at Lincoln Elementary school crosswalk
- McClellan at Orange

Flashing Yellow Beacons

There are flashing yellow beacons at the following locations

- Bollinger near East Estates
- Miller near Calle de Barcelona
- McClellan @ Byrne
- McClellan w/o Bubb

Wheelchair Detectors

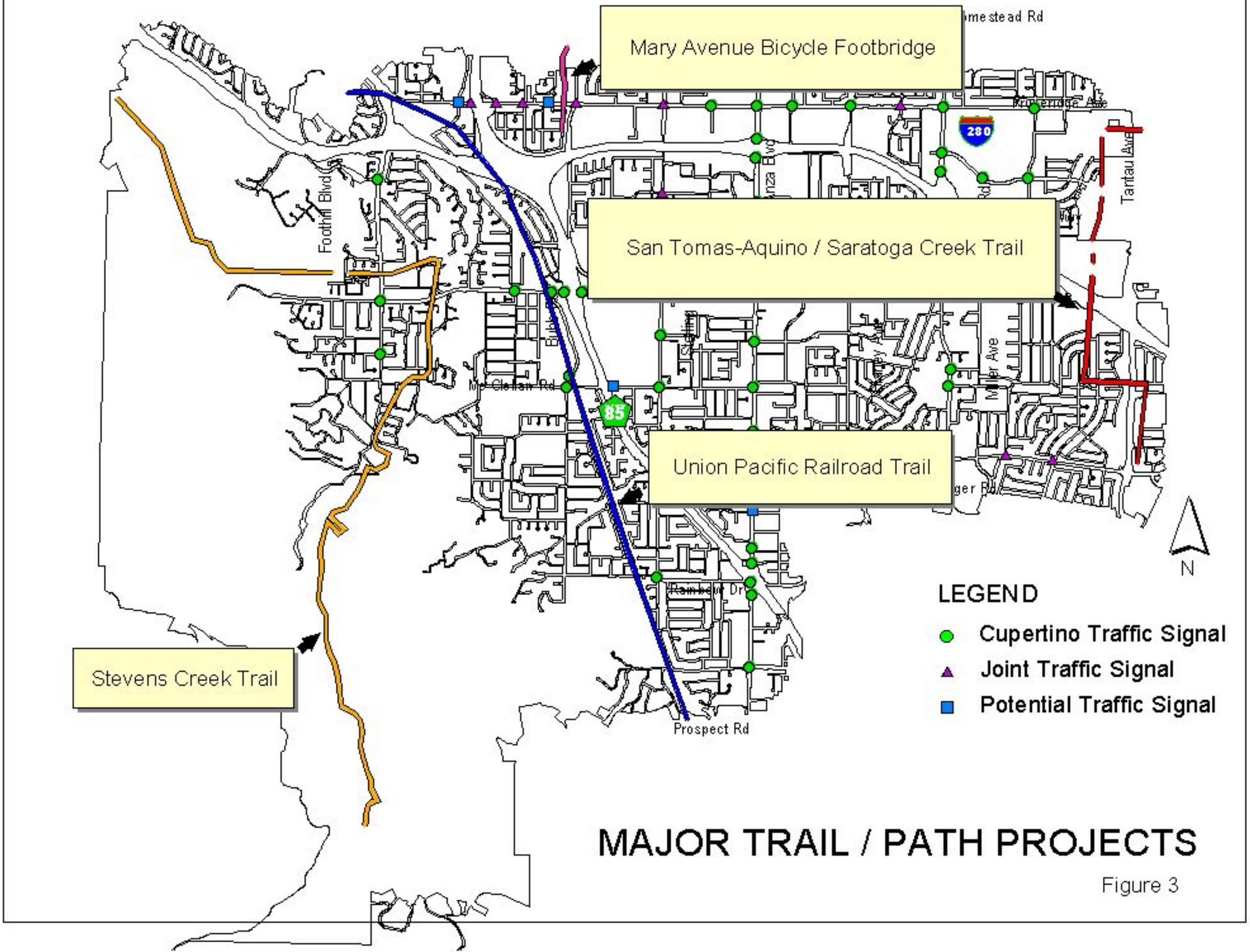
There are wheelchair detectors at the following intersections:

- De Anza and Peppertree
- Stevens Creek and Stelling
- Stevens Creek and Mary
- Stevens Creek and Bandle
- De Anza and Rodriguez

Audible Pedestrian Signals

Audible pedestrian signals are provided at:

- Homestead at De Anza, Wolfe & Tantau
- Tantau at Pruneridge, Vallco Pkwy
- Wolfe at Vallco, Pruneridge
- Stevens Creek at: Mann, Orange, Bubb, Stelling, Saich, Bandley, DeAnza, Torre, Blaney, Portal, Wolfe, Finch



MAJOR TRAIL / PATH PROJECTS

Figure 3

- De Anza at Mariani, Lazeno, Rodrigues
- Stelling at Peppertree, McClellan

EXISTING PEDESTRIAN PROJECTS

In addition to the existing devices, several projects are currently underway in the City. Major projects are illustrated in Figure 3, and are listed below:

Recently Completed

- McClellan Road School Zone Pedestrian Safety Improvements
- Bollinger Road Sidewalk (east of Johnson)

Feasibility Study Underway

- Stevens Creek Trail
- Union Pacific Railroad Trail
- Mary Avenue Bicycle Footbridge

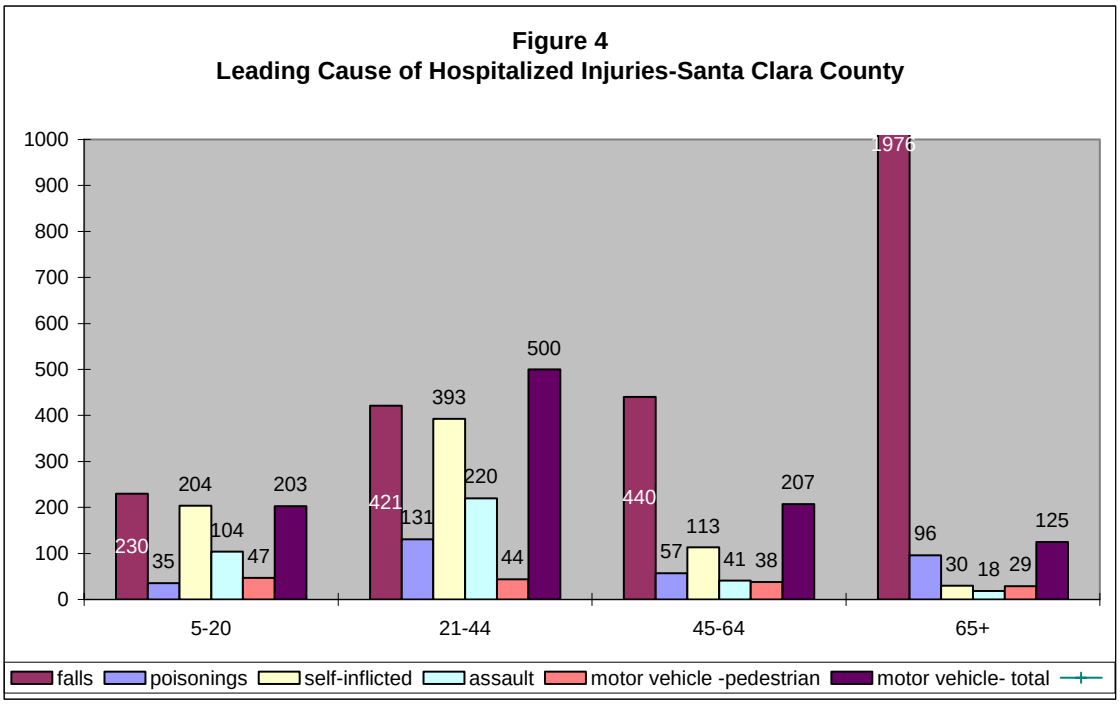
Projects Under Design

- San Tomas Aquino – Saratoga Creek Trail
- De Anza Blvd at Stevens Creek Blvd Crosswalks Enhancement
- Mary Avenue Speed Table/ Crossing
- Lincoln ES, Kennedy MS, Monta Vista HS Traffic Calming Measures

ANALYSIS OF PEDESTRIAN COLLISIONS

Figure 4 shows the leading cause of injuries in Santa Clara County by age group[3]. Traffic accidents are the leading cause of hospitalized injuries for ages 21-44. In other age groups, traffic injuries are exceeded only by falls. Pedestrian injuries are a significant portion of traffic

Figure 4
Leading Cause of Hospitalized Injuries-Santa Clara County



injuries, and typically comprise one-quarter of the traffic injuries for all age groups. Therefore addressing pedestrian traffic collisions will go a long way toward improving the injury rates of Santa Clara County residents.

To analyze the cause and locations of pedestrian injuries, the pedestrian collisions as reported to Statewide Integrated Traffic Reporting System (SWITRS) between January 1, 1997 and December 31, 1999 were reviewed. SWITRS reports vehicle collisions that result in injury or property damage above a certain dollar threshold. Thus, unreported collisions and pedestrian collisions that do not result in injury are not represented in this analysis. (Although, given the nature of pedestrian collisions, it is highly like there was an injury. It is not possible to predict, however, how many of these are settled privately and thus not reported).

In Cupertino, there were 60 reported pedestrian collisions in the three-year period from 1997-1999. This constitutes 2.2 percent of the total auto collisions (2437) in the same period. In terms of injury, pedestrians incurred 3.7 percent of the injuries involving auto collisions (compared to 6.7 percent of total traffic injuries incurred by bicyclists.) This is somewhat lower than the state average of five percent as depicted in Table 3-1. While statewide, twenty percent traffic fatalities are pedestrians, there were no pedestrian fatalities in Cupertino during the study period. Also contrary to state and national data, the vast majority of Cupertino's pedestrian collision victims had not been drinking.

Table 3-1
Pedestrian Injuries As Percent Of Total Traffic-Related

Location	Pedestrians as Percent of Total Traffic Injuries	Pedestrians as Percent of Total Traffic Fatalities
Cupertino */1/*	3%	0%
California */2/*	5%*/2/*	20%*/3/*
USA */3/*	2%	13%
/1/ 1997-1999 average; /2/ 1998; /3/ 1997		

The locations of pedestrian collisions in Cupertino are illustrated in Figure 5. Appendix D contains detailed tables listing the intersections with the most pedestrian collisions and the streets with the largest number of pedestrian collisions. Approximately half of all pedestrian collisions occurred within 10 feet of an intersection during the study period. About one-quarter took place within 100 feet and the remaining took place more than 100 feet from the intersection. Virtually all of the collisions at intersections involved a pedestrian crossing in a crosswalk (thirty of the sixty collisions). Vehicle *movement preceding collision* is also an important statistical consideration. The most common vehicle movement preceding a collision was the right-hand turn, which accounted for thirty percent of the pedestrian/vehicle collisions. The most common primary collision factor for the pedestrian collisions is "Failure to yield to pedestrian in crosswalk".

Pedestrians were determined to be at fault in one-quarter of the collisions while motorists were at fault in three-quarter of the collisions. One-third of the pedestrian collisions involved children under age 16, while thirteen percent involved senior citizens. When party-at-fault is considered

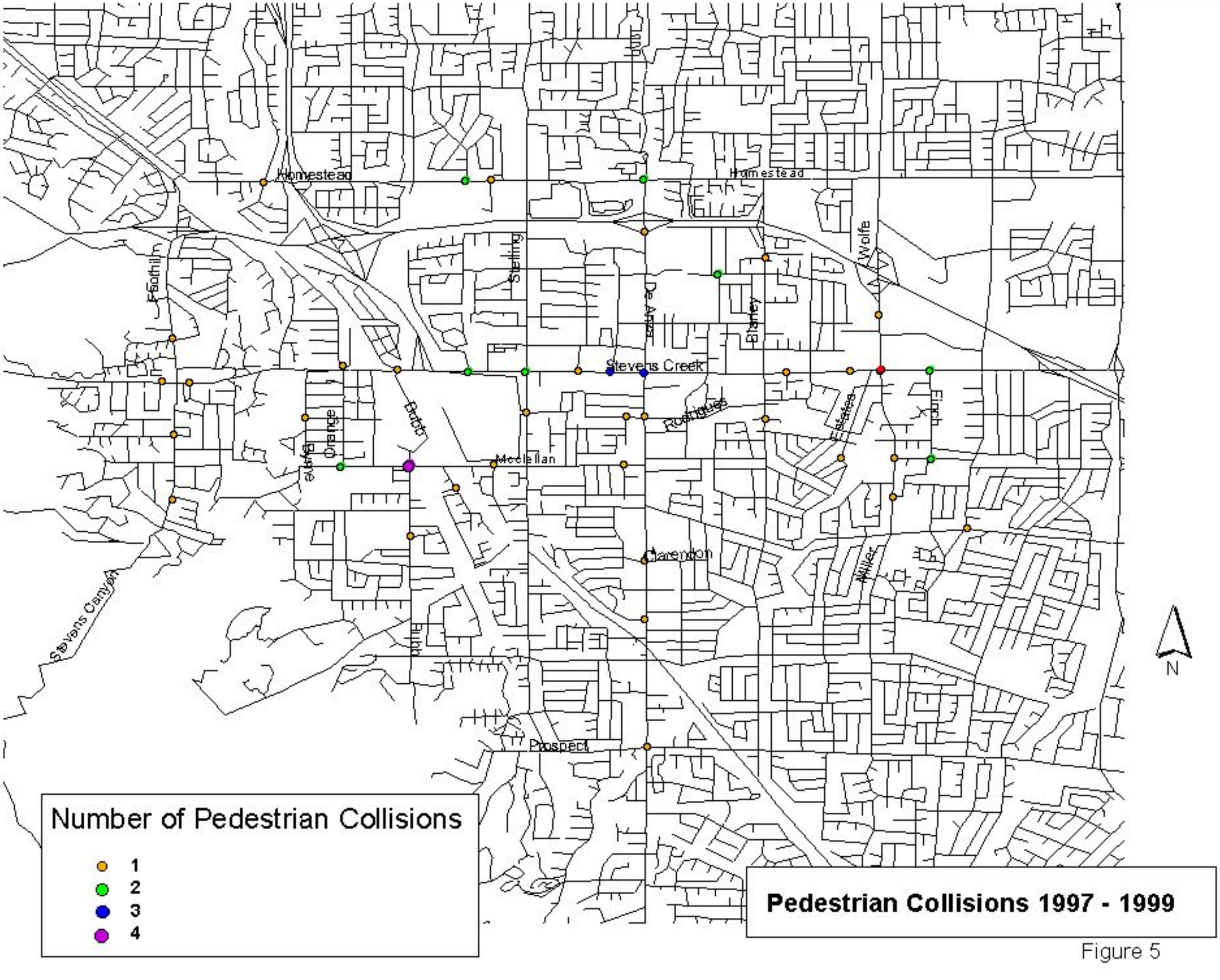

Homestead
Homestead
Foothill
Sterling
De Anza
Blaney
Wolfe
Stevens Creek
Rodriguez
Blaney
Orange
Bubb
McClellan
Finch
Blaney
Stevens Canyon
Bubb
Clarendon
Miller
Prospect
N
Number of Pedestrian Collisions
1
2
3
4
Pedestrian Collisions 1997 - 1999

Figure 5

in terms of age of the pedestrian victim, it becomes apparent that adults tend to be more careful pedestrians: eighty-three percent of the adult pedestrians were not at fault, whereas fifty-seven percent of the child-pedestrians were at fault. This illustrates that efforts toward pedestrian education should be targeted primarily towards children and parents of children.

Chapter 4
NEEDS ASSESSMENT

DESIGN CONSIDERATIONS

Pedestrian design standards are not as fully developed in the field of traffic engineering as are roadway and bicycle facility standards. However, there are isolated examples of cities with adopted pedestrian plans and design guidelines, such as Portland, Oregon and Cambridge Massachusetts. Additionally, the Americans with Disability Act (ADA) has led to the formation of many guidelines that affect pedestrian facilities. Also, the Santa Clara Valley Transportation Authority (VTA) is developing a plan that will include guidelines for pedestrian access to transit.

In designing for pedestrian circulation and access, the following issues should be considered. It is also important to note that there are differences between walking and bicycling in the design of facilities. These design considerations are listed here to ensure that the differences between walking and bicycling are taken into account. Appendix F presents Best Practices and Design Guidelines for Pedestrian Facilities.

Table 4-1
Design Considerations For Pedestrian Facilities

Issue	Pedestrian	Bicycling
Surface	Practically speaking, surface can vary considerably from concrete or asphalt to cobblestone to crushed granite; ADA rules will also apply.	Asphalt or concrete; Decorative pavers if installed appropriately but are usually cost-prohibitive
Design Speed	Typically 2 to 4 mph Pedestrian phasing timed at between 2.5 fps (1.7 mph) and 4 fps (2.7 mph)	20 mph level; 30 mph w/grade.
Stopping Distance	5 feet	15 mph: 75 ft. (level) 30 mph: 260 ft. (5% grade)
Location	Sidewalks in urban/suburban areas. Shoulder or edge of roadway in rural areas.	Shoulder or bike lane, travel lane if not. Sidewalk OK if age 12 or under
Parking	n/a	Needed

Grades	Stairs OK ADA also requires ramps.	Stairs not OK-ADA usually governs - 8.25% maximum grade for ramps

Mixed-use trails need special consideration because by definition they accommodate more than one mode, all with varying speeds: pedestrians, joggers, bicyclists, roller bladers, children on tricycles, etc. Guidelines for accommodating this mix of users can be found in the *Santa Clara County Uniform Interjurisdictional Trail Design, Use and Management Guidelines*. In general, the more varied the users, the wider the trail should be, with the optimum design being separate trails for slower users and faster users.

TOOLS TO ASSESS PEDESTRIAN FACILITIES

Gap Closure/Circulation/Connectivity

The first step in planning and designing a transportation network is to ensure that the network is continuous and does not have gaps and that it serves the major destinations. The assessment of Cupertino's pedestrian network addresses the following connectivity issues: sidewalks, pathways, and crossing barriers such as arterials and freeways.

Pedestrian Level of Service

Pedestrian level of service (LOS) is not as clear cut as vehicular level of service (LOS). While vehicle LOS is largely based on capacity and delay, in many cases the issue of pedestrian access is not capacity but the mere provision of a facility. Capacity cannot be assessed unless a facility exists to begin with. In addition to access, the issues that affect pedestrians most often, are safety and delay.

The Highway Capacity Manual (HCM) addresses the issue of level of service for numerous transportation facilities, from urban intersections to rural highways to transit. It should be noted that standard intersection LOS is solely a measure of vehicular delay and capacity and does not measure the extent to which the intersection accommodates pedestrians or is pedestrian-friendly. Pedestrian LOS is addressed in the HCM by measuring the capacity of:

- Walkways such as sidewalks, pathways or stairs
- Queuing areas such as transit platforms and sidewalk corners at intersections
- Crosswalks at signalized and unsignalized intersections

Note that there is no methodology to calculate the pedestrian LOS at an intersection. Also, these two strategies address capacity not delay or convenience. Pedestrian volumes at intersections are rarely large enough in Cupertino that capacity becomes an issue. Increasing capacity would involve such measures as longer pedestrian walk times, wider crosswalks and sidewalks.

> **Recommendation**: Ensure that traffic signals are pedestrian-friendly, (see specific recommendations in Design Guidelines in Appendix F). Additionally, consider the

development of a "Deficiency Index" and a "Pedestrian Potential Index" as utilized by the Office of Transportation for the City of Portland, Oregon.

Pedestrian Elements in Transportation Impact Analyses

Transportation impact analyses are required as a part of environmental review for new developments. Traditionally, the impacts of new development on pedestrian access, circulation and safety has been ignored or given a cursory review.

Recommendation: Adopt specific pedestrian criteria that must be addressed in all traffic impact analyses for new developments or redevelopments. Suggested criteria were presented on Page 2-4.

PEDESTRIAN PROBLEM AREAS

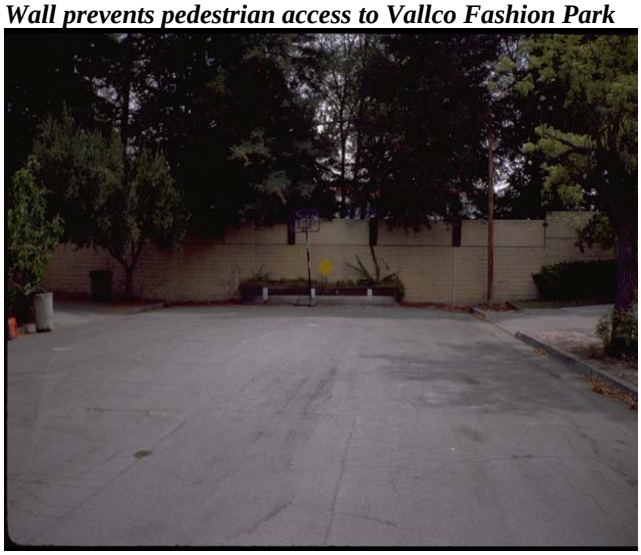
Public input regarding needed pedestrian improvements was solicited through the Cupertino Scene. Over a dozen thoughtful responses were received regarding various issues. These are summarized in Appendix G. The CBPAC also identified numerous problem areas and potential projects. In addition, Dan Burden, a noted authority of the development of "livable communities" was invited to Cupertino in 1999. Members of the City Council, Public Works and Bicycle and Pedestrian Advisory Committee accompanied him on his tour of the City. Appendix H contains a summary of that visit.

Other Pedestrian Access/Circulation Deficiencies

The following locations have been identified by either the Cupertino Bicycle and Pedestrian Advisory Committee, the consultant or members of the public as areas needing improved pedestrian access or safety enhancements.

1. Vallco Fashion Park: Improve access from residential streets, including Merritt, Amherst and Wheaton via a gate or an opening in the fence, and improve access from arterials by providing covered walkways that are landscaped and inviting to pedestrians
2. Target and Mervyns: More pedestrian friendly connection between the two shopping centers, including pedestrian-friendly crossing of Stevens Creek at Saich
3. Intersection of Stevens Creek at Bubb
    - Pedestrians are intimidated by right turning northbound to eastbound traffic on a red light
    - Stevens Creek is a wide street that requires up to 23 seconds to cross

Wall prevents pedestrian access to Vallco Fashion Park



4. Bubb at Caltrans Maintenance Yard
    - Bus stop needed
    - High traffic speed on Bubb
    - Pedestrians need to cross Bubb to access work locations on both sides of the street
5. Bubb at McClellan
    - High congestion level due to elementary, middle school and high school
6. Mervyns Crossroad's Shopping Center: Pedestrian friendly site design needed to connect Fontana's at the west end and Starbucks at the east end
7. De Anza College at McClellan: Need pedestrian entrance at southwest corner of campus
8. Pedestrian bike trail on western perimeter of De Anza College campus
9. The Oaks Shopping Center at Stevens Creek and Mary
    - Integrate with Memorial Park by providing high visibility crosswalk and/or median pedestrian refuge
    - Roundabout at Mary and entrance to Memorial Park
10. School pedestrian connections between Lincoln Elementary School and Monta Vista High should be resurfaced and the bollards improved
11. Freeway interchanges need modification to created a friendlier pedestrian crossing
12. Traffic light timing needs to be lengthened to permit pedestrian crossing on Stevens Creek at De Anza

Sidewalk Survey

The City conducted a survey of the presence or absence of sidewalks on the collectors and arterials in Cupertino. The locations where there are gaps in the sidewalks are presented in Figure 6. The streets with missing sidewalks are listed below. The City will be developing a schedule to construct sidewalks in these locations.

- Homestead
- Stevens Creek
- McClellan
- Bollinger
- Pruneridge
- Foothill
- Vista north of Stevens Creek
- Tantau
- De Anza
- Stelling
- Bubb

N

Sidewalk Gaps

Location of Sidewalk Gaps

Figure 6

INSTITUTIONAL BARRIERS TO WALKING

In addition to physical infrastructure for pedestrian travel, such as sidewalks and pedestrian signal phasing, there are many other impediments to walking as a transportation mode. Many of these do not fall under the purview of the City of Cupertino. They nevertheless contribute to a resident's choice of a transportation mode, either as a disincentive to walk or as an incentive to drive. These are listed below and are included in this plan so that in future policy actions, the City can consider all the factors that affect the decision to walk. Where the City can take steps, either as policy or as a more concrete action step, a recommended action has been listed.

Planning, Land-Use Patterns and Zoning

Connectivity: Eliminate practice of separating residential and retail land uses

Recommendation: Require pedestrian connectivity to all projects.

Recommendation: Encourage mixed-use development to reduce dependency on motor vehicles for short-trips.

Long Commute Distances to Work

- **Recommendation**: encourage infill housing and transit-oriented development.

Lack of Attractive Walking Routes

- **Recommendation**: provide well-lighted, wide sidewalks along all arterials and collectors and into all retail, institutional and employer sites. Use light standard designs that illuminate more of the sidewalk.
- **Recommendation**: Provide landscaping wherever possible along pedestrian walkways.

Recommendation: Prohibit large curb radii and high-speed channelized right turns across crosswalks.

Schools: Magnet Schools

- **Recommendation**: Encourage and support carpooling to magnet schools.

Traditional Focus on Mobility of Motorized Traffic

- **Recommendation**: Equal treatment of pedestrian issues in planning and design of all transportation and development projects.
- **Recommendation**: Evaluate the trade-offs of the improvements to pedestrian and bicycling when it causes deterioration in motorized traffic LOS or mobility.

Cost of Driving

Cheap Gas – Gasoline prices have risen very slowly over the last thirty years compared to other consumer products. In fact, gasoline prices until recently have been the cheapest in history. See Figure 7.

Free Parking - With free parking such as at shopping malls and employer sites, the marginal cost of driving is, for all practical purposes, only the price of the gasoline, which is only about five cents per mile. In areas with parking meters, the cost is about $0.75 per hour. At most Caltrain stations, the cost to park is $1.00 per day.

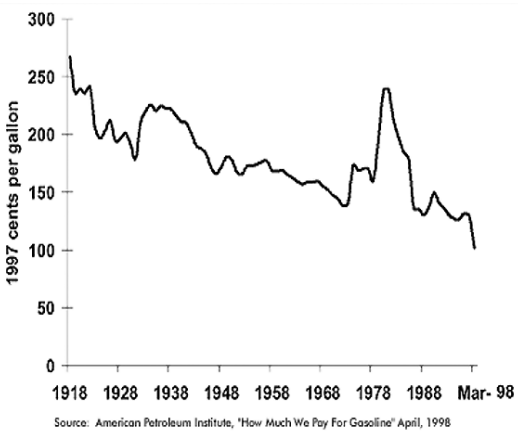


Figure 7 – Historical Gas Prices 1918-1998

Relatively Inexpensive Cars– Cars have had the lowest price increase of all consumer products in the last thirty years. See Figure 8. Access to an automobile has a high correlation with the decision to drive, as the marginal cost of using the automobile is very low. This is particularly applicable to the use of cars by teenagers who are often given use of the "extra" family car by their parents.

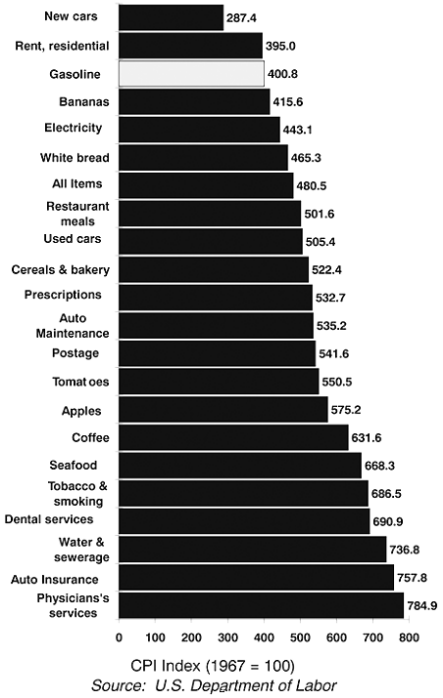


Figure 8 – Change in the Price of Gasoline and Other Consumer Goods 1967-1997

Transit Access Mode

Infrequent Transit Service - Long headways are inconvenient to users and often mean that driving is much more convenient.

Recommendation: Support bus passes for De Anza College students, which could be funded with a surcharge of all students in order to pay for additional transit service. Such a program is currently underway at UC Berkeley in connection with AC Transit service. Encourage the VTA to provide volume discounts for students at high schools and De Anza College through ECO Pass.

Inconvenient Bus Routing – Bus routes that are far apart or routes that require transfers are a disincentive to using the transit system.

Recommendation: Encourage and investigate a local shopping shuttle with frequent service to serve Stevens Creek Boulevard from the Cupertino Post Office to Vallco Fashion Park including stops at De Anza College. An open cable-car style design would be more appealing than a bus, and would facilitate easier boarding and deboarding.

Lack of pedestrian amenities - lack of bus shelters, lighting, safe routes to stops are another disincentive to using transit.

Recommendation: Work with VTA and site owners to provide safe well-lit access to all transit stops.

NEED FOR FURTHER STUDIES

This plan is just the first step in a multi-year process to improve the safety and mobility of pedestrians in Cupertino. More detailed studies both planning and preliminary engineering will be needed before many of the recommendations can be implemented. For example, while this plan evaluated three specific sites, there are many more throughout the City that could be analyzed and redesigned to be more pedestrian friendly. While too numerous to list them all, the

following lists the CBPAC priorities for future studies to begin the process of transforming Cupertino to a more walkable and livable community. In fact one of the first steps is to do economic research to determine the candidate sites that show the most promise to be redeveloped into pedestrian-friendly development.

Land Use/Redevelopment

- Citywide inventory for opportunities to promote pedestrian- friendly retail
- Village-mixed-use development: Economic development research to identify most likely sites to redevelop as pedestrian friendly retail
- Development of a Downtown Town Center: Economic development research to identify most likely sites to redevelop as pedestrian friendly downtown town center

De Anza College Site Specific Studies

- Develop Transportation Demand Management (TDM) plan for college students
- Redesign campus entrances to facilitate pedestrian access

Traffic Calming

Traffic calming provides many benefits to pedestrians and to the creation of livable neighborhoods. While this study does not include overt traffic-calming elements, such measures are compatible with a pedestrian-friendly community.

Traffic calming and slower traffic enhances pedestrian safety by:

- Decreasing the chances of a car-pedestrian collision;
- Reducing the severity of injuries should a collision occur;
- Making it easier and less intimidating for pedestrians to cross streets.

Traffic calming and slower traffic encourage more walking and bicycling by improving the ambiance of the neighborhood and more livable streets by:

- Producing less traffic noise; and
- Reducing the level of air pollution.

Chapter 5
RECOMMENDATIONS AND IMPLEMENTATION PLAN

INTRODUCTION

This chapter presents the implementation plan for the recommended pedestrian projects and improvements for the City of Cupertino. It first describes the components of implementation including the general process for turning the projects from a plan into actual improvements. The prioritization criteria are then presented followed by a list of prioritized projects, recommended programs and the identification of likely funding sources.

PROCESS

The projects in this plan could be implemented incrementally in a variety of ways. Many projects will be incorporated into the Capital Improvement Program (CIP) process and will be implemented as CIP projects get funded. Other recommendations could be implemented as part of the City's regular maintenance and operations practices and sidewalk program. Development and redevelopment in some areas of the City could present the opportunity to provide pedestrian connections and implement other recommendations of this plan. Finally, outside funding may be obtained to finance the design and construction of other projects, improvements and programs. The most likely funding sources are addressed in the last section of this chapter.

RECOMMENDED CAPITAL PROJECTS

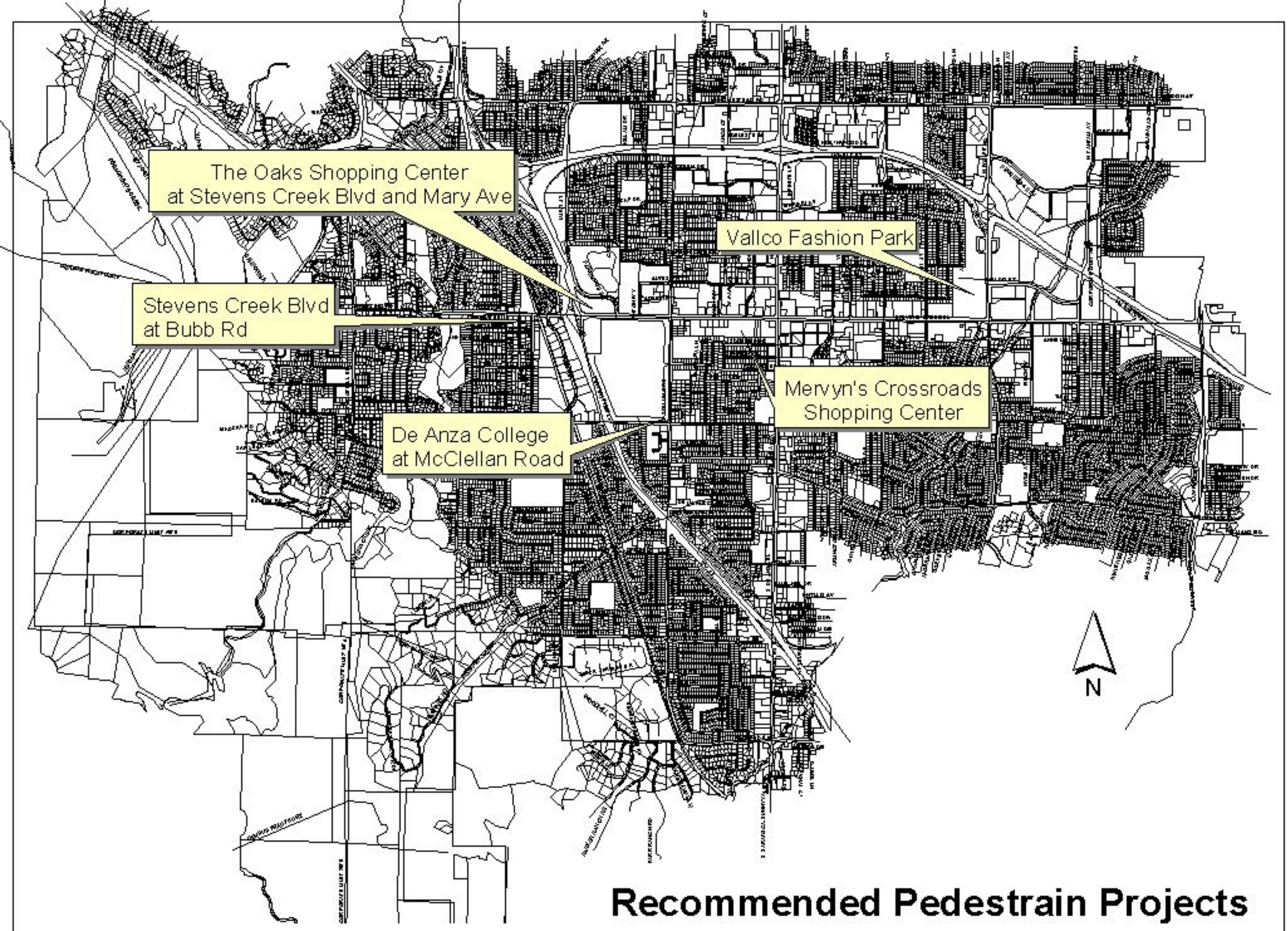
Thirty-six recommended pedestrian projects have been identified that would improve pedestrian connectivity and safety through the City. These fall into five categories:

- Pedestrian Circulation/Safety Projects
- Improvements to Help Pedestrians Cross Streets
- Missing Sidewalks
- Short-cuts/Pathways/Bridges
- Traffic Calming / Bike Lanes

These 36 projects are listed in Table 5-2 beginning on page 5-3. These projects have been prioritized into high, medium and low categories, which will help the City staff focus their efforts on the projects of most importance. The location of some of these projects are depicted in Figure 9.

PRIORITIZATION CRITERIA

Before any projects can be implemented, the numerous projects identified in this plan must be prioritized. An objective set of criteria is essential to avoid controversy among various project



Recommended Pedestrain Projects

Figure 9

proponents as well as to efficiently respond to funding applications. The prioritization criteria presented below were derived from criteria specified by various funding sources as well as input from the CBPAC and staff. The criteria used for TDA grants, which can fund both bicycle and pedestrian projects, is presented below as background information to the presentation of the prioritization criteria used in this study.

Transportation Development Act Article 3

The Metropolitan Transportation Commission (MTC) processes each county's TDA applications but gives great leeway to each county to prioritize their own projects. Thus, MTC does not apply criteria directly to the TDA projects. However, its application sheet identifies the following evaluation criteria:

- Elimination of problem areas;
- Access to or bicycle parking in high activity areas;
- Bicycle/transit or pedestrian/transit use;
- Continuity of longer routes; and
- Local support.

CITY OF CUPERTINO PRIORITIZATION CRITERIA

Five main categories were used in prioritizing the pedestrian projects. Two of the categories are subdivided resulting in a total of seven areas. Each area is scored on a three-point scale from High, Medium and Low. Safety and connectivity have two subcategories; the net effect of this is that safety and connectivity are weighted more than demand or commuting which have only one sub-category. The five main categories are:

- **Safety**- Safety for all users of the system is paramount. Projects that directly or indirectly improve safety are rated higher than others.
- **Connectivity -** Connectivity is important and projects that enable direct travel and that serve the most numbers of bicyclists are rated higher than others.
- **Demand-** Projects which serve a greater number of pedestrians should be rate higher than others.
- **Commuter/Transportation Trips** - Projects which will be used primarily for transportation should be rated higher than those used primarily for recreation.
- **Local Support -** Routes which have demonstrated local support are rated higher.

The specific prioritization criteria for these five categories are presented on the next page in Table 5-1. The consultant rated each of the projects High, Medium or Low, using these criteria as a guide. As projects are implemented and as future conditions change, it is anticipated that the City and CBPAC will revisit these priorities and revise them as needed. The prioritized ratings of all the projects are presented below in Table 5-2. Appendix I contains the individual ratings for each project against each of these criteria.

Table 5-1
Prioritization Criteria

Improves safety

1. Project to reduce exposure to high vehicle volumes or high speed.
2. Improves routes or locations with high accident history.

Improves connectivity

3. Closes gap between two streets or otherwise reduces/eliminates circuitous travel.
4. Links with pedestrian facilities such as transit or in other jurisdictions.

Serves High Demand

5. Improves routes with high existing or potential pedestrian traffic.

Facilitates commuter/utilitarian trips

6. Directly serves attractors/generators, including employment sites, elementary, middle and high schools, and shopping centers.

Local Support

7. Has special significant local support or is of particular interest to a community organization as measured by letters or citizen's attendance at public meeting.

Projects should be re-rated periodically to take into consideration new information, new funding sources, set-aside, updated accident statistics, etc. The ratings of most projects will not change but new circumstances may affect the ratings of some routes, and these should be taken into account

Table 5-2
Locations Needing Pedestrian Improvement

Location	Description of Proposed Improvement	Priority
Pedestrian Circulation/Safety Projects		
1. Vallco Fashion Park	Improve access from Stevens Creek such as a covered landscaped walkway that is inviting for pedestrians.	Low
2. Intersection of Bubb at Stevens Creek	Right turn on Red NB to EB – intimidates pedestrian crossing, wide long crossing of Stevens Creek.	Low
3. Bubb at McClellan	High congestion level due to elementary, middle school and high school.	High
4. Mervyns Crossroads Shopping Center	Pedestrian friendly site design needed to connect Fontana's at the west end and Starbucks at the east end.	Low
5. DeAnza College at McClellan	Provide pedestrian entrance at southwest corner and sidewalks along the perimeter road.	High
6. The Oaks Shopping Center at Stevens Creek and Mary	Integrate with Memorial Park - connect with high visibility crosswalk and/or median pedestrian refuge. Roundabout at Mary / Memorial Park entrance.	Medium

Improvements to Help Pedestrians to Cross Streets		
1. All Freeway interchanges	Modifications needed to be more pedestrian friendly such as reducing the radius to slow speeds, preventing right turns on red.	Medium
2. Stevens Creek at Saich connecting Target and Mervyns	More pedestrian friendly connection between the two shopping centers, including pedestrian-friendly crossing of Stevens Creek at Saich.	High
3. Bubb at Caltrans Maintenance Yard	Pedestrian crossing for Ciena Company to cross high speed Bubb.	Medium
4. Bollinger midway between Blaney and Miller	Investigate the possibility of crosswalk with in pavement flashers or a four-way stop sign at Bollinger and Alderbrook.	High
5. McClellan at Orange	Install a traffic signal.	Medium
6. Homestead at Forge	Provide crosswalk on east side.	Medium
Recommended Sidewalks		
1. Stevens Creek at Bret	Construct sidewalks.	Medium
2. De Anza in front of Yamagami Nursery	Construct sidewalks.	Medium
3. De Anza between Homestead and Stevens Creek	Construct continuous sidewalk.	High
4. The east side of Bubb from Columbus to Kennedy Middle School	Construct sidewalks.	High
5. West side of Stelling at Rainbow	Construct sidewalks.	Medium
6. East side of Stelling, north of the Armenian Church	Construct sidewalks.	High
7. East side of Stelling, north of Jollyman Park	Construct sidewalks.	Medium
8. Citywide	Improved sidewalk maintenance to eliminate trees or shrubs hang over sidewalks as well as upheavals and uneven sidewalks	Medium

Shortcuts/Pathways/Bridges		
1. Vallco Fashion Park	Improve access from Merritt, Amherst and Wheaton via a gate or an opening in the fence.	Medium
2. Western perimeter of De Anza College site	Pedestrian-bike trail through De Anza College site-along west edge to connect Stevens Creek to McClellan.	High
3. Maintenance road on Regnart Creek between Pacifica and Rodriguez.	Open the existing maintenance road on Regnart Creek between Pacifica and Rodriguez to pedestrian/bicycle traffic.	Low
4. Southeast corner of the Longs Drug Store/Orchard Valley property	Provide pedestrian access through the fence at the southeast corner of the Orchard Valley property to connect the corner of Richwood and E. Estates to the Longs Drug/Orchard Valley shopping center.	Low
5. Railroad tracks from Prospect to Stevens Creek Blvd. -west side	Improve pathway by grading and providing all-weather surface. If a hard surface (concrete or asphalt) is provided, leave a softer surface for joggers and walkers.	High
6. The walkway between Lincoln Elementary and Monte Vista High School from McClellan to Presidio	Extend pathway through Lincoln's parking lot repave, improve bollard design, and improve the overall ambiance to encourage walking to school	High
7. Miramonte to the Deep Cliff Golf	Provide pathway (formerly present) to connect the Stevens Canyon Road area, San Juan	High
8. Miramonte to Stevens Creek Park.	Provide a pedestrian path	Low
9. Blackberry Farm	Provide an entrance from the trails behind McClellan Ranch	Low
10. Existing diverters/barriers on Orange at Granada, on Olive between Imperial and Pasadena, and on Festival Drive along Route 85.	Existing openings need improvements to better accommodate pedestrian/bicycle access and for ADA	Low
11. Phar Lap/Mann neighborhood across Stevens Creek	Build pedestrian bridge across Stevens Creek to improve access to Stevens Creek Elementary School	High

12. Miller and Bollinger – small center with the Tin-Tin market	Reinstate opening at end of La Roda cul-de-sac for pedestrians	Low
13. De Anza Blvd at telescope store by Cigarettes Cheaper	Create an opening in the wall that backs up onto cul-de-sac for pedestrians	Low
Traffic Calming		
Pasadena and Orange	Add road humps	Low

RECOMMENDED EDUCATION AND ENCOURAGEMENT PROGRAMS

Proposed Education and Encouragement Programs are listed in Table 5-3.

Table 5-3
Recommended Education and Encouragement Programs

Publicize safe walking routes.	For example, local streets connect to Varian Park. From there you can access Stevens Creek. If parents realized that their kids didn't have to be on a major street most of the way to school, they might be more willing to consider letting them walk or bike
Solicit more public input	Ask the students for input on making their neighborhood a safer place to walk or ride their bikes.
Research	Compare and contrast other school and neighborhood communities (in or out of the Bay Area) with similar pedestrian/bicycle traffic problems and patterns.
Citywide	Educate everyone on how to share the road
Citywide	Adopt zero tolerance for red light runners
Citywide	Incorporate traffic safety into Sheriff's DARE program and neighborhood watch outreach efforts

IMPLEMENTATION AND FUNDING

As stated earlier, the implementation of these projects will take place incrementally over the next ten to twenty years. Construction costs vary considerably depending on the size of the job, the location, and whether it is a stand-alone project or built in conjunction with a roadway project. For example a simple crosswalk with two parallel 12 inch solid white lines could run from $500 to $1000 per location whereas a crosswalk combined with a speed table and /or in-roadway flashing lights can run $20,000 per location, depending on the design. Since there are so many variables to consider, the total cost of implementing these projects is difficult if not impossible to estimate. The costs will be estimated on a project-by-project basis and submitted for grant funding where appropriate. Traditional grant funding sources for pedestrian projects are described below.

Traditional Funding Sources

This section outlines the most probable funding sources to implement the recommended pedestrian projects. While some funding sources are dedicated to the City, many are competitive. The City's General fund also routinely funds some pedestrian projects such as sidewalks. Also, the City of Cupertino receives funding for roadway projects that can be used to implement some of the pedestrian projects identified in this Plan. The most likely grant funding opportunities for pedestrian improvement projects in Cupertino are listed below along with the due date of the grant application and past projects that have been funded:

Potential Funding Programs

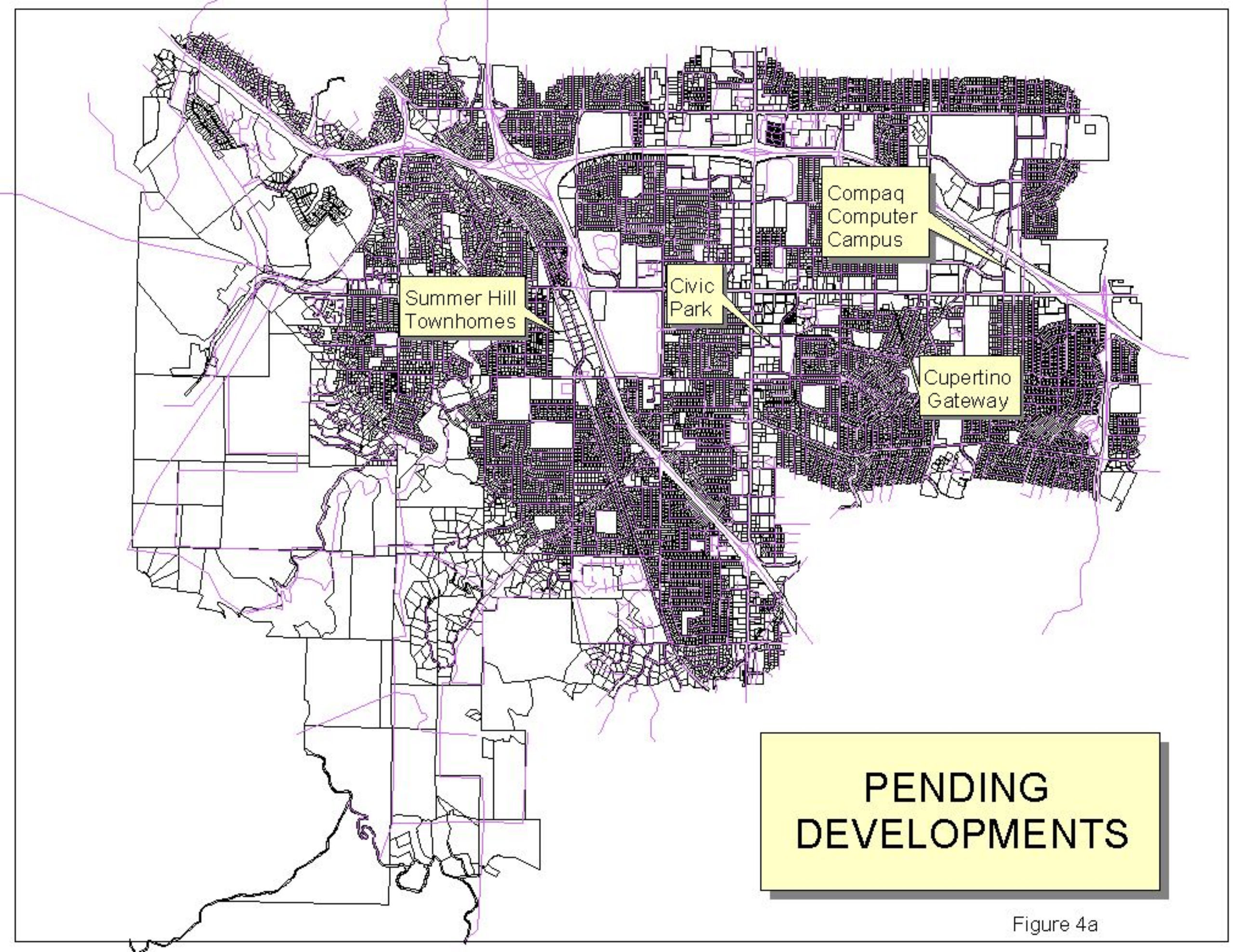
- Transportation Development Act – Pedestrian or Bicycle projects - December 31
- Highway Bridge Replacement and Rehabilitation – anytime
  Bollinger Road (Calabazas Creek) bridge (spring 2002 construction)
- Pedestrian Safety Program – May 22
  De Anza Blvd at Stevens Creek Blvd
  De Anza Blvd at Bandley Ave
- Safe Routes to School Program – May 22
  Sedgwick Elementary School, Hyde Middle School, Cupertino High School
- Transportation Funds for Clean Air – June 30
- Local Streets & County Roads Program (VTP –2020) – Summer
- Transportation for Livable Communities

Pending Grants

- Traffic Safety Concepts Program – Speed
- Environmental Enhancement & Mitigation Program – San Tomas Aquino-Saratoga Creek Bicycle Facility Improvements
- Bikes Belong Coalition – Monta Vista High Bicycle Parking $10,000
- City-Wide Bicycle Parking Facilities $51,789.

Appendix A
LOCATIONS OF APPROVED AND PENDING DEVELOPMENTS

Table A-1 **Approved and Pending Developments**
Approved Developments:
City Center - 6,775 SF retail, 206 apartments
Kimpton Hotel - 224 hotel rooms
Andronico's - 32,160 SF retail
Adobe Inn - 77 hotel rooms
Hewlett-Packard Campus - 293,780 SF office, R&D
P.J. Mulligan's - 5,600 SF retail space, SF 46 condominiums
Oak Valley - 178 homes
Market Place - 10,400 SF offices, 27,800 retail
Cupertino Community Services - 24 apartments, 5,000 SF office
Plaza Cupertino (Vallco Fashion Park Redevelopment) - 439,014 SF retail, 10,000 SF restaurant - 318 hotel rooms, 16 screens
City Public Library - 32,000 SF
Pending Developments
SummerHill - 34 townhouses
Civic Park (Town Green) - 275,000 SF commercial office, 60,000 SF medical office, Town Center 10,000 SF retail, 230 apartments
Villa Serra - 924 apartments
De Anza College Expansion - 7,000 students by year 2010 from 25,000 to 32,000
Compaq Computer Campus - 750,000 SF office R&D, 19,500 SF retail, 400 apartments
Cupertino Gateway - 33,000 SF office, 4,000 SF restaurant, 1,200 SF meeting space, 20 units townhouses.



PENDING DEVELOPMENTS

Figure 4a

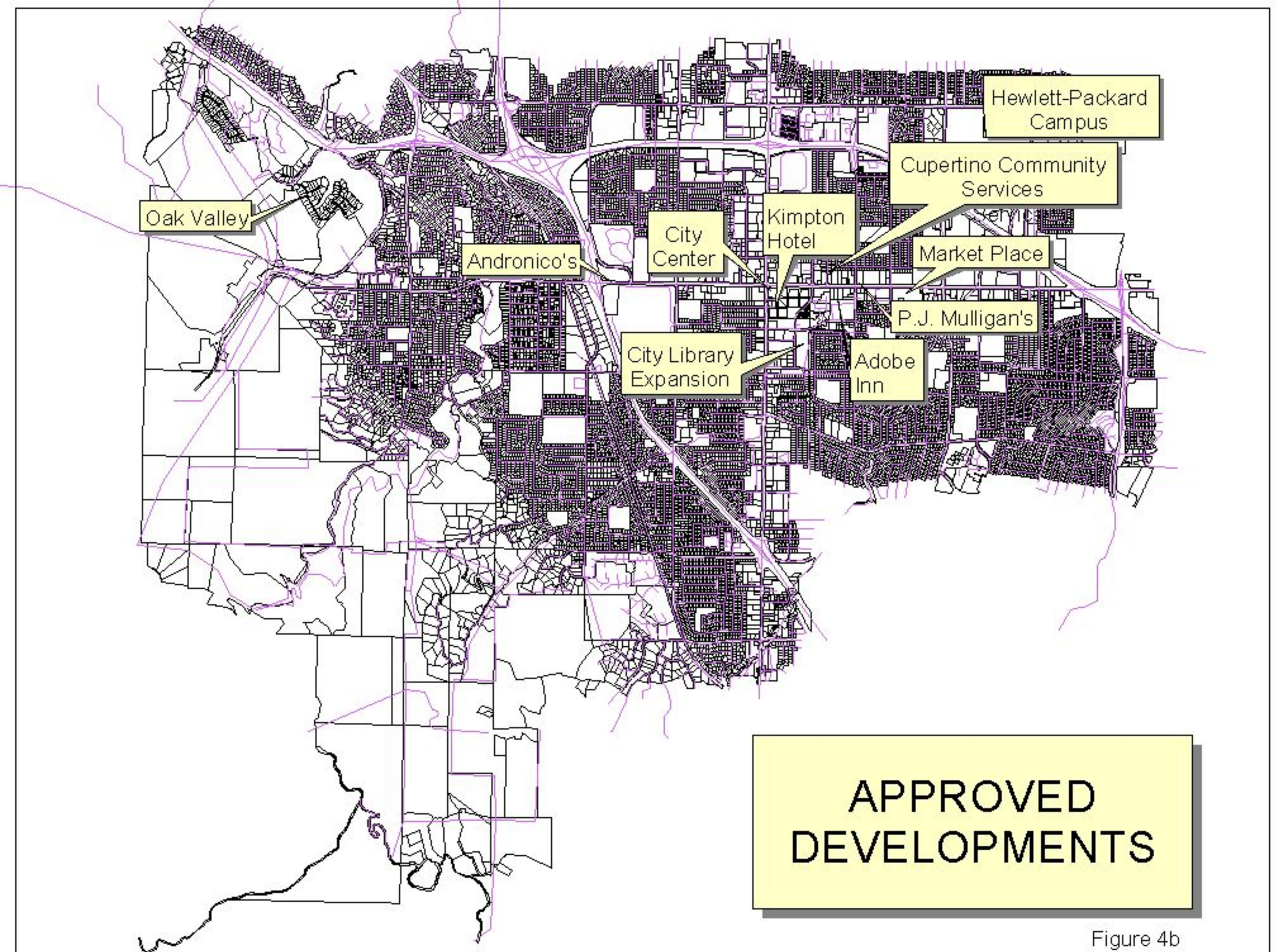

Hewlett-Packard Campus
Cupertino Community Services
Oak Valley
Kimpton Hotel
City Center
Andronico's
Market Place
P.J. Mulligan's
City Library Expansion
Adobe Inn
APPROVED DEVELOPMENTS

Figure 4b

Appendix B
MODEL COMMUNITIES

MODEL COMMUNITIES

There are numerous examples of communities that have exemplary design in terms of being pedestrian-oriented and extremely walkable. Any city founded and developed before the advent of motorized transportation had a central core and outer neighborhoods that were developed when the primary mode of transportation was walking. These include large bustling cities such as London, Paris, Boston and Philadelphia as well as the small towns idealized in 1950's movies and television shows such as "Andy Griffith" or "It's a Wonderful Life". Travel between the different types of land uses was (and is) possible by a variety of methods (walk, bicycle, transit, taxi) in addition to the privately-operated auto. Towns that have retained that "small town charm" are now often popular tourist destinations, such as Charleston, South Carolina; Pacific Grove, and Carmel, California.

Closer to home, we find that the communities of Los Gatos and Palo Alto were built along these same "traditional" lines, with a downtown containing a mix of land uses – office, retail, and residential, surrounded by single family homes within easy walking and biking distance. While plenty of parking is provided, the commercial sites are clustered so that there is a town center, a place for community-oriented buildings and public events. The downtown helps promote a feeling of community. These towns have thriving downtowns despite the proximity of large regional shopping centers.

New communities that are being built with the traditional patterns are referred to as "neo-traditional" or "traditional neighborhood design." Examples include Celebration and Seaside in Florida; Columbia, Maryland and Mashpee Commons, on Cape Cod. The designers of the neo-traditional towns draw from a variety of heritages, heavily influenced by geography, climate, and other characteristics of the location.[1] For example, architects Duany and Plater-Zyberk describe Riverfront, a 100-acre development of houses, offices, and shops south of Manchester, New Hampshire, thusly: *(our model is the New England town at its most cranky and idiosyncratic.)* However, in Friday Mountain, a 550-acre town southwest of Austin, Texas, *the dimensions are distinctively Texan, with streets and squares much broader than those in the East. Trees planted in rows, not in the irregular clumps that most landscapers favor, will break up the big open spaces and generate a sense of enclosure for the community.*

> *"Good streets have places to walk with leisure and safety. They are where you can meet people, they invite you to do that. The best streets are comfortable. They are shady when it's hot; they offer sun when it's cold. They minimize the wind."* Alan Jacobs

[1] Langdon, Phillip, *A Good Place to Live*, Atlantic Monthly, March 1988.

What do these new communities and older towns have that typical suburban sprawl does not? The main differences between Traditional Neighborhood Design (TND) and typical suburban sprawl are:

1. Typical suburbs have no connectivity between the residential neighborhoods and the retail areas. Land uses are geographically as well as physically separated by impervious fences, high speed arterials and freeways.
2. In suburban retail areas, there is a sea of parking lots to traverse such that a shopper at one store will drive to a store on the opposite side of the street.
3. TND communities are pedestrian scale with designed-in pedestrian connections. Furthermore, TNDs are designed so that children can walk to school. The National Transportation Survey revealed that nationwide the number of children who walk or bike to school has fallen from 42 percent in 1969 to less than 16 percent in 1995, a tragic result of the prevalence of suburban sprawl development.
4. The neo-traditional concept has many small streets rather than circuitous collectors and large arterials. This improves the mobility for those of all ages but especially children and people who walk and bike. Children can travel throughout their neighborhood and go to school never using a single intimidating six-lane arterial. This type of development further increases the likelihood that their parents will feel safe allowing them to transport themselves to other places as well: to their friends' houses, the soccer field, movie theatres and the ice cream store.
5. Land use mix, residential density, traffic engineering, and the architectural design of the homes all contribute to the distinctiveness of the TND developments. The traffic engineering features are discussed in the following section on Best Practices.

> *One example of how neo-traditional design can reverse this trend is from Columbia, Maryland. In Columbia, the size of residential areas was determined primarily by the number of households needed to support an elementary school. The Rouse Company, as developer, insisted that within a block of the school there be a swimming pool, a community building, and a convenience store, and that people be able to walk or bike to these facilities without crossing any major streets. Three to five neighborhoods made up a village, which offered more facilities, including a supermarket, a bank branch, and other businesses - also accessible by the community's forty-seven miles of walking and biking paths, as well as by car.*[2]

[2] Philip Langdon, The Atlantic Monthly September 1996.

Appendix C
CUPERTINO COMMUNITY CONGRESS

About 140 residents and community leaders attended the two-day Community Congress in October 2000 to anticipate city issues before they become troublesome. Participants also talked about significant events that have shaped the Cupertino community so far.
Through large and small discussion groups, the following eight issues were found to be the top challenges in Cupertino today (listed in random order; details below): The city council will review these issues and consider them for future goals.

Affordable housing
Traffic and transportation
A "Downtown"
Preserving the environment and managing growth
Education
Intergenerational issues (involving seniors and young people)
Preserving community values
Increasing volunteerism in the community

This appendix contains the full summary of the Cupertino Community Congress for the issues relating to pedestrian transportation safety. For a list of other issues contact Laura D. Lee at 777-3331.

Issue #1
HOUSING
How will this Issue Affect Cupertino's Sense of Community?
• High prices driving people out
• Reduces community commitment and character
• Scarcity of place for children, seniors, teachers, and police
• Monster home problem--Planning the extent of change needed

What Challenges and Opportunities does this issue present?
• Challenges
- Collaborate with other cities in surrounding areas
- Affordable housing for "special needs" people
- High-density housing will pose other problems (transportation, school buses, infrastructure)

Who Should Do What, With What Resources?
• Pay more to teachers, dormitory style housing possible
• Industries moving in used as resources for housing
• Property owners for new units to accept BMR vouchers for affordable housing

What Should be Done First?

• Provide affordable housing
• Give company stocks to teachers
• Promote in-law suites
• City workshops to train people to rent out spaces
• Create attractive alternative housing for seniors

Issue #2
TRAFFIC AND TRANSPORTATION
How will this Issue Affect Cupertino's Sense of Community?
• Street closures (De Anza cutoff)
• Enforcement of violations
• Aging of residents and disabled pedestrians
• Bus stops hard for residents to access
• Cross lights change too quickly
• School District discontinued school buses and parents afraid to let kids walk to school

What Challenges and Opportunities does this issue present?
• Challenges
- Pedestrian crosswalks are not used and expensive
- Lengthen crosswalk time at traffic lights
- School bus system
- Traffic lights (change traffic flow and better connections)

• Opportunities
- Safety for pedestrian crossing

Who Should Do What, With What Resources?
• A Shuttle subsidized by businesses and grants
• Law enforcement: better use of time, warning letters, and mobile radar speed trailer
• City Council: sets budgets for Sheriffs and new signals
• Volunteers to walk kids to school

What Should be Done First?
• Enforcement
- Photo tickets
- Red light runners
- Rapid punishment
- Build reputation: do not speed in Cupertino

• Safety for pedestrians
- Pedestrian and cyclist friendly community outlook

• Alternative transportation
- Bus service
- Bus stops
- Accessible to all Cupertino

- Test-trolley holiday on Stevens Creek

Issue #3
DOWNTOWN
How will this Issue Affect Cupertino's Sense of Community?
• By unifying cultures and generations
• By providing learning opportunities through social interaction and cultural festivities
• By providing a relaxing atmosphere
• By expanding transportation opportunities beyond driving
• By adding value to public transportation
• By strengthening the sense of identity

What Challenges and Opportunities does this issue present?
• Deciding what it will be made up of (retail/park?)
• Deciding it's future location
• Finding transportation to downtown
• Bring a sense of identity and community
• Provide a place to spend free time
• Changing our attitude to adjust for density and accept the downtown
• Deciding who has responsibility at which stage of the process

Who Should Do What, With What Resources?
• City Council needs to take a leadership role
• Initiate partnerships of developers and the city
• Areas to develop: Vallco, Compaq, old Office Building
• Evaluate current facilities for why they are not working
• A new community commission
• Possible way to go: multiple tracks brought together by landscape

What Should be Done First?
• Examine old/new facilities to decide why they do and do not work
• Council should finalize a few ideas and their costs
• Community forum to decide
• Consultants to decide what builds atmosphere that fits community goals

Issue #4
PRESERVING AND STRENGTHENING COMMUNITY VALUES
How will this Issue Affect Cupertino's Sense of Community?
• Safety
• Commitment to parks and open space
• Belonging creates inclusiveness, ownership, and sense of tradition

Who Should Do What, With What Resources?
• All residents need to educate themselves and engage in the life of the community
• Agencies/Leadership seek newcomers and educate them about community values
• Institutional outreach using existing infrastructure

Appendix D
EXISTING CONDITIONS

EXISTING WALKING MODE SPLIT

The school districts do not keep records of how the students commute to school. A few schools have enough data to provide estimates of the mode split. For example, at Cupertino and Homestead High Schools, the mode splits are estimated to be as follows:

Table 1
High School Mode Splits

	Cupertino High	Homestead High
Drive Alone:	20%	15-20%
Carpool:	10%	5%
Bus:	10%	5-7%
Walk:	25%	10%
Bicycle:	10%	3-5%
Dropped off/picked up:	25%	60%+/-

The City conducted a one-day spot check of the travel modes of the three schools clustered on McClellan/Bubb in November of 1999. While not a definitive count of all the students, it reflects the mode that could be observed from one location. See Table 2. The proportion of students observed walking to school was 29 percent at the elementary school, increased to 37 percent at the middle school and fell to 11 percent at the high school. Bicycling was observed to be used by five percent of the elementary school students, 6 percent of the middle school students and only 2 percent of the high school students. Access by car was observed to be around 60 percent for both the elementary school and the middle school, but jumped to 86 percent for the high school. The latter was composed of 57 percent as passengers, 29 percent as drivers. Clearly, driving to school replaces biking and walking for many high school students.

Table 2
Spot Count – AM Peak Period
Student Travel Mode-Three Cupertino Schools

Number of Students by Mode of Travel	Bused	Auto Passenger	Student Driver	Walked	Biked	Total
Lincoln Elementary School	11 4%	194 63%	N/A N/A	88 29%	15 5%	308 100%
Kennedy Middle School	4 <1%	458 57%	N/A N/A	300 37%	47 6%	809 100%
Monta Vista High	0	243	125	47	9	424

School	0	57%	29%	11%	2%	100%
Source: City of Cupertino, November 1999.						

EXISTING POLICIES PROCEDURES AND PRACTICES

Table 3
Existing Policies, Practices and Procedures

Issue	Agency	Policy
General Pedestrian Issues		
Crosswalks	City	Provide crosswalks at signalized intersections and at unsignalized intersections when the presence of pedestrians indicates the need to mark a crosswalk.
Sidewalk construction	City	Provide sidewalks on both sides of arterials and collectors; provide sidewalks in residential areas when developed and retrofit as requested
Sidewalk maintenance	City	Annual program to review for gaps, levelness and shrubbery encroachment
Signal timing-pedestrian phasing	City	Initial WALK phase timed at 5 seconds. Flashing DON'T WALK phase is timed assuming a walking speed of four feet per second
Flashing yellow beacons	City	Placed when signal controlled intersection is not visible due to horizontal curvature of the road.
Transit Related		
Service frequency	VTA	The VTA policies are to maintain headways of 15 minutes on cross-town routes during the peak period, 30 minutes midday and 60 minutes during the evening and on weekends
Bus shelters	VTA	City funded bus shelters can be provided with no objection from the VTA. VTA installed bus shelters generally required 300 daily on and offs. New shelters are generally provided under the ad (advertisement) –shelter program.
Pedestrian Access	VTA/City	VTA is developing guidelines for providing pedestrian access to transit stops in order to enhance the transit connections for pedestrians. This document was completed in the Spring of the year 2000.
School Related		
Install and maintain school related signs and pavement markings	City	City reviews two school areas per year and all new schools. City also conducts reviews in special circumstances and upon request.

Table 3
Existing Policies, Practices and Procedures

Issue	Agency	Policy
Identify suggested routes to school	City	City has developed routes to all schools. Updated when school boundaries change, otherwise no schedule for updating.
Distribute suggested routes to school to students/parents	Cupertino Unified School District	Distributed by schools at the beginning of the school year.
Adult Crossing Guards	City	City conducts study of specific intersections on request. City uses Caltrans guidelines for determining whether an Adult Crossing Guard should be utilized.
School busing K-8		Prior to 1980, the state reimbursed 100% of the cost of school busing. The state then began to cap the reimbursement, which gradually declined until it covered only the cost of mandated bus service for special education. CUSD continued to provide bus service even with reduced funding until 1991 when it was finally discontinued due to lack of funding. When there was busing, 1,800 of the 12,000 students participated. CUSD would be receptive to resuming the school bus program if there were funding.
Walking School Bus	Volunteer	Regnart School
High School parking policies	Fremont Union High School District	Varies with each school; all require permits, some give parking privileges to seniors. Generally the parking is available on a first-come-first-serve basis; overflow parking on neighborhood streets. There are no daily parking fees.
High School parking policies	Cupertino High	Students must buy permits: permit costs $3/year. No limit on permits sold, enough parking for everyone. Spaces within lot available on first come first serve basis no reserved areas or privileges.
High School parking policies	Homestead High	Students must buy permits; permit costs $20/year; the number of permits sold is limited to 20% more than the number of spaces available.

Table 3
Existing Policies, Practices and Procedures

Issue	Agency	Policy
High School parking policies	Monta Vista High	Monta Vista High: Students permits available only for juniors and seniors and only by lottery. Permits costs $15/semester and students receive an assigned space. (316 spaces in student lot). (There are also 20 first-come first-served spaces available with a $10 decal). Parking privileges revoked if student receives moving violation between 7 AM and 4 PM on a school day.
De Anza College parking policies	De Anza College	Permits available for $26.50 per quarter or $2 per day. See additional discussion in below in Section E.
ADA Compliance		
Curb ramps	City	A Citywide program to install curb ramps at all intersections with arterials and collectors has been completed. Residential areas are in progress.
Audible traffic signals	City	City provides audible signals on request.
Accessibility to transit stops	City	City provides improved accessibility on request.
Other accessibility issues	City	Wheel chair detectors are provided in curb ramps on request, where the pedestrian push-button is located inconveniently to someone in a wheel chair.

PEDESTRIAN COLLISION ANALYSIS

Table 4 Pedestrian Injuries As Percent Of Total Traffic-Related		
Location	**Pedestrians as Percent of Total Traffic Injuries**	**Pedestrians as Percent of Total Traffic Fatalities**
Cupertino [1]	3%	0%
California	5%[2]	20%[3]
USA [3]	2%	13%
/1/ 1997-1999 average; /2/ 1998; /3/1997		

The streets with the largest number of pedestrian collisions were:

- Stevens Creek Boulevard - 11
- De Anza Boulevard - 9
- McClellan Road – 8
- Homestead - 4

Approximately half of all pedestrian collisions occurred within 10 feet of an intersection. About one-quarter took place within 100 feet and the remaining took place more than 100 feet from the intersection. There were seven intersections with multiple pedestrian collisions. These are listed in Table 5.

Table 5 Multiple Pedestrian Collision Locations		
Intersection Name	**Number Of Collisions**	**Control**
Stevens Creek &Bandley	3	signal
De Anza & Homestead	2	signal
Bubb & McClellan	4	signal
Stevens Creek & Miller	2	signal
Homestead & Kennewick	2	signal
McClellan & Orange	2	STOP sign
Merritt and Vista	2	two-way STOP

Virtually all of the collisions at intersections involved a pedestrian crossing in a crosswalk. See Table 6.

Table 6 Pedestrian Action at Time of Collision	
Pedestrian Action	**Number**
Crossing in Crosswalk at Intersection	30
Crossing in Crosswalk-Not at Intersection	8
In Road-Includes Shoulder	7
Not in Road	6

Vehicle *movement preceding collision* is also an important statistical consideration. The most common vehicle movement preceding a collision was the right-hand turn, which accounted for 30 percent of the pedestrian/vehicle collisions (see Table 7).

Table 7 Vehicle Movement Preceding Pedestrian Collision				
Movement Of Vehicle	**Year**			**Total**
	1997	**1998**	**1999**	
Left-Turn	0	1	0	1
Right-Turn	10	3	6	19
Ran Off Road	0	2	0	2
Stopped	4	3	2	9
Proceeded Straight	10	12	1	23
Entered Traffic	1	1	0	2
Backing Up	0	1	1	2
Slowing	2	0	2	4
Parked	2	1	0	3
Total	**29**	**27**	**12**	**68***
*Totals more than sixty due to multiple vehicles involved in some collisions				

The age breakdown of the pedestrians involved in the pedestrian collisions is presented in Table 8. One-third of the pedestrian collisions involved children under age 16, while 13% involved senior citizens.

Table 8 Pedestrian Collisions By Age					
	Year			**Total**	
Age Rank	**1997**	**1998**	**1999**	**Number**	**Percent**
0-10	1	0	n/a		4%
11-15	5	7	n/a		29%
16-20	3	2	n/a		10%
21-40	2	4	n/a		15%
41-64	6	3	n/a		21%
65 +	2	2	n/a		13%
Unknown	2	1	n/a		8%

Total	**21**	**19**	n/a	**40**	**100%**

The party at-fault for these collisions is presented in Table 9. Pedestrians were determined to be at-fault in 25 percent of the collisions.

Table 9
At-Fault Determination Of Pedestrian – Vehicle Collisions

Year	At-Fault			Total
	Pedestrian	Driver	Unstated	
1997	4	12	2	18
1998	3	8	1	12
1999	n/a	n/a	n/a	n/a
Total	**7**	**20**	**3**	**32**

When party-at-fault is considered in terms of age of the pedestrian victim, it becomes apparent that adults tend to be more careful pedestrians: 83 percent of the adult pedestrians were not at-fault, whereas 57 percent of the child-pedestrians were at-fault (see Table 10). This illustrates that efforts toward pedestrian education should be targeted primarily towards children and parents of children.

Table 10
At-Fault Party By Age Of Pedestrian Victim

Age of Pedestrian Victim	At-Fault Pedestrian				At-Fault Driver			
	1997	1998	1999	Total	1997	1998	1999	Total
Children ≤ 16	4	2	n/a	8	2	2	n/a	6
Adults	0	1	n/a	4	5	9	n/a	20
Total	**4**	**3**	n/a	**12**	**7**	**11**	n/a	**26**

The most common primary collision factors for the pedestrian collisions is presented in Table 11.

Table 11
Primary Collision Factors In Pedestrian/Vehicle Collisions

Primary Collision Factor	1997-1999 Total
Failure to yield to pedestrian in crosswalk	13
Unsafe Speed	5
Pedestrian Failure to yield not at marked crosswalk	4
Starting/backing when unsafe	4
Failure to yield to pedestrian on sidewalk	4

Improper Driving	4

Appendix E
SITE SPECIFIC RECOMMENDATIONS

Three sites were evaluated in more detail. These three sites were visited in the field to observe the existing conditions and to develop potential improvement ideas. The findings and recommendations are presented below.

1. DE ANZA COLLEGE

Summary Of De Anza College Policies And Practices

The current student population at De Anza College ranges from 15,000 to 25,000 per quarter. This is projected to increase to 32,000 by the year 2010. The current transportation mode split to De Anza College is under study by Altrans[1]. It is the perception of the parking director that the number of bicyclists has increased, but there are no counts to verify this. It also appears that fewer students in their late teens are driving to campus, although there are no surveys to confirm this. De Anza College would be interested in a survey that examines the mode of student transportation by age of student.

De Anza College has approximately 5000 parking spaces. Parking permits cost $26.50 per quarter or $2 per day. De Anza College is prevented by state legislation from raising the permit fees above $100 per year, although there is no such restriction on the daily fee. (The current daily fee amounts to $110 per quarter if a student parks every day.) The revenue from parking fees goes to pay the construction cost of the parking structure built in 1993. This structure will be paid off in the year 2007.

Parking revenues have been declining due to a variety of factors including increased numbers of free and discounted permits for disabled students and students in special education, CalWorks, and Extended Opportunities Programs and Services (EOPS.) Revenues are declining despite the fact that De Anza College runs out of parking spaces for the first few weeks of the quarter. Overflow parking is accommodated on Mary Avenue and in the Latter Day Saints Church lot on Stelling Road. Nevertheless, De Anza College remains committed to supporting alternative modes. Reducing parking demand will help to accommodate the projected student population growth without the need for expensive parking structures.

The Facilities Master Plan for DeAnza College, completed in 1999, outlines the allocation of the $130 million in Measure E Funds to construct and rehabilitate buildings and infrastructure. Several components of the Master Plan will facilitate other transportation modes. The most significant one is to provide a transit center for VTA buses on site. Another project will relocate the entrance on McClellan to the west and provide a traffic signal. The location of the existing vehicular entrance will be a retained as a pedestrian access. There is also money for sidewalks, lighting and signage. It may be possible to use some Measure E funds to leverage grant funding

[1] Altrans is a consulting firm providing alternative transportation planning help to cities and school districts.

to pursue more pedestrian improvement projects. Finally, Altrans has developed a proposal for a student fee that would provide all students with VTA passes. This proposal is still pending.

Recommendations To Improve Pedestrian Access And Circulation

A major gap in pedestrian access and circulation is along the western perimeter of De Anza College. A path is recommended that would align with Mary Avenue at Stevens Creek Boulevard, and could be the extension of the bike route that continues north on Mary Avenue to the proposed Bicycle Footbridge over Interstate 280. A pedestrian path at this location is consistent with the De Anza College Facilities Master Plan which states that the "installation of sidewalks at all perimeter roads and crosswalks is recommended". There are two options: one is to construct a multi-use trail for both pedestrians and bicycles. The other is to construct a sidewalk for pedestrians and to sign the perimeter roadway for bicycles. The recommended cross-sections for these alternatives is described below:

Option 1: Multi-use trail: minimum ten-foot paved area with two foot graded area on either side. Trees adjacent to the freeway right-of-way may need to be removed and/or relocated. Where a minimum ten-foot wide multi-use path is not possible, right-of-way may need to be acquired from the freeway right-of-way or bikes may need to be directed onto the perimeter campus roadway. Alternatively, Option 2 should be pursued for the entire length, see below.

Option 2: Construct five-foot sidewalk for pedestrians; install signage and pavement markings on the perimeter roadway for bicycles.

- Signage: The Facilities Master Plan states that "campus wayfinding is limited and a comprehensive signage program is needed." Signage should be installed to direct pedestrians from the western perimeter pathway to campus buildings and attractions such as the planetarium and Flint Center.
- Lighting for the trail /sidewalk: The Facilities Master Plan states that there should be "large scale lighting along vehicular routes and parking lots" and "pedestrian scale lights in campus core." It is recommended that all pedestrian entrances and major pathways into the interior have pedestrian scale lighting.
- Emergency Phone/call boxes should be strategically placed along the western perimeter pathway.

2. OAKS SHOPPING CENTER INTEGRATION WITH MEMORIAL PARK

Oaks Shopping Center is located across Mary Avenue from Memorial Park, yet there is no easy way to walk from one to the other. Mary Avenue is about seventy feet wide at this point, which is an intimidating width for pedestrians. It is striped to have a northbound right-turn lane into the park, two through lanes, bike lanes, parking lanes, and a southbound left-turn lane into the park. Further north, Mary Avenue has diagonal parking, which serves as free and/or overflow parking for De Anza College students.

Recommendation:

- Realign pathway within Oaks Shopping Center to provide direct access to Memorial Park Provide pathway/signage on the park site to access the pathway over the pond to the picnic tables and playground.
- Mary Avenue - Construct high visibility crosswalk, speed table and/or median pedestrian refuge (under design)
- Construct roundabout at the Mary / Memorial Park entrance to provide a gateway treatment as well as to slow traffic for the crosswalk

3. MCCLELLAN/BUBB FRONTING LINCOLN ELEMENTARY SCHOOL, KENNEDY MIDDLE SCHOOL AND MONTA VISTA HIGH SCHOOL

Setting

McClellan is the site of both Lincoln Elementary School and Monta Vista High School. The roadway is 40 feet wide and is striped to have two travel lanes, a center left turn lane and two bike lanes. The posted speed limit is 25 mph and parking is prohibited. There is considerable congestion particularly at the start of the school day when parents drive their children to school. In addition, many children walk and bike to school using the southern sidewalk. This requires the students to cross several driveways used by drivers entering and exiting the drop-off area. Bicyclists riding the wrong way on the sidewalk in front of the two schools is common. There is an adult crossing guard at the western crosswalk at the western edge of the Lincoln Elementary School site. There is a pedestrian pathway located in between Lincoln Elementary School and Monta Vista High School that provides access for students residing to the south.

Significant traffic congestion and queues develop along McClellan and Bubb due to the three schools located in close proximity to each other. The staggered start times (see table below) help to ameliorate the problem. A volunteer helps cars turn left from the main exit driveway (easternmost) at Lincoln Elementary School. The second (westernmost) driveway could also benefit from volunteers helping cars to exit.

Starting Times of the Three McClellan Road Schools

School	Start time	Dismissal Time
Lincoln Elementary School	9:00 am	3:00 pm/3:30 p.m. (Tuesday 2:30 p.m.)
JFK Middle School	8:20 am	2:48 p.m.
Monta Vista High School	7:35 am	2:55 p.m.

Analysis

While queues and delays are quite extensive, it is not physically feasible to widen McClellan to have more traffic lanes. The increased number of students at these sites combined with the

significant reduction in the number of children who walk and bike to school and the cessation of school busing in 1992 has resulted in a situation that has exceeded the capacity of the existing roadway configuration. The prevalence of cars in and around the school zones and the inherent safety conflicts exacerbates the situation for those who still do walk and bike. Ideally, the main pedestrian access point would be more separated from the main vehicular access point. However even if this were possible, the location of two schools adjacent to each other makes it inevitable that the students walking to one school will have to cross the driveways of the second school.

The numerous driveways along McClellan (two drop-off areas for Lincoln parents, one drop off area for buses at Lincoln Elementary School and five driveways to the Monta Vista High School) cause problems in two ways:

- Eastbound bicyclists in bike lane are at risk from inattentive right-turning vehicles; the narrowness of McClellan makes it impossible for a bicyclist to pass a right-turning motorist on the left if they do not merge into the bike lane. A near collision was observed during field observations.
- There are conflicts between students on the sidewalks and the drivers entering and exiting the driveways to drop off students.

Students sparsely use bike lanes on north side and there is a lot of wrong-way riding on southside sidewalk, despite the Cupertino standard WRONG WAY bike riding signs.

Wider bike lanes might encourage students to ride in the correct direction. One solution to provide wider bike lanes would be to remove the center left-turn lane. A disadvantage to this action is that cars would not be able to bypass other cars waiting to turn left, and congestion would increase. There could be positive side effects, however, such as fewer parents choosing to drive their children, overall lower speeds on McClellan Road, and possibly some through traffic choosing alternate routes avoiding the area altogether. However, this action could backfire because vehicles waiting behind stopped vehicles would be tempted to use the bike lanes to pass. If done erratically without checking, they could endanger bicyclists using the bike lanes.

Another option to reduce wrong way bicycle riding on the southside sidewalk is to encourage high school students arriving by bicycle to use the Presidio pathway or Orange Avenue. Redesigning the crosswalk at Orange to be a high visibility speed table would facilitate the high school students crossing McClellan, and an adult crossing guard would also help them to cross McClellan. Lincoln Elementary School students should continue to cross at the existing location so they will not have to walk across driveways on the south side of the street.

Signing and striping for the school zone is mostly in conformance with the Caltrans Traffic Manual. However the approved “School Crosswalk” sign (W66) at Orange is located behind the crosswalk and is partially obscured by a large tree and a telephone pole. Ideally it should be located at or just in front of the crosswalk and it may be posted 50 feet in advance. Also on Bubb, there is a SLOW SCHOOL XING pavement legend for southbound traffic in advance of Hyannisport. However, this legend is not supposed to be used in advance of a STOP sign or signal controlled intersection.

The southside sidewalk is eight feet wide, but the portion adjacent to the curb is unavailable due to trees, poles and other street furniture, resulting in a usable width of only five-feet. It is

recommended that the sidewalk be widened to 11-feet where possible. However, in some locations this may not be achievable due to choke points caused by utilities and mature trees.

Recommendations for McClellan/Bubb Roads and the Fronting Schools

Transportation Demand Management (TDM) Plan

A strong TDM plan is needed to encourage walking, transit and carpooling. Altrans develops pro-active trip plans for all middle and high schools that sends customized information on carpooling and transit directly to the parents of each student. This program does not rely on parents taking the initiative to ask for commute alternatives. Potential carpool matches and transit information is mailed to parents of students living within one-quarter mile of a direct bus line to school. This has been underway since mid-2000 and continues annually.

Walking and bicycling should be encouraged by:

- Developing a "Walking School Bus" program in which parent volunteers walk a prescribed route to school picking up other children as they go.
- Providing additional adult crossing guards to supervise designated pedestrian crosswalks, thereby decreasing the level of parental concern in allowing children to walk to school.
- Widening sidewalk on southside of McClellan Road to 11-feet, where possible.
- Providing sidewalk on the north side of McClellan Road west of Bubb
- Providing adult crossing guard at Orange Avenue to encourage high school students to use this access point.
- Enhancing the visibility of the existing Orange Avenue crosswalk by installing a speed table with colored pavement and providing an adult crossing guard.

Traffic congestion

Those who are part of the traffic congestion problem should have an opportunity to be part of the solution. Parents who drive their children to school should be requested to help direct traffic by volunteering to station themselves at corners and serve as observers and informal chaperones.

Bike lane awareness

Warn motorists of need to watch for cyclists in bike lanes. This could be accomplished by the use of a sign such as "*Right-Turning Vehicles Enter Bike Lane When Safe*" and/or dashing the bike lane stripe through all the driveway locations. Innovative treatments such as colored bike lanes may be useful, but such a treatment may have the opposite effect and discourage motorists from entering the bike lane in preparation for making a right turn.

Appendix F
BEST PRACTICES AND DESIGN GUIDELINES

TRADITIONAL NEIGHBORHOOD DESIGN

Essential Characteristics of Traditional Neighborhood Design

Traditional Neighborhood Design (TND) contains the essential characteristics that make a community pedestrian-friendly and walkable[i]:

- Medium to high densities of land use.
- Dense development around transit stops.
- Mix of land uses.
- Street-oriented buildings (no farther than 25 feet from street edge).
- Proper height to width ratio for street enclosures (1:1 to 1:3).
- Short to medium block lengths (300 to 500 feet).
- Comfortable and safe places to wait.
- Transit routes every half-mile.
- Two or four lane streets with rare exceptions.
- Continuous sidewalks wide enough for couples.
- Safe pedestrian crossings.
- Appropriate buffering from traffic (on-street parking, park-rows, street trees).

Traffic Engineering Features of Traditional Neighborhood Design

The information presented in this section was culled from a number of sources including Walter Kulash[ii], and ITE[iii], [iv].

Street Layout – The traditional street layout consisted of a dense network of highly connected streets. This usually manifested itself in a grid pattern of streets, where there are multiple available routes for a given trip. There are always alternate routes available if the primary route for a trip is unavailable.

Street Cross Section – Residential streets in traditional neighborhoods are typically no greater than two travel lanes plus onstreet parking, with the maximum pavement width of 32 feet or less. TND calls for a street right-of-way sufficient to contain this street cross-section, but not intended to accommodate a wider pavement at later stages. For most collectors, a right-of-way width of 70 feet can accommodate the TND street. In the TND concept hierarchy of streets is reduced or

nonexistent - either eliminating or greatly reducing the "hierarchy" of conventional functional classifications that are assigned to streets.

In the conventional system, the base of the hierarchy is local streets, intended for immediate property access. The next level is the collector, intended to gather traffic from local streets and feed it to the arterial system. The final level is the arterial street, intended for longer distance mobility and not intended to serve as immediate access to properties (although this function is almost inevitable).

Onstreet Parking – On-street parallel parking in a TND is permitted on virtually all streets. The parking serves as a buffer to pedestrians on the sidewalk, and increases the parking supply itself, although this source of supply serves only a small part of the overall parking need in a business district.

Short Traffic Signal Cycles – Traffic signal lengths of no greater than 60 seconds are compatible with TND. Short traffic signals are pedestrian-friendly. They also create more frequent gaps in traffic for midblock pedestrian crossings.

Two-phase Signals – These are signals that simply turn green for the entire approach, with no turn arrows. These are possible where there is a dense street network, because there is a much greater choice of locations for left-turn movements. The Conventional Suburban Development concept concentrates left-turn movements at a few major intersections, creating the need for multiphase signals. Two-phase signals convey a sense of small scale, to both drivers and pedestrians, that contrasts strongly to heavy-duty multiphase sequences. Two-phase operation permits a greatly reduced cycle time.

Curb Radii – Greatly reduced curb radii at intersections are found in a TND, typically 10 feet or less, which reduces the speed of turning automobiles and also greatly reduces the curb-to-curb walking distance required for pedestrians crossing the street.

Alleys – The TND concept frequently includes alleys serving the rear of all properties. These alleys eliminate the need for curb cuts for driveways in the streets, and permit continuity of buildings along a block front. Curb continuity further increases the amount of on-street parking that can be obtained in the design. Alleys are also intended to provide a utility corridor, thereby removing utilities, particularly power lines, from the streetscape.

Intersection Level of Service – Traditional considerations include vehicular capacity, travel speed (and therefore travel time) and safety. The following should also be considered: Pedestrians, bicycles, overall neighborhood ambiance. It should be noted that TND has superior traffic capacity; large streets have an inherent deficiency of scale. A network of small connected streets has more traffic capacity than the same street area arranged in a sparse hierarchy of large streets. Some other features, while not directly related to traffic, are highly characteristic of TNDs:

Traffic Calming – Traffic calming are techniques that are used to ameliorate the negative effects of post-War suburban sprawl, with wide streets and designs for unimpeded traffic flow. This

document will not repeat the many traffic calming strategies, but recommended traffic calming design guides are included in the references.

Street Trees – Trees are very effective traffic calming devices in addition to the unparalleled beauty that they add to the community. Trees can also serve to create a frame around a street, and such "outdoor rooms" are recognized as being very conducive to enhancing the non-motorist environment. Trees are usually located within the buffer planting strips of six and more feet in width. In commercial areas, trees are usually located in tree wells in sidewalks that are usually eight to ten feet wide.

PEDESTRIAN DESIGN GUIDELINES

The following guidelines for sidewalks and associated pedestrian features are based on guidelines that conform to the Americans with Disabilities Act (ADA).[v] [vi]

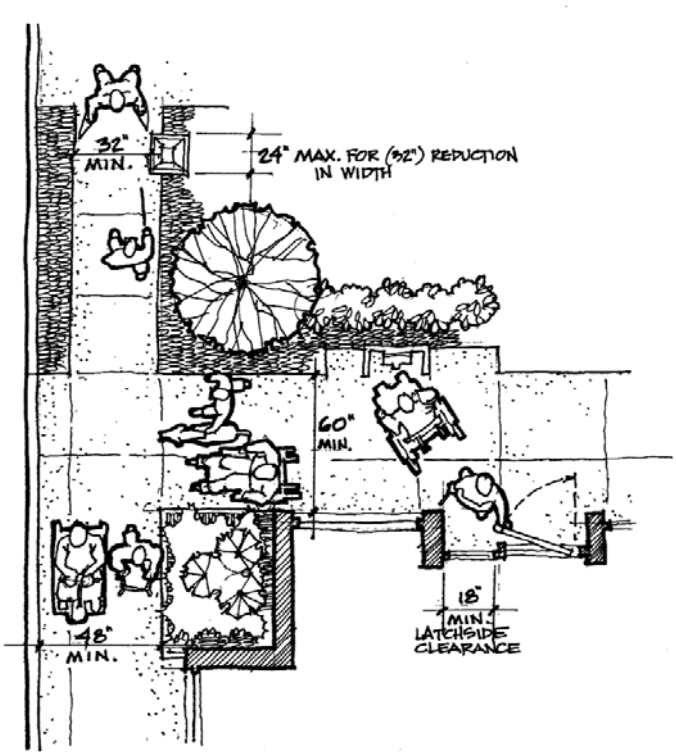
Sidewalks

There are several components to good sidewalk design. Each component is discussed individually below:

Sidewalk Surface – Sidewalks and shared-use paths should meet the "stable, firm, and slip-resistant…" criteria established in accessibility standards. The Access Board's "Technical Assistance Bulletin #4, Surfaces" contains additional information on the performance requirements for walking surfaces on an accessible route.

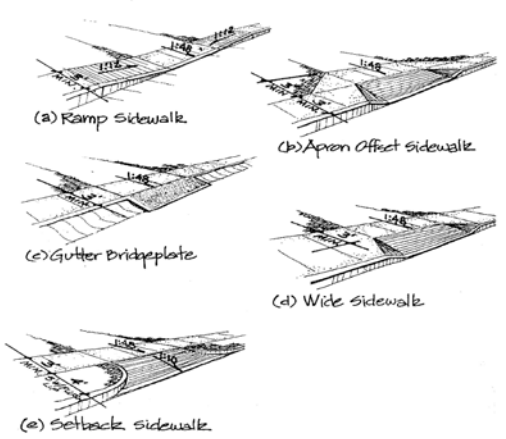
Sidewalk Width – (Measured from back of curb)

- 36 inches (915mm) is the minimum accessible width
- 32 inches (815 mm)is the minimum accessible width at choke points
- 48 inches (1220mm)is the minimum width for an ambulatory person to pass a non-ambulatory person, with constricted movement
- 60 inches (1525 mm) is recommended as the minimum width adjacent to a curb
- 60 inches (1525 mm) is the minimum width needed for two wheelchairs to pass each other and/or to allow for the wheel chair to have



maneuvering space - such as through doorways, or to use public telephones

- 64 inches (1625 mm) is recommended for two able bodied persons to pass each other comfortably
- 96 inches (8 feet) (2.4m) is preferred in areas with heavy pedestrian volumes to allow comfortable passing for three persons
- Note additional width is needed for street furniture (parking meters, planters, mailboxes, bus shelters, bike racks, etc.) and to allow for driveway aprons

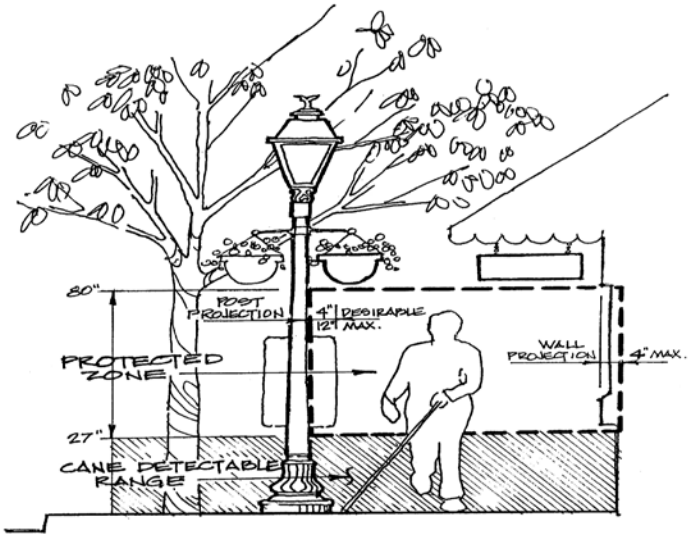


Sidewalk Cross Slope

- Maximum of 1:48 (2 percent)
- At driveways, locate the sidewalks such that the driveway apron does not prevent the provision of a minimum width of 36 inches with a cross slope no more than 2 percent
- At the intersection of two sidewalks, note that the running slope of one sidewalk is the cross slope of the other

Sidewalk Street Furniture

- Shall not protrude into the aforementioned widths
- Heights of fixed objects shall be detectable by pedestrians with vision impairments: leading edges should be mounted at or below 27 inches above the sidewalk so as to be detected by a cane



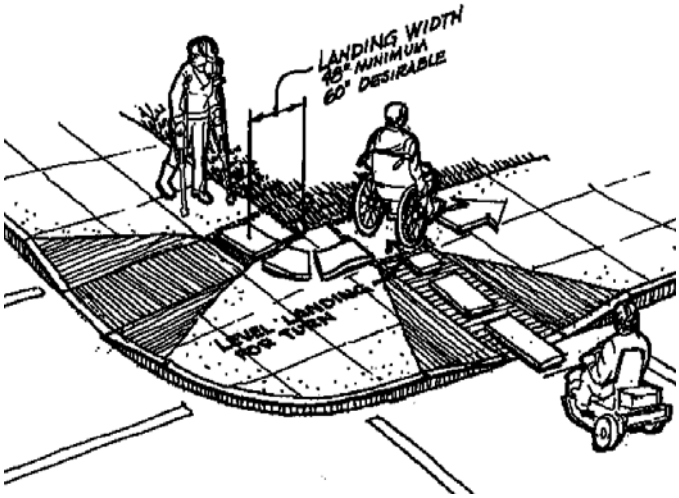
- Minimum height of objects placed on sidewalks outside the circulating zone so as not to be walked into, e.g. bike racks, is not specified in ADA or ADAAG. It is recommended that the minimum height be 30 inches

Running Slope

- On a new site, design features can be manipulated to limit walkway running slope to 1:20 (5%)

- Ramped segments are added where necessary with handrails and landings at or below the 1:12 (8.33%) slope specified in accessibility standards for ramps
- These slopes will not be consistently possible to achieve along public sidewalks and shared-use paths, where running slope is tied to roadway gradient and underlying terrain
- Nevertheless, running slope should be kept to the minimum feasible consistent with these factors
- Artificial slopes should not be added as landscaping features
- Meandering walkways that add significantly to the travel distance should not be designed on a primary circulation route

Curb Ramp Standards – Curb ramps are required whenever a new or altered pedestrian walkway crosses a curb to a street OR whenever a new or altered street intersects a pedestrian walkway. An alternative to curb ramps is a raised crosswalk.



- Width: 36" minimum
- Running Slope: 1:12 (8.33 %) maximum (alterations 1:10 or 10 % for 6 inch rise or 1:8 or 12 % for a 3 inch rise)
- NOTE of caution: slopes that are too gradual are difficult to detect by pedestrians with visual impairments and a tactile feature should be included. In California, a 24 inch wide detectable arming material where sidewalks enter roadway without an intervening curb face (slopes of 1:15 or less)
- Level Landing: ramp must connect to route with maximum cross slope of 2 % and at least 36 inches wide
- Transition: curb ramp to gutter must be flush - no lips, i.e. maximum vertical change of 1/4 inch (6 mm)
- Landing width of 48 inches - 10 percent maximum slope
- Landing width of 36-48 inches -8.3 % maximum slope
- Location within intersection: must be within crosswalks
- Two perpendicular ramps are preferred to one diagonal ramp
- Diagonal ramps must have 48 inch bottom landing located within the space created between the extension of the curb lines and the curb radius
- NOTE: smaller curb radii can be critical factor in providing the two perpendicular ramps within the crosswalks instead of one diagonal ramp

- Smaller curb radii also help pedestrians with visual impairments differentiate between parallel and perpendicular traffic

Crosswalks

Design: A standard crosswalk is ten feet wide with two parallel 12 inch white stripes. In school zones, the stripes are yellow and the crosswalk is marked with a W66 school crossing sign. Otherwise a W54 pedestrian warning sign may be used.

W54 Pedestrian Warning Sign

Zebra crosswalk: Diagonally or longitudinally striped lines may be used to mark the crosswalk instead. These lines are 12 to 24 inches wide spaced 12 to 24 inches apart within the area that would otherwise mark the crosswalk.

Supplementary devices: In-pavement flashing lights, otherwise known as In-Roadway Lights, are a special type of highway traffic signal installed in the roadway surface to warn road users that they are approaching a condition on or adjacent to the roadway that might not be readily apparent and might require the road users to slow down and/or come to a stop.

According the *Manual of Uniform Traffic Control Devices 2000*, if used, In-Roadway Warning Lights at crosswalks:

- shall not exceed a height of 19 mm (0.75 in) above the roadway surface.
- shall be installed only at marked crosswalks with applicable warning signs. They shall not be used at crosswalks controlled by YIELD signs, STOP signs, or traffic control signals.
- shall be installed along both sides of the crosswalk and shall span its entire length.
- shall initiate operation based on pedestrian actuation and shall cease operation at a predetermined time after the pedestrian actuation or, with passive detection, after the pedestrian clears the crosswalk. In-Roadway Warning Lights at crosswalks may use pedestrian detectors to determine the duration of the operation instead of ceasing operation after a predetermined time.
- shall display a flashing yellow signal indication when actuated. The flash rate for In-Roadway Warning Lights at crosswalks shall be at least 50, but not more than 60, flash periods per minute. The flash rate shall not be between 5 and 30 flashes per second to avoid frequencies that might cause seizures.

Raised crosswalks:
Raised crossings, in which the sidewalks are continued across an intersection at curb height, requiring vehicles to ramp up and down, can provide the benefits of a ramp-free connection to the street. Raised crossings (also known as speed tables) are now being designed as traffic-

calming measures in many communities and can be useful in making narrow sidewalks accessible without the installation of curb ramps.

However, a means of discriminating between the sidewalk and the street - typically, a tactile surface treatment - should be provided for pedestrians with vision impairments so that they are aware of leaving the protection of the sidewalk. Uncurbed transitions between sidewalk and street make it difficult for pedestrians with vision impairments to identify the boundary between pedestrian and vehicular areas. Detectable warning surfaces (see ADAAG 4.29.2) placed at the edge of the walkway adjacent to the street can provide information about the presence of a crosswalk, replacing the cues once provided by raised curbs. Audible locator tones installed in pedestrian pushbuttons may also be useful in identifying intersections.

Signalized Intersections

Actuated Pedestrian Signals: These signals can be timed to change automatically as a pedestrian reaches the crossing, or change when the pedestrian pushes an activation button. Unlike pre-set signals, real-time signals respond to immediate pedestrian needs.

- **Signal timing**: Pedestrian phases should provide 2.5 feet per second for slower pedestrians (elderly, disabled, etc.) where appropriate. (The State of California requires a maximum of 4 feet per second.)
- **Countdown signals**: Instead of a flashing red hand, countdown signals provide information on the number of seconds remaining to cross.
- **"Ped scramble"**: These signals include an all-way red phase for motor vehicles that allows pedestrians to cross in every direction, eliminating conflicts between pedestrians and turning vehicles. Ped scrambles are in use throughout the Financial District in San Francisco.
- **Accessible signals**: These may include audible signals for blind pedestrians, wheel chair detectors and pavement symbols, and/or foot-pedal pedestrian activated signals for pedestrians with limited use of the upper body.

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[i] Reid Ewing, *Pedestrian- and Transit Friendly Design*, International City/County Management Association March 1996

[ii] Walter Kulash, *Why TND Traffic Systems Work*, June 28, 1998

[iii] Institute of Transportation Engineers, Traditional Neighborhood Development Street Design Guidelines Recommended Practice, 1999

[iv] C. Rick Chellman, P.E., *The Design of New Urbanist Streets*, prepared for the Urban Land Institute, April 2000

[v] FHWA, *A Design Guide - Sidewalks, Street Crossings and Other Pedestrian Facilities*, Nov, 1999

[vi] FHWA, - *Designing Sidewalks and Trails for Access Part II- A Best Practices Guidebook*, September *2001*

Appendix G
PUBLIC INPUT ON PEDESTRIAN CIRCULATION AND ACCESS

Public input was solicited through the Cupertino Scene. Over a dozen constructive responses were received regarding various issues. These are summarized below by topic:

Crossing streets

1. *Crossing Bollinger midway between Blaney and Miller is difficult, because the bend in Bollinger limits visibility of oncoming traffic, which travels at speeds of up to 50 mph. Suggestion: four-way stop sign at Bollinger and Alderbrook.*
2. *Install a traffic signal at the corner of McClellan and Orange.*
3. *Install a crosswalk on the east of the intersection of Homestead and Swallow.*

Missing Sidewalks (see Figure 6 following page 4-4)

1. *Stevens Creek at Bret*
2. *De Anza in front of Yamagami Nursery*
3. *De Anza between Homestead and Stevens Creek - continuous sidewalks are needed on both sides*
4. *The east side of Bubb from Columbus to Kennedy Middle School*
5. *West side of Stelling at Rainbow*
6. *East side of Stelling, north of the Armenian Church*
7. *East side of Stelling, north of Jollyman Park*
8. *Missing sidewalks on Stelling between Stevens Creek and the Hwy 280 overpass*
9. *Many places where trees or shrubs hang over sidewalks so that a normal size person must duck, or walk around them*

Short-cuts/Pathways/Bridges

1. *Open the existing maintenance road on Regnart Creek between Blaney and Rodriguez and other sections, where possible, to pedestrian/bicycle traffic. This would shorten walks to the library (as well as to Starbucks/ Mervyns/Target) and make them more pleasant.*
2. *Until about a year ago, an opening in the fence at the southeast corner of the Orchard Valley property made it possible to take a very direct route from the corner of Richwood and E. Estates to the Longs Drug/Orchard Valley shopping center. This was closed off*

about a year ago, forcing us to walk all the way out to Stevens Creek. It would be nice if this could be opened up again.

3. *The well-used west side of the railroad tracks from Prospect to Stevens Creek, if smoother and graveled, would improve its walkability.*
4. *If a bicycle path is created along the railroad tracks, please leave a dirt area for joggers and walkers.*
5. *Extend and beautify the alley between Lincoln and Monte Vista High School from McClellan to Presidio. Students have a tough time getting through Lincoln's parking lot to the alley and they may feel more encouraged to walk or ride to school if improvements were made in this area.*
6. *A path to walk from Miramonte, or through the now-gated-community of Rancho to the Deep Cliff Golf Course would help children from the Stevens Canyon area, San Juan, etc. to walk to school. (This used to exist).*
7. *Provide a pedestrian path from Miramonte to Stevens Creek Park. Many bicycle to the park but not many walk there due to the narrow street for automobile, bicycle, and pedestrian traffic.*
8. *Provide an entrance to Blackberry Farm from the trails behind McClellan Ranch; these come very close to Blackberry Farm but there is no access to Blackberry Farm. This would help families residing in Stevens Canyon and in the summer time children who use the swimming pool.*
9. *Existing openings need improvements to better accommodate pedestrian/bicycle access and for ADA: on Orange at Granada, on Olive between Imperial and Pasadena, and on Festival Drive along State Route 85.*
10. *A pedestrian bridge to connect the Phar Lap/Mann neighborhood across Stevens Creek to improve access to Stevens Creek Elementary School. I understand that there is an easement somewhere along Stevens Creek already, so it would be just a matter of constructing the bridge. I think this could help improve walkability in this neighborhood as well as reducing traffic in the Stevens Creek Elementary School neighborhood. In order to get to the school or Varian Park, we either have to walk more than a mile or cross a train track (not at a crossing) because there is no way to cross Steven Creek except by going to the bridge at Stevens Creek.*
11. *At the Tin-Tin market on Miller and Bollinger the little opening to the cul-de-sac at the north side was closed up when the shopping center remodeled. Probably a lot of people who walked before now get in their cars rather than walk the long way around. Unless there is some really compelling reason, I don't think shortcuts should be plugged up.*
12. *An opening in the wall that backs up on a cul-de-sac for walkers to go through is needed at the telescope store on De Anza, by Cigarettes Cheaper.*

Bike Access/Widening

1. *Stelling between Waterford and Rainbow (going north on Stelling) does not have a curb. Suggestion: widen that portion of Stelling. This widening will also benefit pedestrians/kids that are making their way over to the schools on the "Bubb" side of Stelling.*
2. *Widen and add bicycle lanes to Pasadena and Orange and neighboring streets.*
3. *Rainbow between Stelling and Bubb should have been built to be as wide as Rainbow is between Stelling and DeAnza. When they added Seven Springs, they curved the road and made it narrower.*

Other

1. *Add speed bumps on Pasadena and Orange.*
2. *Revise Zoning Ordinance to encourage the integration of work, housing, and retail.*

Education and Encouragement

1. *Let people know of alternative routes to the schools. For example, local streets connect to Varian Park. From there you can access the school. If people realized that their kids didn't have to be on a major street most of the way to school, they might be more willing to consider letting them walk. Ask the students for input on making their neighborhood a safer place to walk or ride their bikes. After all, they're the least experienced in terms of walking and bicycling, so their perspective is useful in evaluating safety at their level. As adults, we make a lot of assumptions on behalf of our children and we end up missing the things that matter the most to them.*
2. *Compare and contrast other school and neighborhood communities, in or out of our Bay Area, with similar pedestrian/bicycle traffic problems and patterns.*
3. *Zero tolerance for red-light runners*
4. *Educate everyone on how to share the road with all users.*

Appendix H
SUMMARY OF DIRECTOR OF WALKABLE COMMUNITIES' VISIT

Dan Burden, a noted authority of the development of "livable communities" was invited to Cupertino in 1999. Members of the City Council, Public Works and Bicycle and Pedestrian Advisory Committee accompanied him on his tour of the City. The following is a brief summary of the observations and recommendations generated at that time:

Potential Improvements:

- Fort Baker at Presidio – school crossing - discussed raised pedestrian crosswalk
- Roundabouts on Stelling at Orion and at Huntridge
- Stevens Creek near Saich, Mervyns and Target - a midblock crosswalk with median refuge: pedestrians can either cross during a gap or press a pedestrian pushbutton that only controls one-direction of traffic at a time
- Eliminate sidewalk gaps on Bubb, McClellan, Stelling and other locations
- Residential areas:
  - Short medians at intersection approach slow left-turn into the side street from the major street
  - Traffic circles
  - Roundabouts
  - No centerline: stripe bike lanes or shoulders, leaving a twenty-foot section for two lanes of traffic; this slows cars due to lack of security of the centerline stripe.

Walkable Cities Brainstorming Session

Pedestrian Retail Serves:

- Existing residents who can walk there
- Future residents who will live and walk there
- Shoppers (both residents and non-residents) who drive and park but stay parked and walk around to enjoy the friendly pedestrian ambiance.

Economic Development Committee

- Revenue (dollars per square foot) can help identify the most likely redevelopment sites in the City
- Old Mill redevelopment project in Mountain View may provide useful data on trip generation
- Village-type and scale mixed-use retail

Pedestrian Commuting

- Major generators such as shopping centers, parks and recreation facilities
- Schools
- Transit access

Pros and Cons of Traffic Calming Related to Walking

- Median refuges
- Raised crosswalks
- Sources: Local Government Commission, Civilizing Traffic, Center for Livable Communities
- Canada's Guide to Traffic Calming
- Develop data on roundabouts and their impact on pedestrian safety

Support for Trails

- Provide more commute options for pedestrians including recreational trails and short-cuts, where possible

Pedestrian Facilities Needs

- Crossing main arterials
- Crosswalk designs
- Sidewalk standards

Appendix I
Prioritization of Recommended Projects

Location of Proposed Improvement	Description of Proposed Improvement	Criteria							
		1	2	3	4	5	6	7	Total
		safety	accident history	gap closure	linkages	pedestrian demand	school/ commuter	Local Support	
Pedestrian Circulation/ Safety Projects									
1. Vallco Fashion Park	Improve access from Stevens Creek such as a covered landscaped walkway that is inviting for pedestrians.	1	0	1	3	2	1	1	9
2. Intersection of Bubb at Stevens Creek	Right turn on Red NB to EB – intimidates pedestrian crossing, wide long crossing of Stevens Creek	3	0	1		1	2	1	8
3. Bubb at McClellan	High congestion level due to elementary, middle school and high school.	3	3	1		1	3	1	12
4. Mervyns Crossroads Shopping Center	Pedestrian friendly site design needed to connect Fontana's at the west end and Starbucks at the east end.	1	0		1	2	1	1	6
5. DeAnza College at McClellan	Provide pedestrian entrance at southwest corner and sidewalks along the perimeter road.	1	2	3	3	2	3	1	15
6. The Oaks Shopping Center at Stevens Creek and Mary	Integrate with Memorial Park – connect with high visibility crosswalk and/or median	2	3	1	1	2	1	1	11

Location of Proposed Improvement	Description of Proposed Improvement	Criteria							
		1	2	3	4	5	6	7	Total
		safety	accident history	gap closure	linkages	pedestrian demand	school/ commuter	Local Support	
	pedestrian refuge.								
7 The Oaks Shopping Center at Stevens Creek and Mary	Roundabout at Mary / Memorial Park entrance.	2	2	1	1	2	1	1	10
Crossing Streets								1	
1. All Freeway interchanges	Modifications needed to be more pedestrian friendly such as reducing the radius to slow speeds, preventing right turns on red.	3	1	1	1	1	2	1	10
2. Stevens Creek at Saich connecting Target and Mervyns	More pedestrian friendly connection between the two shopping centers, including pedestrian-friendly crossing of Stevens Creek at Saich.	3	2	1	3	2	1	1	13
3. Bubb at Caltrans Maintenance Yard	Pedestrian crossing for Ciena Company to cross high speed Bubb.	3	1	1	1	2	2	1	11
4. Bollinger midway between Blaney and Miller	Investigate the possibility of crosswalk with in pavement flashers or a four-way stop sign at Bollinger and Alderbrook.	3	1	1	2	2	2	1	12
5. McClellan at Orange	Install a traffic signal.	3	2	1	1		3	1	11
6. Homestead at Forge	Provide crosswalk on east side.	2	1	2	2		3	1	11
Missing Sidewalks								1	1
1. Stevens Creek at Bret	Construct sidewalks.	1	1	3	1	2	2	1	11
2. De Anza in front of	Construct sidewalks.	1	1	3	1	2	2	1	11

Location of Proposed Improvement	Description of Proposed Improvement	Criteria							
		1	2	3	4	5	6	7	Total
		safety	accident history	gap closure	linkages	pedestrian demand	school/ commuter	Local Support	
Yamagama Nursery									
3. De Anza between Homestead and Stevens Creek	Construct continuous sidewalk.	1	3	3	1	2	2	1	13
4. The east side of Bubb from Columbus to Kennedy Middle School	Construct sidewalks.	1	3	3	1	3	3	1	15
5. West side of Stelling at Rainbow	Construct sidewalks.	1	1	3	1	2	2	1	11
6. East side of Stelling, north of the Armenian Church	Construct sidewalks.	1	2	3	1	2	2	1	12
7. East side of Stelling, north of Jollyman Park	Construct sidewalks.	1	1	3	1	2	2	1	11
8. Citywide	Improved sidewalk maintenance to eliminate trees or shrubs hang over sidewalks as well as upheavals and uneven sidewalks	1	2	2	1	2	2	1	11
Short-cuts/Pathways/Bridges									
1. Vallco Fashion Park	Improve access from Merritt, Amherst and Wheaton via a gate or an opening in the fence.	1	1	3	2	2	1	1	11

Location of Proposed Improvement	Description of Proposed Improvement	Criteria							
		1	2	3	4	5	6	7	Total
		safety	accident history	gap closure	linkages	pedestrian demand	school/ commuter	Local Support	
2. Western perimeter of De Anza College site	Pedestrian-bike trail through De Anza College site- along west edge to connect Stevens Creek to McClellan.	1	1	3	2	3	3	1	14
3. Maintenance road on Regnart Creek between Pacifica and Rodriguez.	Open the existing maintenance road on Regnart Creek between Pacifica and Rodriguez to pedestrian/bicycle traffic.	1	1	3		2		1	8
4. Southeast corner of the Longs Drug Store/Orchard Valley property	Provide pedestrian access through the fence at the southeast corner of the Orchard Valley property to connect the corner of Richwood and E. Estates to the Longs Drug/Orchard Valley shopping center.	2	0	3		2	1	1	9
5. Railroad tracks from Prospect to Stevens Creek Blvd. -west side	Improve pathway by grading and providing all-weather surface. If a hard surface (concrete or asphalt) is provided, leave a softer surface for joggers and walkers.	2	1	3		3	3	1	13
6. The walkway between Lincoln Elementary and Monte Vista High School from McClellan to Presidio	Extend pathway through Lincoln's parking lot repave, improve bollard design, and improve the overall ambiance to encourage walking to school	1	3	3		3	3	1	14

Location of Proposed Improvement	Description of Proposed Improvement	Criteria							
		1	2	3	4	5	6	7	Total
		safety	accident history	gap closure	linkages	pedestrian demand	school/ commuter	Local Support	
7. Miramonte to the Deep Cliff Golf	Provide pathway (formerly present) to connect the Stevens Canyon Road area, San Juan	2	1	3		2	3	1	12
8. Miramonte to Stevens Creek Park.	Provide a pedestrian path	2	1	3		2	1	1	10
9. Blackberry Farm	Provide an entrance from the trails behind McClellan Ranch	1	1	3		2	1		8
10. Existing diverters/barriers on Orange at Granada, on Olive between Imperial and Pasadena, and on Festival Drive along Route 85.	Existing openings need improvements to better accommodate pedestrian/bicycle access and for ADA	1	1	2		2	3	1	10
11. Phar Lap/Mann neighborhood across Stevens Creek	Build pedestrian bridge across Stevens Creek to improve access to Stevens Creek Elementary School	2	2	3		2	3	1	13
12. Miller and Bollinger - small center with the Tin-Tin market	Reinstate opening at end of cul-de sac for pedestrians	1	1	3		2		1	8
13. De Anza Blvd at telescope store by Cigarettes Cheaper	Create an opening in the wall that backs up onto cul-de-sac for pedestrians	1	1	3		2		1	8
City policies	Revised Zoning Ordinance to encourage the integration of work, housing, and retail						3	1	4
high=3 medium=2 low=1									