

# Pedestrian Master Plan



2011

Public Works – Alternative Transportation

401 Vernon Street

Roseville, CA 95678

(916) 774-5293

[www.roseville.ca.us/bikeways](http://www.roseville.ca.us/bikeways)



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# Chapter 1: Introduction

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The Pedestrian Master Plan is intended to establish policies, projects, and programs that improve the pedestrian system in Roseville and increase walking for transportation, recreation, and health. Most travelers walk during some portion of their journey whether it is from their home to the bus stop or between work and home. It is the goal of the City of Roseville to promote walking as the most basic form of transportation and as an important part of healthy and active lifestyles.

Pedestrians include people of all ages and abilities. Pedestrian facilities are used by people pulling or pushing strollers, carriages, carts and wagons, and people walking or riding bicycles. The design of pedestrian facilities should accommodate their various needs.

Pedestrians have the same basic needs as all other travelers: direct, continuous and safe routes to/from their destinations. Nevertheless, pedestrians do have needs that are unique such as shorter travel distances and personal security/safety. A challenge of the Pedestrian Master Plan is to satisfy these unique pedestrian needs while still accommodating the other road users such as motorists, bicyclists and transit riders.

Pedestrians have differing preferences. Some individuals prefer to walk in solitude along separated paths while others feel more comfortable walking along crowded streets. Some pedestrians such as children, individuals with disabilities and elderly persons are more vulnerable than others due to their slower speeds, less predictable behavior or smaller sizes. Other pedestrians can cross a street in half the time that it may take a senior or a person with a disability.

Thus, the Pedestrian Master Plan must satisfy as many needs as possible within the limits of available funding and the physical space available for improvements and upgrades. It is a difficult balancing act that involves safety and travel flow considerations for all modes of transportation.

## 1.1 Project Overview

The Pedestrian Master Plan is being developed along with the Pedestrian Design Guidelines and the Americans with Disabilities Act (ADA) Transition Plan. The ADA Transition Plan addresses improvement needs relating to disability access within the public right-of-way. The ADA Transition Plan is a legally required document pursuant to the ADA Act of 1990 and related decisions by the Department of Justice, and California Title 24. The Pedestrian Master Plan is a policy document that addresses the pedestrian policies and improvements needed within the public right-of-way. The Pedestrian Design Guidelines include design standards for the public right-of-way that are intended to enhance accessibility for all pedestrians including individuals with disabilities, and improve safety, connectivity, ease of use,

aesthetics and cost effectiveness. These plans require the gathering of extensive data on existing City facilities and a public outreach effort.

## **1.2 Pedestrian Master Plan Purpose**

The Pedestrian Master Plan is intended to guide and influence the design and development of public pedestrian walkways in Roseville to create a safe, efficient, well-connected and aesthetically pleasing pedestrian environment that serves all types of pedestrians, while balancing the needs to other forms of transportation. The ultimate goal of this effort is to increase the number of people who walk in Roseville. The Pedestrian Master Plan will accomplish this by:

1. Adopting goals, policies, and implementation measures for pedestrian improvements and programs.
2. Identifying a recommended pedestrian network
3. Establishing a 20-year framework of improvements that will enhance the pedestrian environment in the Capital Improvement Program.

The Pedestrian Master Plan covers facilities and programs for people who walk or travel by means of a wheelchair, electric scooter, crutches, or other walking devices or mobility aids. Facilities for pedestrians generally consist of walkways, roadway crossing aids, and amenities. Additionally, supportive programs can help create and maintain a more pedestrian-oriented environment. The Pedestrian Master Plan addresses only pedestrian issues within the public right-of-way, and does not deal with issues concerning land use, private development or public lands, such as parks. The improvement recommendations build upon the inventory fieldwork, public input, collision data, ADA standards and codes, Pedestrian Design Guidelines and other sources.

## **1.3 Setting**

The City of Roseville is the hub of South Placer County, one of the fastest growing regions in the country. Roseville has experienced significant economic and population growth over the past 10 years. The City has a current population of approximately 115,781. Although Roseville has a strong jobs base with the 78,000 jobs exceeding the 52,000 employable residents, Roseville retains ties to its days as a bedroom community, with many residents commuting the 16-miles to downtown Sacramento.

Dating back to the turn of the century, the City of Roseville has grown from a small railroad town with a roundhouse and repair facility to a thriving city where the railroad continues to play a prominent role in transportation throughout the City. The railroad offers commuter and long distance train service (Capitol Corridor and California Zephyr) from the Amtrak station, while the railroad tracks create a barrier that affects circulation and access for automobiles, buses, bicycles, and pedestrians.

The City of Roseville is a full service City that operates its own bus service (Roseville Transit), most of its own utilities, and a nationally-recognized parks and recreation

program. Roseville is known for providing a high level of service to its residents and business partners in a fiscally responsible manner.

## 1.4 Benefits of Walking

Walking has health, environmental, economic and quality of life benefits. Walking is a low-impact activity in which a variety of ages and fitness levels may participate. Walking produces a myriad of benefits, including:

- Improved physical fitness and reduced health care costs;
- Reduced stress, reduced health care costs, and improved mental health;
- Vibrant in urban environments;
- Reduced auto trips, resulting in reduced resource consumption, reduced congestion, and improved air quality;
- Reduced personal transportation costs;
- Economical form of transportation;
- Greater opportunities for social interactions; and
- More eyes on the street, like neighborhood watch programs, as a crime reduction strategy.

A comprehensive pedestrian network that links all of the City's activity centers creates an environment conducive to walking.

## 1.5 Pedestrian Facility Types

Basic pedestrian facilities include sidewalks and paths as well as crosswalks, curb ramps, and other crossing aids. Pedestrian amenities, such as lights, benches, and trees, create a more inviting and comfortable walking environment. Pedestrian facilities may include the following components:

- Walkways, which may be sidewalks, paths or trails<sup>1</sup>;
- Roadway crossing aids, such as marked or raised crosswalks, pedestrian refuges, corner bulb-outs, pedestrian countdown signal heads, curb ramps, and/or aids for the visually and hearing-impaired;
- Amenities, such as pedestrian-scaled lighting, plazas, benches, water fountains, refuse cans, walking maps, directional signage, and public phones; and
- Other facilities, including improvements to transit waiting environments.

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<sup>1</sup>Class I Off-street bike paths or trails that are for exclusive use of bicycles and pedestrians are covered in the Bicycle Master Plan. The Pedestrian Master Plan focuses on the pedestrian facilities in the public rights-of-way, including the Class I facilities, which are enhanced sidewalks that are for bicyclists and pedestrians.

These physical components of the pedestrian environment are discussed in more detail in the accompanying Best Practices Manual for Pedestrian Design. (See Appendix).

## 1.6 Public Participation

Public participation was an important component of developing a comprehensive and inclusive Pedestrian Master Plan. The Public was invited to submit ideas for making Roseville more walkable and identifying problematic locations for pedestrians and disabled residents. A public workshop was held and a Consumer Survey was distributed to directly solicit public input.

### ***Pedestrian Consumer Survey***

A Pedestrian Consumer Survey was distributed at the public workshop, of which eight were filled out and returned. Statistically valid results were not necessarily drawn from the survey results, because the pedestrian respondents were not randomly selected. For the summaries below, it should be remembered that respondents were allowed to choose more than one response to questions.

The respondents' average trip time on foot was 31 minutes and average time spent on Roseville's walkway was 39 minutes a day. Walking for pleasure was the most popular response for the usual pedestrian trip purpose, followed by health and exercise. Table 1 summarizes these results.

**Table 1: Usual Purpose of Walking Trip**

<b>Walking Trip Purpose</b>	<b>Percent</b>
Pleasure	50%
Exercise or health	37%
Personal or family business	25%
School, church, or civic activities	16%
Work	16%
Dog walking	16%

*Source: Roseville Pedestrian Consumer Survey, May 2008*

Note: Respondents were able to choose more than one trip purpose.

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Walkways in good condition and reasonable crossing times were the most common responses for conditions important for walking, as shown in Table 2. As shown in Table 3, the poor condition of sidewalks was by far the most likely condition to discourage walking.

**Table 2: Important Conditions for Walking**

<b>Conditions Important for Walking</b>	<b>Percent</b>
Pavements in good, firm condition	75%
Reasonable crossing times	63%
Planting strips between street and walk	38%
Wide sidewalks	25%
Street trees for shady areas	25%
Curb ramps at every corner	25%

*Source: Roseville Pedestrian Consumer Survey, May 2008*

Note: Respondents were able to choose more than one condition.

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**Table 3: Conditions that Discourage Walking**

<b>Conditions that Discourage Walking</b>	<b>Percent</b>
Sidewalks or walkways in poor condition	63%
Inaccessible conditions or no curb ramps	25%
Afraid of motor vehicles or drivers	25%
Difficult or unsafe street crossings	25%
Destination is too far away	16%
Unattractive scenery or surroundings	16%
Getting around is too difficult	16%
Personal security or safety	16%
Takes too long to destination	16%

*Source: Roseville Pedestrian Consumer Survey, May 2008*

Note: Respondents were able to choose more than one condition.

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### ***Public Workshop***

A public workshop was held in mid-May 2008 to present the plan development process and solicit feedback on the inventory results. Notice of this meeting was sent to interested persons as well as over twenty local agencies or groups that represent persons with disabilities and pedestrians. The workshop was attended by approximately eight people.

## **1.7 Pedestrian Characteristics**

To plan and design successfully for pedestrians it must be acknowledged that pedestrians have a wide range of needs and that a flexible design approach is recommended. Understanding the “pedestrian user” is a challenge in two respects: 1) the user includes individuals of a wide range of ages and physical capabilities, and 2) there is far less research on the characteristics of pedestrians when compared to the level of research available for motor vehicle design users.



### ***Travel Characteristics***

Pedestrians prefer the most direct path of travel between their origin and destination, and often take measures to reduce their travel time. For example, when faced with the decision to cross an 80-foot wide road at a midblock location versus walk 600 feet to the nearest intersection, cross at the crosswalk and walk back down the street, the majority of pedestrians cross midblock – even if that crossing presents added dangers. The time differential in this example is significant. Assuming a walking speed of 4 feet per second, the midblock crossing takes 20 seconds, while the alternative route requires more than 5 minutes. Like other travelers, pedestrians have a time budget and make choices accordingly.

### **Spatial Needs**

Two people walking side-by-side or passing one another generally require 56 inches of space. Wheelchair and scooter users need 60 inches of space to pass one another. The recommended minimum sidewalk widths in the best practices manual primarily are based on the spatial needs of pedestrians.

### **Walking Speeds**

Studies have shown that pedestrians have a wide range of walking rates, from 2.5 to 8.0 feet per second. The MUTCD recommends an average walking speed of 4 feet per second; however, it does not reflect the full range of actual pedestrian travel speeds. For example, children, the elderly, persons with mobility impairments and pedestrians who have visual impairments may travel at slower speeds. It is significant considering that these groups comprise a more substantial percentage of the pedestrian population than of the population as a whole.

### ***Characteristics at Different Ages***

Pedestrian needs vary depending on the age of the traveler. The common characteristics of pedestrians at various ages are shown in the table on page 7. The primary need of young pedestrians is adult supervision, until they learn to navigate the transportation system independently. In addition to adult supervision and effective education programs, careful design of the places children walk most, such as school zones and school walking routes, neighborhood streets and parks can help to improve their safety.

As the population ages, the needs of older pedestrians will continue to rise. Because many older adults have limitations that keep them from driving, they are more likely to rely on walking and public transportation than other adults. The aging process causes a general deterioration of physical, cognitive and sensory abilities. Some older adults require more time to cross the streets, desire more predictable surfaces, and need places to rest along their route.

## ***People with Disabilities***

The planning and design of the pedestrian environment needs to address the needs of those with disabilities, whether it is mobility, sensory, or visual impairments.

People with mobility impairments include those who use wheelchairs, crutches, canes, walkers, orthotics and prosthetic limbs. Nevertheless, there are many people with mobility impairments who do not use assistive devices.

Characteristics common to people with mobility limitations include substantially altered space requirements to accommodate assistive device use, difficulty negotiating soft surfaces, slower walking speeds, and difficulty negotiating surfaces that are not level.

<b>Age 0 to 4</b>	<ul style="list-style-type: none"> <li>• Learning to walk</li> <li>• Requiring constant parental supervision</li> <li>• Developing peripheral vision, depth perception</li> </ul>
<b>Age 5 to 12</b>	<ul style="list-style-type: none"> <li>• Increasing independence, but still requiring supervision</li> <li>• Poor depth perception</li> <li>• Susceptible to “dart out”/ intersection dash</li> </ul>
<b>Age 13 to 18</b>	<ul style="list-style-type: none"> <li>• Sense of invulnerability</li> <li>• Intersection dash</li> </ul>
<b>Age 19 to 40</b>	<ul style="list-style-type: none"> <li>• Active, fully aware of traffic environment</li> </ul>
<b>Age 41 to 65</b>	<ul style="list-style-type: none"> <li>• Slowing of reflexes</li> </ul>
<b>Age 65+</b>	<ul style="list-style-type: none"> <li>• Street crossing difficulty</li> <li>• Poor vision</li> <li>• Difficulty hearing vehicles approaching from behind</li> <li>• High fatality rate</li> </ul>

### **Pedestrian Characteristics by Age**

Although sensory disabilities are commonly thought of as total blindness or deafness, partial hearing or vision loss is much more common. Although as many as 40 percent of older adults have hearing impairments, hearing loss is not generally believed to significantly affect a pedestrian’s ability to navigate in the roadway environment. Nevertheless, hearing loss can limit a person’s ability to use cues such as the increasing noise of an approaching vehicle to detect impending dangers. Hearing loss forces users to rely heavily on visual indicators or vibrations caused by passing traffic. Other types of sensory disabilities can affect touch, balance or the ability to detect the position of one’s own body in space. Color blindness also is considered a sensory impairment.

Almost two million non-institutionalized Americans over the age of 15 report having a visual disability that prevented them from seeing words or letters in ordinary newsprint. Visual disabilities can cause the following impediments to mobility:

- Limited perception of the path ahead (preview).
- Navigation with limited information about surroundings, providing less protection against obstacles and other dangers.
- Reliance on memory and unchanging conditions in familiar terrain.
- The need to assimilate information obtained through non-visual sources such as texture and sound.

Design approaches for people with disabilities also might benefit children and the more than 20 percent of American adults who do not read English. Signs that use pictures, universal symbols and colors convey meaning to a broad range of people.

# Chapter 2: Guidelines, Policies, and Ordinances

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This section describes the existing federal, state, and local guidelines, policies, and ordinances that provide the regulatory context for pedestrian planning and for design of the pedestrian environment.

The Pedestrian Master Plan builds on both existing and emerging local, state and federal policies. The most important are in the General Plan. However, the Caltrans non-motorized travel directive, and the United States Department of Transportation (US DOT) Policy Statement on Integrating Bicycling and Walking into Transportation Infrastructure provide broader evidence to the changing philosophical climate pertaining to travel in the United States.

## 2.1 Federal

### *Federal Policy – USDOT*

In February 2000, the United States Department of Transportation (USDOT) issued a design guidance statement on integrating bicycling and walking into transportation infrastructure. The guidance included a policy statement covering the following:

1. Bicycle and pedestrian ways in new construction and reconstruction projects in all urbanized areas, with specific exceptions.
2. Paved shoulders in rural areas in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day.
3. Designing, constructing, operating, and maintaining pedestrian facilities so that all pedestrians, including people with disabilities, can travel safely and independently.

At the state level, this federal policy statement was referenced in Assembly Concurrent Resolution No. 211 (ACR 211) by Assemblyman Nation, which became effective in August 2002.

### *Manual of Uniform Traffic Control Devices*

State and federal law regulates the design of many streetscape elements. Traffic control devices must follow the procedures set forth in the Manual of Uniform Traffic Control Devices (MUTCD). The City of Roseville follows the procedures and policies set out in the CA MUTCD (state) and MUTCD (federal). Traffic control devices include traffic signals, traffic signs, and street markings. The manual covers the placement, construction, and maintenance of devices. The CA MUTCD emphasizes uniformity of traffic control devices to protect the clarity of their message. A uniform device conforms to regulations for dimensions, color, wording, and graphics. Uniformity also means treating similar situations in the same way.

## ***Americans with Disabilities Act***

Streetscape elements such as sidewalks and curb cuts must comply with guidelines implementing the Americans with Disabilities Act (ADA). Title II of the Americans with Disabilities Act (ADA), signed into law in 1990, is a civil rights act that prohibits public entities from discrimination on the basis of disability. Newly constructed facilities must be free of architectural barriers that restrict access or use by individuals with disabilities. Cities in California use two technical standards for accessible design: the Americans with Disability Act Accessibility Guidelines (ADAAG), adopted by the Department of Justice for places of public accommodation and commercial facilities covered by Title 3 of the ADA, and the California Title 24 State Accessibility Standards, State Architectural Regulations for Accommodation of the Physically Handicapped in Public Facilities.

To address the ADA requirements, the City of Roseville adopted the Roseville ADA Transition Plan for Public Rights-of-Way.

## **2.2 State**

### ***State Policy Directive – Caltrans***

Effective March 6, 2001, Caltrans adopted a policy directive related to non-motorized travel that applies to state highways. The Deputy Directive 64 reads:

“The Department fully considers the needs of non-motorized travelers (including pedestrians, bicyclists and persons with disabilities) in all programming, planning, maintenance, construction, operations and project development activities and products.”<sup>2</sup>

In support of this directive, Assembly Concurrent Resolution No. 211 (ACR 211) by Assemblyman Nation, which became effective in August 2002, encourages local jurisdictions to implement the policies in DD-64 when constructing transportation projects.

On October 2, 2008, Caltrans issued Deputy Directive DD-64-R1: ‘Complete Streets – Integrating the Transportation System’, which supersedes DD-64. DD-64-R1 reiterates the policy to provide for all travelers of all ages and abilities in all activities and products on the State highway system and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system.

### ***AB 1358, The Complete Streets Act***

In September 30, 2008, Assembly Bill 1358, a legislative act entitled the California Complete Streets Act of 2008, was approved. The act mandates that starting January 1, 2011, cities and counties modify the circulation element of their General Plans “for a balanced, multimodal transportation network that meets the needs of all users.” By definition, “complete street” is a transportation facility that is planned, designed, operated and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit riders, and motorists appropriate to the function and context of the facility.”<sup>3</sup>

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<sup>2</sup> California Department of Transportation. Deputy Directive DD-64, March 2001.

<sup>3</sup> California Department of Transportation. Deputy Directive DD-64-R1, October 2008.

## 2.3 Local Policy Context

Due to concerns about vehicle emissions, climate change, oil dependency, livability, and public health, there is growing interest from policy makers and the public in shifting transportation planning to a more multi-modal approach. This trend is evidenced in the State of California's 2009 adoption of the Complete Streets Act, which states that General Plan Circulation Elements shall:

“plan for a balanced, multimodal transportation network that meets the needs of all users of streets, roads, and highways for safe and convenient travel in a manner that is suitable to the rural, suburban, or urban context of the general plan.”

The Circulation Element of the Roseville General Plan provides the overall policy direction for transportation planning in Roseville, including pedestrian planning. The city also has a number of Specific Plans that guide development and identify public improvements for targeted areas.

### ***General Plan Circulation Element***

The Circulation Element of the General Plan identifies existing and proposed transportation facilities and includes goals, policies and implementation measures to develop a balanced transportation system for automobiles, transit, bicycles, and pedestrians. The preamble to the Circulation Element notes that the California Clean Air Act requires trip reduction measures that promote car-pooling, transit and non-vehicular modes of travel (bicycles and walking). The Circulation Element also states that its underlying goal is a circulation system that:

1. Promotes the safe, efficient, and reliable movement of people and goods;
2. Promotes a shift from the single occupant automobile to other modes of transportation; and
3. Provides an adequate level of transportation service for all persons traveling in and through Roseville.

The Circulation Element is divided into five components:

- Functional Classification
- Levels of Service
- Transit
- Transportation Systems Management
- Bikeways/Trails

Pedestrian issues are discussed primarily within the Levels of Service component. Goal 1 of the Levels of Service Component is:

- “Maintain an adequate level of transportation service for all of Roseville’s residents and employees through a balanced transportation system, which considers automobiles, transit, bicyclists, and pedestrians.”

## **Pedestrian Districts**

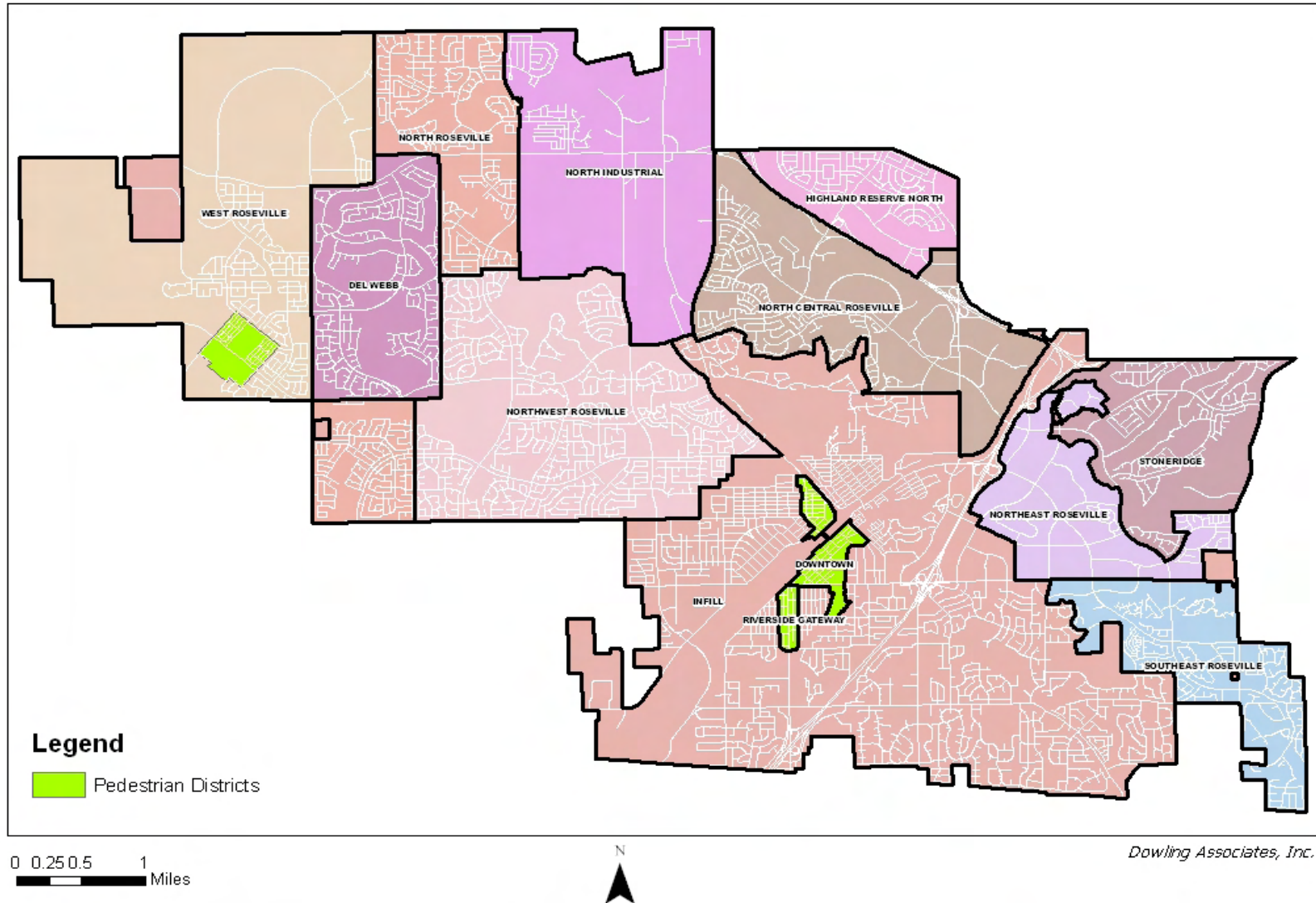
Policy 5 in the Level of Service section allows for the designation of Pedestrian Districts in an effort to encourage increased pedestrian activity and safety. In Pedestrian Districts, pedestrian travel takes a higher priority than automobile travel. It is recognized that within Pedestrian Districts, vehicular levels of service may not meet City standards. The Levels of Service Component also identifies strategies for the establishment of Pedestrian Districts, including potential treatments such as mid-block crossings, enhanced intersection crossings, traffic calming and streetscape enhancements.

The Circulation Elements states that the objectives of Pedestrian Districts are as follows:

- Create a safe walking environment
- Ensure the security of pedestrians
- Create land use patterns conducive to walking
- Create street environments conducive to walking and public space and destinations that encourage walking
- Integrate walking with other modes of transportation
- Reduce total vehicle miles traveled and auto emissions that contribute to climate change, and
- Integrate public services into a Pedestrian District

The City of Roseville has designated Pedestrian Districts in the West Roseville Specific Plan, Riverside Gateway Specific Plan and Downtown Specific Plan. The boundaries of these Pedestrian Districts are shown in Figure 1.

Figure 1: Roseville Pedestrian Districts and Specific Plan Boundaries



## **Bikeways/Trails**

The Bikeways/Trails component recognizes that pedestrians and bicyclists frequently use the same system of off-road facilities. This includes Class I bike trails, which are designed as multi-use facilities, and sidewalks. The Bikeways/Trails component identifies a specific type of sidewalk, the Class 1A sidewalk, which is wider than typical to accommodate shared use by pedestrians and bicyclists. The use of sidewalks, including Class IA sidewalks, by both pedestrians and bicyclists poses a potential for conflict between the two modes.

## **Transit/TSM**

Pedestrian travel is often linked to transit, as people typically walk to and from bus stops or either end of a bus trip. In addition, efforts to reduce vehicle miles traveled may in turn, provide a better walking environment by reducing consumption of public space by vehicles, improving pedestrian safety, and encourages walking as a form of transportation. As a result, the General Plan Transit and Transportation System Management components include policies that indirectly benefit pedestrians.

### ***Bicycle Master Plan***

The 2008 Bicycle Master Plan for the City of Roseville recognizes that the needs of bicyclists and pedestrians may differ because bicyclists travel at a higher rate of speed than pedestrians. However, the BMP recognizes that it is the intent of the City to achieve a balanced transportation system that provides Roseville residents a variety of transportation choices, including automobile, transit, bicycle, and pedestrian options. The BMP further notes that Class I bike trails are intended as multi-use facilities, including pedestrians, and that trail design, trail amenities and trail use policies need to consider the multitude of users.

### ***Specific Plans***

The City of Roseville uses the specific plan process to implement the General Plan as new tracts of land are developed. Within the City limits, there are currently eleven specific plan areas. The most recent specific plans to be adopted include the West Roseville Specific Plan, the Riverside Gateway Specific Plan and the Downtown Specific Plan. The Specific Plan area boundaries are shown in Figure 1.

Specific Plans contain detailed regulations, programs and design criteria for land use, traffic and circulation, affordable housing, resource management, public services and infrastructure. Specific Plan development & design standards include components that affect the pedestrian environment. For example, specific plans identify the required width of sidewalks, streetscape design including separation (if any) of sidewalks from curbs, and the trails system. Specific Plans also identify whether or not a given area is within a pedestrian district. The design standards for pedestrian facilities within each specific plan may differ.

### ***Blueprint Strategies***

The Sacramento Area Council of Governments (SACOG) adopted the Preferred Blueprint Scenario in December 2004. The Blueprint set forth a vision for growth in the Sacramento region that promotes compact, mixed-use development and



transportation choices as an alternative to low-density development. The vision is a product of a 3-year public involvement effort and is intended to guide land use and transportation choices over the next 50 years as the region's population grows.

In May 2005, the City of Roseville adopted Smart Choices for Roseville's Future: Implementation Strategies to Achieve Blueprint Project Objectives. This document outlines a menu of programs and projects to be considered by the City of Roseville to implement the Blueprint Growth Principles. The *Smart Choice for Roseville's Future* provides Growth Principles that will guide future planning and development, including walking as one of the transportation choices.

### ***Community Design Guidelines***

The Community Design Guidelines are intended to implement the Community Design component of the General Plan by establishing design principles and guidelines that enhance the community's identity through establishment of common design elements and expectations. One of the design principles is to promote development that supports a variety of transportation modes and facilitates pedestrian mobility, convenience, and safety. The guidelines include recommendations for the design of public spaces, including public sidewalks within easements along commercial, office, industrial and multi-family properties. The guidelines also include recommendations for the design of walkways through parking lots.

## Chapter 3: Existing Conditions

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This section describes the existing pedestrian environment, including facilities, programs, and collisions involving pedestrians.

### 3.1 Pedestrian Activity

Almost everyone is a pedestrian for some portion of each journey, regardless of primary travel mode. Accessing most retail, services, employment, and entertainment requires some pedestrian travel in the public rights-of-way. However, some residents may rely heavily on pedestrian travel as their primary mode by choice or due to age, disability, or lack of vehicle ownership. The capabilities and needs differ with each type of pedestrians. The pedestrian network and programs must consider this range of needs.

#### *Population*

According to the 2006 American Community Survey conducted by the United States Census Board, Roseville's estimated population is 113,590. Of these residents, the following demographics have been summarized for those that may be most inclined to walk for transportation purposes.

- Children 15 and younger are 19.3% and senior citizens 65 and older are 13.3% of the total population.
- Disabled persons of all ages make up 11.4% of the total population, of which 5.8% are between 16 and 64 years of age.
- Races and ethnicities are predominately White (75.1%) with a substantial percentage of Latino (10.8%) and Asian (9.6%) residents. About 5.8% of residents speak English less than well.
- Roseville's estimated number of occupied households is 43,155, of which 3.8% have no vehicle available and 28.0% have one vehicle available.
- The number of residents 16 and older who work is estimated at 54,961. Most drive alone or carpool.

According to the 2000 Census, drive alone and carpool were the primary means of transportation to work. As summarized in Table 4, the mode split for Roseville is compared to that of other local jurisdictions as well as the statewide average. Roseville's walk mode split is less than a third of the statewide average and less than half of that of Folsom and Lincoln. This indicates that there is great potential to increase the walk mode split.

**Table 4: Mode Split (%) Journey to Work**

Place Name	Drive		Public		Walk	Other*
	Alone	Carpool	Transportation	Bicycle		
Roseville	82.3%	9.9%	1.3%	0.4%	0.9%	5.1%
Fairfield	73.0%	20.3%	2.0%	0.4%	0.7%	3.7%
Folsom	79.3%	10.2%	1.4%	0.6%	2.2%	6.2%
Lincoln	76.8%	15.9%	0.0%	0.4%	2.8%	4.0%
Rocklin	81.4%	9.4%	0.8%	0.5%	1.4%	6.6%
Sacramento	71.0%	16.3%	4.6%	1.4%	2.8%	3.9%
Santa Rosa	77.1%	12.3%	2.2%	0.9%	2.2%	5.3%
West Sacramento	70.9%	19.9%	2.7%	1.3%	2.1%	3.0%
State of California	71.8%	14.5%	5.1%	0.8%	2.9%	4.8%

Source: Census 2000 Journey to Work

\* Other mode – includes worked at home, motorcycle, other

While the 0.9% mode split for journey-to-work does not capture many of the walk trips, such as shopping, medical, and school trips, there is ample opportunity for increasing walking.

### ***Transit Users***

Some passengers access transit stops or stations on foot. There are currently three locally- and regionally-serving public transit service providers in Roseville, including Roseville Transit, Placer County Transit, and Sacramento Regional Transit. Additionally, the multi-modal transit center in downtown contains an Amtrak station, which provides intrastate transit service with bus and rail service on the Capitol Corridor Route, and a Greyhound stop for nationwide bus service.

In the 2004-2005 Fiscal Year, Roseville Transit had an average of 21,423 boardings per month on its fixed route service and an average of 7,071 boardings per month on its commuter service.<sup>4</sup> Average weekday daily ridership on Roseville Transit was 1,249, and average weekend ridership was 77, based on counts done in June 2002.<sup>5</sup>

As the bus service provider, the City has the opportunity to coordinate internally to improve pedestrian access to bus stops.

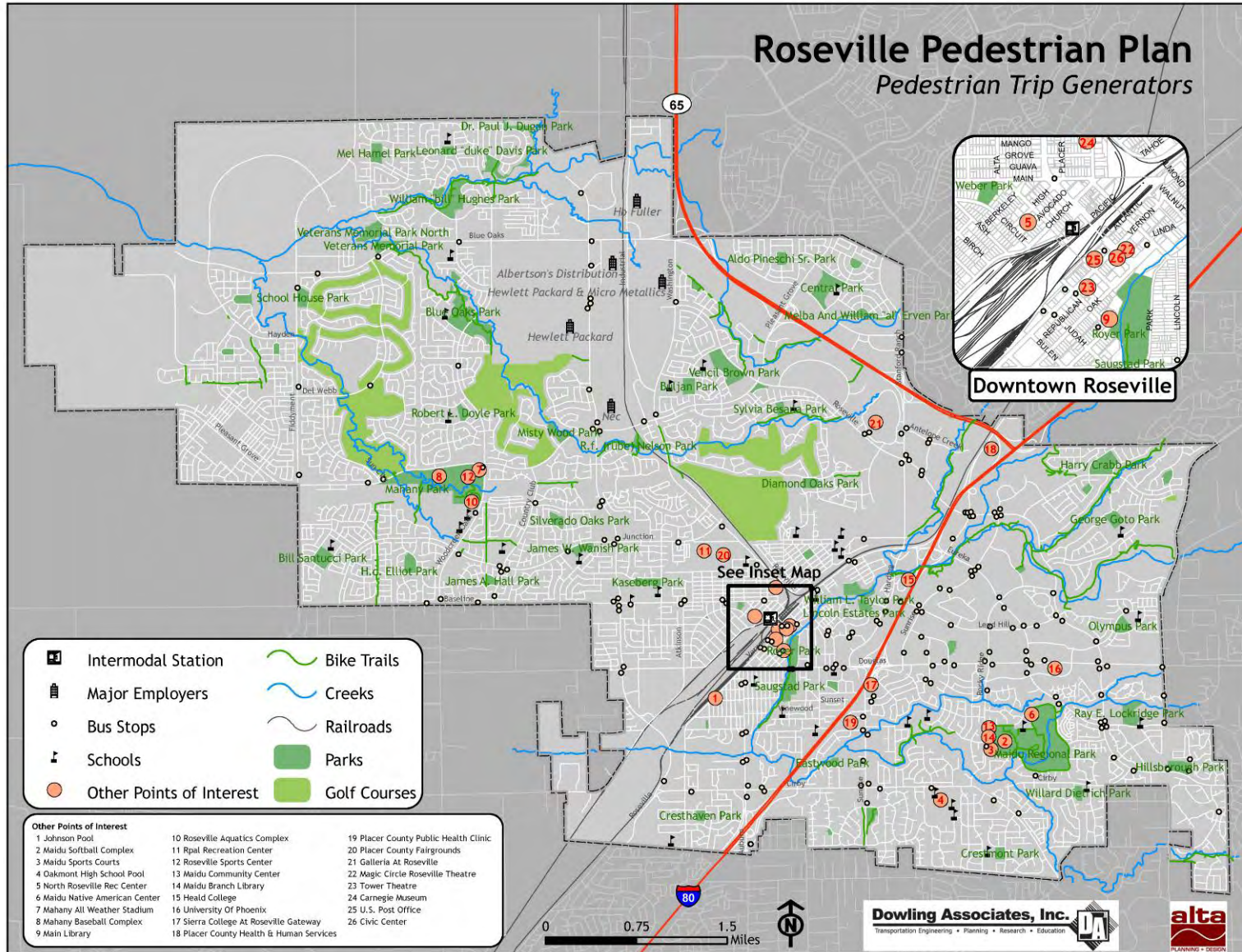
### ***Land Use and Urban Design***

Land use and urban design affect the level of pedestrian activity. People are more likely to walk, ride a bicycle, or take transit in mixed use communities that have high population densities, a diversity of land uses, and transit-friendly design. Schools, community and recreation centers, and the regional and neighborhood parks are located in the residential neighborhoods and provide the opportunity to increase pedestrian activity. The bus stops are provided at major intersections along the bus routes. These potential pedestrian trip generators are shown in Figure 2.

<sup>4</sup> Roseville Transit Service Fare Study. Administrative Draft. June 19, 2006.

<sup>5</sup> Roseville Transit Short Range Transit Plan Update. Final Report. February 1, 2005.

Figure 2: Pedestrian Trip Generators



## 3.2 Pedestrian Facilities Inventory

As part of the planning process, an inventory of existing pedestrian facilities was conducted. The inventory focused on curb ramps and corners at intersections throughout the city as well as sidewalks along all arterials and collectors in Roseville. About 2,400 intersections were inventoried, which are discussed in the accompanying *ADA Transition Plan*. A total of 755 sidewalk segments were surveyed and are summarized Table 5. The roadways covered by the inventory are shown in Figure 3.

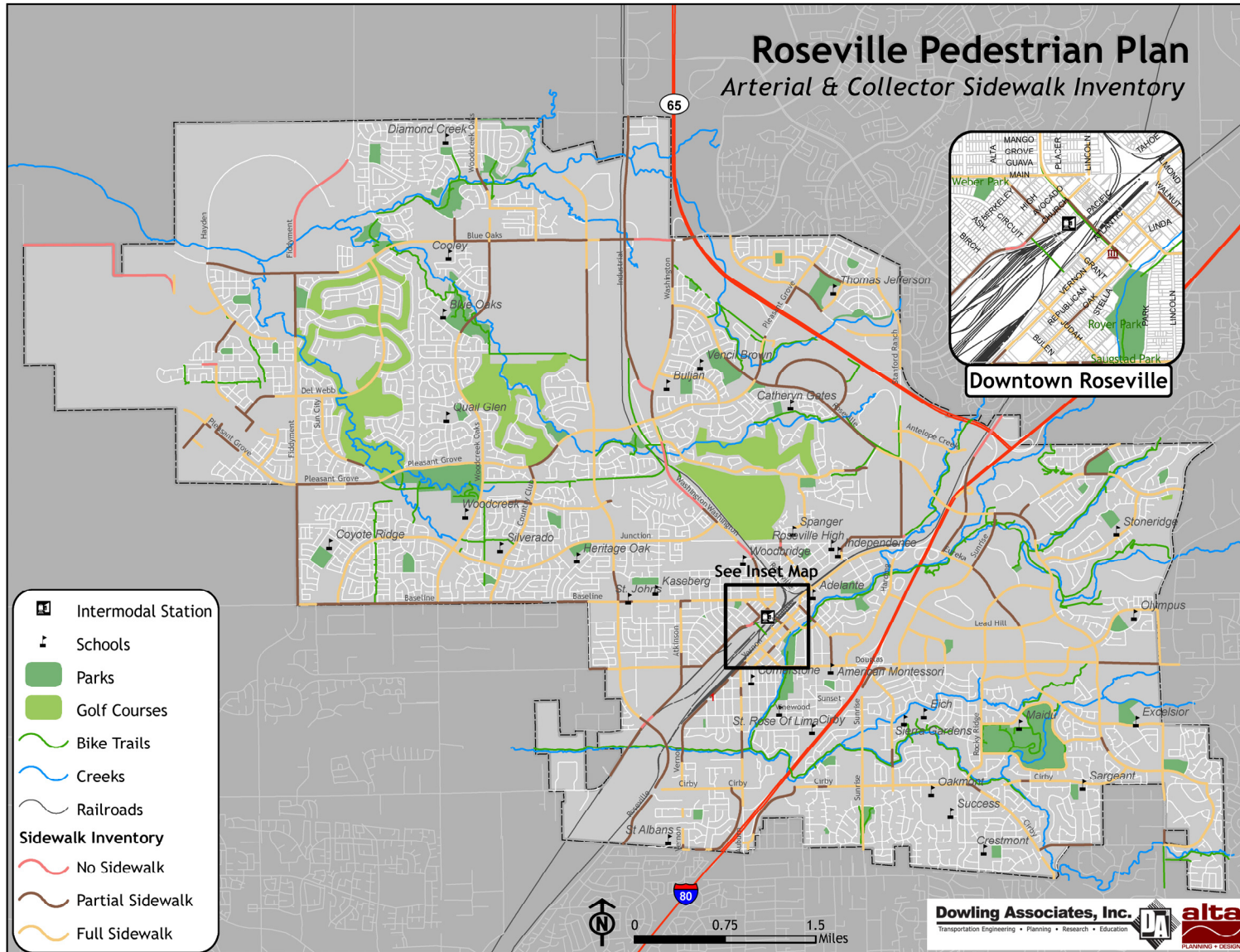
**Table 5: Summary of Sidewalk Segment Inventory**

<b>Description</b>	<b>Number</b>	<b>Percent</b>
Total sidewalk segments	5,529	
Total sidewalk segments surveyed	755	
Full sidewalk both sides of street	567	75%
Full sidewalk one side, partial sidewalk other side	8	1%
Full sidewalk one side, no sidewalk other side	98	13%
Partial sidewalk both sides of street	10	1%
Partial sidewalk one side, no sidewalk other side	43	6%
No sidewalk either side of street	29	4%

*Source: Inventory conducted in 2008*

*Dowling Associates, Inc*

**Figure 3: Arterial and Collector Sidewalk Inventory**



### 3.3 Pedestrian Collision Data

The State of California’s Office of Traffic Safety collects and analyzes collision data. An analysis of 2006 collision data compared Roseville’s collisions with those of 49 other cities of similar population size (100,000 to 250,000 residents). Table 6 shows that when ranked by daily vehicle miles traveled, Roseville had a low rate for overall collisions compared with other similarly sized cities, including the overall lowest rate of collisions that involved pedestrians.

Roseville has a relatively higher rank with all collisions when compared to other cities of similar population. As a result, when the collision data is compared by average population, Roseville’s ranking becomes mixed. For example, Roseville has a relatively low collision rate for pedestrians under 15 years old, but a relatively high collision rate for pedestrians over 65 years old.

**Table 6: 2006 Pedestrian-Involved Collision Summary for Roseville**

Type of Collision	Victims Killed & Injured	Ranking by DVMT <sup>1</sup>	Ranking by Average Population
Pedestrians	18	50/50	44/50
Pedestrians < 15	3	50/50	45/50
Pedestrians 65+	4	30/50	13/50
Overall		46/50	15/50

*Source: California Office of Traffic Safety*

<sup>1</sup> DVMT = Daily Vehicle Miles Traveled

Dowling Associates, Inc

The Information Services Unit of the California Highway Patrol is responsible for collecting and inventorying collision data through its Statewide Integrated Traffic Records System (SWITRS). The most recent five-years of collision records available for Roseville were obtained from SWITRS, which covered January 1, 2003 through December 31, 2007. In this time frame, there were a total of 7,546 collisions reported, of which 81 (1.1%) involved pedestrians. These 81 pedestrian-involved collisions were analyzed in further detail<sup>6</sup>.

For the five-year study period, the highest number of pedestrian-involved collisions occurred in 2007 with 20 collisions, whereas 2004 had the lowest with 12 collisions. Table 7 displays the number of pedestrian-involved collisions by year. In Roseville over the five-year period from January 2003 to December 2007, pedestrian fatalities accounted for 3 of the 33 traffic-related fatalities.

<sup>6</sup> The detailed data received from SWITRS included a total of 82 pedestrian-involved collisions records. However, on closer inspection one of the records was found to be a duplicate. This detailed data is slightly different from the summaries provided on the CHP website, which were used for the comparison with other cities as summarized in Table 10.

**Table 7: Pedestrian-Involved Collisions by Year**

Year	Collisions	Pedestrian Killed	Pedestrian Injured
2003	18	1	19
2004	12	0	14
2005	13	0	13
2006	18	0	19
2007	20	2	19
<b>Grand Total</b>	<b>81</b>	<b>3</b>	<b>84</b>

Source: California Highway Patrol SWITRS Jan 01, 2003 through Dec 31, 2007

Dowling Associates, Inc

Table 8 compares the average number of pedestrian collisions per year between 2003 and 2007 in Roseville to other local jurisdictions and statewide. The average number of collisions per year is about half that of Fairfield, but higher than Folsom, Lincoln, and Rocklin. However, when accounting for population, the rate of pedestrian-involved collisions per 1000 persons for Roseville is closer to that in these three neighboring communities.

**Table 8: Pedestrian-Involved Collision Comparison Among Cities**

City	Population	2003	2004	2005	2006	2007	Average Collisions per Year	Collisions per 1,000 Persons
Roseville	115,781	19	14	16	18	23	18	0.16
Fairfield	105,955	29	32	46	28	49	37	0.35
Folsom	71,453	8	8	3	8	11	8	0.11
Lincoln	41,111	4	2	2	7	4	4	0.09
Rocklin	56,019	5	3	8	9	4	6	0.10
Sacramento	486,189	282	291	261	214	257	261	0.54
Santa Rosa	163,436	49	49	46	52	50	49	0.30
West Sacramento	48,426	15	14	13	16	11	14	0.28
<b>STATEWIDE TOTAL</b>	<b>35,934,000</b>	<b>13,735</b>	<b>13,810</b>	<b>13,565</b>	<b>13,427</b>	<b>13,609</b>	<b>13,629</b>	<b>0.38</b>

Source: California Highway Patrol. Statewide Integrated Traffic Reporting System. <http://www.chp.ca.gov/switrs>

California Department of Finance. January 2010 City Population Ranked by Size, Numeric, and Percentage Change. [http://www.dof.ca.gov/research/demographic/reports/estimates/cities\\_ranked/2010/](http://www.dof.ca.gov/research/demographic/reports/estimates/cities_ranked/2010/)

There were a total of 84 pedestrians involved in the reported collisions, as some incidents involved more than one pedestrian. Hit-and-runs accounted for 15 of pedestrian-involved collisions, 13 of which were felony hit and run meaning that the collision resulted in bodily injury or death. Almost all collisions resulted in some degree of injury or death to the pedestrians involved, whereas most drivers and passengers were not injured. Table 9 summarizes the number and degree of injury for pedestrians and vehicle occupants.



**Table 9: Pedestrian-Involved Collisions by Degree of Injury**

Degree of Injury	Pedestrian	Driver or Passenger
Killed	3	0
Severe injury	14	0
Other visible injury	36	1
Complaint of pain	31	1
<b>Grand Total</b>	<b>84</b>	<b>2</b>

*Source: California Highway Patrol SWITRS Jan 01, 2003 through Dec 31, 2007*

Dowling Associates, Inc

A significant majority of pedestrian-involved collisions occurred during clear weather (68). While the majority of collisions occurred during daylight hours (43), a sizeable number of incidents happened when natural lighting was compromised. Table 10 summarizes lighting conditions for pedestrian involved collisions.

**Table 10: Pedestrian-Involved Collisions by Lighting**

Lighting	Collisions	Pedestrian Killed	Pedestrian Injured
Daylight	43	1	45
Dark with functioning street lights	26	1	27
Dusk-Dawn	8	0	7
Dark - no street lights	3	1	4
Not Stated	1	0	1
<b>Grand Total</b>	<b>81</b>	<b>3</b>	<b>84</b>

*Source: California Highway Patrol SWITRS Jan 01, 2003 through Dec 31, 2007*

Dowling Associates, Inc

As shown in Table 11, motorists and parked vehicles were faulted the majority (56%) of times for pedestrian-involved collisions (45) but pedestrians were faulted for a sizeable number, as well (33). There were 3 incidents for which no fault was assigned.

**Table 11: Pedestrian-Involved Collisions by Fault**

Party Type	Fault	Percent
Driver	41	51%
Parked vehicle	4	5%
Pedestrian	33	41%
Not stated	3	4%
<b>Grand Total</b>	<b>81</b>	

*Source: California Highway Patrol SWITRS Jan 01, 2003 through Dec 31, 2007*

Dowling Associates, Inc

Pedestrian actions before the collision were summarized in Table 12 and it was found that the highest number of collisions involved pedestrians who were crossing the roadway but not in a crosswalk (33). However, a sizeable number of collisions involved pedestrians who were either crossing the roadway in designated crosswalks (26) or were not in the roadway (7).

**Table 12: Pedestrian-Involved Collisions by Pedestrian Action**

Pedestrian Action	Fault			Total Collisions
	Motorist	Pedestrian	Not Stated	
Crossing not in crosswalk	7	24	2	33
Crossing in crosswalk at intersection	20	2	2	24
In road, including shoulder	9	6	0	15
Not in Road	3	1	3	7
Crossing in crosswalk not at intersection	2	0	0	2
<b>Total</b>	<b>41</b>	<b>33</b>	<b>7</b>	<b>81</b>

Source: California Highway Patrol SWITRS Jan 01, 2003 through Dec 31, 2007

Dowling Associates, Inc

The ages of pedestrians involved in collisions were grouped and assessed then compared with their population in Roseville. It was found that pedestrians under 18 years old are involved with collisions at a higher percentage than their population (29.1% collision involvement as compared to 22.7% of their population). Generally, analyses of collisions often find that pedestrian minors are involved in collisions at a higher rate, perhaps because they walk more than other age groups. Pedestrians from the other two age groups analyzed accounted for a lower percentage involved in collisions when compared to their population. Table 13 summarizes pedestrian ages to Roseville's population.

**Table 13: Pedestrian-Involved Collisions by Pedestrian Age Compared to City's Population**

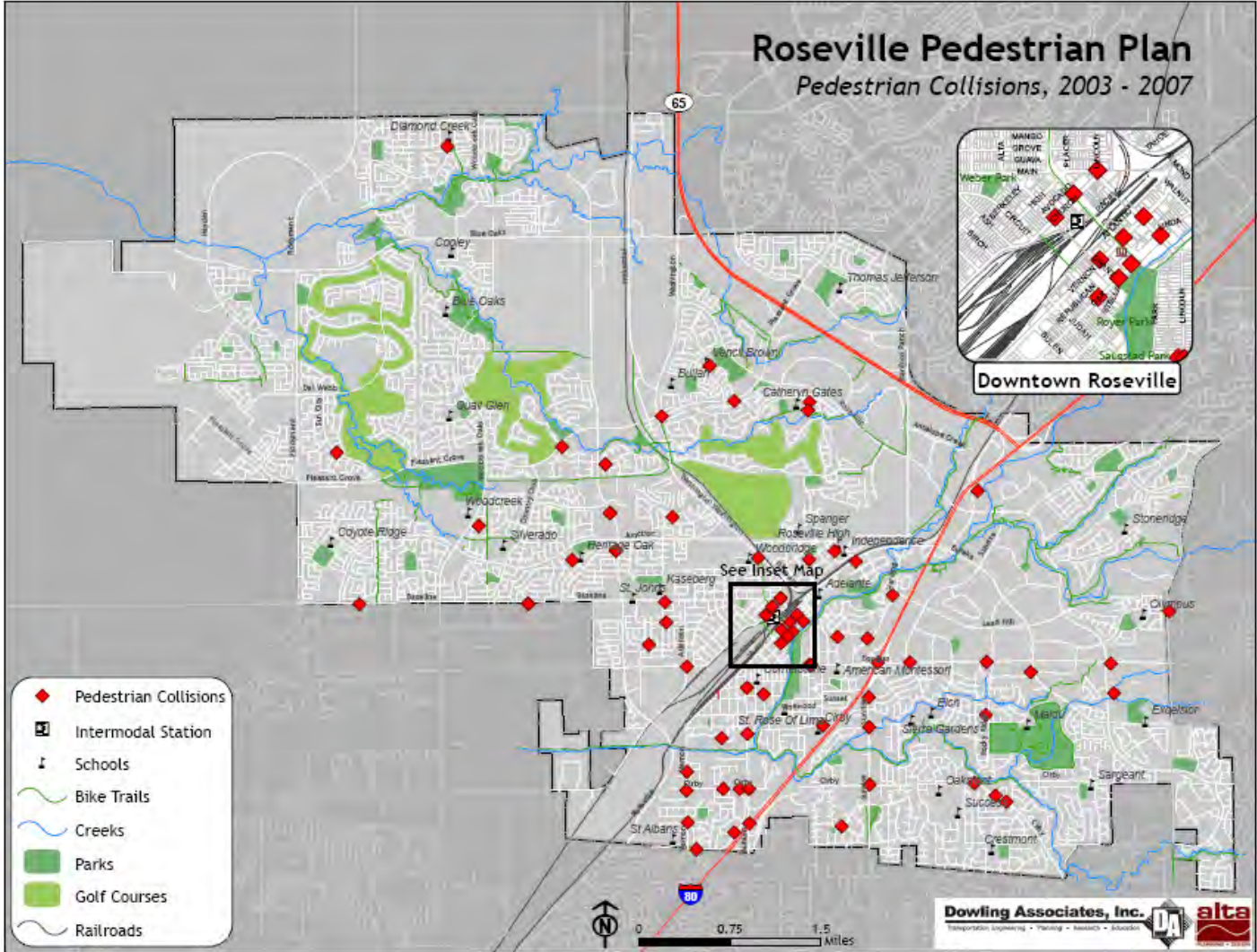
Age	Pedestrian	Percent	Population	Percent
17 and younger	25	29.4%	25,806	22.7%
18 to 64	49	57.6%	72,708	64.0%
65 and older	8	9.4%	15,076	13.3%
Unknown	3	3.5%		
<b>Grand Total</b>	<b>85</b>	<b>100.0%</b>	<b>113,590</b>	<b>100.0%</b>

Source: California Highway Patrol SWITRS Jan 01, 2003 through Dec 31, 2007 and the US Census 2006 American Community Survey

Dowling Associates, Inc

Figure 4 shows the locations of pedestrian-involved collisions in the City of Roseville. Three collisions resulted in the deaths of pedestrians. One occurred in 2003 and the other two in 2007. None of these collisions were hit and run and none were at intersections. The pedestrians were faulted in all three collisions.

Figure 4: Locations of Pedestrian-Involved Collisions in Roseville



## 3.4 Current Pedestrian Programs

Several programs and partnerships already provide public health education, pedestrian safety, and walking programs. These program and partnerships can provide a foundation for developing additional programs.

### ***Safe Routes to School Program***

The City of Roseville currently operates a Safe Routes to School Program. Working with the schools, the City staff has developed crosswalk plans for each school in Roseville. These plans are updated every two years and focus on engineering improvements. The Public Works Department works closely with the schools to create a safe environment on streets within and adjacent to school properties. Efforts include placing radar speed feedback signs and designating crossings.

The City actively promotes International Walk to School Day each October. The City launched their first Walk to School Day in 2007 at one school and was expanded in 2010 to include four schools in the Dry Creek District, and other schools elsewhere in the City. The program includes a comprehensive marketing campaign and identifies walking routes to school. It also organizes walking school buses and bike trains, promotes healthy eating, and includes a celebration rally.

In 2009, the City initiated work on a federal grant to develop a Safe Routes to School Non-Infrastructure Pilot Program for the Dry Creek School District, which includes three elementary schools and one middle school. The \$215,000 grant would enhance the Safe Routes to School Program through preparation of a Safe Routes to School Toolbox, including strategies and materials for implementing education, enforcement, encouragement, and evaluation components. The pilot program would be implemented over a 3-year time frame.

A Safe Routes to School Committee was formed in January 2010 and has been meeting on a regular basis to develop the content for the Toolbox. An outline has been created and is currently being expanded on to include the 5 E's of the Safe Routes Program - Education, Encouragement, Enforcement, Evaluation and Engineering. Once developed, the content of the Toolbox will be accessed via the City website.

### ***Sidewalk Repair Program***

The City has a yearly sidewalk repair program that covers five areas with official city street trees in the vicinity of Downtown Roseville. Figure 6 shows the limits of this program. Currently, there are no plans to expand this program to include any other area in Roseville, since most of the newly constructed or planned areas include various community facility districts (CFDs) and lighting and landscape districts (LLDs) that include a budget for sidewalk repair in the area.

The current annual budget for sidewalk repair in the five downtown areas is \$80,000. The repairs are scheduled on a yearly rotation between the five areas.

Figure 5: Sidewalk Repair Program Areas



### ***Education and Enforcement***

The Roseville Police and Fire Departments currently conduct bicycle and pedestrian safety training in area schools. The training is provided on an intermittent basis by designated neighborhood or school officers/firefighters.

The City of Roseville works cooperatively with local school districts on a crossing guard program. The City and school districts determine appropriate locations for crossing guards and fund the program. The crossing guards are hired and trained by the City Police Department.

### ***Public Health and Fitness***

Placer County Safe Kids is one of over 600 Coalitions and Chapters of Safe Kids World Wide. Safe Kids Placer County, which is hosted at the Roseville Fire Department, brings together health and safety experts, educators, corporations, foundations, governments, and volunteers to educate and protect families. Pedestrian Safety is one of the many program areas of the coalition. “Walk This Way” teaches safe behavior to motorists and child pedestrians with the goal of creating safer, more walkable communities. Events include the International Walk to School Day when Safe Kids Placer County coalitions and FedEx Express employees lead children on an interactive learning experience on how to safely walk to school. For more information, see [http://www.roseville.ca.us/fire/public\\_education/safe\\_kids\\_placer\\_county.asp](http://www.roseville.ca.us/fire/public_education/safe_kids_placer_county.asp).

PedalSafe Roseville sponsors the annual Roseville Bikefest, a family-oriented bicycle safety event featuring helmet fitting, bicycle inspections, safety presentations, and obstacle courses to test participants’ skills. Roseville Bikefest began in 1994 and has been successful at educating school-age children and their parents on bicycle safety. For more information, see [http://www.roseville.ca.us/transportation/bikeways/roseville\\_bikefest.asp](http://www.roseville.ca.us/transportation/bikeways/roseville_bikefest.asp)

The Sutter Roseville Medical Center’s SHOP (School Hospital Outreach Program) provides a weekly educational session by hospital staff program and includes Pedestrian Safety to children in elementary school. Currently, 50 schools (1,000 students) in Placer County participate in the program and participation is growing.

The Parks and Recreation Department has a variety of programs, classes, special events, and services for adults 50+. The Senior Center is located in the Maidu Community Center, where the majority of the City’s programs for older adults take place. The Maidu Walkers meet on weekdays for a 2-3 mile walk around Maidu Regional Park.

Auburn Volksmarching Club and Sac Walking Sticks have many Roseville members and often have walks in Roseville.

## Chapter 4: Goals, Policies & Implementation Measures

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The goals, policies, and implementation measures for the Pedestrian Master Plan provide specific direction on the necessary actions involved in planning, designing, funding, and implementing pedestrian facilities and programs in the City of Roseville. This section includes recommendations for updating the General Plan Circulation Element to further incorporate pedestrian goals and policies. This section also includes Goals, Policies, and Implementation Measures specific to the Pedestrian Master Plan. These policies were developed in consideration of existing and emerging local, state, and federal policies, as well as, the current values held by the City as expressed in the General Plan.

### 4.1 General Plan Goals

Per the State of California Complete Streets Act of 2008, the General Plan Circulation Element must plan for a balanced, multimodal transportation network that meets the needs of all users of streets, roads, and highways. These users are defined to include motorists, pedestrians, bicyclists, children, persons with disabilities, seniors, movers of commercial goods, and users of public transportation. The Complete Streets Act states that policies should be suitable to the rural, suburban, or urban context of the jurisdiction.

The General Plan Circulation Element includes policies for the designation of Pedestrian Overlay Districts, but does not include policies for pedestrians on the balance of the street network. As a result, the General Plan Circulation Element should be updated to include pedestrian policies for the City at large. The General Plan land use, open space, and parks and recreation elements may also need to be updated to reference the “Pedestrian Master Plan”. As noted in the introduction, most travelers walk during some portion of their journey, whether it is from their home to the bus stop or between work and home. The General Plan Update would recognize walking as a primary mode of transportation, and would memorialize the existing practice that pedestrians be routinely accommodated as part of all transportation projects.

Draft goals for consideration are:

Goal 1: Increase the percentage of walking trips made in Roseville

Goal 2: Establish and maintain a safe and continuous sidewalk network that links residential, commercial, employment, and public land uses, addresses, to the extent feasible, the varying needs of different pedestrian types, and meets ADA requirements.

Goal 3: Establish education, encouragement and enforcement programs that increase pedestrian and motorist awareness of the rights and responsibilities of pedestrians.

## 4.2 Goals, Policies, and Implementation Measures

The goals, policies, and implementation measures of the Pedestrian Master Plan are separated into the following areas:

- Pedestrian Access and Circulation
- Streetscape Design
- Pedestrian Overlay Districts
- Maintenance
- Pedestrian Education, Encouragement and Enforcement Programs
- Funding
- Evaluation

### ***Pedestrian Access and Circulation***

**Goal 1: Achieve a balanced transportation system that, consistent with the Roseville General Plan Circulation Element and Smart Choices for Roseville's Future: Implementation Strategies to Achieve Blueprint Project Objectives, provides Roseville residents a variety of transportation choices, including automobile, transit, bicycle, and pedestrian options.**

**Goal 2: Establish a safe, comfortable and connected network of public sidewalks and street crossings that meets the needs of a broad range of users, including children, the elderly and persons with disabilities.**

### **Policies**

1. Provide continuous and direct pedestrian connections between residential areas, schools, shopping areas, public services, employment centers, parks, and public transit stops.
2. Include sidewalks in the planning and design of all new, reconstructed or widened streets. Sidewalks should be installed on both sides of the street, unless circumstances call for an exception.
3. Improve pedestrian crossings in areas of high pedestrian activity, where pedestrian collision trends are identified, or where safety is otherwise identified by the City of Roseville as an issue.



4. Sidewalks and street crossings should provide access for all people, regardless of physical abilities, consistent with the Americans with Disabilities Act and ADA Transition Plan.
5. Sidewalks and street crossings should be maintained to minimize hazards through compliance with adopted standards.
6. Bus stop locations should be sensitive to pedestrian access and safety in addition to traffic flow.

### **Implementation Measures**

1. Implement the ADA Transition Plan and the Pedestrian Master Plan.
2. Incorporate applicable provision of the Best Practices Manual into the City Design/Construction standards.
3. City staff will review improvement plans and development project proposals for conformance with the following:
  - a. Applicable local, state and federal design & construction standards.
  - b. Applicable provisions of the Best Practices Manual for Pedestrian Design, provided that the provisions of the Best Practices Manual are not intended to supersede adopted specific plan design guidelines.
  - c. Where gated subdivisions, cul-de-sacs and soundwalls are proposed, consider providing openings and shortcuts where feasible and desirable for pedestrian access.
  - d. For construction plans, Temporary Traffic Control should be provided to meet the needs of pedestrians per the California MUTCD.
4. Where appropriate, include pedestrian counts when assessing impacts to traffic operations at intersections as part of signal modification or installation and when traffic impact studies are prepared.
5. When traffic impact studies are prepared, consider the effect on pedestrian safety as well as increased pedestrian crossing times and distances or pedestrian wait times due to longer cycle lengths.
6. Consider adopting a “Pedestrian Safety Action Plan” tailored to Roseville pursuant to Federal Highway Administration publication FHWA SA-05-12.
7. New developments should continue to integrate existing and future transit services into their design

### ***Streetscape Design***

**Goal 3: Create streetscape environments that result in a pleasant environment for walking.**

### **Policies**

1. Streetscape design should enhance the comfort and appeal of the pedestrian environment. The streetscape environment should be active and interesting.

### **Implementation Measures**

1. As feasible along collector and arterial roads, within pedestrian overlay districts and in other areas where an enhanced pedestrian environment is desired, separate pedestrians from vehicular traffic by the use of planter strips with street trees and other measures.
2. Continue to incorporate high-quality landscape design concepts and elements along collector & arterial road landscape corridors as identified in the Community Design Guidelines or applicable specific plan design guidelines.

### ***Pedestrian Overlay Districts***

**Goal 4: As part of the Specific Plan process or as otherwise determined by the City Council, designate Pedestrian Overlay Districts in areas of the City where greater emphasis on pedestrian activity is desired through the provision of enhanced pedestrian facilities.**

### **Policies**

1. Within Pedestrian Overlay Districts, vehicular speeds should be reduced and intersections should be excluded from the City's level of service (LOS) standard.
2. Sidewalk and crossing treatments within Pedestrian Overlay Districts should be chosen to enhance pedestrian safety and comfort in consideration of each particular district's context.
3. Land uses in Pedestrian Overlay Districts should include densities that support transit and a mix of diverse land uses, including public/quasi-public uses, residential and commercial.
4. To create a pleasant environment with a sense of place, streetscapes in Pedestrian Overlay Districts should incorporate high quality design elements, including landscaping, street trees, public art, seating, drinking fountains, information signs and/or other amenities and uses.

### **Implementation Measures**

1. Implement the policies and implementation measures of the Pedestrian Access & Circulation and Streetscape Design sections.
2. Implement the Best Practices Manual for Pedestrian Design as appropriate for each Pedestrian Overlay District, provided that the provisions of the Best Practices Manual are not intended to supersede adopted specific plan design guidelines.
3. During the review of land use and development plans for Pedestrian Overlay Districts, support plans that:

- a. Provide enhanced access to key destinations and uses, including public buildings, transit stops, schools, parks, residential and commercial.
- b. Reduce building setbacks so that entrances are convenient and attractive to pedestrians and transit stops.
- c. Separate sidewalks from the street with planter strips.
- d. Reduce block lengths to enhance pedestrian connections and activity.
- e. Provide a mix and density of land uses that will support increased pedestrian activity.

***Maintenance***

**Goal 5: Maintain walkways to ensure preservation of the City’s capital improvements and to provide safe and comfortable facilities for users.**

**Policies**

- 1. Sidewalks shall be repaired per City and State Codes. The City is responsible for long-term repair of sidewalks damaged by Official City Street Trees or a City vehicle. If a sidewalk is damaged in any other manner, the adjacent property owner is responsible for repairing the sidewalk, as required by State law.

**Implementation Measures**

- 1. Continue to document identified pedestrian network hazards and take appropriate actions to ensure remediation of hazards.
- 2. Continue to inspect on a regular basis all sidewalks within the City for deficiencies.
- 3. As funding allows, continue to provide temporary asphalt repairs or grinding to damaged sidewalks to reduce the potential for trip falls.
- 4. For sidewalk repairs that are the responsibility of the City due to damage from official city street trees or City vehicles, continue the annual sidewalk repair program as funding allows.
- 5. For sidewalk repairs that are not the responsibility of the City, continue to ensure that private property owners are aware of their maintenance responsibility.

***Pedestrian Education, Encouragement and Enforcement Programs***

**Goal 6: Increase pedestrian and motorist awareness of the rights and responsibility of pedestrians in order to improve safe pedestrian and motorist practice and reduce collisions.**

**Goal 7: Use incentives and encouragement efforts to promote walking for transportation and recreation.**

## **Policies**

1. Enforcement efforts directed at motorists or pedestrians should focus on areas where collision data indicates a trend in illegal or unsafe driving or pedestrian behavior.
2. Raise motorist and pedestrian awareness of the rights and responsibilities of pedestrians and the ways motorists can more safely accommodate pedestrians.

## **Implementation Measures**

1. Consider formation of a Pedestrian Safety Task Force comprised of City staff and community members to coordinate education, encouragement and enforcement strategies.
2. Coordinate education and encouragement efforts with the Police Department, Parks and Recreation Department, public health agencies, and other interested groups.
3. Explore opportunities to expand the Safe Routes to School Program. Consider partnering with the schools to create an annual pedestrian safety education program for school-age children.
4. Create a public education campaign that provides information on the rights and responsibilities of pedestrians and motorists.
5. Coordinate efforts and develop coalitions with other City departments, schools, public health agencies, walking groups, running groups or other groups with an interest in pedestrian safety.
6. Provide training to Public Works and Planning Department staff and commissions on the best practices for pedestrian planning, design and maintenance.

## ***Funding***

**Goal 8: Ensure adequate funding for construction and maintenance of pedestrian facilities.**

## **Policies**

1. Maximize funding opportunities through a combination of federal, state and local sources, including development agreements, community facilities districts and grants.

## **Implementation Measures**

1. Where feasible and appropriate, incorporate pedestrian improvements into larger roadway corridor or redevelopment projects.
2. Continue to bundle sidewalk construction and repair projects to take advantage of economies of scale and reduced mobilization costs.
3. Submit grant applications in accordance with the City's guidelines.

4. If feasible, fund City staff pedestrian program training.

### ***Evaluation***

**Goal 9: Evaluate the effectiveness of the City's pedestrian plans and programs on an on-going basis.**

### **Policies**

1. Establish and implement a plan for regular measurement of pedestrian activity in Roseville.
2. Annually review pedestrian-involved collisions to identify causal factors and trends, and to target efforts to reduce collisions and injuries/fatalities.

### **Implementation Measures**

1. Prepare an annual report summarizing pedestrian program activities and collision data, and identifying an action plan for future years.
2. If a trend of pedestrian/bicycle conflicts on sidewalks or multi-use paths is identified, consider signs or other measures to reduce the potential for conflict.
3. Where appropriate, include pedestrian counts to gauge pedestrian activity

## Chapter 5: Pedestrian Network

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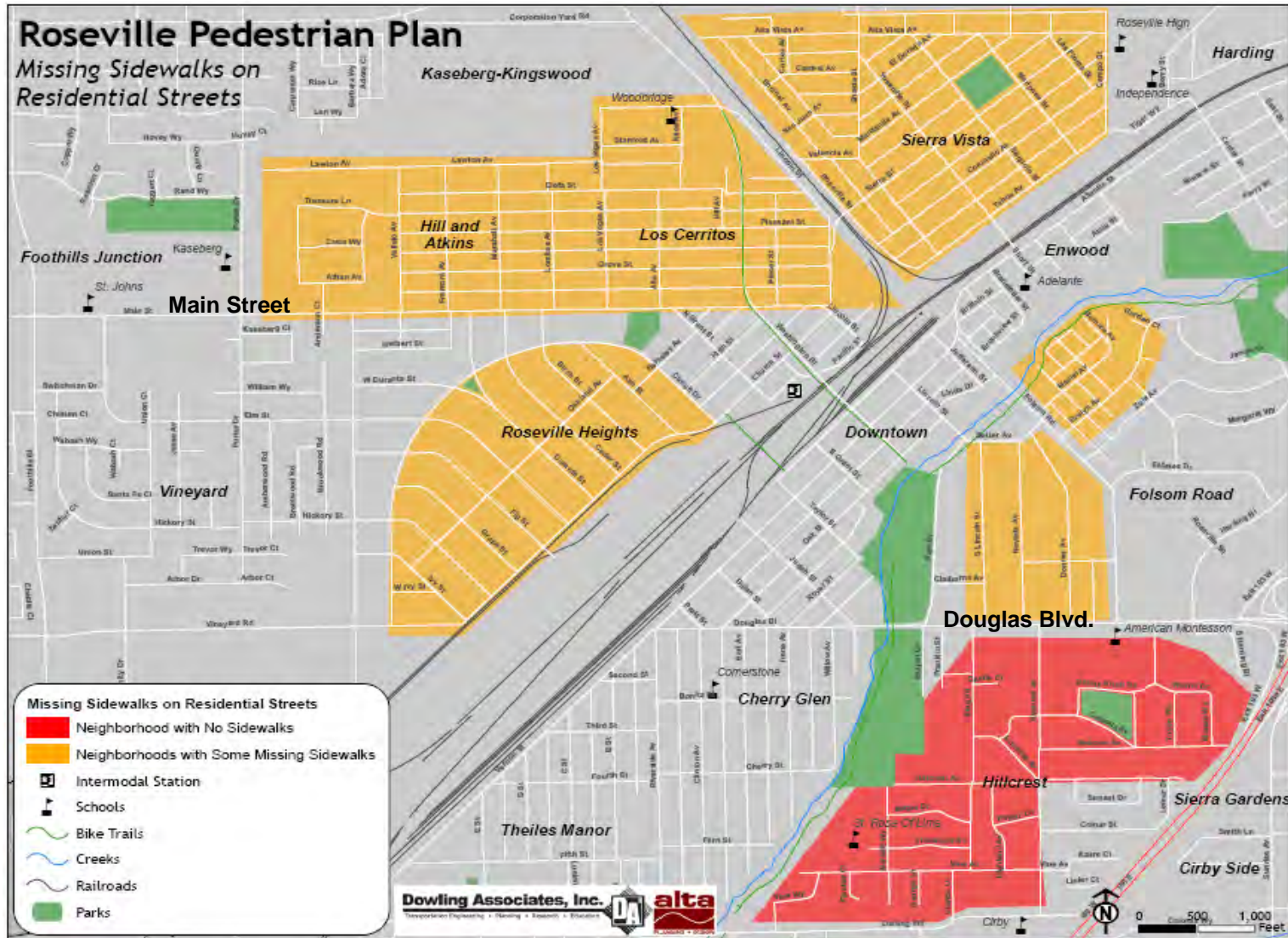
Planned roadway projects and new developments provide important opportunities to enhance the pedestrian network by installing and upgrading pedestrian facilities and incorporating requirements set forth in the Americans with Disabilities Act (ADA).

In Roseville, the pedestrian network includes the following:

- Arterials and collectors which provide the access to public facilities, such as schools, senior centers, city offices, and libraries.
- Pedestrian activity area where higher numbers of pedestrians may be expected, such as employment, recreation, and community centers (i.e., Maidu Community Center).
- Pedestrian overlay districts
- Walking routes providing access to neighborhood schools
- Access to transit stops
- Sidewalks on residential roads
- Walkways on private property

While sidewalks along residential streets were not included in the field inventory, they are an important part of the pedestrian network. The City would continue to address sidewalk gaps on residential streets in the future. Figure 6 shows a map of residential areas where sidewalk gaps are found.

Figure 6: Residential Areas with Sidewalk Gap



## Chapter 6: Implementation Plan

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This chapter presents the project selection and prioritization process used to develop a list of priority projects for implementation. First, candidate capital improvement projects are identified for implementation as part of this Pedestrian Master Plan. The implementation plan presents a list of capital improvement projects that are prioritized based on a set of criteria.

### 6.1 Candidate Projects

The candidate projects were identified based on the review of the existing conditions and needs assessment on arterial and collector streets.<sup>7</sup> These projects are geared mainly towards engineering solutions to eliminate sidewalk gaps. Candidate projects started with the list of on-going project and plans that include pedestrian improvements. In addition, the needs assessment from the field inventory and constraints identified by public input survey respondents were used to develop a list of candidate projects.

The candidate projects are presented in the following order:

- Current City projects and plans
- Sidewalk gaps on arterial and collector streets

#### *Current City Projects and Plans*

Generally, property owners are responsible for installing and maintaining the sidewalks that front their property. Nonetheless, there are city-sponsored projects and plans that address the installation of walkways.

#### **Capital Improvement Program**

The City is undertaking several corridor and intersection projects that would involve pedestrian improvements as part of the project.

#### **Annual Sidewalk Repair Program**

The Public Works Department has an Annual Sidewalk Repair Program, as it is responsible for repairing sidewalk damage caused by City-owned vehicles and official city street trees.<sup>8</sup> Neighborhoods containing official city street trees are

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<sup>7</sup> Residential streets were not surveyed and are not contained in the list of candidate projects. This does not preclude the City from addressing sidewalk gaps on residential streets in the future. Figure 6 shows a map of residential areas where sidewalk gaps are found.

<sup>8</sup> City of Roseville Public Works Department FAQs website, accessed January 13, 2010 at [http://www.roseville.ca.us/pw/faqs\\_%28public\\_works%29.asp#878](http://www.roseville.ca.us/pw/faqs_%28public_works%29.asp#878)



generally found in the areas close to downtown. Funding for this program averages \$80,000 per year.

### ADA Transition Plan

The ADA Transition Plan identifies locations with missing curb ramps at intersections using the inventory database. For each surveyed intersection, the inventory shows which corners have curb ramps and the location of the curb ramp. The ADA Transition Plan includes a prioritization for the curb ramps and the truncated domes as well as other measures to provide accessibility in the public right-of-way. Most projects identified in the ADA Transition Plan are not included in the Pedestrian Master Plan. However, the City may chose to combine projects from both plans into a single construction project.

### Sidewalk Gaps

Using the field inventory, gaps in the sidewalks on arterial and collector streets under Roseville’s jurisdiction were identified. Of the 217 total directional miles of arterial and collector streets covered in the inventory, 34.3 directional miles (about 16%) under Roseville’s jurisdiction were found to have sidewalk gaps where sidewalks are needed. For most of the streets with sidewalk gaps, the entire sidewalk was missing. The directional miles of sidewalks gaps are summarized by percentage with sidewalks in Table 14.

**Table 14: Summary of Sidewalk Gaps (in Directional Miles)**

Percent of street with sidewalk	Total Inventory	Gap and Missing Sidewalk Inventory
0%	24.0	24
25%	8.3	6.7
50%	3.9	2
75%	6.2	1.6
100%	152.5	0
Other <sup>1</sup>	22.1	N/A
<b>Inventory Total</b>	<b>217.0</b>	<b>34.3</b>

*Source: 2007 inventory survey with 2010 updates*

<sup>1</sup> *Refers to inventoried sidewalks not under Roseville's jurisdiction or locations where sidewalks are not planned or needed*

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Since the field inventory only covered sidewalks on arterial and collector roadways, residential streets are not included in the summary. The field inventory focused on the arterials and collectors, because they primarily provide access to businesses and public uses, including transit stops.

From the inventory, there are a total of 188 segments with incomplete or missing sidewalks in Roseville's city limits, as of September 2010. Of these, 20 are under the jurisdiction of another agency, such as the California's Department of Transportation (Caltrans) or in the neighboring cities and counties. Another 28 segments have missing sidewalks on a side of the street where sidewalks are not needed, such as those on Vernon and Church Streets bordering the railroad tracks. Thus, there are a total of 140 roadway segments under Roseville's jurisdiction with incomplete or missing sidewalks where sidewalks are needed.

## **Crossing Safety**

The City of Roseville is in the process of developing a TAAS (Traffic Accident Analysis System) which will provide guidelines for Engineering Staff for evaluating top pedestrian collision locations throughout the City. Engineering will annually evaluate the top pedestrian accident locations within the City paying close attention to locations near schools. Engineering will use Caltrans warrants and engineering judgment to mitigate potential high incident locations.

## **6.2 Selection Criteria**

Planned roadway projects and new developments provide important opportunities to enhance the pedestrian network by installing and upgrading pedestrian facilities and incorporating requirements set forth in the Americans with Disabilities Act (ADA).

### ***Capital Improvement Program***

While part of the pedestrian network, many sidewalk gaps are planned for improvement under the current roadway CIP. When a planned roadway CIP will close a gap in the sidewalk system, the sidewalk is not included as part of the candidate pedestrian improvements covered by this Implementation Plan.

### ***Specific Plan***

Many missing sidewalks are in developing specific plan areas. These sidewalks are typically constructed as part of the site improvements for future development projects. The construction of sidewalks in specific plan areas is paid for through the funding mechanisms identified in the specific plan development agreement(s). These funding mechanisms may include developer funding or fee-based programs. Where funding for sidewalk construction is provided by the specific plan development agreement(s), the sidewalk improvements are not included in the Implementation Plan. In several cases, specific plan development agreements did not provide adequate funding for sidewalk construction. In these cases, the sidewalk is included in the Implementation Plan.

### ***City Right-of-Way***

Some of the sidewalk gaps fall outside of the City's jurisdiction. When the sidewalk or side of a roadway is under the jurisdiction of Caltrans, Placer County, or Citrus Heights, that other agency would be responsible for addressing the sidewalk gap. If there are instances where both Roseville and an adjoining jurisdiction have nearby

or adjacent gaps in the sidewalk system, the communities may partner on sidewalk projects.

### 6.3 Sidewalk Gap Projects for Implementation

As described above, a total of the 140 roadway segments under Roseville’s jurisdiction have incomplete or missing sidewalks where walkways need to be installed. Potential funding for sidewalk installation has already been identified for the majority of these segments. Developers are responsible for installing sidewalks on the majority of the roadway segments identified, while sidewalk installations on other segments are already included in Roseville’s Capital Improvement Program or the West Roseville Specific Plan (Planned CIP). The remaining 42 segments form the basis of the Pedestrian Master Plan’s implementation program (PMP Implementation). Table 15 summarizes the responsibility for addressing sidewalk gaps, while roadways where sidewalk gaps were identified are mapped in Figure 7.

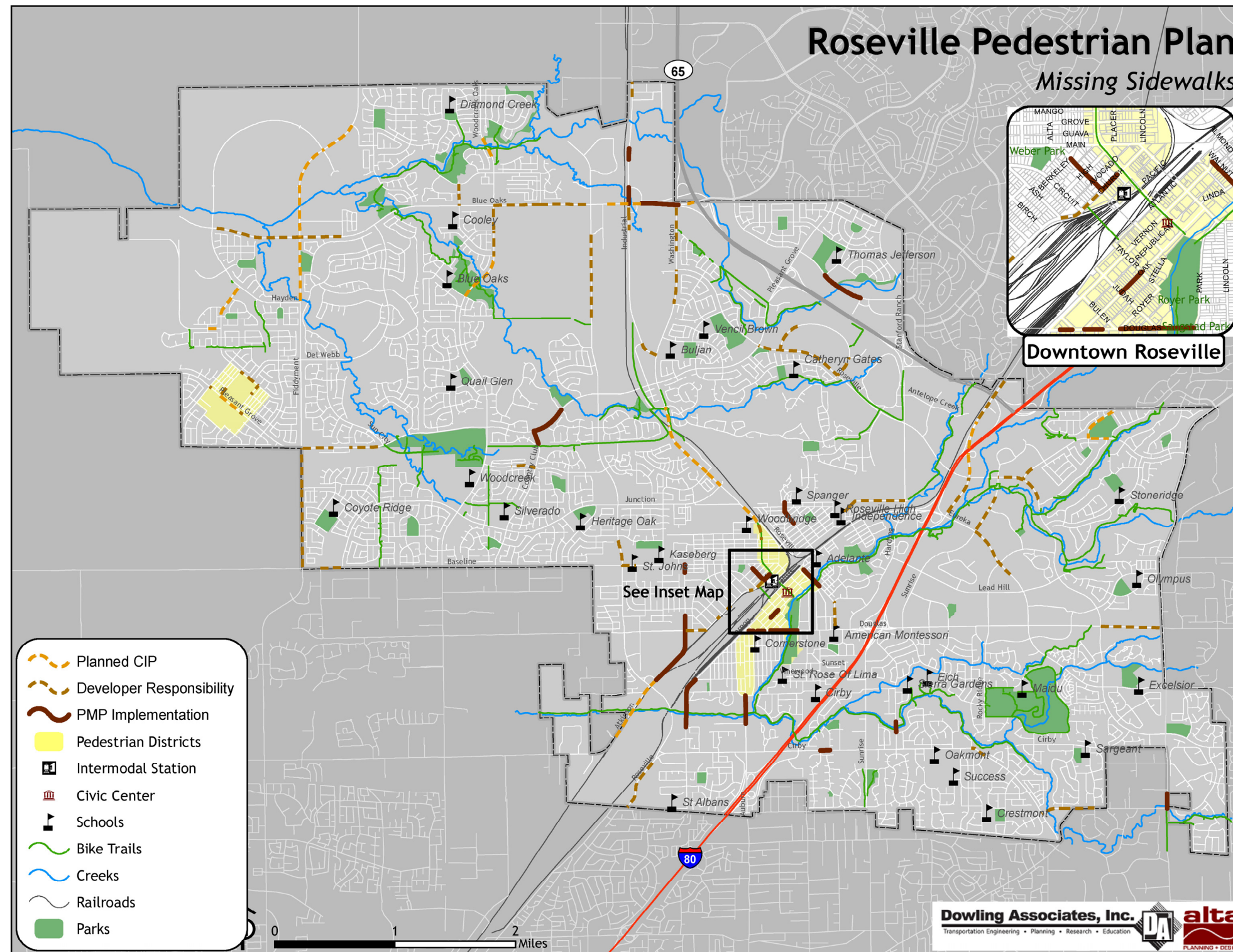
**Table 15: Sidewalk Gap Responsibility**

Responsibility	Number of Segments with Gaps	Sidewalk Gaps (Directional Miles)	Percent of Gaps (Directional Miles)
Developer	68	18.9	55.1%
Planned Capital Improvements Program	30	9.6	28.0%
Pedestrian Master Plan	42	5.8	16.9%
<b>Total</b>	<b>140</b>	<b>34.3</b>	<b>100.0%</b>

*Source: 2007 inventory survey with 2010 updates*

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Figure 7: Missing or Incomplete Sidewalks in Roseville's Jurisdiction



## 6.4 Priority Projects for Implementation

This chapter presents the project prioritization process used to develop a list of priority projects for implementation.

### *Prioritization Criteria*

The candidate segments identified as Pedestrian Master Plan implementation projects were prioritized. Candidate projects are focused on where there are discontinuous or missing sidewalks. These projects are geared towards sidewalks and associated curb and gutter improvements to eliminate sidewalk gaps. They were prioritized based on proximity to the following sites:

- Amtrak train station
- Bus stops
- Secondary schools
- Elementary schools
- Critical sites (hospitals, government offices, major adult care facilities)
- Pedestrian districts

An additional criterion was whether the sidewalk was located in a Pedestrian District.

Each of these criteria and the rationale for selection are described below. Candidate segments receive one point in the ranking system for each criterion they fulfill.

- **Transit Center** – The candidate segment is located within one-half mile radius of the Amtrak station. The half-mile radius was assumed to represent the maximum distance people are likely to walk from the transit center. This criterion would prioritize improvements that provide access to the train.
- **Bus Stops** – The candidate segment is located within one-quarter mile of the nearest bus stop. The one-quarter mile radius is the greatest distance at which most people would walk to a bus stop. This criterion would prioritize improvements that provide access to transit.
- **Secondary Schools** – The candidate segment is located within one-quarter mile of a public middle or high school. The one-quarter mile radius was assumed to be a reasonable distance that an older child would likely walk to and from middle and high schools. Private schools were excluded from the prioritization because they tend to draw from a wider geographic area, which limits student walk access.
- **Elementary Schools** – The candidate segment is located within one-quarter mile of a public elementary school. Public schools generally draw geographically from the surrounding neighborhoods, enabling walk access. The one-quarter mile was the maximum distance that a small child would

likely walk to and from school.<sup>9</sup> Private schools were excluded from the prioritization because they tend to draw from a wider geographic area, which limits student walk access.

- **Critical Sites** – The candidate segment is located within one-quarter mile of hospitals, government offices, or major adult care facilities for the elderly or developmentally disabled. These sites provide critical public services as defined by the City’s Hazards Mitigation Plan.
- **Pedestrian Districts** – The candidate segment is located within a Pedestrian District. By designation as a Pedestrian District, the City intends to promote walkability within it and allows for several enhancements.

***Preliminary Prioritization and Weighting***

Using these criteria and assigning equal weighting to each, the 42 sidewalk gap projects were prioritized for implementation. The results with the number of segments ranking out of a possible rank of 6 are contained in Table 16 and shown in Figure 8.

**Table 16: Rank of Segments with Sidewalk Issues**

Total Rank	Number of Segments
6	0
5	7
4	4
3	5
2	3
1	15
0	8
Total	42

<sup>9</sup> For elementary schools, which tend to be located within residential neighborhoods, the sidewalk inventory did not include residential streets, so some sidewalk gaps may not show up on the project list.

Figure 8: Ranked Sidewalk Projects

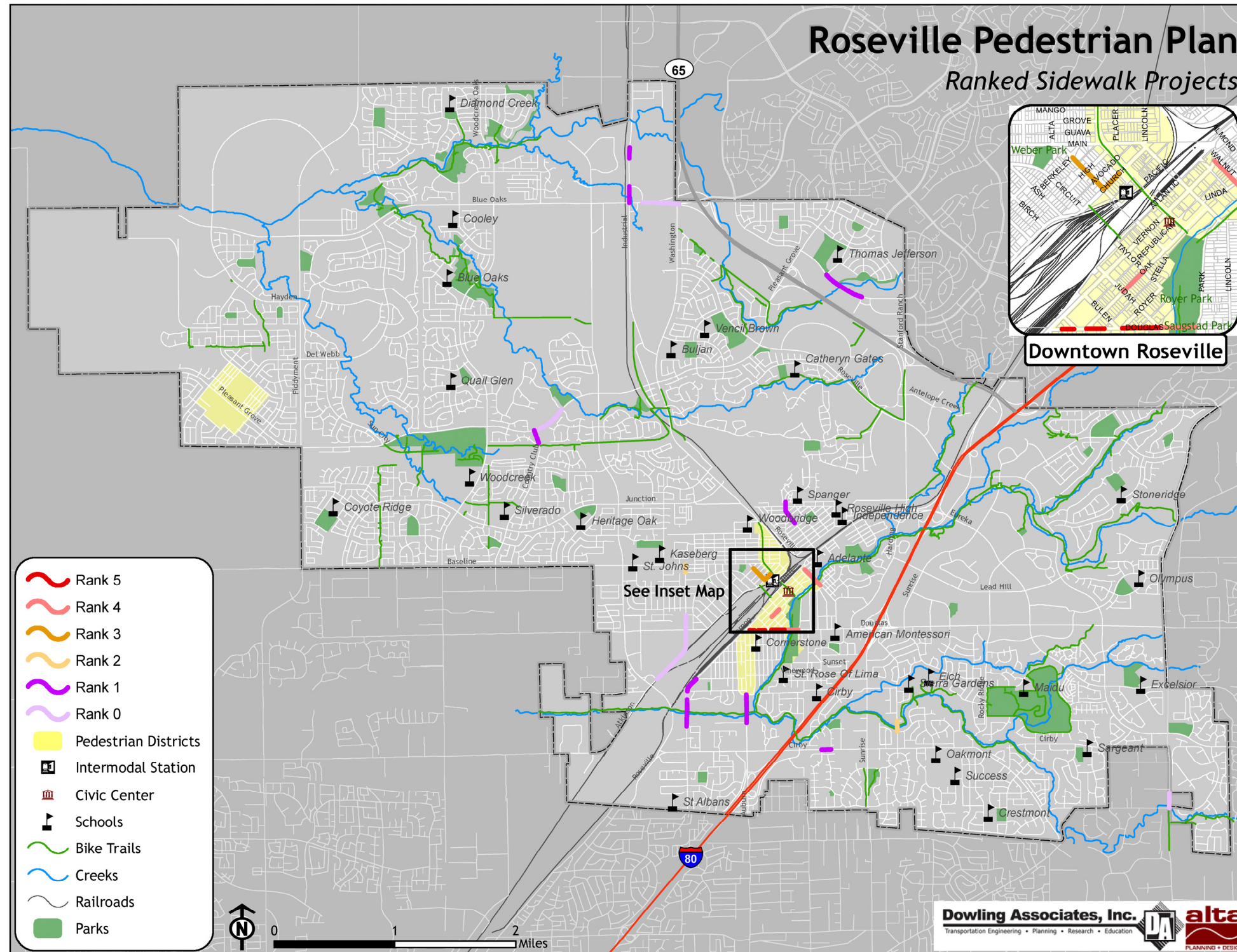


Table 17 lists the sidewalk gap projects by ranking from highest to lowest, indicates the extent of the roadway segment, and which side of the street the sidewalk is present as a percentage.

**Table 17: Priority Sidewalk Projects by Ranking**

Street Name	Extent		Project Rank	Sidewalk Present (%)	
	From	To		N-E	S-W
Douglas Blvd	Willow Ave	Judah St	5	0%	100%
Douglas Blvd	Gopher Gulch Al	Willow Ave	5	0%	0%
Douglas Blvd	Irene Ave	Bing Al	5	0%	100%
Douglas Blvd	Earl Ave	Stella Al	5	0%	100%
Douglas Blvd	Oak St	Earl Ave	5	0%	0%
Douglas Blvd	Rainier Al	Clinton Ave	5	0%	100%
Douglas Blvd	Bing Al	Gopher Gulch Al	5	0%	0%
Douglas Blvd	Judah St	Buljan Dr	4	25%	100%
Folsom Rd	Vernon St	Linda Dr	4	25%	0%
Folsom Rd	Linda Dr	Maciel Ave	4	75%	0%
Oak St	Taylor St	Judah St	4	50%	100%
Church St	Pacific St	N Grant St	3	100%	0%
N Grant St	Avocado Al	High St	3	0%	100%
N Grant St	Coconut Al	Berkeley Ave	3	0%	100%
N Grant St	High St	Coconut Al	3	0%	100%
N Grant St	Church St	Avocado Al	3	50%	25%
Atkinson St	Alley (S)	Main St	2	0%	100%
Atkinson St	Herbert St	Alley (N)	2	0%	100%
Oak Ridge Dr	Vinmar Ct	Rampart Dr	2	100%	25%
Cirby Wy	San Simeon Dr	Coral Dr	1	25%	0%
Country Club Dr	Danielle Dr	Pleasant Grove Blvd	1	0%	100%
Industrial Ave <sup>1</sup>	Blue Oaks Blvd	Alantown Dr	1	75%	0%
Industrial Ave <sup>1</sup>	Alantown Dr	Finisteria Dr	1	75%	0%
Fairway Dr	Central Park Dr	Home Depot Dwy	1	100%	75%
Riverside Ave	Darling Wy	Kenroy Ln	1	0%	0%



Street Name	Extent		Project Rank	Sidewalk Present (%)	
	From	To		N-E	S-W
Shasta St	Alta Vista Ave	Alley (N)	1	0%	100%
Shasta St	Alley (S)	Alta Vista Ave	1	0%	0%
Shasta St	Alta Vista Ave (N)	Alta Vista Ave (S)	1	0%	0%
Shasta St	Alley (N)	Yosemite St	1	0%	100%
Vernon St <sup>1</sup>	Fifth St	Sixth St	1	0%	0%
Vernon St	Dudley Dr	Inglis Wy	1	50%	50%
Yosemite St	Alley (S)	Shasta St	1	0%	100%
Yosemite St	Alley (N)	El Dorado Ave	1	100%	0%
Yosemite St	Manzanita Ave	Alley (N)	1	0%	100%
Atkinson St	Vineyard Rd	Ivy St	0	0%	75%
Atkinson St	Denio Lp	Vineyard Rd	0	0%	0%
Blue Oaks Blvd	Exit 309 S	Washington Blvd	0	0%	100%
Blue Oaks Blvd	Exit 309 N	Alantown Dr	0	0%	0%
Blue Oaks Blvd	Washington Blvd	Exit 309 N	0	0%	0%
Pleasant Grove Blvd	Hemingway Dr	Country Club Dr	0	0%	50%
<del>Sierra College Blvd <sup>2</sup></del>	<del>Haskell Wy</del>	<del>Old Auburn Rd</del>	<del>0</del>	<del>25%</del>	<del>25%</del>
Vernon St <sup>1</sup>	Sixth St	Dudley Dr	0	0%	0%

**N-E** = North or East side of street; **S-W** = South or West side of street

<sup>1</sup> Railroad property on west side, sidewalk will not be installed

<sup>2</sup> On Sierra College Blvd., sidewalk in Roseville is complete; remainder to be built is in Placer County.

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Although the Country Club Drive and Pleasant Grove Boulevard segments rank low, they are identified as priority projects in the ADA Transition Plan because of their proximity to a senior community. Additionally, it's important to note that segment ranking does not indicate the order in which projects will be completed. Funding types and availability heavily influence the project's completion dates. For example, the sidewalk on Industrial Avenue between Alantown and Finisteria Drives will be completed in the near future, even though its ranking is one, because the City received a grant to retrofit the bridge.

# Chapter 7: Funding

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The chapter describes the estimated costs for the priority projects as well as unit costs for improvements. Potential funding sources are listed.

## 7.1 Cost Estimates

Order-of-magnitude unit cost estimates for pedestrian improvement projects were developed to help better understand funding needs to implement these improvements. Cost estimates for installing new sidewalks, vertical curbs, and gutters were calculated by reviewing construction bids submitted in 2008 to the City of Roseville. A unit cost estimate for installing new six-foot wide sidewalks, vertical curbs, and gutters is roughly \$120 per linear foot. This unit cost was applied to every segment in Table 17 where sidewalks are needed to fill gaps, regardless of existing vertical curb and gutter or sidewalk width. This planning-level estimate does not include design, start-up costs, right-of-way acquisition, or additional structures and other specific improvements to address unique conditions in the field, but assumes some built-in contingency. For example, completing the sidewalk gap on Industrial Avenue south of Finisteria Drive may involve design and bridge widening over the waterway, which are costs that are not delineated as part of this level of planning.

## 7.2 Potential Funding Sources

The projects and programs in the Pedestrian Master Plan can be funded by a variety of local, regional, state and federal sources. Identification of projects in this plan will facilitate grant applications for pedestrian improvements. Primary funding sources for pedestrian projects and programs are listed in Table 18. Some sources are specifically for pedestrian projects, while others are for larger transportation projects of which pedestrian improvements may only be a small component.

### *Previous Funding in Roseville*

In the past, the City of Roseville has been successful in obtaining funding for projects that include, or could potentially fund, pedestrian capital improvements. The City has received grants from Federal, State, and local sources. A summary of previously funded projects follows.

The Federal Highway Administration (FHWA) provided funds in 2003 through the Transportation and Community and System Preservation Program (TCSP) for the Washington Boulevard Pedestrian Underpass project. This \$310,000 project included \$110,000 of local redevelopment agency matching funds.

A California State Safe Routes to School (SR2S) grant in the amount of \$232,000 with a 10% local match was awarded to the City of Roseville in 2008 to install a traffic signal at the corner of Woodcreek Oaks Boulevard and Camino Capistrano near Quail Glen Elementary School.

The Federal Transit Administration (FTA) provides a number of grants under which sidewalk repair could be folded into projects, as long as they are consistent with short-range transit plans. Roseville successfully received funds from grant 5309 (Bus and Bus-Related Facilities Discretionary Grant Program To Support Urban Partnerships), which awarded \$635,000 for transit-related sidewalk improvements for the Riverside Avenue Gateway Project in 2004 and 2005. The project required \$159,000 in matching funds. Other FTA grants awarded to Roseville have included 5307 (Large Urban Cities), 5316 (Job Access and Reverse Commute Program), and 5317 (New Freedom), although most were not used for sidewalk installations. In late 2009, the FTA proposed a policy to increase the radius of potential pedestrian improvements to a half-mile from public transit stops and stations. If adopted, the number of sidewalk projects in Roseville eligible for FTA grants would increase.

Funds from California Transportation Development Act (TDA) have been used in Roseville to fund primarily bicycle and transit projects. Article 3 (Bicycle and Pedestrian) provides approximately \$80,000 per year of non-discretionary funds to implement bicycle projects. Article 4 (Public Transit) provides \$3,900,000 per year to primarily fund transit capital improvements and operations, as well as bicycle programs and transportation demand management. Roseville also receives non-discretionary funding from the federal Congestion Mitigation and Air Quality (CMAQ), which is distributed every two to three years for an average of \$1.1 million annually and can be used for pedestrian projects.

For the 2005-2010 funding cycle, the City of Roseville was apportioned close to \$472,000 non-discretionary funds from the Placer County Transportation Planning Agency's (PCTPA) Pedestrian and Bicycle Fund. These funds are 2% of the Local Transportation Fund and are distributed on a reimbursement basis. This latest cycle included the Harding to Royer Bike Trail and this Pedestrian Master Plan.

### ***Funding in Other Jurisdictions***

Other jurisdictions have used a variety of funding sources to implement pedestrian projects. For revenue generation, some cities have created special districts to fund, in part, sidewalk installation, landscaping, and maintenance. Grants are also commonly used to fund pedestrian projects.

### **Generating Revenue**

The California cities of Pasadena and Redwood City have created business improvement districts (BID) in their downtown core. Money is generated from parking meter revenue and is used to improve the walking environment in the district. Tax increment financing (TIF) is a tool that allows jurisdictions to finance debt for current public projects by accounting for future gains in property taxes should the project get installed. For example, a public project to clean up hazardous waste will often lead to an increase in the value of surrounding, privately-owned real estate, and perhaps new investment. TIF is designed to channel funding toward

improvements in distressed or underdeveloped areas where development might not otherwise occur. They are used in almost every state, with California being the first to initiate its use. As an example, the Pleasant Hill BART Station in Walnut Creek used TIF for a \$40 million project, of which \$5 million was used to enhance pedestrian and bicycling facilities.

### Grants

The majority of federal and state grants in this region are distributed through the metropolitan planning organizations of the Placer County Transportation Planning Agency (PCTPA) and Sacramento Area Council of Governments (SACOG). The California Department of Transportation (Caltrans) has provided funds directly to local jurisdictions. A review of recent grants awarded by these agencies for pedestrian capital projects provides reasonable funding expectations for the implementation of sidewalk improvements in Roseville as well as highlights funding sources that the City has not utilized in recent years.

The City of Auburn has received over \$125,000 from the Recreational Trails Program for trail and culvert maintenance, rehabilitation, and bridges. The receipt of these funds was often accompanied by agreements for using volunteers, such as the California Conservation Corps, and existing staff at agencies, such as the Forest Service, to do some work.

While Placer County and the City of Roseville are not eligible for SACOG's Bicycle and Pedestrian Funding Program, a review of awarded grant monies provides insight into winning projects and the award amounts. This program distributes federal funds every two years for capital and non-capital bicycle and pedestrian projects in the four counties of Sacramento, Sutter, Yolo, and Yuba through a competitive process.<sup>10</sup> In 2010, it awarded \$8.6 million, including:

- \$680,000 to Yuba City for the Garden Highway bike lanes and sidewalks on Garden Highway (Lincoln Road to Winship Road, approximately 0.46 miles)
- \$980,000 to Yuba County for sidewalk, curbs, gutter, and bike lanes on Powerline Road (9<sup>th</sup> to 15<sup>th</sup> Avenue, approximately 0.60 miles), and
- \$1.743 million to Sacramento County for the construction of bicycle and pedestrian improvements along Marconi Avenue (Walnut Avenue to Garfield Avenue, approximately 0.50 mile long).
- \$1.493 million to Sacramento County for sidewalks, landscape enhancements, accessibility improvements, and other bicycle, pedestrian, and transit access enhancements on Orange Grove Avenue (Auburn Boulevard to College Oak Drive, approximately 0.57 miles). In 2010, \$8.6 million was awarded to 12 projects.

As mentioned previously, the PCTPA apportions non-discretionary funds every five years to jurisdictions from the Pedestrian and Bicycle Fund. For the 2005-2010

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<sup>10</sup> Federal funding sources are the Regional Surface Transportation Program (RSTP), the Congestion Mitigation and Air Quality Program (CMAQ), and Transportation Enhancements (TE) Program.

funding cycle, a summary of each neighboring jurisdiction's apportionment follows, as they pertain to pedestrian facilities, follows:

- City of Auburn was apportioned \$59,399 for Pedestrian and bicycle trails, pathways, lighting and signage for the Auburn School Park Preserve project at High St. and College Way.
- City of Lincoln was apportioned \$114,010 for Auburn Ravine Park Trail Walkways
- City of Loomis was apportioned \$29,532 for rehabilitating the bike/pedestrian path along King Road from Sierra College Blvd to Humphrey Road.
- City of Rocklin was apportioned \$284,923 for two projects, the Farron Street bike and pedestrian crossing and the Pacific Street sidewalks and bike lanes.

In 2009, Caltrans' Local Assistance Program administered \$465,000 in Federal Congestion Mitigation and Air Quality funds for sidewalk improvements in Placer County (Granite Bay) for a 3-mile stretch of Douglas Boulevard between Sierra College Boulevard and Auburn-Folsom Road. A local match of \$100,000 from the Road Fund will be used to supplement the \$800,000 project. Caltrans awarded roughly \$1 million dollars of Transportation Enhancement funds in 2008 to El Dorado County for the construction of a multi-use trail between Forni Road and Missouri Flat Road near Placerville.

## **7.3 Funding Plan and Strategy**

Using the final list of projects and the preliminary cost estimates, a timeframe for implementation was prepared. The actual timeframe depends upon the cost estimates and the availability of funding. The costs for the highest priority (rank of 4 or 5, as well as the Country Club Drive and Pleasant Grove Boulevard identified as a priority in the ADA Transition Plan) projects are shown in Table 19.

For the lower priority projects, the timeframe will also depend upon cost of the project and the feasibility and ease of implementation. The estimated cost for all segments is contained in the appendix.

**Table 18: Summary of Potential Funding Sources**

<b>Grant Source</b>	<b>Agency</b>	<b>Program Funds Available</b>	<b>Matching Requirement</b>
<b>Federal Funding</b>			
Congestion Mitigation and Air Quality (CMAQ)	FHWA Administered by PCTPA	\$8.6 billion nationwide under SAFETEA-LU (2005-2009)	11.47%
Highway Safety Improvement Program	FHWA Administered by SACOG	\$1.8 million for Placer County in 2010	10%
Railway-Highway Crossings (Section 130) Program	FHWA Administered by Caltrans	\$220 million nationwide annually under SAFETEA-LU	None
State and Community Highway Safety Grant Program (Section 402)	California Office of Traffic Safety	\$2.376 million in California for FY2008 ped and bike projects	None
Land & Water Conservation Fund (LCWF)	California Department of Parks & Recreation	24% of the total budget to local agencies in Northern California	50%
Transportation Enhancement Activities (TEA)	FHWA Administered by Caltrans	\$151 million available statewide in 2008	20%
Regional Surface Transportation Program (Section 1113)	FHWA Administered by Caltrans	\$6,577 million nationwide annually under SAFETEA-LU	None if safety related 20% if bicycle or pedestrian related
Federal Lands Highway Funds	FHWA Administered by the California Division	\$4.5 billion nationwide through 2009	None
Recreational Trails Program (RTP)	FHWA Administered by State Department of Parks and Recreation	\$5.4 million statewide (FY2009)	12%
Federal Transit Administration	Federal Transit Administration	Varies	20%
Federal Safe Routes to Schools (SRTS) Program	Caltrans	\$46 million for California (Cycle 2 2008)	None
Youth Violence Prevention through Economic, Environmental, and Policy Change (U01)	Department of Health Services	\$1 million in FY09/10	None
Highway Bridge Program	FHWA	\$305 million to California in 2006	20%
Transportation and Community and System Preservation Program (TCSP)	FHWA	\$61 million in FY 08/09	20%
<b>State Funding</b>			
Transportation Development Act (TDA) Articles 3, 4 & 8	Caltrans	\$102K in Placer County (FY09-10)	Not required but favored

<b>Grant Source</b>	<b>Agency</b>	<b>Program Funds Available</b>	<b>Matching Requirement</b>
State Transportation Improvement Program (STIP)	Caltrans	\$763,000 to Placer County 2008-2013	Not required but favored
General OTS Grants	California Office of Traffic Safety	\$70 million statewide (FY08/09)	None
California Center for Physical Activity Grant Program	Department of Health Services	Up to \$4,999 per grantee (pending budget availability)	None
Environmental Enhancement and Mitigation Program (EEMP)	State Resources Agency, Caltrans	\$10 million annually statewide	Not required but favored
Environmental Justice Grants: Context Sensitive Planning	Caltrans	\$2.8 million statewide for FY09-10; \$250K maximum grant	10% local match
Community Based Transportation Planning	Caltrans	\$2.7 million statewide for FY09-10; \$300K maximum grant	20% local match
Safe Routes to School (SR2S)	Caltrans	\$48.5 million in Cycle 8 (FY 08/09)	10% match
Habitat Conservation Fund (HCF)	California Department of Parks & Recreation	\$2 million annually statewide	50% match
California Conservation Corps	N/A	N/A	
<b>Local Funding</b>			
Community Design Program	SACOG	\$18.4 million for 2007-09 program cycle	
South Placer Regional Transportation Authority Impact Fees	SPRTA	\$191 million in 2007	
<b>Nontraditional Sources</b>			
Community Development Block Grants	HUD	\$39 million statewide (2008)	None, but may be used as evaluation criteria
Public-Private Partnerships	N/A	N/A	
Individual Sponsors	N/A	N/A	
Mello-Roos Community Facilities Act	Various Public Agencies	Varies	None

Table 19: Priority Projects

Street ID	Street Name	Extent		Project Rank	Segment Length (Ft)	Sidewalk Present (%)		Sidewalk, Curb, & Gutter Installation (Ft)			Estimated Cost
		From	To			N-E	S-W	N-E	S-W	Total	\$120
2548	Douglas Blvd	Willow Ave	Judah St	5	190.53	0%	100%	190.53	0.00	190.53	\$22,864
2549	Douglas Blvd	Gopher Gulch Al	Willow Ave	5	113.25	0%	0%	113.25	113.25	226.51	\$27,181
2552	Douglas Blvd	Irene Ave	Bing Al	5	191.43	0%	100%	191.43	0.00	191.43	\$22,971
2560	Douglas Blvd	Earl Ave	Stella Al	5	91.34	0%	100%	91.34	0.00	91.34	\$10,961
2561	Douglas Blvd	Oak St	Earl Ave	5	190.87	0%	0%	190.87	190.87	381.74	\$45,809
2565	Douglas Blvd	Rainier Al	Clinton Ave	5	193.76	0%	100%	193.76	0.00	193.76	\$23,251
2551	Douglas Blvd	Bing Al	Gopher Gulch Al	5	79.09	0%	0%	79.09	79.09	158.18	\$18,981
<b>Rank 5 Subtotal</b>											<b>\$172,018</b>
2546	Douglas Blvd	Judah St	Buljan Dr	4	588.12	25%	100%	441.09	0.00	441.09	\$52,930
2297	Folsom Rd	Vernon St	Linda Dr	4	494.67	25%	0%	371.00	494.67	865.68	\$103,881
2336	Folsom Rd	Linda Dr	Maciel Ave	4	492.18	75%	0%	123.05	492.18	615.23	\$73,827
4517	Oak St	Taylor St	Judah St	4	469.26	50%	100%	234.63	0.00	234.63	\$28,156
<b>Rank 4 Subtotal</b>											<b>\$258,795</b>
1250	Country Club Dr	Danielle Dr	Pleasant Grove Blvd	1	602.10	0%	100%	602.10	0.00	602.10	\$72,252
1150	Pleasant Grove Blvd	Hemingway Dr	Country Club Dr	0	1558.46	100%	71%	0.00	438.00 <sup>1</sup>	438.00	\$52,560
<b>Country Club Dr and Pleasant Grove Blvd Subtotal</b>											<b>\$411,763</b>
<b>Priority Projects Total</b>											<b>\$842,576</b>
<sup>1</sup> Linear feet per construction measurements											
Street ID = Number corresponding to the GIS street centerlines database; (Ft) = Feet; N-E = North or East side of street; S-W = South or West side of street											
March 2010 Dowling Associates, Inc											



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## Appendix

**Table A-1 – Sidewalk Gap Projects Ranked with Prioritization Criteria**

Street Name	Extent		In Ped District	1/4 mile Primary School	1/4 mile Secondary School	1/4 mile Bus Stop	1/2 mile Transit Center	1/4 mile Critical Site	Total Rank
	From	To							
Douglas Blvd	Willow Ave	Judah St	1	1	0	1	1	1	5
Douglas Blvd	Gopher Gulch Al	Willow Ave	1	1	0	1	1	1	5
Douglas Blvd	Irene Ave	Bing Al	1	1	0	1	1	1	5
Douglas Blvd	Earl Ave	Stella Al	1	1	0	1	1	1	5
Douglas Blvd	Oak St	Earl Ave	1	1	0	1	1	1	5
Douglas Blvd	Rainier Al	Clinton Ave	1	1	0	1	1	1	5
Douglas Blvd	Bing Al	Gopher Gulch Al	1	1	0	1	1	1	5
Douglas Blvd	Judah St	Buljan Dr	1	0	0	1	1	1	4
Folsom Rd	Vernon St	Linda Dr	1	0	0	1	1	1	4
Folsom Rd	Linda Dr	Maciel Ave	1	0	0	1	1	1	4
Oak St	Taylor St	Judah St	1	0	0	1	1	1	4
Church St	Pacific St	N Grant St	0	0	0	1	1	1	3
N Grant St	Avocado Al	High St	0	0	0	1	1	1	3

Street Name	Extent		In Ped District	1/4 mile Primary School	1/4 mile Secondary School	1/4 mile Bus Stop	1/2 mile Transit Center	1/4 mile Critical Site	Total Rank
	From	To							
N Grant St	Coconut Al	Berkeley Ave	0	0	0	1	1	1	3
N Grant St	High St	Coconut Al	0	0	0	1	1	1	3
N Grant St	Church St	Avocado Al	0	0	0	1	1	1	3
Atkinson St	Alley (S)	Main St	0	1	0	1	0	0	2
Atkinson St	Herbert St	Alley (N)	0	1	0	1	0	0	2
Oak Ridge Dr	Vinmar Ct	Rampart Dr	0	0	0	1	0	1	2
Cirby Wy	San Simeon Dr	Coral Dr	0	0	0	0	0	1	1
Country Club Dr	Danielle Dr	Pleasant Grove Blvd	0	0	0	1	0	0	1
Fairway Dr	Central Park Dr	Home Depot Dwy	0	1	0	0	0	0	1
Industrial Ave	Blue Oaks Blvd	Alantown Dr	0	0	0	0	0	1	1
Industrial Ave	Alantown Dr	Finisteria Dr	0	0	0	0	0	1	1
Riverside Ave	Darling Wy	Kenroy Ln	0	0	0	1	0	0	1
Shasta St	Alta Vista Ave	Alley (N)	0	1	0	0	0	0	1
Shasta St	Alley (S)	Alta Vista Ave	0	1	0	0	0	0	1
Shasta St	Alta Vista Ave (N)	Alta Vista Ave (S)	0	1	0	0	0	0	1
Shasta St	Alley (N)	Yosemite St	0	1	0	0	0	0	1
Vernon St	Fifth St	Sixth St	0	0	0	0	0	1	1
Vernon St	Dudley Dr	Inglis Wy	0	0	0	1	0	0	1

Street Name	Extent		In Ped District	1/4 mile Primary School	1/4 mile Secondary School	1/4 mile Bus Stop	1/2 mile Transit Center	1/4 mile Critical Site	Total Rank
	From	To							
Yosemite St	Alley (S)	Shasta St	0	1	0	0	0	0	1
Yosemite St	Alley (N)	El Dorado Ave	0	1	0	0	0	0	1
Yosemite St	Manzanita Ave	Alley (N)	0	1	0	0	0	0	1
Atkinson St	Vineyard Rd	Ivy St	0	0	0	0	0	0	0
Atkinson St	Denio Lp	Vineyard Rd	0	0	0	0	0	0	0
Blue Oaks Blvd	Exit 309 S	Washington Blvd	0	0	0	0	0	0	0
Blue Oaks Blvd	Exit 309 N	Alantown Dr	0	0	0	0	0	0	0
Blue Oaks Blvd	Washington Blvd	Exit 309 N	0	0	0	0	0	0	0
Pleasant Grove Blvd	Hemingway Dr	Country Club Dr	0	0	0	0	0	0	0
Sierra College Blvd	Haskell Wy	Old Auburn Rd	0	0	0	0	0	0	0
Vernon St	Sixth St	Dudley Dr	0	0	0	0	0	0	0

**Table A-2 – Potential Funding Sources with Contact Information**

Grant Source	Application Deadline	Agency	Program Funds Available	Average Grant	Matching Requirement	Eligible Applicants	Commute	Recreation	Safety/Education	Contact Information	Website
<b>Federal Funding</b>											
Congestion Mitigation and Air Quality (CMAQ)	Varies	FHWA Administered by PCTPA	\$8.6 billion nationwide under SAFETEA-LU (2005-2009)		20%	State DOTs MPOs Transit agencies	X		X	PCTPA 299 Nevada St Auburn, CA 95603 Ph: (530) 823-4030 Email: pctpaa@pctpaa.net	<a href="http://www.fhwa.dot.gov/environment/cmagogs/">http://www.fhwa.dot.gov/environment/cmagogs/</a>
Comments:		Construct pedestrian facilities that reduce vehicle trips and are not exclusively recreational or conduct education and public outreach on using alternative modes.									
Highway Safety Improvement Program	Varies	FHWA Administered by SACOG	\$1.8 million for Placer County in 2010		10%	State DOTs	X	X	X	Caltrans District 3 703 B St (P.O. Box 911) Marysville, CA 95901 Ph: (530) 741-5435	<a href="http://www.dot.ca.gov/hq/LocalPrograms/hsip.htm">http://www.dot.ca.gov/hq/LocalPrograms/hsip.htm</a>
Comments:		Projects must identify a specific safety problem that can be corrected or be improved substantially.									
Railway-Highway Crossings (Section 130) Program	Contact Caltrans	FHWA Administered by Caltrans	\$220 million nationwide annually under SAFETEA-LU		None	MPOs & RTPAs Public roadway agencies Railroads Caltrans Public Utilities Commission			X	Caltrans Headquarters Division of Rail Railroad Crossing Safety Branch Ph: (916) 654-7076	<a href="http://safety.fhwa.dot.gov/xings/index.htm">http://safety.fhwa.dot.gov/xings/index.htm</a>
Comments:		Purpose is to reduce the number and severity of highway crashes by eliminating hazards to motor vehicles, trains, and pedestrians at existing highway/ railroad crossings.									
State and Community Highway Safety Grant Program (Section 402)	January	California Office of Traffic Safety	\$2.376 million in California for FY2008 ped and bike projects	\$185,000 for State Ped and Bike Projects in FY2009	None	State			X	Office of Traffic Safety 2208 Kausen Dr, #300 Elk Grove, CA 95758 Ph: (916) 509-3030	<a href="http://www.ots.ca.gov/Grants/Search.asp">http://www.ots.ca.gov/Grants/Search.asp</a>
Comments:		Bicycle and pedestrian safety programs to reduce collisions, injuries, deaths, and property damage									
Land & Water Conservation Fund (LCWF)	March	California Department of Parks & Recreation	24% of the total budget to local agencies in Northern California		50%	Cities & counties Park districts		X		California DPR Office of Grants and Local Services PO Box 942896 Sacramento, CA 94296 Ph: (916) 653-7423 Email: localservices@parks.ca.gov	<a href="http://www.parks.ca.gov/grants">www.parks.ca.gov/grants</a>
Comments:		Recreational trails are eligible for funding. Applicants must fund the entire project, and will be reimbursed for 50% of costs.									

Grant Source	Application Deadline	Agency	Program Funds Available	Average Grant	Matching Requirement	Eligible Applicants	Commuter	Recreation	Safety/Education	Contact Information	Website
Transportation Enhancement Activities (TEA)	August, odd-numbered years	FHWA Administered by Caltrans	\$151 million available statewide in 2008	\$23,000 to \$1.775 million in 2008	20%	Municipality County State agency University Federal government Non-profit	X	X	X	Caltrans TE Coordinator John Haynes 1120 N Street Sacramento, CA 95814 Ph: 916-653-8077 Email: john_haynes@dot.ca.gov	<a href="http://www.dot.ca.gov/hq/TransEnhAct/TransEnact.htm">http://www.dot.ca.gov/hq/TransEnhAct/TransEnact.htm</a>
Comments: For bicycle and pedestrian facilities, educational activities, and preservation of abandoned railway corridors for non-motorized use.											
Regional Surface Transportation Program (Section 1113)	Contact PCTPA	FHWA Administered by Caltrans	\$6,577 million nationwide annually under SAFETEA-LU		None if safety related 20% if bicycle or pedestrian related	MPOs & RTPAs FHWA Federal Transit Administration Environmental Protection Agency	X	X	X	PCTPA 299 Nevada St Auburn, CA 95603 Ph: (530) 823-4030 Email: pctpa@pctpa.net	<a href="http://www.fhwa.dot.gov/programadmin/113005.cfm">http://www.fhwa.dot.gov/programadmin/113005.cfm</a>
Comments:											
Federal Lands Highway Funds		FHWA Administered by the California Division	\$4.5 billion nationwide through 2009		None	State	X	X	X	Federal Highway Administration 650 Capitol Mall, Suite 4-100 Sacramento, CA 95814 (916) 498-5001	<a href="http://flh.fhwa.dot.gov/policy/safetea-lu/flhp.htm">http://flh.fhwa.dot.gov/policy/safetea-lu/flhp.htm</a>
Comments: Project must appear in STIP.											
Recreational Trails Program (RTP)	October	FHWA Administered by California Department of Parks and Recreation	\$5.4 million statewide (FY2009)		12%	State, local, & regional agencies Non-profit agencies		X		California DPR Office of Grants and Local Services 1416 9th St, Rm 918, Sacramento CA 95814 Ph: (916) 653-6160	<a href="http://www.parks.ca.gov/?Page_id=24324">http://www.parks.ca.gov/?Page_id=24324</a>
Comments:											
Federal Transit Administration	Varies	Federal Transit Administration	Varies		20%	MPOs & RTPAs State & local agencies	X			FTA Region 9 201 Mission Street, #1650 San Francisco, CA 94105 Ph: (415) 744-3133	<a href="http://www.fta.dot.gov/funding/grants_financing_263.html">http://www.fta.dot.gov/funding/grants_financing_263.html</a>
Comments: Some grants may be used to improve the pedestrian environment around transit. Roseville has used 5309 (New Starts) funds for pedestrian infrastructure along a transit corridor. Other possible grants include 5307 (Large Urban City) and 5316 (Job access and reverse commute).											

Grant Source	Application Deadline	Agency	Program Funds Available	Average Grant	Matching Requirement	Eligible Applicants	Commute	Recreation	Safety/ Education	Contact Information	Website
Federal Safe Routes to Schools (SRTS) Program	February	Caltrans	\$46 million for California (Cycle 2 2008)		None	State, local, & regional agencies Cities and counties Non-profit agencies School districts Tribal governments			X	Laura Rice Safe Routes to School District Coordinator Caltrans District 3 703 B St Marysville, CA 95901 Ph: (530) 741-5122	<a href="http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm">http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm</a>
Comments:											
Youth Violence Prevention through Economic, Environmental, and Policy Change (U01)	February	Department of Health Services	\$1 million in FY09/10		None	State & local governments Non-profit agencies School districts Tribal governments Faith- and community based groups University and research institutions Businesses Hospitals			X	PGO TIMS Ph: (770) 488-2700 Email: PGOTIM@cdc.gov	<a href="http://www.cdc.gov/od/pgo/funding/CE09-009.htm">http://www.cdc.gov/od/pgo/funding/CE09-009.htm</a>
Comments: One of the purposes is to study the effects of improving infrastructure (including the pedestrian environment) on reducing violent crime (particularly youth crime)											
Highway Bridge Program		FHWA	\$305 million to California in 2006		20%	State and local governments MPOs Tribal governments	X	X		Ann Shemaka Office of Bridge Technology Ph: (202) 366-1575 Email: ann.shemaka@fhwa.dot.gov	<a href="http://www.fhwa.dot.gov/bridge/bripro.htm">http://www.fhwa.dot.gov/bridge/bripro.htm</a>
Comments:											
Transportation and Community and System Preservation Program (TCSP)	Varies	FHWA	\$61 million in FY 08/09		20%	State and local governments MPOs Tribal governments	X	X		Gary Jensen Office of Planning, Environment, and Realty Ph: (202) 366-2048	<a href="http://www.fhwa.dot.gov/tcsp/">http://www.fhwa.dot.gov/tcsp/</a>
Comments: Projects that improve system efficiency, reduce environmental impacts of transportation, etc.											

Grant Source	Application Deadline	Agency	Program Funds Available	Average Grant	Matching Requirement	Eligible Applicants	Commute	Recreation	Safety/Education	Contact Information	Website
<b>State Funding</b>											
Transportation Development Act (TDA) Articles 3, 4 & 8	December	Caltrans	\$102K in Placer County (FY09-10)		Not required but favored	Local governments MPOs & RTPAs	X			PCTPA 299 Nevada St Auburn, CA 95603 Ph: (530) 823-4030 Email: pctpa@pctpa.net	<a href="http://www.pctpa.net/">http://www.pctpa.net/</a>
Comments:		Article 3 Pedestrian and bicycle; Article 4 Transit; Article 8 Transit in Rural areas									
State Transportation Improvement Program (STIP)	Varies	Caltrans Administered through PCTPA	\$763,000 to Placer County 2008-2013		Not required but favored	Local governments	X			PCTPA 299 Nevada St Auburn, CA 95603 Ph: (530) 823-4030 Email: pctpa@pctpa.net	<a href="http://www.pctpa.net/">http://www.pctpa.net/</a>
Comments:		Funding for a variety of transportation projects such as transit station, bicycle, and pedestrian facilities									
General OTS Grants	January	California Office of Traffic Safety	\$70 million statewide (FY08/09)		None	MPOs & RTPAs City & county governments State colleges & universities School districts Fire departments Public emergency services providers			X	Office of Traffic Safety 2208 Kausen Dr, #300 Elk Grove, CA 95758 Ph: (916) 509-3030	<a href="http://www.ots.ca.gov/Grants/Apply/default.asp">http://www.ots.ca.gov/Grants/Apply/default.asp</a>
Comments:		Grants are used to mitigate traffic safety program deficiencies, expand ongoing activity, or develop a new program. Grant funding cannot replace existing program expenditures, nor can traffic safety funds be used for program maintenance, research, rehabilitation, or construction.									
California Center for Physical Activity Grant Program	November	Department of Health Services	Up to \$4,999 per grantee (pending budget availability)		None	Public health departments			X	Lisa Cirill, Acting Chief lcirill@dhs.ca.gov Ph: (916) 552-9943	<a href="http://www.caphysicalactivity.org/">www.caphysicalactivity.org/</a>
Comments:		For pedestrian training programs									
Environmental Enhancement and Mitigation Program (EEMP)	November	State Resources Agency, Caltrans	\$10 million annually statewide		Not required but favored	Local, state and federal governments Non-profit agencies	X	X		Email: eemcoordinator@resources.ca.gov Ph: (916) 651-7593	<a href="http://www.resources.ca.gov/eem/">www.resources.ca.gov/eem/</a>
Comments:		Projects that mitigate environmental impacts of planned transportation projects; can include acquisition or development of roadside recreational facilities.									



Grant Source	Application Deadline	Agency	Program Funds Available	Average Grant	Matching Requirement	Eligible Applicants	Commute	Recreation	Safety/Education	Contact Information	Website
Environmental Justice Grants: Context Sensitive Planning	April	Caltrans	\$2.8 million statewide for FY09-10; \$250K maximum grant		10% local match	MPOs RTPAs Cities and counties Transit districts Tribal governments	X	X	X	Caltrans District 3 703 B St (P.O. Box 911) Marysville, CA 95901 Ph: (530) 741-5435	<a href="http://www.dot.ca.gov/hq/tpp/grants.html">http://www.dot.ca.gov/hq/tpp/grants.html</a>
Comments: Promote community involvement in planning to improve mobility, access, and safety while promoting economic opportunity, equity, environmental protection, and affordable housing for low-income, minority, and Native American communities.											
Community Based Transportation Planning	April	Caltrans	\$2.7 million statewide for FY09-10; \$300K maximum grant		20% local match	MPOs RTPAs Cities and counties Transit districts Tribal governments	X	X	X	Caltrans District 3 Office Transportation Planning 703 B St Marysville, CA 95901 Ph: (530) 741-5435	<a href="http://www.dot.ca.gov/hq/tpp/grants.html">http://www.dot.ca.gov/hq/tpp/grants.html</a>
Comments: Fund coordinated transportation and land use planning that promotes public engagement, livable communities, and a sustainable transportation system which includes mobility, access, and safety.											
Safe Routes to School (SR2S)	May	Caltrans	\$48.5 million in Cycle 8 (FY 08/09)		10% match	City & county	X	X	X	Laura Rice Safe Routes to School District Coordinator Caltrans District 3 703 B St Marysville, CA 95901 Ph: (530) 741-5122	<a href="http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm">http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm</a>
Comments:											
Habitat Conservation Fund (HCF)	October	California Department of Parks & Recreation	\$2 million annually statewide		50% match	Cities Counties Districts	X	X		California Department of Parks and Recreation Office of Grants Local Services 1416 9th St, # 918 Sacramento, CA 94296 Ph: (916) 653-7423	
Comments: Funds to acquire or develop wildlife corridors and trails											
California Conservation Corps	N/A		N/A				X	X		Auburn (Placer) CCC 3710 Christian Valley Rd. Auburn, CA 95602 Ph: (530) 823-4900	<a href="http://www.ccc.ca.gov/">http://www.ccc.ca.gov/</a>
Comments: Provides labor for trail building, landscaping, and emergency service assistance											

Grant Source	Application Deadline	Agency	Program Funds Available	Average Grant	Matching Requirement	Eligible Applicants	Commut	Recreation	Safety/Education	Contact Information	Website
<b>Local Funding</b>											
Community Design Program		SACOG	\$18.4 million for 2007-09 program cycle			Cities	X	X		SACOG Regional Funding 1415 L Street, Suite 300 Sacramento, CA 95814 Ph: (916) 321-9000	<a href="http://www.sacog.org/regionalfunding/awarded_grant_applications--2003-05.cfm">http://www.sacog.org/regionalfunding/awarded_grant_applications--2003-05.cfm</a>
Comments:		Capital projects seek to construct development within a project area that will improve the livability of that area									
<b>Nontraditional Sources</b>											
Community Development Block Grants	Varies	HUD	\$39 million statewide (2008)		None, but may be used as evaluation criteria	Principal cities of MSAs Cities with populations > 50K Urban counties with populations > 200K	-	-	-	Community Planning and Development Regional 9 Office 600 Harrison St, 3rd Fl San Francisco, CA 94104 Ph: (415) 489-6598 Email: steven_b_sachs@hud.gov	<a href="http://www.hud.gov/offices/cpd/communitydevelopment/programs/entitlement/">http://www.hud.gov/offices/cpd/communitydevelopment/programs/entitlement/</a>
Comments:		Primarily for community revitalization, but may be used to fund streetscape improvements, to eliminate slum and blight in low- and moderate-income areas.									
Individual Sponsors	N/A										
Comments:		Individuals may contribute money or conduct maintenance of walkway facilities for public acknowledgement.									
Public-Private Partnerships	N/A										
Comments:		Partnerships may include car sharing or car rental organizations, health care providers,									
Mello-Roos Community Facilities Act	None	Various Public Agencies	Varies		None	City & county agencies School district Special district Joint powers	X	X	X		<a href="http://www.mello-roos.com/pdf/mrpdf.pdf">http://www.mello-roos.com/pdf/mrpdf.pdf</a>
Comments:		A tax-assessment district formed for capital projects, operations, and maintenance.									

**Acronyms:**

AQMD - Air Quality Management District  
 Caltrans - California Department of Transportation  
 CMAQ - Congestion Management and Air Quality  
 CTC - California Transportation Commission  
 FHWA - Federal Highway Administration  
 RTPA - Regional Transportation Planning Agency  
 State DPR - California Department of Parks and Recreation (under the State Resources Agency)  
 SAFETEA-LU - Safe, Accountable, Flexible, Efficient Transportation Equity Act

**Jurisdictions for City of Roseville, California:**

Caltrans - Caltrans District 3  
 SACOG - Sacramento Area Council of Governments  
 PCTPA - Placer County Transportation Planning Agency  
 SPRTA - South Placer Regional Transportation Authority

<http://www.dot.ca.gov/dist3/>  
<http://www.sacog.org/>  
[www.pctpa.net/](http://www.pctpa.net/)  
[www.pctpa.net/sprta.htm](http://www.pctpa.net/sprta.htm)

Table A-3 – List of All Sidewalk Gaps with Cost Estimate

Street ID	Street Name	Extent From	To	Criteria								Total Rank	Segment Length (Ft)	Sidewalk Present (%)		Sidewalk, Curb, & Cutter Installation (Ft)			Total Estimated Cost \$120 + LF
				In Pedestrian District	1/4 mile Elementary School	1/4 mile Secondary School	1/4 mile Bus Stop	1/2 mile Transit Center	1/4 mile Critical Site	N-E	S-W			N-E	S-W	Total			
2548	Douglas Blvd	Willow Ave	Judah St	1	1	0	1	1	1	5	190.53	0%	100%	190.53	0.00	190.53	\$22,864		
2549	Douglas Blvd	Gopher Gulch Al	Willow Ave	1	1	0	1	1	1	5	113.25	0%	0%	113.25	113.25	226.51	\$27,181		
2552	Douglas Blvd	Irene Ave	Bing Al	1	1	0	1	1	1	5	191.43	0%	100%	191.43	0.00	191.43	\$22,971		
2560	Douglas Blvd	Earl Ave	Stella Al	1	1	0	1	1	1	5	91.34	0%	100%	91.34	0.00	91.34	\$10,961		
2561	Douglas Blvd	Oak St	Earl Ave	1	1	0	1	1	1	5	190.87	0%	0%	190.87	190.87	381.74	\$45,809		
2565	Douglas Blvd	Rainier Al	Clinton Ave	1	1	0	1	1	1	5	193.76	0%	100%	193.76	0.00	193.76	\$23,251		
2551	Douglas Blvd	Bing Al	Gopher Gulch Al	1	1	0	1	1	1	5	79.09	0%	0%	79.09	79.09	158.18	\$18,981		
2546	Douglas Blvd	Judah St	Buljan Dr	1	0	0	1	1	1	4	588.12	25%	100%	441.09	0.00	441.09	\$52,930		
2297	Folsom Rd	Vernon St	Linda Dr	1	0	0	1	1	1	4	494.67	25%	0%	371.00	494.67	865.68	\$103,881		
2336	Folsom Rd	Linda Dr	Maciel Ave	1	0	0	1	1	1	4	492.18	75%	0%	123.05	492.18	615.23	\$73,827		
4517	Oak St	Taylor St	Judah St	1	0	0	1	1	1	4	469.26	50%	100%	234.63	0.00	234.63	\$28,156		
2302	Church St	Pacific St	N Grant St	0	0	0	1	1	1	3	343.76	100%	0%	0.00	343.76	343.76	\$41,251		
2286	N Grant St	Avocado Al	High St	0	0	0	1	1	1	3	193.65	0%	100%	193.65	0.00	193.65	\$23,238		
2244	N Grant St	Coconut Al	Berkeley Ave	0	0	0	1	1	1	3	120.52	0%	100%	120.52	0.00	120.52	\$14,463		
2271	N Grant St	High St	Coconut Al	0	0	0	1	1	1	3	194.97	0%	100%	194.97	0.00	194.97	\$23,397		
2303	N Grant St	Church St	Avocado Al	0	0	0	1	1	1	3	196.13	50%	25%	98.06	147.10	245.16	\$29,419		
2230	Atkinson St	Alley (S)	Main St	0	1	0	1	0	0	2	165.56	0%	100%	165.56	0.00	165.56	\$19,868		
2263	Atkinson St	Herbert St	Alley (N)	0	1	0	1	0	0	2	172.84	0%	100%	172.84	0.00	172.84	\$20,741		
4406	Oak Ridge Dr	Vinnar Ct	Rampart Dr	0	0	0	1	0	1	2	459.21	100%	25%	0.00	344.40	344.40	\$41,329		
4005	Cirby Wy	San Simeon Dr	Coral Dr	0	0	0	0	0	1	1	410.11	25%	0%	307.58	410.11	717.69	\$86,122		
1250	County Club Dr	Danielle Dr	Pleasant Grove Blvd	0	0	0	1	0	0	1	602.10	0%	100%	602.10	0.00	602.10	\$72,252		
317	Fairway Dr	Central Park Dr	Home Depot Dwy	0	1	0	0	0	0	1	1439.93	100%	75%	0.00	359.98	359.98	\$43,198		
79	Industrial Ave (1)	Blue Oaks Blvd	Alantown Dr	0	0	0	0	0	1	1	727.93	75%	0%	181.98	N/A	181.98	\$21,838		
5546	Industrial Ave (1)	Alantown Dr	Fristeria Dr	0	0	0	0	0	1	1	3842.99	75%	0%	960.75	N/A	960.75	\$115,290		
3126	Riverside Ave	Darling Wy	Kenroy Ln	0	0	0	1	0	0	1	1223.11	0%	0%	1223.11	1223.11	2446.23	\$293,547		
4836	Shasta St	Alta Vista Ave	Alley (N)	0	1	0	0	0	0	1	169.49	0%	100%	169.49	0.00	169.49	\$20,339		
1597	Shasta St	Alley (S)	Alta Vista Ave	0	1	0	0	0	0	1	146.56	0%	0%	146.56	146.56	293.13	\$35,175		
1585	Shasta St	Alta Vista Ave (N)	Alta Vista Ave (S)	0	1	0	0	0	0	1	23.71	0%	0%	23.71	23.71	47.43	\$5,691		
1606	Shasta St	Alley (N)	Yosemite St	0	1	0	0	0	0	1	33.61	0%	100%	33.61	0.00	33.61	\$4,034		
2970	Vernon St (1)	Fifth St	Sixth St	0	0	0	0	0	1	1	676.86	0%	0%	676.86	N/A	676.86	\$81,223		
3148	Vernon St	Dudley Dr	Inglis Wy	0	0	0	1	0	0	1	1160.40	50%	50%	580.20	580.20	1160.40	\$139,248		
4614	Yosemite St	Alley (S)	Shasta St	0	1	0	0	0	0	1	89.57	0%	100%	89.57	0.00	89.57	\$10,749		
4613	Yosemite St	Alley (N)	El Dorado Ave	0	1	0	0	0	0	1	192.46	100%	0%	0.00	192.46	192.46	\$23,095		
4611	Yosemite St	Manzanita Ave	Alley (N)	0	1	0	0	0	0	1	192.84	0%	100%	192.84	0.00	192.84	\$23,141		
2539	Atkinson St	Vineyard Rd	Ivy St	0	0	0	0	0	0	0	659.42	0%	75%	659.42	164.85	824.27	\$98,912		
2853	Atkinson St	Denio Lp	Vineyard Rd	0	0	0	0	0	0	0	2684.23	0%	0%	2684.23	2684.23	5368.46	\$644,215		
74	Blue Oaks Blvd	Exit 309 S	Washington Blvd	0	0	0	0	0	0	0	79.85	0%	100%	79.85	0.00	79.85	\$9,582		
6303	Blue Oaks Blvd	Exit 309 N	Alantown Dr	0	0	0	0	0	0	0	311.51	0%	0%	311.51	311.51	623.03	\$74,763		
75	Blue Oaks Blvd	Washington Blvd	Exit 309 N	0	0	0	0	0	0	0	1215.23	0%	0%	1215.23	1215.23	2430.46	\$291,656		
1150	Pleasant Grove Blvd	Hemingway Dr	Country Club Dr	0	0	0	0	0	0	0	1558.46	0%	50%	1558.46	779.23	2337.69	\$280,523		
3626	Sierra College Blvd	Haskell Wy	Old Auburn Rd	0	0	0	0	0	0	0	650.87	25%	25%	488.15	488.15	976.30	\$117,156		
3028	Vernon St (1)	Sixth St	Dudley Dr	0	0	0	0	0	0	0	374.21	0%	0%	374.21	N/A	374.21	\$44,906		
<b>Total</b>																	<b>\$3,181,174</b>		

Street ID = Number corresponding to the GIS street centerlines database, Ft = Measured in feet, N-E = North or East side of street, S-W = South or West side of street, LF = Linear Foot, N/A = Not Applicable  
 (1) Railroad tracks on west side of street, no sidewalk needed

# Best Practices Manual For Pedestrian Design



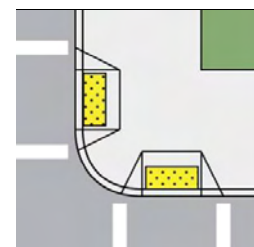
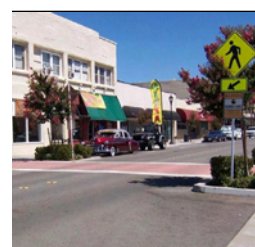
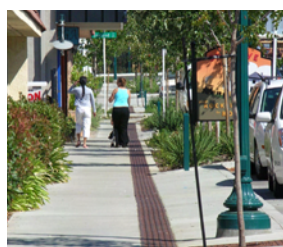
2011

Public Works – Alternative Transportation  
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Roseville, CA 95678  
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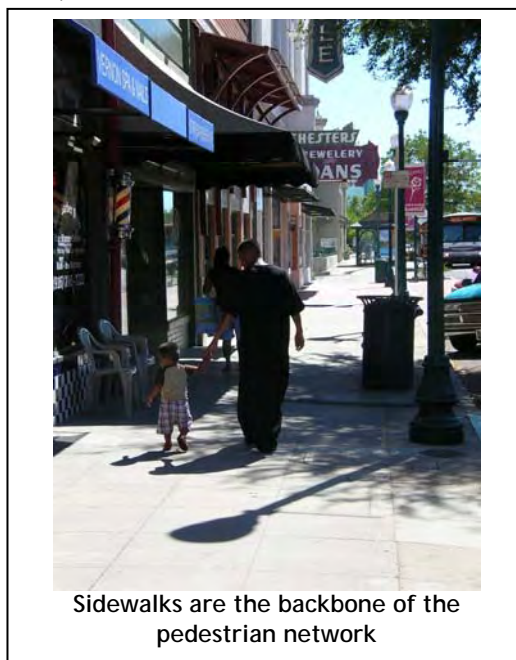


# Introduction

The City of Roseville promotes pedestrian circulation to improve health and wellness, reduce vehicle emissions and improve air quality. In order to facilitate pedestrian activity, the pedestrian walkway system, including sidewalks and street crossings, should be safe, comfortable and convenient. As stated in the General Plan, the City may seek to designate pedestrian districts. These districts place greater emphasis on pedestrian travel by implementing the following enhancements.

1. Mid-block crossing treatments
2. Intersection crossing treatments
3. Traffic calming
4. Pedestrian enhancements

The Best Practices Manual was created in context with the City's existing documents and pedestrian design policies and practices. In some instances, the manual includes modifications to existing practices. In other cases where the City does not have existing policies for particular sidewalk/crossing design themes, this manual incorporates policies and practices widely accepted for use by other jurisdictions.



The Best Practices Manual for Pedestrian Design is *not* intended to supersede adopted guidelines for the development of streets, sidewalks, and streetscapes in the City's specific plans. Instead, it may inform the development of future specific plans or may be used as a reference when a particular design issue is not addressed within a specific plan. There are currently 13 adopted specific plans that guide community form and design.

The Best Practices Manual for Pedestrian Design presents design options for the three public pedestrian network elements: sidewalks in the public right-of-way, street crossings (at intersections and between intersections), and signals and signs at street crossings that warn motorists of the pedestrian presence and inform pedestrians where and when to cross streets. The Best Practices Manual does not address walkways on private property, since they are addressed in other City planning documents, including the Community Design Guidelines. The interface between public sidewalks and private walkways is an important consideration in pedestrian friendly design and is addressed to some extent within the manual.

The design options are drafted in consideration of local, state and federal standards to provide pedestrians with a safe and comfortable walking environment. Improvements and guidelines for pedestrian facilities require flexibility and in all cases, engineering judgment is required for implementing specific projects.

## Using this Best Practices Manual

The Best Practices Manual for Pedestrian Design guides the design of the public walkway system to help achieve a balanced transportation network where walking is safe, comfortable and convenient. City of Roseville staff, developers, designers, engineers and others involved with street and sidewalk design will use this manual.

This manual is split into two sections. The first section discusses broad concepts for pedestrian design including definitions of pedestrian areas, sidewalk zones, sidewalk types and sidewalk design. The second section addresses design guidelines for specific pedestrian facilities. These facilities are listed in the City of Roseville's General Plan Circulation Element Strategies for Pedestrian Districts as crossing treatments, traffic calming, and pedestrian enhancements. These design guidelines include descriptions, example photos or graphics, and where applicable, recommended locations for implementation.

# 1. Pedestrian Design Concepts

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## 1.1. Principles for Pedestrian Design

Design principles represent a set of ideals that should be incorporated, to some degree, into every pedestrian improvement.

### 1. The pedestrian environment should be safe.

Sidewalks and street crossings should be designed and built to be free of hazards, offer a sense of security, and minimize conflicts with external factors such as noise, vehicular traffic, and protruding architectural elements.

### 2. The pedestrian network should be accessible.

As prescribed in the City of Roseville ADA Transition Plan for Public Rights-of-way, sidewalks and street crossings should ensure mobility and accommodate the needs of all users regardless of age or ability

### 3. The pedestrian network should provide continuous, convenient and direct connections between destinations.

Sidewalks and street crossings should allow persons to safely and conveniently connect to homes, schools, shopping areas, businesses, public services, recreation and transit.

### 4. Pedestrian improvements should be designed in context with their surroundings.

The City of Roseville includes a variety of developed areas. These include quiet neighborhood streets, busy arterial roads, older historic streets and newer developed areas with narrower streets emphasizing a pedestrian scale. The pedestrian environment should be designed in context with the existing and planned environment. In Downtown Roseville this may mean that historical elements should be preserved in the public space, or restored to accentuate historical elements of the area. Where active street life is desired, the pedestrian environment may include open spaces with focal points and destinations such as plazas, courtyards, and squares, and amenities such as seating, street furniture, banners, art, trees, plantings, shading, vending, and special paving.

### 5. Pedestrian improvements should be economical.

Roseville can achieve economic efficiency if pedestrian improvements are constructed in coordination with other roadway improvements. This strategy consolidates the administration and construction efforts. In addition, Roseville can achieve long term financial savings by constructing pedestrian improvements near transit, shopping districts, schools and other pedestrian generators; these are areas where people are most likely to walk instead of drive. This in turn may decrease traffic on roadways and the resulting maintenance costs.



## 2. Comprehensive Sidewalk Network

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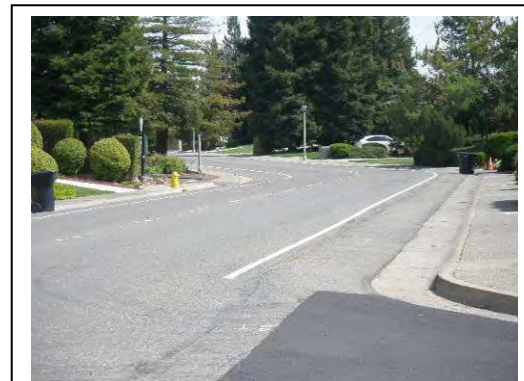
A comprehensive sidewalk network is essential to improving pedestrian mobility, accessibility, and safety. It provides connections throughout the City, with link to land uses of all varieties. Locations near schools, transit stops, and areas with high pedestrian volumes should be prioritized in the expansion of the sidewalk network. A comprehensive sidewalk network includes continuous sidewalks along both sides of streets that are accessible to all pedestrians, as described in the City of Roseville's ADA Transition Plan.

### 2.1. Sidewalk Types

Sidewalks are typically located within the public right-of-way between the curb or roadway edge and the property line. Sidewalks are either attached or separated from the curb by a planting strip or utilities. Sidewalk types in Roseville vary depending on location. This section defines attached and detached sidewalks.

#### *Attached Sidewalks*

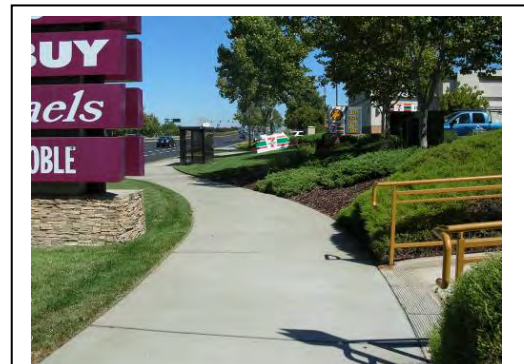
Attached sidewalks abut the back of curbs. One advantage of attached sidewalks is that they are convenient to construct in coordination with roadway work. The disadvantage of attached sidewalks is that they do not provide a buffer between sidewalks and passing traffic. Pedestrians may not feel as comfortable as they would on a separated sidewalk because there is no buffer. Some attached sidewalks in Roseville have rolled curbs. Where rolled curbs exist, parked or turning vehicles may encroach into the sidewalk.



Diamond Oaks Road has attached sidewalks with rolled curbs

#### *Separated Sidewalks*

Separated sidewalks are separated from the roadway by a landscape area, usually planted with trees and grass. The vegetated buffer enhances the pedestrian experience by creating visual interest and shading. Trees protect pedestrians from motorists and help deaden roadway noise. Separated sidewalks are typically constructed along arterial roadways adjacent to commercial property. In many cases in Roseville, the sidewalk is on private property within a landscape/public utility easement. Separated sidewalks may be constructed a constant distance from the back of curb, or may meander within a landscape area.



Meandering sidewalks are separated from the roadway at varying distances

Meandering sidewalks are typically within a landscape area adjacent to the street and are detached from the curb to create a buffer between the sidewalk and the roadway. Meandering sidewalks weave

within the landscape area, with a varying distance between the sidewalk and the curb. The meander typically takes a curvilinear form to create visual interest. The type and amount of meandering may be influenced by the location of utilities and trees. Meandering sidewalks are most often used along arterial roadways (but occasionally along collector streets) where landscape corridors are designed to create visual interest in juxtaposition to the speed of adjacent traffic.

Meandering sidewalks have several drawbacks that should be considered:

1. Pedestrians who are on their way to a destination (as opposed to out for a recreational walk) want to take the most direct line to their destination. A winding sidewalk increases walking distance and time.
2. Pedestrians with vision impairments find meandering sidewalks difficult to negotiate. Persons who are blind or visually impaired typically prefer to navigate a straight line parallel to the sound of traffic. With a meandering sidewalk, persons with visual impairments have a greater risk of tripping on the edge of the sidewalk as the sidewalk edge moves. Also, they are less able to discern audible cues.
3. Meandering sidewalks require greater amounts of pavement. This increases sidewalk construction and maintenance costs. The irregular shape of the adjacent landscape areas results in irrigation and maintenance difficulties.

A more recent trend in Roseville is to design sidewalks to be both attached to and separated from the curb within the same block. In these cases, the sidewalk is attached to the curb at the beginning and ends of the block, but then transitions back and forth between a separated condition and attached condition in the middle of the block.

## **2.2. Sidewalk Design**

Sidewalks form the backbone of the pedestrian network within the public right-of-way. The City of Roseville requires the installation of sidewalks on all new public streets. This section addresses the design of new sidewalks and the Roseville ADA Transition Plan for Public Rights-of-way provides more details on these standards.

### ***Sidewalk Width***

The Roseville Design/Construction Standards identify the required width for new sidewalks, as shown in Table 1. These standards are used for new and re-constructed sidewalks in the infill areas. Specific Plans may have varying requirements. Where a project is in a specific plan area, the project engineer or designer should refer to the specific plan for sidewalk width and design requirements.

Residential roadways with attached sidewalks require a minimum four foot wide sidewalk. Four feet is not sufficient to allow two pedestrians to walk side by side comfortably. Attached sidewalks on residential streets incorporate a rolled curb, making it possible for parked vehicles to encroach onto the sidewalk and further restrict the space for pedestrians. When an enhanced pedestrian environment is desired, residential streets with attached sidewalks should include a five foot wide sidewalk. The provision of a five foot wide sidewalk on residential streets also meets the “Passing Space” requirements in Section 4.5(3) of the ADA Transition Plan for Public Rights-of-way.

**Table 1 Roseville Required Sidewalks Classifications and Widths**

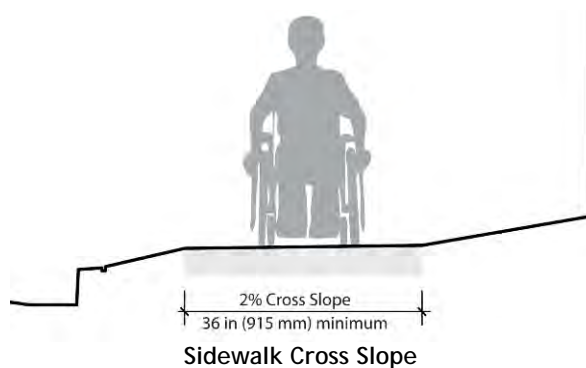
Street Classification	Sidewalk Width (ft)
Minor Resident.-attached sidewalk	4
Primary Resident.-attached sidewalk	4
Minor Resident.-detached sidewalk	5
Primary Resident.-detached sidewalk	5
Collector/Industrial	5
Minor Arterial	8
Major Arterial	8
<i>City of Roseville Design Standards: Section 7, March 2007</i>	

### Grade

Sidewalk grade is the slope parallel to the direction of travel. Sidewalk grade affects users’ control, stability and endurance. For sidewalks, ADAAG specifies the rate of change of grade should not exceed 13 percent. The rate of change of grade measures the change of grade in two foot intervals. If a grade change exceeds 13 percent, the ground clearance of wheelchair footrests might be compromised.

### Cross Slope

Cross slope is the angle of a walkway perpendicular to the direction of travel. Some cross slope is required for drainage. However, a cross slope too great may hinder the travel of people using wheelchairs and other mobility assistive devices. ADAAG requires cross slopes not to exceed two percent in flat areas.



If a greater slope is anticipated because of unusual topographic or existing conditions, the designer should maintain the preferred slope of 1:50 within the entire through passage zone, if possible. This can be accomplished either by raising the curb so that the cross-slope of the entire sidewalk is 1:50, or by placing the more steeply angled slope on the inside edge of the walkway. Additionally, drainage from the adjacent sloped landscaped areas should be collected or redirected prior to crossing onto and over sidewalks.

### Surface Treatment

Walking surfaces are required by ADAAG to be firm and stable, resistant to slipping, and allow for ease of passage by people using canes, wheelchairs, or other devices to assist mobility. Sidewalks are generally constructed of Portland cement concrete. Brick or concrete unit pavers may also be used, at the discretion of the City Engineer, particularly in the Furnishings Zone, which is described in **Section 2.3**, or around mature trees where sidewalk lifting is a problem.

The surface of concrete sidewalks should be scored to match historic patterns within specific plan areas where appropriate. Table 2 provides additional information about sidewalk materials.

**Table 2 Sidewalk Materials**

<b>Concrete</b>	
Where to Use	Portland concrete cement (PCC) is the preferred material for use on all city sidewalks.
Maintenance Life	75 years plus
Comparative Cost (2007)	\$10/sq ft
<b>Concrete Pavers</b>	
Where to Use	At the discretion of the City Engineer, concrete pavers may be acceptable for use in the Furnishings Zone of sidewalks in pedestrian-oriented areas as a streetscape accent where pedestrian through travel is not expected.
Maintenance Life	20 years plus
Comparative Cost (2007)	\$15/sq ft
<b>Rubber Sidewalk</b>	
Where to Use	Experimental sidewalk material being applied in select locations in cities including Berkeley, Santa Monica and Washington D.C., where cracking and tree root uplifting are problems.
Maintenance Life	Insufficient data
Comparative Cost (2007)	\$15/sq ft
<b>Asphalt</b>	
Where to Use	Asphalt concrete (AC) has been used on some sidewalks in Roseville, is the material of choice for Class I bikeways and has been used on some pedestrian connector paths (such as paseos). However, it is generally not preferred as a material due to frequent need for maintenance and damage by tree roots.. Asphalt may be used for the temporary repair of concrete sidewalks
Maintenance Life	10 years plus
Comparative Cost (2007)	\$5/sq ft

### ***Curb Ramps***

Curb ramps create a transition between sidewalks that are raised above roadway grade. They are necessary for people using wheelchairs, scooters and other mobility assistive devices but benefit all pedestrians.

As illustrated in Figure 1, there are two types of curb ramps: perpendicular and diagonal. Perpendicular curb ramps align with crosswalks, providing the most direct pedestrian access to sidewalks. Perpendicular curb ramps may not be feasible for every location due to site conditions including drainage and utilities. Diagonal curb ramps align with the apex of the street corner and are less expensive to install because they require only one ramp. However, diagonal curb ramps force pedestrians to use a circuitous route to access sidewalks.

The ADAAG recommends curb ramps at all intersections. ADA Section II 5.3000 states public entities must give priority to walkways serving Federal, State and local offices and facilities, transportation, places of public accommodation and employees.

As illustrated in yellow in Figure 1, ADAAG requires detectable warnings on all curb ramps. Detectable warnings provide a distinctive surface pattern alerting people with vision impairments of a roadway ahead.

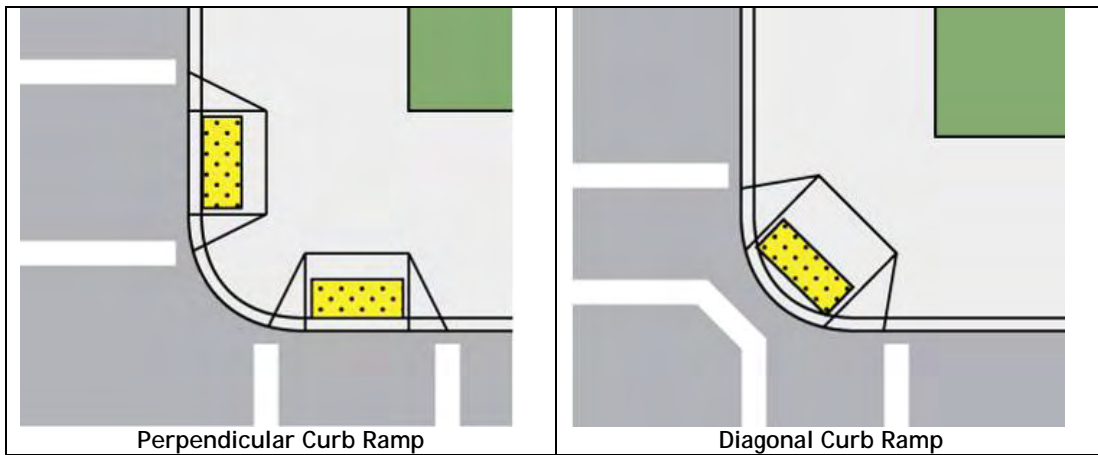


Figure 1: Curb Ramp Types

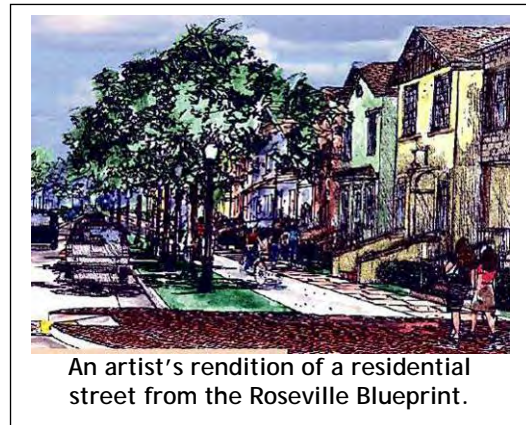
### 2.3. Sidewalks in Pedestrian-Oriented Areas

Sidewalks in pedestrian-oriented areas (typically pedestrian overlay districts, but sometimes elsewhere as established by a specific plan) are designed to encourage active living and walking for transportation purposes. The design features for these vary depending on the surrounding uses. This section of the Best Practices Manual provides general design guidance for sidewalks in residential and commercial/mixed-use pedestrian-oriented areas.

#### *Residential*

Sidewalks in pedestrian-oriented residential areas are comprised of a variety of treatments that facilitate walking. Sidewalks may be wider than the City standard, providing adequate width for strollers and pedestrians walking side-by-side.

- Residential units should front on the street and may be alley-loaded or otherwise designed to minimize driveways onto the street. Driveways create potential conflict points with pedestrians on the sidewalk.
- Sidewalks are typically detached from the curb by a planter strip (width is typically eight feet to facilitate landscape maintenance and minimize potential for sidewalk damage when trees mature, tree species should be appropriate for the space provided as measured at maturity, or as otherwise determined during the planning process), and a vertical curb is used.
- Behind the sidewalk, landscaping, landings, raised porches or other means may be provided to create a buffer zone that separates the public sidewalk from the private property, without restricting access to future residences.



An artist's rendition of a residential street from the Roseville Blueprint.

## Commercial/Mixed-Use Areas

Sidewalks in commercial and mixed-use areas typically have more pedestrians, with specific trip purposes, whether it is for shopping or taking a lunch break. Sidewalks should be built to accommodate these needs by providing enough width for high pedestrian volumes and limiting conflict points with motorists. Elements of commercial/mixed use sidewalks are described in this section.

In commercial areas, sidewalks have many uses, such as strolling, sitting, café seating or other active uses. They may also include open spaces with focal points and destinations such as plazas, courtyards, and squares. Commercial sidewalks in pedestrian-oriented areas may also have amenities such as seating, street furniture, banners, art, trees, plantings, shading, vending, and special paving. Commercial sidewalks in pedestrian-oriented areas have three distinct zones that serve different purposes. These are the frontage, pedestrian, and furnishings zones. **Figure 2** illustrates this concept.

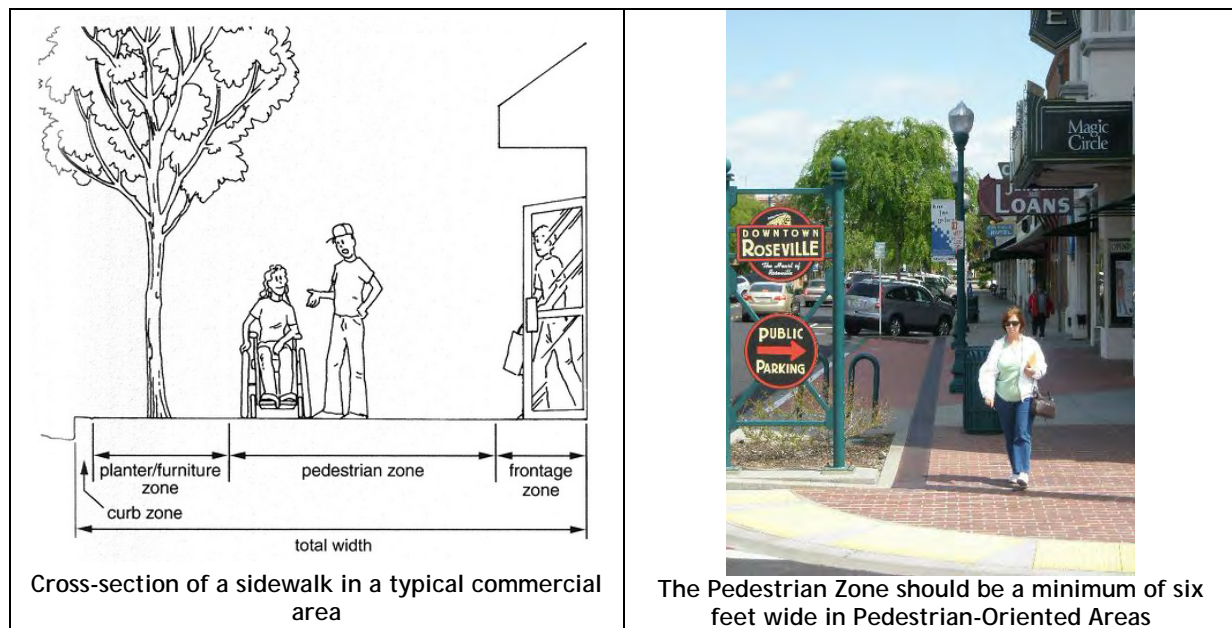


Figure 2

## Sidewalk Zones

When defining the pedestrian realm, typically in commercial and mixed-use areas, sidewalks can be divided into zones that have defined purposes. This section provides descriptions and design considerations for each zone.

## Frontage Zone

The frontage zone is the space between the sidewalk and the adjacent property line. In pedestrian-oriented commercial areas, buildings will often be built up to the property line to enhance the pedestrian environment. In other areas, fences or hedges may extend out to the sidewalk.

Pedestrians tend to avoid walking close to barriers at the property line, such as buildings, storefronts, walls or fences, in the same way that they tend to avoid walking next to the roadway. In most cases, the frontage zone should be at least 12 inches deep, providing enough room for small planters. The width of the frontage zone should increase if the installation of street furniture is planned or to maintain compliance with ADA Accessibility Guidelines (ADAAG). For example, if café seating is desired adjacent to buildings, the frontage zone must be wider than 12 inches. The frontage zone widths are in addition to the minimum six foot width prescribed for the pedestrian zone (described in the next section) and should comply with ADAAG standards where applicable, which sets door swing clearances up to 48 inches. Elements in the frontage zone may include:

- Sidewalk cafés
- Small planters
- Store entrances
- Transit shelters and benches
- Window sills
- Signal and street lighting poles
- Doorways
- Traffic and parking signs
- Utility poles
- Utility boxes

Where no furnishings zone exists, elements that would normally be sited in that zone, such as transit shelters, benches, signal and street lighting poles, controller boxes, traffic and parking signs, and utility poles may occupy the frontage zone. In some cases, easements from private property owners or additional right-of-way may be required. For example, Roseville Transit may acquire an easement from a private property owner to install a bus shelter where there is not enough room in the public right-of-way. In mixed-use areas, care must be taken to ensure that furnishings zone improvements do not block access to an existing or future building.

Building setback requirements specify the distance between the building frontage and the public right-of-way. With small setback maximums, buildings frame the street, reinforcing the public space and promoting interactions between pedestrians on the sidewalk and commercial activities in the buildings.



## Pedestrian Zone

The pedestrian zone is the area dedicated for pedestrian travel and can also serve as public gathering space. In commercial areas, the minimum recommended pedestrian zone width is six feet with eight feet as preferable in pedestrian-oriented areas where pedestrian volumes are high. The pedestrian zone should be entirely free of permanent and temporary objects to allow easy and safe passage.

To further allow easy and safe passage, the frontage and furnishing zones within a pedestrian-oriented area should be relatively consistent in width and laterally offset from store-to-store and block-to-block, minimizing the need for pedestrians to “weave” through the pedestrian zone.

Covered areas shelter pedestrians from rain and provide shade from the sun. Covered areas provide shelter to pedestrians, which can result in more pedestrian activity in commercial areas. In addition, a continuous arcade or awning treatment can help reinforce the identity of a commercial district. Coverings are most appropriate where sidewalk pedestrian volumes are high.



Garbage Can and Bench in the Furnishings Zone

## Furnishings Zone

The furnishings zone is the area between the curb and the sidewalk that provides a separation and buffer between pedestrians and vehicle travel lanes. Separating pedestrians from vehicular travel lanes increases pedestrian comfort on the sidewalk. The furnishings zone is also the area where people alight from parked cars.

The typical width of the furnishings zone is four to six feet, depending on vehicle speeds and volumes. A wider zone is preferable in areas where large tree planters or seating exist or planned, or where there is high vehicular traffic. Tree cut-outs should be a minimum of 6 square feet with the appropriate tree species to match the space limitation at maturity.

The furnishings zone typically includes street furniture and other amenities that help establish the buffer between the pedestrian zone and the road, while also providing a pleasant walking environment, areas to sit, and attractions for pedestrians and passing motorists. Where the sidewalk is of sufficient width, the furnishings zone should include tree wells and trees to provide shade and soften the visual environment. Elements in the furnishings zone may include:

- Bus shelters
- Telephone poles
- Banners and flags
- Consolidated news racks
- Trash/recycling receptacles
- Utility boxes
- Fountains
- Parking Meters
- Information kiosks
- Public art
- Street & wayfinding signs
- Fire hydrants



## 3. Design Treatments for Pedestrian Facilities

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This section of the Best Practices Manual for Pedestrian Design provides descriptions of specific facilities for enhancing the pedestrian network. Many of the facilities described in this section are intended to promote walkability in pedestrian districts (as described in the City of Roseville’s General Plan Circulation Element) or other areas where enhanced pedestrian improvements are desired. These guidelines separate the facilities into sidewalk design and the three categories in the General Plan: Mid-Block Crossing Treatments, Intersection Crossing Treatments, Traffic Calming, and Pedestrian Enhancements.

State and federal law regulates the design of many pedestrian elements. Traffic control devices must follow the standards set forth in the California Manual of Uniform Traffic Control Devices (CAMUTCD). These guidelines reference the CAMUTCD where standards exist.

### 3.1. Intersection and Mid-Block Crossing Treatments

Crosswalks are provided at signalized and unsignalized intersections and, where marked, at mid-block crossings. This section describes previous research regarding marked and unmarked crosswalks and then provides best practices for crosswalk and mid-block crossing treatments including markings, crosswalk types, and in-pavement flashers and beacons.

#### *Crosswalks: Marked versus Unmarked*

Crosswalks, as defined by the CAMUTCD, are any portion of a roadway that connects the lateral lines of a sidewalk, or in the absence of sidewalks, the edges of a roadway. Thus, crosswalks may or may not be marked. Mid-block crosswalks, however, only exist if they are marked.


The Federal Highway Administration (FHWA) studied how effective marked versus unmarked crosswalks were at uncontrolled intersections (i.e. intersections without signals or stop signs).<sup>1</sup>The study found that under no condition were marked crosswalks associated with lower pedestrian crash rates at uncontrolled intersections. Further, marked crosswalks at multi-lane intersections with average daily traffic volumes (ADT) of at least 12,000 were associated with higher pedestrian crash rates. The study found that additional engineering facilities (i.e. traffic calming and signals) helped increase pedestrian safety and that marked crosswalks alone at uncontrolled intersections are insufficient in these circumstances:

- Speed limit exceeds 40 mph
- Roadways with four or more lanes, without a raised median or refuge island and ADT of 12,000 or greater
- Roadways with four or more lanes, without a raised median or crossing island and has an ADT of 15,000 vehicles or greater.


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<sup>1</sup>Federal Highway Administration, “Safety Effects of Marked versus Unmarked Crosswalks at Uncontrolled Locations,” (2005).


## Transverse Crosswalks

<b>Description</b>
Transverse crosswalks are two parallel lines connecting intersection corners. These are standard design citywide at intersections where pedestrian crossings are permitted.
<b>Graphic</b>

Transverse crosswalk from the pedestrian perspective (left) and the motorist perspective (right).
<b>Design Recommendations</b>
Transverse crosswalk lines should be 12 to 24 inches wide, spaced at least 6 feet apart (see CAMUTCD Section 3B.17).
<b>Potential Uses</b>
Generally, standard transverse markings are considered appropriate at controlled intersections, minor uncontrolled intersections, and other crossing locations with low traffic volumes/speeds, short crossing distance, and good visibility.
<b>Advantages</b>
Low cost.
<b>Potential Issues</b>
Striping wears away at vehicle tire paths.



## Ladder Crosswalks

<p><b>Description</b></p>
<p>Ladder crosswalks are a type of high visibility crosswalk where cross bar "rungs" are added to the standard crosswalk. These are a design option to use citywide instead of transverse crosswalks.</p>
<p><b>Graphic</b></p>

<p>Ladder crosswalk from the pedestrian perspective (left) and the motorist perspective (right).</p>
<p><b>Design Recommendations</b></p>
<p>Rungs should be spaced so that vehicle tires track between them, reducing maintenance. Width of ladder lines should be 1 foot, with minimum spacing between ladder lines of 1.5 feet. See CAMUTCD Section 3B.17. When it is raining or becomes wet large areas of thermoplastic cause slippage problems so only paint should be used to create ladder crosswalks.</p>
<p><b>Potential Uses</b></p>
<p>Ladder crosswalks should be considered at uncontrolled intersections and mid-block crossings. They may also be installed at controlled intersections at the discretion of the City Traffic Engineer.</p>
<p><b>Advantages</b></p>
<p>Increased motorist visibility of crosswalk.</p>
<p><b>Potential Issues</b></p>
<p>Increased cost and maintenance required.</p>
<p><b>Other Considerations</b></p>
<p>Installation is dependent upon the number of pedestrians crossing, traffic speeds/volumes, number of lanes to cross, presence of nearby schools or senior centers, and history of collisions. High visibility crosswalks are most effective when complemented with traffic calming.</p>


## School Area Crosswalks

<b>Description</b>
Crosswalks within the designated school zone must be painted yellow, per CAMUTCD and can be marked as either transverse or ladder. Yellow crosswalks are a citywide standard markings in school zones.
<b>Graphic</b>

Crosswalks in school zones must be yellow.
<b>Design Recommendations</b>
Must be painted yellow and can be marked either standard or ladder. See CAMUTCD Section 3B.17.
<b>Potential Uses</b>
School zones, up to 500 feet from the school boundary.
<b>Advantages</b>
Yellow color notifies motorists that they are in a school zone.
<b>Potential Issues</b>
Children may feel a false sense of security in a crosswalk.

## Stop Lines and Yield Lines

<b>Description</b>	
<p>Stop lines indicate where traffic must stop at STOP-controlled or signalized locations. This also allows more clearance for vehicles turning from perpendicular streets. A supplement to Stop Lines is “STOP HERE ON RED” signage with a down arrow indicating the stop line as the proper location for vehicles to stop in advance of the intersection. Stop lines are only required at controlled locations where no marked crosswalk exists; where a crosswalk is present, the crosswalk itself can function as the stop line.</p>	
<p>Yield lines indicate the point at which traffic should yield at uncontrolled locations. Yield lines are comprised of a row of white triangles, and are sometimes referred to as “yield teeth.” In California, vehicles are required to “YIELD” to pedestrians in uncontrolled crosswalks, and yield lines can be used to indicate the appropriate location for vehicles to stop in advance of an uncontrolled crossing location. These markings are most effective in mid-block locations, where there is no intersection to give a motorist cues on the location to wait for a crossing pedestrian.</p>	
<p>Stop and yield lines are citywide design options at crosswalk locations.</p>	
<b>Graphic</b>	
	
<p>Advance stop lines discourage vehicles from encroaching onto crosswalks and provides additional turning radius for large vehicles.</p>	<p>Yield lines show the advanced stop locations for vehicles before approaching a crosswalk. Photo Source:saferoutesinfo.org</p>
<b>Design Recommendations</b>	
<p>Stop lines are solid white lines 12 inches to 24 inches wide. Yield lines are composed of white triangles 3 feet long by 2 feet wide, spaced 1 foot apart. Yield teeth placement should be 20 to 50 feet back of uncontrolled mid-block intersections. See CAMUTCD Section 3B.16.</p>	
<b>Potential Uses</b>	
<p>Installing stop lines in advance of crosswalks can help to discourage vehicle encroachment into the marked crosswalk, particularly in right turn-on-red situations where vehicles often creep forward for better visibility.</p>	
<b>Advantages</b>	
<p>Striping a stop line on the left lanes farther back than the right lanes, allowing better visibility to the left for right-turning vehicles.</p>	
<b>Potential Issues</b>	
<p>Some locations may not provide direct sight lines of crossing traffic.</p>	

## Flashing Beacons

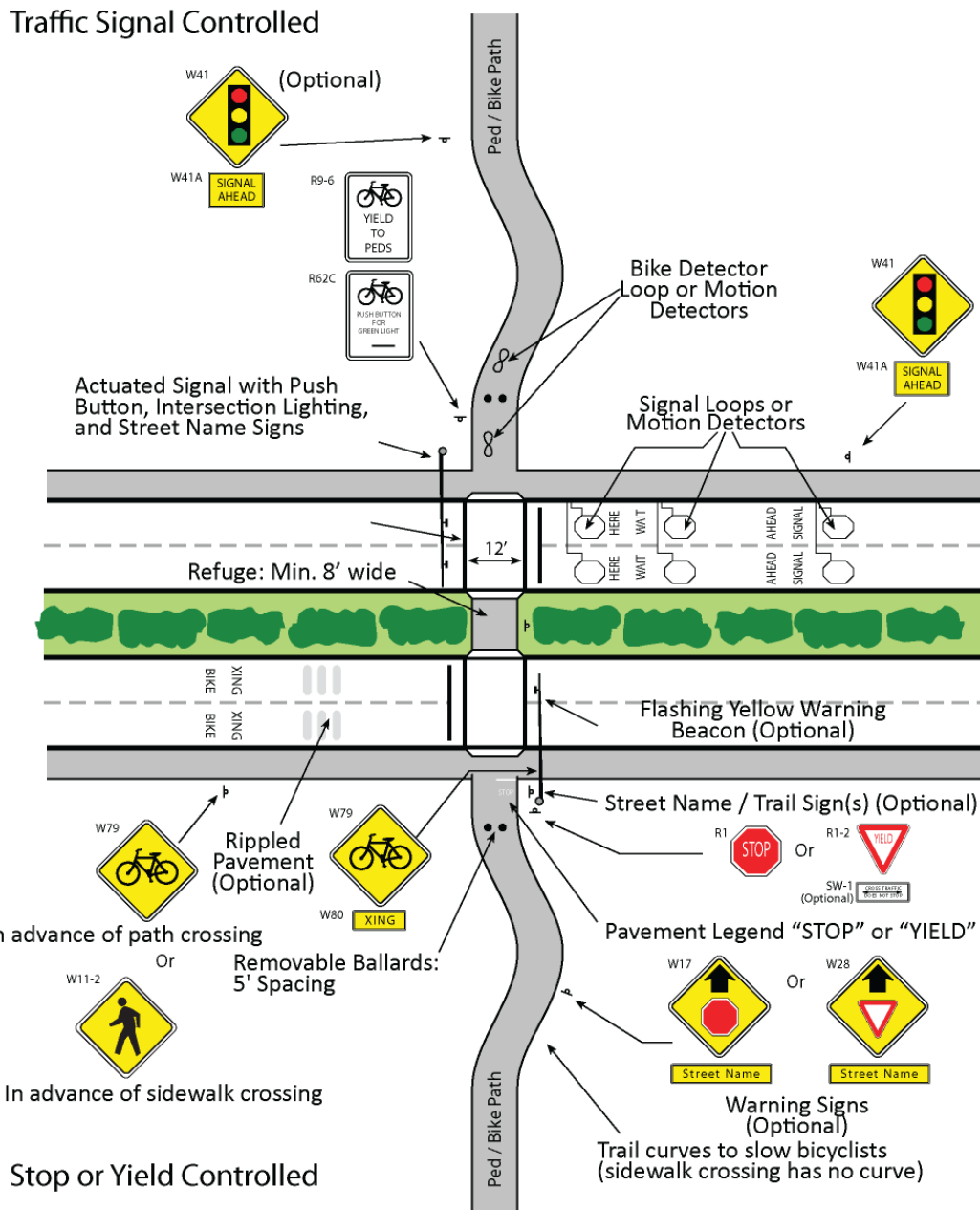
<b>Description</b>
Pedestrian warning signs and flashing beacons are installed on a mast arm or on signs at crosswalks. Beacons can be set to operate at all times where there is high pedestrian activity, can be on an automated timer (such as during school hours), or can be set for activation by pedestrians to only flash during the crossing time. Flashing beacons are a citywide design option at mid-block pedestrian crossings.
<b>Graphic</b>

Beacons increase the visibility of pedestrian crossings. Source: pedbikeimages.org
<b>Design Recommendations</b>
All push-button activated flashing beacon locations should have “Cross with Caution” signs at every push button location. See CAMUTCD Section 4K.103.
<b>Potential Uses</b>
Uncontrolled intersections and mid-block crossings, especially at locations where motorists cannot see the marked crosswalk due to topography or other unusual barriers.
<b>Advantages</b>
Alert motorists to expect crossing pedestrians where the visibility of a crosswalk is poor.
<b>Potential Issues</b>
Significantly less efficacy for standard flashing beacon systems than high-intensity or rapid-flash systems. Motorists pay less attention to beacons operating at all times as they become acclimated to them and the system can lose its effectiveness.

## Path/Sidewalk Mid-Block Crossing with Refuge

### Description

Multi-use paths provide pedestrian and bicycle travel ways that are separated from automobile traffic. Path crossings must be safe for pedestrians and bicyclists alike, and should also provide convenient connections to Roseville's street network. Mid-block sidewalk crossings should also provide safe connections for pedestrians.

### Graphic



Path crossings should provide access to the street network as well as a safe connection across traffic lanes.

### Design Recommendations

In general, path and mid-block sidewalk crossings should be treated just like other intersection types, oriented at 90 degree angles whenever possible ensuring safety for all path and road users.

Restricting parking near path or mid-block crossings, as at typical intersections, enhances sight distance. Street lighting may be installed to alert users and motorists of the crossing. The vehicle and user volumes determine whether the intersection should be stop or signal controlled. Locations with more than 2 lanes warrant a signal in most situations. Landscaping within 20 feet of the refuge should be 18 inches or lower. Refuge islands should be a minimum of 4 feet long for sidewalk crossings and 8 feet long for path crossings. Refuges can be slightly angled for better user site lines.

**Potential Uses**

Path and mid-block sidewalk roadway intersections.

**Advantages**

Increases motorist awareness of path and sidewalk crossings.

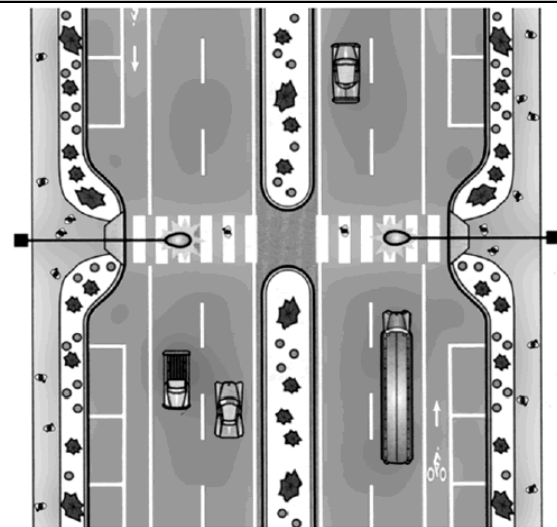
**Potential Issues**

Path and sidewalk users may feel a false sense of security with the addition of a crosswalk. Rippled pavement in advance of the crossing may result in extraneous noise, and should be designed to avoid adverse affects on bicyclists by not extending into a bike lane (if provided) or by otherwise providing an area for bicycle passage. The decision to install a mid-block crossing is subject to review and approval of the City Engineer based upon site specific design considerations including but not limited to traffic speeds and volumes.

**Other Considerations**

In addition to typical intersection lighting, signage, and traffic control features, crossings should include design features that warn both trail and roadway users of the crossing. For motorists, this can include bots dots or rippled pavement. These roadway warnings should not continue into the roadway bike lanes if they exist. (see page 39 for additional information).


Alternatively or in addition to a refuge, curb extensions can be installed on either or both sides of the roadway at the intersection. To install curb extensions, on-street parking or wide shoulders must be present. Curb extensions decrease the crossing distance and increase pedestrian visibility by allowing pedestrians to safely step out to the edge of the parking lane where they can see into the street, also making them more visible to oncoming motorists.




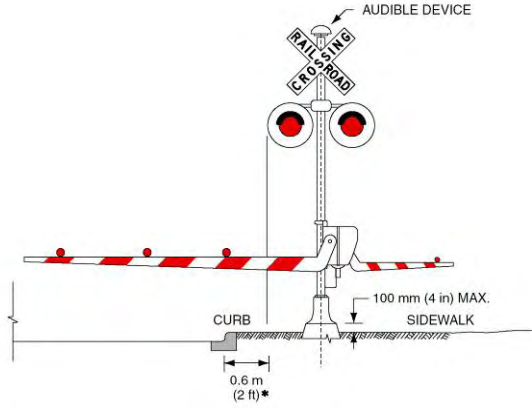
A mid-block crossing with curb extensions on both sides of the roadway.  
Source:tfhrc.gov



# Grade Separated Crossings

<b>Description</b>	
Pedestrian overpasses and underpasses provide crossings at a different grade than vehicle traffic. Grade Separated Crossings are a citywide design option.	
<b>Graphic</b>	
	
Grade separated crossings provide crossings over or under infrastructure and topography that would otherwise not be crossable	
<b>Design Recommendations</b>	
Grade separated crossings have a large number of design considerations, including aesthetics of the bridge, design of the path over the bridge for accommodating bicyclists and pedestrians, consideration and mitigations for environmental impacts, and potential conflicts with utilities.	
<b>Potential Uses</b>	
Crossings with very high traffic volumes, such as a freeway or train tracks.	
<b>Advantages</b>	
Provides uninterrupted separated crossing from freeway or major arterial traffic.	
<b>Potential Issues</b>	
Expensive to construct. The crossing must be conveniently located to encourage its use and to ensure that users will not seek out other at-grade alternative crossings.	
<b>Other Considerations</b>	
Overpasses work best when the topography allows for a structure without ramps (e.g., overpass over a sunken freeway). Underpasses work best when designed to feel open and accessible.	

## Railroad Crossings

Description	
<p>There are a variety of facilities that can be installed to improve pedestrian accessibility over railroad tracks. Truncated domes installed in advance of railroad tracks alert visually impaired pedestrians of the crossing and crosswalk striping can delineate the pedestrian path of travel. Signage can be used to warn pedestrians of oncoming trains and regulate their crossing. Retractable arms may also be used to further regulate pedestrian crossing. These measures may be installed at-grade pedestrian railroad crossings. Railroad crossings require standard treatments citywide as determined by the California Public Utilities Commission.</p>	
Graphic	
 <p data-bbox="266 1026 764 1083">Detectable warning surfaces and signage alert pedestrians to railroad crossings</p>	 <p data-bbox="992 1026 1295 1052">Railroad arm on a sidewalk</p>
Design Recommendations	
<p>Train types, frequency of trains, and train speeds should be considered when determining the level of design for at-grade pedestrian crossing improvements.</p>	
Potential Uses	
<p>Railroad crossings that have or are near high volume pedestrian areas.</p>	
Advantages	
<p>Regulates pedestrian crossings.</p>	
Potential Issues	
<p>Pedestrians may not comply with designated crossings.</p>	
Other Considerations	
<p>Fencing may be installed to encourage pedestrian use of designated crossing.</p>	

## 3.2. Intersection Signal and Sign Design

This section provides design guidelines for pedestrian crossing treatments, emphasizing signal design and signs.

### *Traffic Signal Enhancements for Pedestrians*

Pedestrian accommodating devices can be installed at traffic signals to enhance existing crosswalks. These devices include pedestrian heads (digital signs prompting pedestrians to cross) and pushbutton to actuate the head. The various traffic signals are described below and may determine the appropriate pedestrian device.

**Fixed-time signals** have a regular cycle of phases with a fixed amount of green time for each movement. There is a regular WALK phase in each direction for each cycle, and pedestrians are not required to push a button to actuate the WALK phase. Fixed time signals are considered to provide a higher level of service to pedestrians because they do not require pedestrians to push a button. However, they provide a walk/don't walk phase even when pedestrians are not present, and this results in traffic delays. As a result, Roseville does not use fixed-time signals. The City may consider fixed-time signals where pedestrian volumes are consistently high and lower vehicle level of service is acceptable.

**Fully-actuated signals** are highly responsive to local traffic variations because they detect vehicles and pedestrians as they arrive in the intersection on any approach. On fully-actuated signals, pedestrians are required to push the button to actuate the WALK phase in any direction.

**Semi-actuated signals** employ vehicle and pedestrian detection only on the side or local street. A green light and WALK phase is on for the major street unless the presence of a pedestrian or car is detected on the local street. Pedestrians must push a button to actuate the side street signal.

Special pedestrian phases can also be used to provide more crossing time for pedestrians at certain intersections. These include:

- **Extended phase** – At intersections with an extended phase, pedestrians who push the pedestrian crossing button get more time to cross the street than is provided during the normal signal phase.
- **Leading Pedestrian Interval (LPI)** – At intersections where there are conflicts between turning vehicles and pedestrians, pedestrians are given a “walk” designation a few seconds before the associated green phase for the intersection begins. LPIs can be an effective pedestrian safety measure, particularly at intersections with high pedestrian injury rates resulting from conflicts between turning vehicles and pedestrians. Roseville has installed LPIs in select locations, including Oak/Washington and Rocky Ridge/Cirby, and may consider them in additional locations with approval from the City Engineer.

## Signal Timing

<p><b>Description</b></p> <p>Traffic signal timing can have an affect on the ability of slower-moving pedestrians to cross the street. The length of the pedestrian clearance phase is determined by calculating a clearance interval, which is the length of time it takes a person to walk from the curb on one side to the center of the farthest travel lane on the other. The standard walking speed used to calculate pedestrian clearance intervals recommended by the CAMUTCD is four feet per second. However, where there are populations of pedestrians who walk more slowly, a lower walking speed may be considered in determining the pedestrian clearance time. Particularly where there are seniors or persons with disabilities, the CAMUTCD provides that the City may use a walking speed of 2.8 feet per second. To date, Roseville has not used this lower walking speed. However, the City allows for the adjustment of the “walk” phase of the signal to allow for bigger groups or slower persons. Residents may petition for a traffic study to determine if additional time is warranted and the impact of adding more time to the pedestrian “Walk” portion. This recommendation may also be applied to locations around elementary schools, as young children commonly walk more slowly. The Roseville General Plan recommends signal timing changes for Pedestrian Districts. The Roseville policy on the calculation of the pedestrian crossing time is given below.</p> <p>There are four sub-phases of a traffic signal phase in Roseville:</p> <ol style="list-style-type: none"> <li>1. At all signals, the "Walk" time" is currently a minimum of 5 seconds. However, the "Walk" time may be longer if determined necessary by traffic studies for the site.</li> <li>2. The length of the pedestrian clearance phase (“Don’t Walk”) is determined by calculating a clearance interval, which is the length of time it takes a person to walk from the curb on one side to the center of the farthest travel lane on the other.</li> <li>3. The yellow light sub-phase is a minimum of three seconds.</li> <li>4. The All Red time is a minimum of one second.</li> </ol> <p>This means that pedestrians have a minimum total of nine seconds of time (five seconds of "Walk" time, three seconds of "Yellow" time and one second of "All Red" time) above the minimum 4 ft/sec "Don't Walk" time. However, where there are populations of pedestrians who walk more slowly, residents may submit a request for a “traffic study.” The Engineering Division then evaluates the request to determine if additional time is warranted and to determine the impact (if any) of adding more time to the pedestrian walk time. If the City Engineer supports the request, they would add time to the "Walk" portion.</p>
<p><b>Potential Uses</b></p> <p>Intersections with high pedestrian volumes or in areas with seniors, persons with disabilities, or children.</p>
<p><b>Advantages</b></p> <p>Additional crossing time for pedestrians, which increases pedestrian comfort and safety.</p>
<p><b>Potential Issues</b></p> <p>Requires changing the signal timing of the intersection, which may result in decreased intersection capacity and increased delays to motorists.</p>
<p><b>Other Considerations</b></p> <p>This recommendation may also be applied to locations near elementary schools, as young children commonly walk more slowly.</p>


## *Lead Pedestrian Interval*

<b>Description</b>
Pedestrians are given a WALK phase a few seconds before the associated vehicle green phase for the intersection. This is a design option for signalized intersections in pedestrian districts.
<b>Design Recommendations</b>
Lead Pedestrian Intervals may be considered at signals near senior centers, senior housing, elementary schools, or centers generating significant volume of pedestrians with disabilities.
<b>Potential Uses</b>
Signalized intersections where there are conflicts between turning vehicles and pedestrians.
<b>Advantages</b>
Lead Pedestrian intervals can be an effective pedestrian safety measure at intersections with high pedestrian injury rates resulting from conflicts between turning vehicles and pedestrians.
<b>Potential Issues</b>
Decreases vehicle capacity of the intersection by increasing the "all red" phase for vehicles.


## *Pedestrian Actuated Signals at Intersections*

<b>Description</b>
On fully-actuated signals, pedestrians are required to push the button to actuate the WALK phase in any direction. Semi-actuated signals employ vehicle and pedestrian detection only on the side street. A green light and WALK phase is on for the major street unless the presence of a pedestrian or car is detected on the side street. Pedestrians must push a button to actuate the side street signal. Actuated signals are standard improvements for new and replacement signals citywide.
<b>Design Recommendations</b>
Pushbuttons are used for pedestrian detection and loop detectors monitor traffic and send signals to the traffic signal controller.
<b>Potential Uses</b>
Intersections of side streets and arterials with lower pedestrian volumes.
<b>Advantages</b>
Highly responsive to local traffic variations because vehicles and pedestrians are detected as they arrive in the intersection on any approach.
<b>Potential Issues</b>
Requires an action on the part of the pedestrian, as opposed to fixed-time signals, and only appropriate where pedestrian crossings are intermittent.

## Pedestrian Scramble

<b>Description</b>
A pedestrian scramble dedicates one signal phase for pedestrians to cross an intersection in all directions while all vehicles are stopped. Pedestrian scramble signals are a design option for pedestrian districts.
<b>Graphic</b>

Scramble signals allow pedestrians to cross signalized intersections in all directions Source: <a href="http://livablestreets.com">livablestreets.com</a>
<b>Design Recommendations</b>
Scrambles are only appropriate where there are very high pedestrian volumes.
<b>Potential Uses</b>
Areas with extremely high pedestrian volumes.
<b>Advantages</b>
Allows large volumes of pedestrians to cross in any direction.
<b>Potential Issues</b>
The additional pedestrian phase increases wait times for all modes.
<b>Other Considerations</b>
Exclusive pedestrian phases are a challenge for pedestrians with visual impairments, as the audible cues associated with parallel traffic streams are no longer present, making it difficult to know when to begin crossing.

## Pedestrian Pushbutton Detectors


<b>Description</b>
Pedestrian pushbutton detectors allow for actuation of pedestrian signals. As required by the CAMUTCD, pedestrian pushbutton detectors must be accompanied by signs explaining their use. Pushbuttons and signs are standard at actuated signals citywide.
<b>Graphic</b>

Pedestrian push buttons require signs explaining their use
<b>Design Recommendations</b>
Pedestrian pushbuttons should be easily accessible for those in wheelchairs and for the sight-impaired. This can be accomplished by locating them approximately 3.5 feet off the ground and provide a level surface to the push button.
See the Federal Highway Administration's Designing Sidewalks and Trails for Access.
<b>Potential Uses</b>
At all intersection corners where pedestrian actuation is used.
<b>Advantages</b>
Provides directions to pedestrians on how to comply with crossing at a traffic signal.
<b>Potential Issues</b>
Pedestrian pushbuttons should not be used in locations where the pedestrian phase is set on a fixed cycle and cannot be actuated. One exception to this is the use of pushbuttons to activate audible pedestrian signals at non-actuated locations.
<b>Other Considerations</b>
The Roseville ADA Transition Plan for Public Rights-of-way provides more details on these standards.

## ***Audible Signals***

<b>Description</b>
Audible pedestrian signals provide an audible signal to assist visually impaired pedestrians crossing the street. Some audible signals use different tones to indicate the direction of the crossing, using one sound for East-West crossings and another sound for North-South crossings. Other devices offer verbal information instructing the user when to cross or which direction to go. Audible signals are a design option citywide.
<b>Design Recommendations</b>
See CAMUTCD Section 4E.06.
<b>Potential Uses</b>
Complex and wide signalized intersections.
<b>Advantages</b>
Assist visually impaired pedestrians with intersection crossings.
<b>Potential Issues</b>
Possible adverse noise impacts, particularly on adjacent residential neighborhoods.
<b>Other Considerations</b>
Visually impaired pedestrians often have difficulty knowing about or locating pedestrian-activated control buttons. Some audible devices emit sound to help pedestrians locate the control buttons. Visual indicators also help partially sighted people find the control buttons. Some tactile devices use dots and lines to indicate how many lanes there are to cross, the direction of travel and the presence of a median. Vibrotactile devices also help people with visual impairments locate control buttons and vibrate to indicate the proper time to cross. New receiver-based systems provide audible information when triggered by a receiver carried by the pedestrian. In general, care must be exercised when implementing these designs around sensitive noise receptors such as residential areas.



## Countdown Pedestrian Signals

<b>Description</b>
Traffic control signals minimize conflicts between motorists and pedestrians by giving clear direction about the proper use of the right-of-way. Countdown pedestrian signals are a type of pedestrian head that assist pedestrians in making safe crossing judgments, as they provide information on the amount of time remaining for pedestrians to cross. Countdown signals are standard for new signals and signal upgrades citywide.
<b>Graphic</b>

Countdown pedestrian signals provide pedestrians the amount of time until the opposing signal changes.
<b>Design Recommendations</b>
Section 4E.07 of the CAMUTCD outlines the standards for the use and design of pedestrian heads, including the warrants for locations where pedestrian signals may be provided. The City of Roseville has installed countdown signals at all signalized intersections.
<b>Potential Uses</b>
Engineering judgment should be used in determining the specifics of pedestrian signal design at different crossing locations.
<b>Advantages</b>
Countdown pedestrian signals assist pedestrians in making safe crossing judgments.
<b>Potential Issues</b>
Requires replacement of the existing pedestrian signal heads.

## ***Right-Turn on Red Restrictions***

<b>Description</b>
Prohibitions of right-turns on red lights reduce conflicts between pedestrians and turning vehicles. This measure may be considered at signalized intersections with high volumes of turning traffic and crossing pedestrians. Right-turn on red restrictions should only be considered after an engineering evaluation of the operational impacts. These restrictions are a design option for intersections citywide.
<b>Design Recommendations</b>
Signs prohibiting motorists turning right on red should be placed in a prominent location at intersections to prevent non-compliance.
<b>Potential Uses</b>
Signalized intersections with high volumes of turning traffic and crossing pedestrians.
<b>Advantages</b>
Potential decreased collisions with right-turning vehicles.
<b>Potential Issues</b>
Right-turn on red restrictions decreases capacity of an intersection and may lead to higher right-turn-on-green conflicts when there are concurrent signals.

## ***Sign Types***

The CAMUTCD sets standards and guidelines for installing pedestrian signs. Warning signs can alert motorists of upcoming pedestrian activity and crosswalks. Regulatory signs can control traffic at intersections with marked crosswalks or notify pedestrians of areas where they are prohibited. Signs should only be used when necessary, as overuse can create visual clutter and noncompliance.

### **High Visibility Signage**

One way of increasing the visibility of pedestrian-related signage is installing signs with fluorescent yellow-green (FYG) backgrounds. Use of FYG signage is approved by the CAMUTCD for use on pedestrian, bicycle and school signs. When the FYG background is used for corridor or school-area signing, a systematic approach should be used so that the mixing of standard yellow and FYG is avoided. It is recommended that Roseville consider FYG signs for all new pedestrian and school signage installations as old signs are replaced.

### **Warning Signage**

Pedestrian warning signage should be installed in advance of areas where pedestrian activity is expected. The distance at which these signs are installed should consider the speed of motorists and follow CAMUTCD guidelines. In school areas, school specific pedestrian warning signs should be installed 500 feet in advance of the school grounds. To provide additional information, supplemental plaques, such as AHEAD and XXX Feet, may be installed under warning signs, as pictured above. If numerous uncontrolled marked crosswalks exist in a short segment of roadway, one warning sign may be used at the beginning of the series of crossings.

Crosswalk warning signs should be installed in advance of crosswalks at uncontrolled intersections, including mid-block crossings. They are not, however, permitted at crosswalks controlled by a traffic signal, as the traffic control itself serves to regulate vehicles at the intersection.

## **Regulatory Signage**

Regulatory signage is installed to control traffic and pedestrians. The installation of certain types of regulatory signage is governed by the location of the pedestrian crossing, i.e. controlled or uncontrolled intersections.

At signalized intersections, particularly where right turn on red is permitted, installation of a “TURNING TRAFFIC MUST YIELD TO PEDESTRIANS” (R10-15) sign may be considered especially where there are high volumes of turning vehicles and crossing pedestrians. This type of signage is recommended for the Pedestrian Districts in the General Plan’s Circulation Element.


At uncontrolled intersections with crosswalks, in-pavement paddles may be considered if motorists are not yielding to pedestrians. Paddles warn approaching motorists to yield to crossing pedestrians and are installed at the center stripe of the roadway on the leading edge of the crosswalk. Paddles shall comply with breakaway requirements set forth in AASHTO’s “Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.”

To increase motorist awareness of crossing school children, a “SCHOOL” plaque may be installed above paddles for use at school crosswalks. These signs are sometimes installed on a portable base and brought out in the morning and back in at the end of each day by school staff. This is intended increase motorist compliance. For permanently installed signs, maintenance can be an issue as the signs may be run over by vehicles and need to be replaced occasionally. Installing the signs in a raised median can help extend their lifetime.


## **Selective Exclusion (Pedestrian Prohibited) Signs**

Selective exclusion signs are regulatory signs that control pedestrian movement. The intent of these signs is to direct pedestrians to a safer, alternative route. There are two typical locations where these signs are used, at freeways and unmarked mid-block crossings. At locations where the City wants to limit pedestrian crossings to a specific location, for instance at split or permissive phase traffic signals, a NO PEDESTIAN CROSSING supplemented with USE CROSSWALK and arrow plaques should be installed to direct pedestrians to the designated crosswalk.

## Fluorescent Yellow Green Signs

<b>Description</b>
The CA MUTCD allows the use of fluorescent yellow green (FYG) for pedestrian, bicycle and school signs. Fluorescent Yellow Green Signs are a design option citywide.
<b>Graphic</b>

Fluorescent Yellow Green signs provided an extra alert to motorists of crossing pedestrians
<b>Design Recommendations</b>
When the FYG background is used for corridor or school-area signing, a systematic approach should be used, so that the mixing of standard yellow and fluorescent yellow-green is avoided.
<b>Potential Uses</b>
Intersections, mid-block crossings, and near schools.
<b>Advantages</b>
Provides important information that can improve road safety with relatively low cost.
<b>Potential Issues</b>
Risk of visual clutter with too many signs.


## *In-Street Yield to Pedestrian Sign*

<b>Description</b>
In-street yield to Pedestrian Signs are flexible plastic signs installed in the center line or median to enhance a crosswalk at uncontrolled crossing locations. These are design option at unsignalized pedestrian crossings citywide.
<b>Graphic</b>

In-Street Yield to Pedestrian signs help pedestrians in commercial districts where there are crossings at unsignalized locations
<b>Design Recommendations</b>
See CAMUTCD Section 2B.12.
<b>Potential Use</b>
Intersections and mid-block crossings and near schools.
<b>Advantages</b>
Provides important information that can improve road safety with relatively low cost.
<b>Potential Issues</b>
For permanently installed signs, maintenance can be an issue as the signs may be run over by vehicles and need to be replaced occasionally. Installing the signs in a raised median can help extend their lifetime.
<b>Other Considerations</b>
Candidate locations for this treatment need to be carefully reviewed by traffic engineers. Possible issues to be avoided include narrow right of way and constricted turning movements, both of which can create the potential for vehicle-on-vehicle conflicts.


### 3.3. Traffic Calming

Traffic calming helps slow vehicles in pedestrian areas, helping them feel more comfortable walking. This section describes traffic calming measures that help slow vehicles and enhance the pedestrian network.

#### *Raised Crosswalks*

<b>Description</b>
Raised crosswalks are similar to speed humps, but are installed at unsignalized intersections. This gives pedestrians greater prominence as they cross the street. These are design options in the pedestrian districts.
<b>Graphic</b>
 <p data-bbox="397 1266 1235 1291">Raised Crosswalks serve pedestrians crossing the street and to calm traffic</p>
<b>Design Recommendations</b>
Raised crosswalks are constructed 3-4 inches above the elevation of the street with a 10 foot approach. The crossing should be 12 feet wide. Raised crosswalks are not suitable for major thoroughfares.
<b>Potential Uses</b>
Unsignalized intersections or crossings.
<b>Advantages</b>
Eliminates grade changes from the pedestrian path and increases visibility of crossing.
<b>Potential Issues</b>
Requires negotiation with emergency services and may require reconfiguration of storm water facilities.
<b>Other Considerations</b>
Use detectable warnings at the curb edges to alert vision-impaired pedestrians that they are entering the roadway.

## *Raised Intersections*

<b>Description</b>
A raised intersection is a speed table for the entire intersection. Construction involves providing ramps on each vehicle approach, elevating the entire intersection to the level of the sidewalk. The intersection and crosswalks are elevated to slow vehicle speeds and enhance the pedestrian environment. Raised intersections are a design option in the pedestrian districts.
<b>Graphic</b>

Raised intersections slow vehicles and enhance the street crossing for pedestrians
<b>Design Recommendations</b>
Detectable warning strips at edges enable pedestrians with vision impairments to detect the crossing. Raised intersections may not be appropriate if the street is a bus route or emergency route. Several raised intersections on one corridor may be disruptive.
<b>Potential Uses</b>
Raised intersections are appropriate for traffic calmed streets and eliminate the need for curb ramps.
<b>Advantages</b>
Reduces vehicle speeds and enhance the pedestrian environment at the crossings. The crosswalks on each approach are also elevated as part of the treatment to enable pedestrians to cross the road at the same level as the sidewalk.
<b>Potential Issues</b>
Expensive to construct.

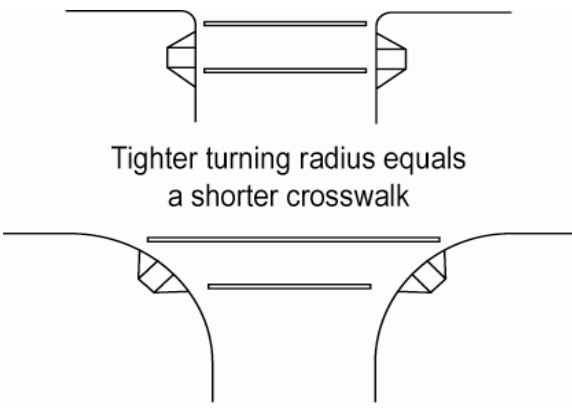
## Special Crosswalk Pavement Treatments

<b>Description</b>
Special crosswalk pavement treatments, such as textured pavement, can contribute to the identity of a commercial area and can slow vehicle speeds. Special crosswalk pavement treatments are a design option in the pedestrian districts.
<b>Graphic</b>


Crosswalk treatments are a visual cue to motorists to slow down as they approach a crosswalk
<b>Design Recommendations</b>
Slippery surfaces, such as smooth granite and paint, and uneven surfaces, such as cobblestones and brick, should not be used on the primary pedestrian network.
<b>Potential Uses</b>
In commercial areas.
<b>Advantages</b>
Sends a visual cue about the function of a street, creates an aesthetic enhancement of a street, and delineates separate space for pedestrians. The paving material can also help slow traffic speeds.
<b>Potential Issues</b>
Care should be taken when selecting the paving materials to ensure safety of crossing pedestrians and crosswalk visibility.




## Reduced Corner Radii

Description																
<p>Corner turning radii determine how fast a motorist can negotiate a turn. A tighter turn or shorter radius forces motorists to slow down, allowing them to see pedestrians better and stop more quickly. Intersection corners with short radii may improve safety for pedestrians at intersections by creating more sidewalk space and less roadway space.</p> <p>The arterial and collector roadway system in Roseville is designed to facilitate the flow of traffic throughout the City. Roseville. Street classifications and curb return or radius requirements for new street development are provided below.</p> <p>Reduced corner radii are a design option citywide.</p>																
Graphic	City Radius Requirements															
 <p>Tighter turning radius equals a shorter crosswalk</p>	<table border="1"> <thead> <tr> <th>Street Classification</th> <th>Radius (ft)</th> </tr> </thead> <tbody> <tr> <td>Minor Resident.-attached sidewalk</td> <td>26.0</td> </tr> <tr> <td>Primary Resident.-attached sidewalk</td> <td>26.0</td> </tr> <tr> <td>Minor Resident.-detached sidewalk</td> <td>26.0</td> </tr> <tr> <td>Primary Resident.-detached sidewalk</td> <td>26.0</td> </tr> <tr> <td>Collector/Industrial</td> <td>31.0</td> </tr> <tr> <td>Minor Arterial</td> <td rowspan="2">31.0-62.0</td> </tr> <tr> <td>Major Arterial</td> </tr> </tbody> </table>	Street Classification	Radius (ft)	Minor Resident.-attached sidewalk	26.0	Primary Resident.-attached sidewalk	26.0	Minor Resident.-detached sidewalk	26.0	Primary Resident.-detached sidewalk	26.0	Collector/Industrial	31.0	Minor Arterial	31.0-62.0	Major Arterial
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Design Recommendations																
<p>A 10 foot turning radius is recommended for streets without curbside parking. For streets where there is curbside parking on both streets, a 20 foot radius is recommended. However, to ensure adequate turning radii for large vehicles, such as school busses and sanitation trucks, an engineering evaluation must be considered.</p>																
Potential Uses																
<p>The existing engineering standards used by the City should be adjusted in the specific plan areas, Pedestrian Districts, as land development occurs and local planning code to provide a better environment for pedestrians crossing at intersections.</p>																
Advantages																
<p>Slows vehicle speeds, creates more sidewalk space, and decreases crossing distances. Also allows for curb ramps that align parallel to crosswalks.</p>																
Potential Issues																
<p>Expensive to implement, especially if storm water facilities need to be relocated.</p>																
Other Considerations																
<p>Streets with significant volumes of truck traffic may require larger corner radii.</p>																

## Neckdowns

<b>Description</b>	
<p>Neckdowns, also known as bulb-outs or curb extensions, are an extension of the curb and sidewalk into the parking lane. Neckdowns offer several benefits, including increased visibility for crossing pedestrian, shortened crossing distances, and slower vehicle speeds.</p> <p>Neckdowns are a citywide design option.</p>	
<b>Graphic</b>	
	
<p>Neck downs increase the turning radii of motorists and decrease crosswalk lengths.</p>	
<b>Design Recommendations</b>	
<p>Neck downs should not extend past the parallel parking lane. Integration with on-street bicycle facilities should also be considered.</p>	
<b>Potential Uses</b>	
<p>Intersections with on-street parking lanes.</p>	
<b>Advantages</b>	
<p>Increased visibility, shortened crossing distance, slower vehicle speeds, additional space for pedestrians and curb ramps.</p>	
<b>Potential Issues</b>	
<p>Expensive to implement, especially if stormwater facilities require relocation.</p>	
<b>Other Considerations</b>	
<p>Consider the volume of truck and bus traffic, as neckdowns can make turns difficult.</p>	


## Pedestrian Refuge Islands

<p><b>Description</b></p>
<p>On wide, multi-lane arterials and collectors, pedestrians can benefit from median refuge islands, which offer a place to wait after crossing half of the street. Refuge islands increase the visibility of pedestrian crossings and decrease pedestrian collisions by reducing pedestrian and vehicle conflicts, motor vehicle speeds, and exposure time for pedestrians.<sup>2</sup> Pedestrian refuge islands are citywide design options.</p>
<p><b>Graphic</b></p>

<p>Median Refuge Islands provide pedestrians a safe buffer while waiting for a gap in oncoming traffic</p>
<p><b>Design Recommendations</b></p>
<p>The FHWA document “Pedestrian Accommodations at Intersections” advises that a refuge island should be a minimum of four feet wide and 12 feet long (or the width of the crosswalk, whichever is greater).<sup>3</sup></p>
<p><b>Potential Uses</b></p>
<p>Signalized and unsignalized intersections and mid-block crossings, particularly on wide multi-lane roads.</p>
<p><b>Advantages</b></p>
<p>Offers a place to wait after crossing half of the street, increases the visibility of pedestrian crossings, and may decrease pedestrian collisions by reducing pedestrian and vehicle conflicts, motor vehicle speeds, and exposure time for pedestrians. Also allow pedestrians to consider crossing traffic from one direction at a time, making it easier to find a gap and simplifying crossing.</p>
<p><b>Potential Issues</b></p>
<p>Can be expensive and requires sufficient roadway width to accommodate the island.</p>
<p><b>Other Considerations</b></p>
<p>Refuge islands at intersections should have a median “nose” that gives protection to the crossing pedestrian.</p>

<sup>2</sup> FHWA 2002b, p. 72

<sup>3</sup> Pedestrian Accommodation and Intersections, FHWA, [http://safety.fhwa.dot.gov/ped\\_bike/univcourse/swless15.htm](http://safety.fhwa.dot.gov/ped_bike/univcourse/swless15.htm)


## Split Pedestrian Crossovers

<b>Description</b>
A pedestrian refuge island that separates a crosswalk into discrete legs, where the crossing is designed with a "Z" pattern (pedestrian crosses to the middle with one signal, traverses down the median and then crosses to the other side). Split pedestrian crossovers are citywide pedestrian design options.
<b>Graphic</b>

Split Crossovers allow pedestrians to cross a street in two phases with or without signals Image Source: Source: Abu Dhabi Urban Street Design Manual
<b>Design Recommendations</b>
Consideration for visually impaired users and people using walking assistance devices.
<b>Potential Uses</b>
Mid-block crossings, not at intersections.
<b>Advantages</b>
Allows pedestrians to focus on crossing traffic from one direction at a time, simplifying crossing, and provides a protected refuge.
<b>Potential Issues</b>
Can be expensive and requires sufficient roadway width to accommodate island. Difficult for visually impaired persons to negotiate.


### 3.4. Pedestrian Enhancements

Definitions for Comprehensive Sidewalk Network and Building Setback are in the Pedestrian Design Concepts of the Best Practices Manual. The remaining pedestrian enhancements listed in the Circulation Element are in this section. These enhancements provide amenities specific to pedestrians.


#### *Pedestrian-Only Walkways*

<b>Description</b>
Pedestrian only walkways provide access to areas not served by vehicular streets. These should be supplemental to the comprehensive sidewalk network. A surfaced pedestrian way not located contiguous to a street used by the public. Pedestrian-only walkways are a citywide design option.
<b>Graphic</b>

Pedestrian only walkways provide access to areas not accessible by vehicle.
<b>Design Recommendations</b>
The Caltrans Highway Design Manual Chapter 1000 recommends a minimum paved width of 8 feet, with 2-foot wide graded shoulders. Where heavy traffic is anticipated, the paved width should be greater than 8 feet, preferably 12 feet or more.
<b>Potential Uses</b>
Pedestrian mall, pedestrian bridge, recreational facility.
<b>Advantages</b>
Improves pedestrian mobility and access in areas without vehicle traffic.
<b>Potential Issues</b>
Not a substitute for a comprehensive sidewalk network.


## Street Furniture

<b>Description</b>
Street furniture include areas to sit, and attractions for pedestrians and passing motorists, including benches, artwork, and information boards. Good-quality street furniture will show that the community values its public spaces and is more cost-effective in the long run. Street furniture are a design option for the pedestrian districts.
<b>Graphic</b>

Street furniture enhances the pedestrian environment.
<b>Design Recommendations</b>
Sidewalk furnishings should be designed to a pedestrian scale. Care must be taken when installing furnishings to ensure that the furnishings themselves or people using them do not conflict with use of the pedestrian zone.
<b>Potential Uses</b>
Retail and commercial streets.
<b>Advantages</b>
Slow vehicle traffic and provide amenities for pedestrians.
<b>Potential Issues</b>
Can block pedestrian walkway or curb ramps or create sightline problems. Ensure adequacy of overhead clearances and detectability of protruding objects for pedestrians who are blind or visually impaired.

## Landscaping and Street Trees

<b>Description</b>
Trees and landscaping can help create a more attractive streetscape, providing visual relief year round and shade in summer, improving air quality, and creating a buffer between pedestrians and vehicles. Landscaping improvements are a citywide design option.
<b>Graphic</b>

Landscaping visually enhance the street and sidewalk and provides a buffer from passing vehicles
<b>Design Recommendations</b>
Guidelines for the design of streetscape landscaping and street trees are provided in the applicable specific plan for a given area of the City, or in the Community Design Guidelines. These include recommendations for plant material selection, planter width and other streetscape components. Landscaping should be well-maintained to create a sense of public pride, which enhances safety.
In order to maintain line of sight to stop signs or other traffic control devices at intersections, when planning for new trees, care should be taken not to plant street trees within 25 feet of corners of any intersection. When installing landscaping and street trees, stopping site distance for traffic signal heads need to be considered. Careful consideration should also occur at intersections and/or near uncontrolled crosswalks as landscaping can impair visibility to pedestrians and block signage.
<b>Potential Uses</b>
Where the sidewalk is wide enough, the furnishings zone should include street trees.
<b>Advantages</b>
Slows traffic and can improve safety for pedestrians. Trees add visual interest to streets and narrow the visual corridor, which may cause motorists to slow down.
<b>Potential Issues</b>
Requires ongoing maintenance. Can impede visibility if not properly maintained.

## *Pedestrian-Scale Lighting*

<b>Description</b>
Pedestrian-scale lighting improves pedestrian visibility. Lighting serves to vertically define the street, and coordinated lighting can contribute to the identity of a commercial district. Lighting at the pedestrian scale is designed to specifically illuminate sidewalks and pedestrian crossings. Pedestrian-scale lighting is a design option for the pedestrian districts.
<b>Graphic</b>
 <p data-bbox="456 1077 1224 1102">Pedestrian-Scale Lighting provides a vertical definition for this path</p>
<b>Design Recommendations</b>
A guideline for a pedestrian way is illumination between 0.5 foot-candle to 1.0 foot-candle. The appropriate height is 8-12 feet above ground level.
<b>Potential Uses</b>
Areas of high pedestrian activity and where feasible based on available right of way, utilities and cost.
<b>Advantages</b>
Improves visibility and can provide a vertical buffer between the sidewalk and the street, defining pedestrian areas.
<b>Potential Issues</b>
High initial capital cost.




## Bike Parking

Description		
<p>For most commercial areas, bicycle parking is provided by the private property owner as an on-site improvement per the Zoning Ordinance. In pedestrian-oriented commercial and mixed-use areas, bicycle parking should be provided within the furnishings zone of the sidewalk in order to facilitate combined walking-bicycling trips. Bike parking is a citywide design option.</p>		
Design Recommendations		
<p>In narrow frontage zones, bicycle parking is oriented so the parked bicycle is parallel to the pedestrian traffic flow. On sidewalks with wider furnishings zones, bicycle parking may be oriented with locked bicycles perpendicular to the right-of-way as long as they do not project into the pedestrian zone.</p> <p>To ensure that bicyclists have secure places to park, the City should consider adopting an ordinance requiring bicycle parking. Requiring bicycle parking based on land use is an example of how to develop such an ordinance.</p> <p>When installed in the furnishings zone, bike racks should be a minimum of 3.5 feet from the curb and should not obstruct the pedestrian zone.</p>		
Land Use	Long-Term Bicycle Parking Requirement	Short-Term Bicycle Parking Requirement
Multi-family dwelling	1 space for each 4 dwelling units	1 space for each 20 dwelling units
Quasi-public (Auditoriums, theaters, community centers, clubs or lodges)	1 space for each 40,000 square feet of gross floor area	1 space for each 20,000 square feet of gross floor area
Office	1 space for each 10,000 square feet of gross floor area	1 space for each 20,000 square feet of gross floor area
Commercial	1 space for each 20,000 square feet of gross floor area	1 space for each 10,000 square feet of gross floor area
Advantages		
Encourages bicycling and can potentially decrease single-occupancy car trips.		
Potential Issues		
Improperly installed bicycle racks can obstruct pedestrian travel.		

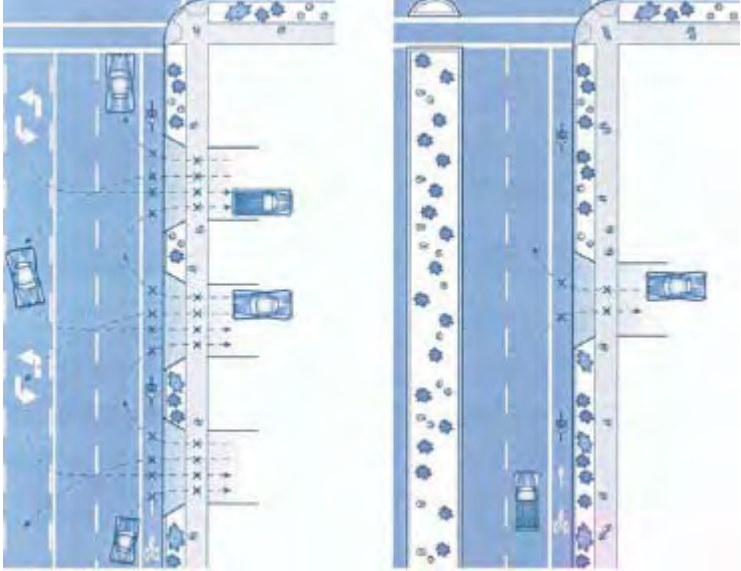
## *Pedestrian-Vehicle Interface*

Designing commercial and mixed-use areas with a prioritization on pedestrian travel can reduce conflicts with vehicles. Pedestrians are exposed to vehicles at driveways, curbs, and in parking lots. This exposure can be reduced by implementing the design considerations in this section.


### *Parking Lot Walkways*

<b>Description</b>	
A defined walkway through parking lots increases motorist awareness of pedestrians and improves pedestrian access to storefronts. Walkways may be striped crosswalks, textured decorative crosswalks or space provided between parked cars.	
<b>Graphic</b>	
	
Additional space for pedestrians can be provided between parked cars.	
<b>Design Recommendations</b>	
Provide the most direct route between the sidewalk and the building front door.	
<b>Potential Uses</b>	
Commercial areas with large building setbacks.	
<b>Advantages</b>	
Improves access for pedestrians walking to the site and pedestrians walking from vehicles to the building.	
<b>Potential Issues</b>	
Unpleasant walking environment and does not encourage pedestrian access.	

## Consolidation of Driveways

<b>Description</b>
Reducing the number of driveways that cross the sidewalk improves pedestrian safety by decreasing potential for conflicts with vehicles. In commercial areas, adjacent businesses should be encouraged to share parking and driveways. Consolidation of driveways is a citywide design option.
<b>Graphic</b>

Consolidating adjacent driveways reduces potential pedestrian and vehicle conflicts.
<b>Design Recommendations</b>
Encourage the consolidation of adjacent commercial driveways through design review. Reference the City of Roseville's Design/Construction standards when considering placement of driveways.
<b>Potential Uses</b>
Commercial areas.
<b>Advantages</b>
Improves pedestrian safety by reducing conflicts with vehicles.
<b>Potential Issues</b>
Requires coordination of businesses and may also require reconstruction of the sidewalk.

## On-Street Parking

<b>Description</b>
On-street parking provides a buffer for pedestrians between the sidewalk and vehicle travel lanes. It also can help slow vehicle speeds. On-street parking is a citywide design option.
<b>Graphic</b>

On-street parking provides a buffer between the sidewalk and vehicle traffic
<b>Design Recommendations</b>
See CAMUTCD Section 3-18.  At all intersections, one stall length on each side measured from the crosswalk or end of curb return should have parking prohibited. At signalized intersections parking should be prohibited for a minimum of two stall lengths on the near side and one stall length on the far side.
<b>Potential Uses</b>
Streets with parking demand.
<b>Advantages</b>
Provides a buffer between the sidewalk and travel lanes and can slow vehicle speeds. Increases positive "friction" along a street and can narrow the effective crossing width, encouraging slower speeds.
<b>Potential Issues</b>
Creates a visual barrier between motor vehicle traffic and crossing pedestrians, especially children and people using wheelchairs.

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# Glossary

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**Actuated Signal** – a signal where the length of the phases for different traffic movements is adjusted for demand by a signal controller using information from detectors.

**Attached Sidewalk** – a sidewalk with one edge adjacent to the back of the street curb. An attached sidewalk may or may not have intermittent planting of street trees in wells along its length.

**Audible Pedestrian Signals**– pedestrian signal indicators that provide an audible signal to assist visually impaired pedestrians in crossing the street.

**CAMUTCD** – Manual on Uniform Traffic Control Devices, a publication of the Federal Highway Administration that establishes a national standard for traffic control.

**Clearance Interval**– the length of time that the DON'T WALK indication is flashing on a pedestrian signal indication.

**Crossing Treatment** – a physical treatment of a crosswalk to make it safer and more convenient for pedestrian travel; may include such elements as crosswalk markings, median refuges, or curb extensions.

**Crosswalk** – any portion of a roadway at an intersection or elsewhere that is distinctly indicated for pedestrian crossing. Where there are no pavement markings, there is a crosswalk at each leg of every intersection, defined by law as the prolongation or connection of the lateral lines of the sidewalks.

**Curb Extension** – an area where the sidewalk and curb are extended into the parking lane, usually in order to shorten pedestrian crossing distance. Also called “bulb-out” or “curb bulb.”

**Curb Radius** – the length of the radius of the curve where a curb turns a street corner.

**Curb Ramp** – a combined ramp and landing to accomplish a change of level at a curb in order to provide access to pedestrians using wheelchairs.

**Curb Zone** – the portion of the Sidewalk Corridor that physically separates the sidewalk from the roadway.

**Detached Sidewalk** – a sidewalk that is separated from the curb by a linear planting strip. (see “Separated sidewalk.”)

**Fixed-Time Signal** – a signal that operates on a regular fixed cycle and has no actuated phases.

**Frontage Zone** – a linear portion of the Sidewalk Corridor, adjacent to the edge of the right-of-way (or property line).

**Fully-Actuated Signal** – a signal where all signal phases are actuated. (See “Actuated signal.”)

**Furnishings Zone** – a linear portion of the Sidewalk Corridor, adjacent to the curb that contains elements such as street trees, signal poles, utility poles, street lights, controller boxes, hydrants, traffic signs, street signs, parking signs, parking meters, driveway aprons, planting strip, or street furniture.

**Grade** – the slope parallel to the direction of travel.

**Gutter** – the trough that runs between the curb or curb ramp and the street.

**Head-Start Pedestrian Phasing** – also referred to as pedestrian lead interval (PLI), provides pedestrians with crossing time that starts in advance of the accompanying green light phase.

**High Pedestrian Use Areas** – areas within ¼ to ½ mile of land uses such as commercial, hotel, public facilities, and ocean-front areas that attract high volumes of pedestrian activity.<sup>4</sup>

**Intersection** – the area of a roadway created when two or more public roadways join together at any angle.

**In-Pavement Flashers** – pedestrian actuated lights inset in a roadway along the transverse stripes of crosswalks.

**Median Refuge Island** – a refuge island located between vehicle travel lanes.

**Midblock Crossing** – a crossing treatment that occurs between intersections.

**Pathway or Path** – a pedestrian walkway other than a standard sidewalk.

**Pedestrian** – a person afoot; a person operating a pushcart; a person riding on, or pulling a coaster wagon, sled, scooter, tricycle, bicycle with wheels less than 14 inches in diameter, or a similar conveyance, or on roller skates, skateboard, wheelchair or a baby in a carriage.

**Pedestrian Signal Indication** – the lighted WALK/DON'T WALK (or walking man/hand) signal that indicates the pedestrian phase.

**Refuge Island** – a raised island in the roadway that separates a crosswalk into discrete legs and provides a refuge for crossing pedestrians.

**Regulatory Signage** – signs controlling roadway user movements.

**Semi-Actuated Signals** – signals where only some phases (usually the side street) are actuated. (See “Actuated signals.”)

**Separated Sidewalk** – a sidewalk separated from the curb by linear planting strip which may include lawn or groundcover and street trees. (See “Detached sidewalk.”)

**Sidewalk** – an improved facility intended to provide for pedestrian movement; usually, but not always, located in the public right-of-way adjacent to a roadway. Typically constructed of concrete.

**Sidewalk Corridor** – the area located within the public right-of-way between the curb line of a street or roadway edge and the property line at the edge of right-of-way.

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<sup>4</sup>High volumes of pedestrian use vary by location and can be defined in a number of different ways. One example from Walk San Francisco is Level of Service Standards measured in average pedestrian area occupancy. High volumes can be considered LOS C, D, E, or F – greater than seven square feet per person. Viewed at: <http://www.walksf.org/pedestrianLOS.html> on 9/20/2010.

**Slip Lane** – a lane provided for ease of right-hand turns at the intersection of arterial streets. In new construction, this is often accomplished by the use of a large turning radius and an intermediate refuge island for pedestrian crossings.

**“T” intersection** – an intersection where one street ends at a through street, forming an intersection shaped like the letter “T”.

**Through Pedestrian Zone** – a linear portion of the Sidewalk Corridor which contains no obstructions, openings, or other impediments that would prevent or discourage movement by pedestrians.

**Truncated Domes** – a textured ground surface warning visually impaired persons of an upcoming vehicle crossing or grade change. AADAG provides guidelines for the installation of truncated domes.

**Walkway** – a pedestrian facility, whether in the public right-of-way or on private property, which is provided for the benefit and use of the public.

**Warning Signage** – provides advance warning to roadway users of unexpected conditions.

**Widened Shoulder** – a pedestrian facility provided immediately adjacent to the roadway.



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