Town of Fairfax
Bicycle and Pedestrian Plan 2016 Update

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EXHIBIT A

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

FIGURES

Tables

1 Introduction

The 2016 Fairfax Bicycle and Pedestrian Master Plan update (Plan) provides for a Town-wide active transportation network of bicycle and pedestrian paths, lanes and routes, along with bicycle- and pedestrian-related programs and support facilities, intended to ensure bicycling and walking are viable transportation options for people who live, work, and recreate in Fairfax. Current network information was gathered from meetings with the Fairfax Bicycle/Pedestrian Advisory Committee (BPAC) and Town staff, combined with information on proposed routes from the previously adopted Town of Fairfax Bicycle and Pedestrian Master Plan (2008). Relevant bikeway information was also gathered from the Marin County Unincorporated Area Bicycle and Pedestrian Master Plan (2007).

The purpose of this Bicycle and Pedestrian Master Plan is to improve bicycle and pedestrian transportation in Fairfax by providing direction for future bicycle and pedestrian planning and meeting the guidelines of the California Active Transportation Program, the requirements of which are contained in Senate Bill 99 (Chapter 359, Statutes of 2013).

1.1 Community Participation

The towns of San Anselmo and Fairfax held a joint public meeting on Saturday, June 6, 2015 to discuss potential updates to their respective bicycle and pedestrian plans. The meeting was noticed through distribution to an interested parties list. An online survey was available for members of the public to submit their input on existing bicycling and walking conditions in Fairfax. In addition, public input was received at a second public meeting held on Monday, February 29, 2016 when recommendations for updating the 2008 Fairfax Pedestrian and Bicycle Master Plan were discussed. The newly convened BPAC met 4 times to discuss necessary gap closures and vital sidewalk improvements in order to augment the existing 2008 update and provide a number of pedestrian-oriented enhancements.

2 Goals, Objectives, Policies, and Compliance

2.1 Goals

Goals provide the context for the specific objectives and policy actions discussed in the Plan. The goals provide the long-term vision and serve as the foundation of the Plan. Goals are broad statements of purpose that do not provide specific descriptions of the goal, while policy actions provide a bridge between general policies and actual implementation guidelines.

- **Goal 1 Increased Bicycle and Pedestrian Access**

  Expand bicycle and pedestrian facilities and access in and between neighborhood areas, employment centers, shopping areas, schools, and recreational sites.

- **Goal 2 Bicycle Transportation**

  Make the bicycle an integral part of daily life in Fairfax by implementing and maintaining a bikeway network, providing end-of-trip facilities, improving bicycle/transit integration, encouraging bicycle use, and making bicycling safer and more convenient.

- **Goal 3 Pedestrian Transportation**

  Encourage walking as a daily form of transportation in Fairfax by completing a pedestrian network that services short trips and transit, improving the quality of the pedestrian environment, improving the health of all citizens, and increasing safety, convenience, and access opportunities for all users.

2.2 Objectives

Objective A

Implement the Bicycle and Pedestrian Master Plan which identifies existing and future needs and provides specific recommendations for facilities and programs.

Objective A Policy Actions

1. Update the Plan every five (5) years to reflect new policies and/or requirements for bicycle and pedestrian funding.
2. All Safe Routes to Schools (SR2S) travel plans should be reviewed by the Fairfax BPAC for consistency with this Plan, with the authority to refer concerns to staff and council as necessary. Individual SR2S travel plans (or smaller plans packaged together) which involve a bid higher than $5,000 will be reviewed by the Town Council per current policy.

3. The Town of Fairfax will retain its BPAC to monitor implementation of this Plan, review roadway projects for bicycle and pedestrian needs, advise the Town on the design of funded projects, ensure consistency with the update of the General Plan, and assist with education and encouragement programs. The BPAC will also work with the Town on the next revision of the Plan which would take place by 2021.
4. Maximize coordination between government agencies, schools, and community organizations to address bicycle and pedestrian issues of mutual concern.
5. Seek funding for bikeway and pedestrian projects through current local, regional, state, and federal funding programs and encourage multi-jurisdictional funding applications.

Objective B

Complete a continuous network of bikeways that are feasible, fundable, and that serve bicyclists' needs, especially for travel to employment centers, schools, commercial districts, transit stations, and institutions.

Objective B Policy Actions

1. Implement high-priority projects, and Safe Routes to Schools improvements.
2. Prioritize closing gaps in the east-west bikeway, such as the Broadway Avenue to Sir Francis Drake Boulevard connection.
3. Require construction of relevant planned bikeways as an integral part of any transportation facility maintenance or construction project.
4. Construct a network that encourages bicycling to and for recreational purposes.
5. Work with adjacent government agencies and local community groups to ensure a complete and continuous network across jurisdictional boundaries.
6. At a minimum, construct all bikeways according to Caltrans Chapter 1000 Design Guidelines.

Objective C

Complete a network of walkways that serves pedestrian needs, especially for short trips to employment centers, schools, commercial districts, transit stations, and institutions.

Objective C Policy Actions

1. Complete missing connections to make direct routes for walking, especially connections between residential neighborhoods and the downtown area.
2. Work to build walkways along existing and potential pedestrian rights-of-way.
3. Identify and mitigate impediments and obstacles to walking to school.
4. For new development or redevelopment projects, require construction of planned pedestrian facilities.

5. Work with transit authorities to ensure that pedestrian concerns are addressed in the design of transit stops.
6. Provide opportunities for recreational walking.

Objective D

Maintain and improve the quality, operation, and integrity of bikeway and walkway network facilities.

Objective D Policy Actions

1. Undertake routine maintenance of bikeway and walkway network facilities, such as sweeping bicycle lanes and sidewalks and removing vegetation which impinges on bicycle or pedestrian rights-of-way and forces users into travel lanes occupied by motor vehicles.
2. Undertake regular periodic maintenance of bicycle and pedestrian facilities such as striping, signing and surface condition to avoid safety issues for users including integrating into the existing Public Works maintenance process a regular inspection of roads, pathways, or sidewalks for cracks and potholes that might affect bicyclists and pedestrians.
3. Ensure that repair or construction of any transportation facility minimizes disruption to the cycling and walking environment and that safe, direct alternate routes clear of vegetation, debris or other safety hazards are signed for bicycling and walking through or around construction zones for the duration of the project. The alternate route should be clearly signed and communicated prior to start of construction, with signs notifying motorists of the presence of bicyclists and/or pedestrians in the area. All projects by outside agencies should be coordinated with the Town to ensure compliance with this policy.
4. Ensure that repair or construction of any transportation facility does not result in the permanent removal of an existing bicycle or pedestrian facility.
5. Ensure that the pedestrian walkway network is accessible to and usable by persons with disabilities, as technically feasible, in compliance with ADA requirements.
6. Enforce existing Town ordinances to ensure pedestrian walkways are unobstructed by illegally parked cars.

Objective E

Provide short- and long-term bicycle parking and end-of-trip facilities in employment and commercial areas, in multifamily housing, at schools, and at transit facilities.

Objective E Policy Actions

1. Require bicycle parking spaces as part of new development or redevelopment projects.
2. Encourage the installation of short- and long-term bicycle parking in the public right-of-way in the Downtown area.

3. Work with local elementary, middle, and high schools to promote bicycle commuting and to assist in purchasing and siting short- and long-term bicycle parking.
4. Require the provision of bicycle parking at all Town-permitted large events to help ease traffic and parking.
5. Pursue the development of a "bicycle station" for use by recreational and transportation riders with showers, lockers, and secure storage to encourage visitors to remain in town and patronize local businesses.

Objective F

Develop and implement safety, education, and encouragement plans aimed at youth and adult bicyclists, pedestrians, and motorists.

Objective F Policy Actions

1. Develop and expand youth and adult bicycle and pedestrian education, encouragement, and safety programs, particularly Share the Road programs aimed at reducing bicyclist-motorist conflicts.
2. Promote the health and environmental benefits of bicycling and walking.

2.3 Compliance with Local Plans

The following section provides context for this plan update in terms of past and ongoing planning efforts related to bicycling and walking. In addition to the plans and programs listed below, this Plan is consistent with the **2010-2030 Fairfax General Plan**, the **2008 Marin County Unincorporated Bicycle and Pedestrian Master Plan**, and the Metropolitan Transportation Commission's (MTC) **Transportation 2035 Plan for the San Francisco Bay Area**.

2.3.1 Safe Routes to Schools (SR2S) Infrastructure Plans

The Town of Fairfax, in partnership with the Transportation Authority of Marin's (TAM) SR2S Program, the Ross Valley SR2S Task Force, and local volunteers, secured Measure A Safe Pathways funding and Office of Traffic Safety funds for several school access projects:

- Glen Drive/Mitchell Drive at Sir Francis Drake Crosswalk Improvements: This project installed high visibility-crosswalk and additional school warning lights on Sir Francis Drake Boulevard and provided signage and striping on Glen Drive at Mitchell Drive.
- Manor Drive Sidewalk: This project installed 125 feet of sidewalk along the east side of Oak Manor Drive beginning at Sir Francis Drake Boulevard, providing a connection to the school campus.
- Oak Tree Lane Crosswalk and Enhancements: This project installed a new crosswalk on Sir Francis Drake Boulevard at Oak Tree Lane, connecting to the new Manor Bridge. Originally planned to include in-pavement flashing crosswalk lighted, the crosswalk was redesigned and includes an actuated overhead flashing signal beacon similar to the crosswalk at Cascade Canyon School.

2.3.2 Non-motorized Transportation Pilot Program

Marin County was one of four communities nationally that was selected by Congress to participate in a **Non-motorized Transportation Pilot Program** and receive $25 million for improvements for bicycling and walking to demonstrate the impact that bicycling and walking can have on transportation mode share. Several Fairfax projects have been funded by this program, including:

- Parkade Improvements Study ($25,000): This completed study examined the area surrounding the downtown Parkade area in Fairfax in terms of improving bicycle and pedestrian safety and circulation.
- The Fairfax BPAC has identified the segment of Sir Francis Drake Boulevard between Klaus and Pacheco as an important area for improvements for bicycling and walking.
- San Rafael-Fairfax Corridor Study ($150,000): This completed study examined the corridor between Fairfax and San Rafael, with the goal of identifying improvements for bicycling and walking between the communities of Fairfax, San Anselmo, and San Rafael. As a part of the process of updating this, all updated plans along the corridor were coordinated to "set the stage" for this study.
- Pastori Avenue Sidewalk Construction ($50,000): This completed project built new sidewalk and crosswalk improvements along the segment of Pastori Avenue between Center Boulevard and Sir Francis Drake to provide connections to the bus stop on Sir Francis Drake Boulevard.
- Sir Francis Drake Sidewalk Construction ($80,000): This project proposes to build a new sidewalk along the south side of Sir Francis Drake Boulevard between Claus Drive and Olema Road, connecting to existing sidewalks west of Olema Road recently constructed as part of a SR2S project.

2.3.3 Steps, Lanes and Paths

Steps, Lanes and Paths (SLP) is a project that a number of Marin communities have undertaken in order to address the need for pedestrian connections in areas that are not easily served by conventional sidewalk networks. Challenges such as limited right-of-way, steep grades, and narrow roads have made it difficult to connect residential neighborhoods to the downtown areas in many Marin cities and towns. Fairfax Volunteers have made great progress in addressing this challenge by documenting and mapping unused existing and potential historic pedestrian rights-of-way in the Town.

The SLP project helps the Town achieve one of its pedestrian objectives of connecting neighborhoods more directly to the downtown area, but it also faces significant challenges. Many of the potential rights-of-way were established decades ago at the time of laying out the parcel property lines and were never officially adopted or maintained by the Town. The exact condition and legal status of some of the rights-of-way is not known and many of these rights-of-way may currently be in use by adjacent property owners who are not aware of their history or status. Adoption of these rights-of-way by the Town could constitute a significant maintenance burden and the issue of ADA access would have to be resolved. The Town, in partnership with local volunteers, is addressing these challenges as the project moves forward. Currently, the connections to the downtown area as well as to open space,

being treated as recreational trails and not as transportation facilities. The Town hopes to resolve both ADA and liability issues through this recreational trail classification.

Center Boulevard Project: The Town of Fairfax rehabilitated the segment of Center Boulevard between Pastori Avenue and Pacheco Avenue. The project included a number of bicycle and pedestrian improvements such as new and wider sidewalks, curb extensions, new and improved crosswalks, driveway consolidation, repaving the roadway surface, bicycle lanes, intersection treatments for bicycle safety, such as carrying the bicycle lane through the intersection, and improved lighting. The current plan contains one more crosswalk at the western end of the otherwise completed Center Boulevard project.

2.4 ATP Compliance Checklist

The State of California adopted Active Transportation Program (ATP) guidelines that encourage increased use of active modes of transportation, such and bicycling and walking, and provide guidance on the inclusion of specific ATP elements in order to apply for grant funding. This Plan includes the provisions in **Table 2-1** in compliance with ATP guidelines.

Table 2-1: ATP Compliance Checklist

	Required Plan Elements	Location
(a)	The estimated number of existing bicycle trips and pedestrian trips in the plan area, both in absolute numbers and as a percentage of all trips, and the estimated increase in the number of bicycle trips and pedestrian trips resulting from implementation of the plan.	Ch. 4
(b)	The number and location of collisions, serious injuries, and fatalities suffered by bicyclists and pedestrians in the plan area, both in absolute numbers and as a percentage of all collisions and injuries, and a goal for collision, serious injury, and fatality reduction after implementation of the plan.	Ch. 4
(c)	A map and description of existing and proposed land use and settlement patterns which must include, but not be limited to, locations of residential neighborhoods, schools, shopping centers, public buildings, major employment centers, and other destinations.	Ch. 4
(d)	A map and description of existing and proposed bicycle transportation facilities.	Ch.s 3, 5
(e)	A map and description of existing and proposed end-of-trip bicycle parking facilities.	N/A
(f)	A description of existing and proposed policies related to bicycle parking in public locations, private parking garages and parking lots and in new commercial and residential developments.	Ch.s 2, 7
(g)	A map and description of existing and proposed bicycle transport and parking facilities for connections with and use of other transportation modes. These must include, but not be limited to, parking facilities at transit stops, rail and transit terminals, ferry docks and landings, park and ride lots, and provisions	N/A

	Required Plan Elements	Location
	for transporting bicyclists and bicycles on transit or rail vehicles or ferry vessels.	
(h)	A map and description of existing and proposed pedestrian facilities at major transit hubs. These must include, but are not limited to, rail and transit terminals, and ferry docks and landings.	N/A
(i)	A description of proposed signage providing wayfinding along bicycle and pedestrian networks to designated destinations.	Ch. 3
(j)	A description of the policies and procedures for maintaining existing and proposed bicycle and pedestrian facilities, including, but not limited to, the maintenance of smooth pavement, freedom from encroaching vegetation, maintenance of traffic control devices including striping and other pavement markings, and lighting.	Ch. 8
(k)	A description of bicycle and pedestrian safety, education, and encouragement programs conducted in the area included within the plan, efforts by the law enforcement agency having primary traffic law enforcement responsibility in the area to enforce provisions of the law impacting bicycle and pedestrian safety, and the resulting effect on accidents involving bicyclists and pedestrians.	Ch. 3
(l)	A description of the extent of community involvement in development of the plan, including disadvantaged and underserved communities.	Ch. 1
(m)	A description of how the active transportation plan has been coordinated with neighboring jurisdictions, including school districts within the plan area, and is consistent with other local or regional transportation, air quality, or energy conservation plans, including, but not limited to, general plans and a Sustainable Community Strategy in a Regional Transportation Plan.	Ch. 2
(n)	A description of the projects and programs proposed in the plan and a listing of their priorities for implementation, including the methodology for project prioritization and a proposed timeline for implementation.	Ch. 8
(o)	A description of past expenditures for bicycle and pedestrian facilities and programs, and future financial needs for projects and programs that improve safety and convenience for bicyclists and pedestrians in the plan area. Include anticipated revenue sources and potential grant funding for bicycle and pedestrian uses.	Ch. 3
(p)	A description of steps necessary to implement the plan and the reporting process that will be used to keep the adopting agency and community informed of the progress being made in implementing the plan.	Ch. 8
(q)	A resolution showing adoption of the plan by the city, county or district.	Appendix D

3 Existing Conditions

In the years since the adoption of the 2008 Fairfax Bicycle and Pedestrian Master Plan, significant progress has been made in improving conditions for bicycling and walking. This section of the plan describes the existing conditions in Fairfax in terms of bikeways, bicycle parking, and pedestrian facilities, as well as education, encouragement, and enforcement activities.

The bicycle map which accompanies this Plan designates Fairfax's bicycle facilities and those in adjacent unincorporated areas in accordance with Chapter 1000 on Bikeway Planning and Design in the California Department of Transportation, Highway Design Manual.

3.1 Existing Conditions for Bicycling

3.1.1 Definition of Bikeways

The four types of bikeways identified by Caltrans in Chapter 1000 of the Highway Design Manual are shown in **Figure 3-1** and described below:

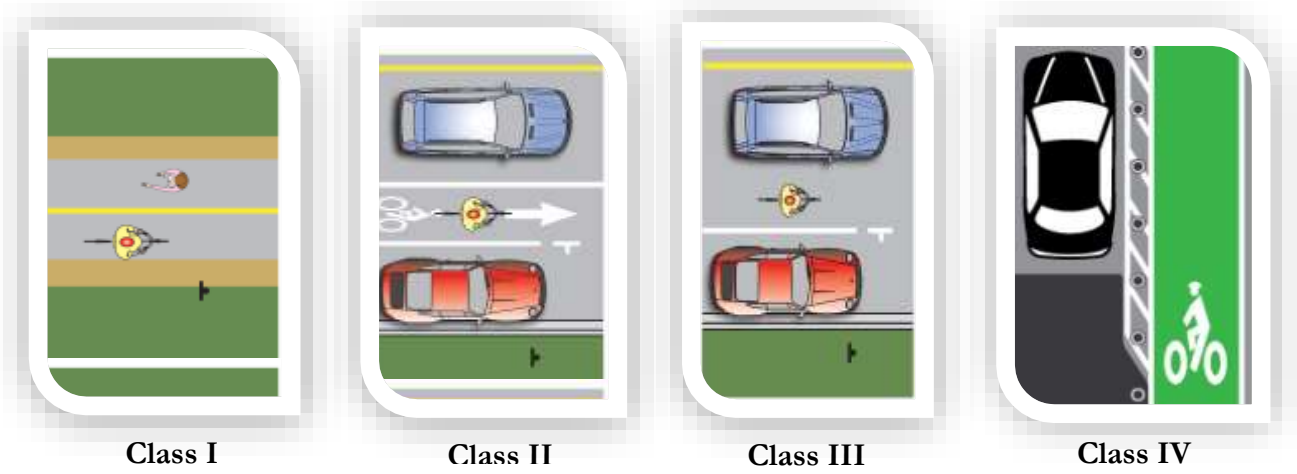
Class I Bikeway. Typically called a "multi-use path," a Class I bikeway provides bicycle and pedestrian travel on a paved right-of-way completely separated from any street or highway.

Class II Bikeway. Often referred to as a "bicycle lane," a Class II bikeway provides a striped and stenciled lane for one-way travel on a street or highway.

Class III Bikeway. Generally referred to as a "bicycle route," a Class III bikeway provides for shared use with motor vehicle traffic and is identified only by signing and/or pavement marking stencils.

Class IV Bikeway. Often referred to as "protected bicycle lanes," "separated bicycle lanes," or "cycle tracks," Class IV bikeways are located within a street or highway right-of-way, provide a designated area for one-way or two-way bicycle travel. They offer physical protection from adjacent motor vehicle traffic using barriers, bollards, curbing, parked cars, posts, planters, or other vertical elements.

Figure 3-1: Bikeway Classifications



Class I Class II Class III Class IV

It is important to note that bicycles are permitted on *all* roads in the State of California and in Fairfax (with the exception of access-controlled freeways). As such, Fairfax's entire street network is effectively the Town's bicycle network, regardless of whether or not a bikeway stripe, stencil, or sign is present on a given street. The designation of certain roads as Class I, II, III, or IV bicycle facilities is not intended to imply that these are the only roadways intended for bicycle use. Rather, the designation of a network of Class I, II, III, and IV on-street bikeways recognizes that certain roadways are optimal bicycle routes for reasons such as directness or access to significant destinations and allows the Town of Fairfax to then focus resources on building out this primary network. Fairfax's existing network of designated bikeways is shown in **Figure 3-2**. Specific facility segments are discussed in more detail below.

3.1.2 Existing Bikeway Facilities

The Town's existing bikeway system is composed of approximately 4.63 miles of Class I Multi-use Pathways, Class II Bicycle Lanes and Class III Bicycle Routes, as shown in **Table 3-1**. The primary bicycling corridor serves the east-west route from the border with San Anselmo through downtown to the unincorporated area at the base of White's Hill.

Figure 3-2: Existing Bikeways

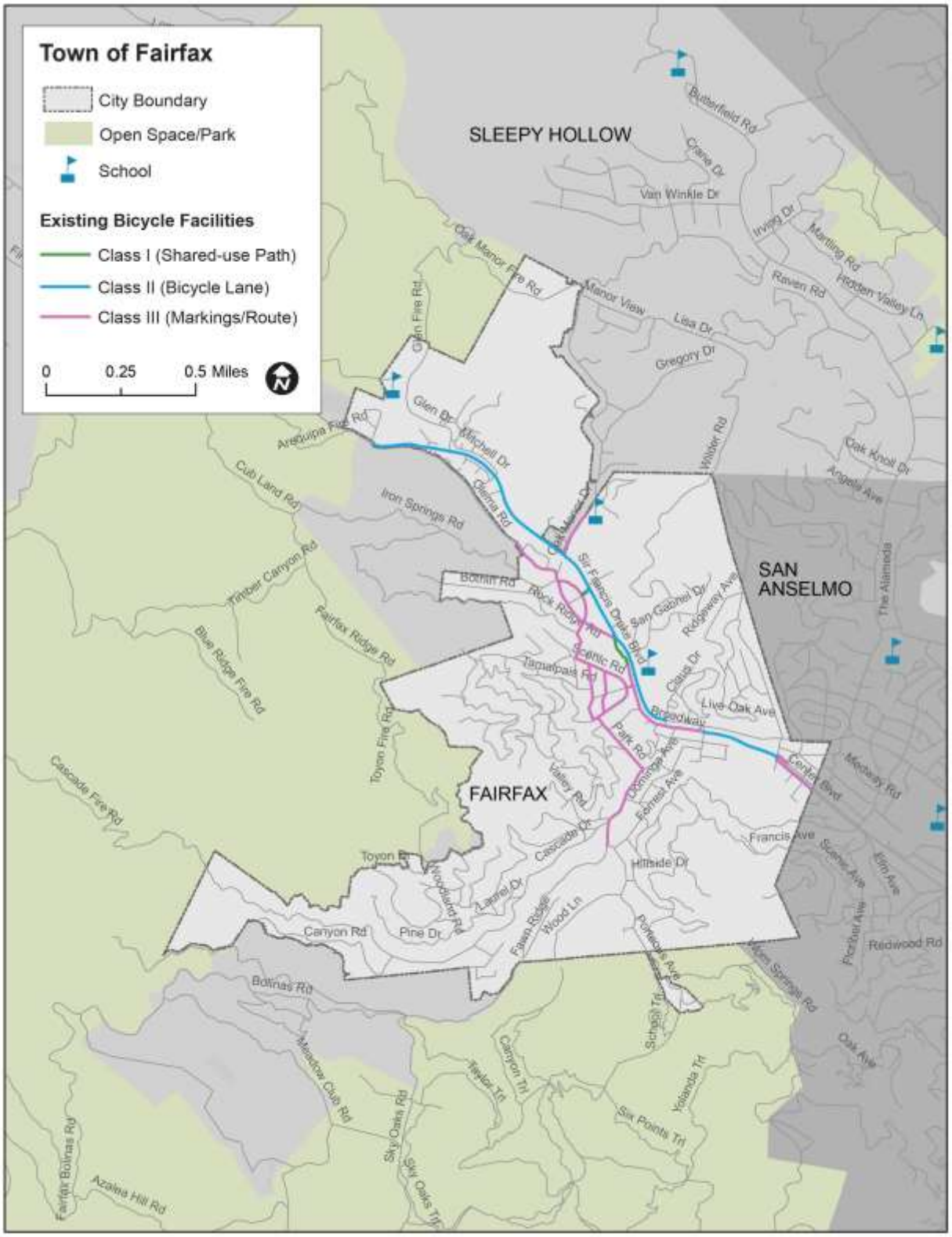


Table 3-1: Existing Bikeway Mileage by Classification

Class	Bikeway Type	Total Mileage
I	Multi-Use Paths	0.11
II	Striped Bicycle Lanes	1.74
III	Signed Bicycle Routes	2.78
IV	Protected Bicycle Lanes	0.00
All Bikeways		**4.63**

There are two existing segments of Class I Multi-use Paths. One segment runs parallel to Sir Francis Drake Boulevard and connects to Broadway. Another short segment of pathway begins at Bothin Road and runs midway up Marin Road, where it becomes a Class II bicycle lane.

Table 3-2: Existing Class I Bikeways

Segment Name	Begin	End	Class	Length
Marin Rd. (Bridge)	Bothin Rd./Manor Rd.	Sir Francis Drake Blvd.	I	0.01
Parallel path to Sir Francis Drake Blvd.	Sir Francis Drake Blvd./Olema Rd.	Broadway	I	0.10
Total Class I Bikeways				**0.11**

The longest existing Class II bicycle lane is on Sir Francis Drake Boulevard, extending from Claus Drive to the Town line in the northwest. Another segment runs on Center Boulevard, connecting two Class III Bicycle Routes between Pacheco Avenue and Pastori Avenue.

Table 3-3: Existing Class II Bikeways

Segment Name	Begin	End	Class	Length
Center Blvd.	Pacheco Ave.	Pastori Ave.	II	0.26
Sir Francis Drake Blvd.	Claus Dr.	Fairfax Town Limit	II	1.48
Total Class II Bikeways				**1.74**

The majority of the Town's bikeways are signed Class III Bicycle Routes, which take advantage of direct routes along busier arterial or collector roadways. These routes were signed as a part of the County of Marin's Bicycle Route Guide Signage Project to mark the countywide east-west route. Most local routes such as Bolinas Road and neighborhood streets which serve as de facto "feeders" into this countywide east-west route are currently unmarked. West of Claus Drive an alternate route composed of signed Class III Bike Routes on residential streets was signed by the Town. This alternate route is commonly used by school children bicycling to school and recreational bicyclists traveling through Fairfax to West Marin, in addition to using existing Class II bicycle lanes on Sir Francis Drake

Boulevard. Further, a commonly used route exists immediately outside the Fairfax Town limit, connecting Kent Avenue to San Anselmo Schools along Butterfield via Sir Frances Drake and other neighborhood routes north of Sir Francis Drake. Since the adoption of the **2008 Fairfax Bicycle Master Plan**, several of the segments of Class III Bicycle Routes have been extended to provide better connectivity within the bicycle network, such as new segments on Bolinas Road, Park Road, Sequoia Road, Arroyo Road, and Spruce Road.

Table 3-4: Existing Class III Bikeways

Segment Name	Begin	End	Class	Length
Scenic Rd.	Manor Rd.	Azalea Ave.	III	0.20
Aroyo Rd.	Scenic Rd.	Spruce Rd.	III	0.14
Azelea Ave.	Scenic Rd.	Broadway	III	0.02
Belmont Ave.	Kent Ave.	Pastori Ave.	III	0.04
Bolinas Rd.	Porteous Ave.	Park Rd.	III	0.29
Bothin Rd.	Marin Rd.	Olema Rd.	III	0.10
Broadway	Sir Francis Drake Blvd.	Pacheco Ave.	III	0.39
Lansdale Ave.	Pastori Ave.	Fairfax Town Limit	III	0.16
Manor Rd.	Scenic Rd.	Marin Rd.	III	0.22
Park Rd.	Spruce Rd.	Bolinas Rd.	III	0.23
Oak Manor Dr.	Sir Francis Drake Blvd.	Manor Elementary	III	0.15
Olema Rd.	Sir Francis Drake Blvd.	Fairfax Town Limit	III	0.48
Sequoia Rd.	Spruce Rd.	Scenic Rd.	III	0.19
Spruce Rd.	Sequoia Rd.	Azalea Ave.	III	0.17
Total Class III Bikeways				**2.78**

3.1.3 Bikeway Signage

The County of Marin received $189,000 in grant funding to design and implement a Countywide Bicycle Route Guide Signage project in partnership with local jurisdictions. The goal of the project is to encourage commuting by bicycle through Marin County and make recreational bicycling more attractive to the public. The signage provides bicyclists with directions and destinations at key intersections so that residents and visitors will be able to navigate more easily. The Marin Public Works Directors Association selected a uniform sign for the County which has a logo of Mount Tamalpais in the background. The guide signage is intended to complement the County's Share the Road signage program.

The Town is committed to developing a link in the east-west bikeway route through Marin County, connecting Fairfax to San Anselmo and countywide destinations such as West Marin, Ross, and San Rafael. Signs have been installed throughout the Town along the primary countywide east-west route and overlay the local Class II and Class III facilities described above. These signs augment the existing system of green and white Caltrans D11-1 Bicycle Route signs already found along Broadway Avenue, Scenic Road, Manor Road, and Olema Road.

3.1.4 Bicycle Support Facilities

Bicycle support facilities include bicycle parking racks, lockers and changing facilities. Any facility that assists commuting or recreational bicyclists to complete their journey is also considered a support facility.

Within the Town of Fairfax bicycle parking is located throughout the downtown area along Broadway Avenue and at specific locations along Bolinas Road such as Town Hall and the Mono parking lot. Of the four schools located in Town, both Manor Elementary and White Hill Middle School have bicycle parking.

Currently there are no publicly accessible changing rooms or shower facilities, although such facilities may exist in private buildings.

3.1.5 Bicycle Access to Transit

Providing bicycle access to transit allows bicyclists to extend the distance they are able to travel, enabling bicycling as a regional mode of travel. Fairfax residents have access to two transit services, Golden Gate Transit, serving San Francisco, Sonoma County, Southern, Central and Northern Marin (as well as Marin County Ferry Terminals) and the West Marin Stage which operates limited service to most West Marin communities and the San Anselmo Hub and the San Rafael Transit Center. All local transit service in Marin County is operated under contract with the Marin County Transit District (MCTD).

Most bus stops within the Town of Fairfax do not have bicycle racks located at the stops. The Parkade bus stop has bicycle racks with capacity for approximately 6 bicycles. In addition, up to two bicycles can fit on racks mounted to the front of all Golden Gate Transit buses less than 60 feet long. Golden Gate Bridge Highway and Transportation District (GGBHTD) has received funding to install new 3-bike capacity racks on the front of their buses. Buses longer than 60 feet were recently outfitted with luggage bay racks that allow two bicycles to ride in the underfloor luggage area. In addition, the MTCD has included an element in their long-range transit plan to upgrade all bus-mounted front bicycle racks from two to three capacity fixtures.

3.1.6 Bicycle Loop Detectors

Bicycle Loop Detectors (BLD) involve the installation or calibration of in-pavement induction loops so that they are sensitive to bicycles. BLDs use a unique Caltrans standard stencil to identify the best location for bicyclists to position themselves to actuate a traffic signal. The Town of Fairfax has not installed bicycle loop detectors at any signalized intersections within the Town. State legislation was passed in 2007 that requires the Town to install such loop detectors if any new signals are installed or existing signals are improved.

3.1.7 Share the Road Signs

The Town of Fairfax has yellow "Share the Road" bicycle warning signs posted at several locations throughout the Town, including on Bolinas Road at the start of the climb up to Pine Mountain and

Center Boulevard at the eastern Town limit. These signs are intended to increase motorist and bicyclist awareness of the need to share narrow roadways with limited sightlines or potential safety concerns.

3.2 Existing Conditions for Walking

3.2.1 Definition of Pedestrian Facilities

Generally, there are two types of pedestrian facilities, those intended for exclusive use by pedestrians, such as sidewalks, and those shared with other users (i.e., Class I Multi-use Pathways). In addition, sidewalks in California can be legally used by bicyclists under the age of 12 unless otherwise signed or locally regulated. Pedestrian facilities at intersections can include crosswalks, pedestrian crosswalk signals, warning signage, curb ramps, and other treatments to promote safety and accessibility for disabled users.

The California Vehicle Code Section 275 defines a crosswalk as either:

- That portion of a roadway included within the prolongation or connection of the boundary lines of sidewalks at intersections where the intersecting roadways meet at approximately right angles, except the prolongation of such lines from an alley across a street.

- Any portion of a roadway distinctly indicated for pedestrian crossing by lines or other markings on the surface.

At intersections, a crosswalk is effectively a legal extension of the sidewalk across the roadway. Crosswalks are present at all intersections, whether marked or unmarked, unless the pedestrian crossing is specifically prohibited by the local jurisdiction. At mid-block locations, crosswalks only exist if they are marked.

Traffic control devices must follow the procedures set forth in the California version of the Manual of Uniform Traffic Control Devices (CAMUTCD), while elements such as sidewalks and curb cuts must comply with guidelines for implementing the federal Americans with Disabilities Act (ADA).

3.2.2 Existing Walkways

Sidewalks are found on at least one side of the street throughout the downtown business district and on many adjacent residential streets. With the exception of most sidewalks within the Downtown area, many of these walkways in Fairfax do not meet ADA requirements for width, obstructions, tripping hazards, or curb ramps. Sidewalks are generally lacking in the hillside neighborhood areas and along some of the smaller residential streets in the neighborhoods surrounding downtown. In addition, the Bicycle and Pedestrian Advisory Committee has identified a lack of direct pedestrian connections between residential neighborhood streets along potential property line rights-of-way that would allow more direct walking routes.

The Town recently constructed new sidewalks along Sir Francis Drake Boulevard between Manor Road and Olema Road as part of a Safe Routes to Schools (SR2S) project.

Two multi-use path segments serve pedestrians near the downtown area. The Mono-Dominga connector is a short "cut-through" that allows pedestrians to travel from downtown businesses along Broadway Avenue directly to Dominga Avenue residential area. The Library Pathway connects the sidewalk along the south side of Sir Francis Drake Boulevard at Olema Road to existing sidewalks along Broadway and the crossing of Sir Francis Drake Boulevard at Cascade Canyon School..

3.2.3 Existing Crosswalk and Other Facilities

Pedestrian exposure at intersections directly impact safety, especially for children and older adults who may not be able to cross streets quickly or discern (or be seen by) on-coming traffic. Generally intersections in and around the downtown area all have crosswalks marked with either high-visibility "ladder" style crosswalks or traditional parallel stripes augmented by colored pavement treatments. In addition, a number of mid-block crossings are similarly marked along Broadway and Sir Francis Drake Boulevard. In-roadway pedestrian warning "paddle" signs are found at mid-block crossings of Broadway and one crossing on Bolinas Road.

In addition to intersection conditions in the downtown area, a number of "spot improvements" have been implemented with the goal of improving pedestrian safety. The Manor Bridge SR2S project was installed as an alternate to the existing narrow bridge to provide a dedicated pedestrian connection to Sir Francis Drake Boulevard and the new sidewalk. At several locations throughout the residential areas, curbs at intersections have been painted red to prevent on-street parking and improve visibility through these intersections.

3.3 Past Expenditures

Table 3-5 contains a summary of bicycle and pedestrian facility projects constructed since the **2001 Bicycle and Pedestrian Master Plan**.

Table 3-5: Past Bicycle and Pedestrian Expenditures

Facility	Description	Cost
Manor Circle Bridge and Sir Francis Drake Boulevard Sidewalk (Manor Circle to Olema Road)	Installation of a bicycle and pedestrian bridge and sidewalks on south side of Sir Francis Drake Boulevard between new bridge and Olema Road	$637,537
Sir Francis Drake Boulevard Sidewalk Improvements (Oak Manor to June Court)	This project was designed to install new sidewalks on Sir Francis Drake Boulevard from Oak Manor to June Court to eliminate gaps in the sidewalk network	$198,685
Sir Francis Drake Library/Cascade Canyon School Crosswalk	1998 Installation of high-visibility crosswalk and pushbutton-actuated, audible overhead flashing pedestrian crossing beacons	$43,333
Sir Francis Drake Boulevard at Oak Manor Drive Crosswalk	1998 Installation of high-visibility crosswalk and push button-actuated, audible overhead flashing pedestrian crossing beacons	$43,333
Sir Francis Drake at Robin Hood Apartments Crosswalk	1998 Installation of high-visibility crosswalk and pushbutton-actuated, audible overhead flashing pedestrian crossing beacons	$43,333
In-roadway Pedestrian "Paddle" Signs	Installation of pedestrian crosswalk warning signs in center of roadway at marked crosswalk locations	$800
Downtown Bicycle Racks – Phase I (federal grant) and Phase II (local supervisorial grant)	Installation of inverted U style bicycle racks at specific locations along Broadway, Bolinas Road, and in the Fairfax Parkade	$12,000
Share the Road Signage	Installation of safety warning signs on Bolinas Road and Manor Road	$800
Sir Francis Drake Boulevard (Olema Road to Claus Drive)	Installation of Class II bicycle lane	$28,600
Center Boulevard (Pastori Avenue to Pacheco Avenue)	Installation of Class II bicycle lane	$4,600
Manor Road (Olema Road)	Installation of Class III bicycle lane as part of bike spine	$35,200
Manor Road (Olema Road to Scenic Road)	Installation of Class III bicycle lane as part of bike spine	$400

Facility	Description	Cost
Park Road (Spruce Road to Bolinas Road)	Installation of Class III bicycle lane as part of bike spine	$42,800
Scenic Road (Manor Road to Azalea Avenue)	Installation of Class III bicycle lane as part of bike spine	$37,000
Sequoia Road (Scenic Road to Spruce Road)	Installation of Class III bicycle lane as part of bike spine	$335,700
Spruce Avenue (Sequoia Road to Azalea Avenue)	Installation of Class III bicycle lane as part of bike spine	$31,500
Bicycle Parking	Installation of U style bicycle racks at Fairfax Theater, Fairfax Lumber, IGA/Fairfax Cyclery, Lotus Café, Barefoot Café, Fairfax Scoop, White Hill School, and Manor School	$18,600
Oak Manor Drive Sidewalk (Sir Francis Drake Boulevard to Manor Elementary)	N/A	$54,500
Pastori Avenue Sidewalk (Sir Francis Drake Boulevard to Center Boulevard)	N/A	$50,000
Total Expenditures		**$1,618,721**

3.4 Safety, Education and Encouragement Programs

3.4.1 Fairfax Police Department

The Fairfax Police Department conducts regular enforcement of bicycle violations of the vehicle code, particularly along the designated bicycle route on Broadway and Lansdale Avenue. Since 2005 the Fairfax Police Department has partnered with the Marin County Bicycle Coalition to conduct annual Share the Road Checkpoints at selected locations in Fairfax.

3.4.2 Safe Routes to Schools (SR2S)

The original SR2S program began in Fairfax as a pilot program in 2000 as an effort to reduce congestion and encourage healthy exercise and transportation habits among school-aged children in Marin County. The program has since expanded to its current level, with over 45 schools and over 18,500 students participating countywide. Since then, this program has been expanded nationally. Each year, the program has successfully decreased the percentage of drive-alone students at participating schools through innovative classroom activities, contests and events, and initiation of engineering improvements.

The program consists of five key components:

- **Education** - Classroom lessons teach children the skills necessary to navigate through busy streets and show them how to be active participants in the program. **Table 3-6** shows education programs completed at Fairfax schools.
- **Engineering** - The program's licensed traffic engineer works with schools and the Town in developing a plan to provide a safer environment for children to walk and bike to school. The focus is on creating physical improvements to the infrastructure surrounding the school, reducing speeds, and establishing improved crosswalks and pathways.
- **Encouragement** - Events, contests, and promotional materials are incentives that encourage children and parents to try walking and bicycling. **Table 3-6** shows encouragement programs completed in Fairfax schools.
- **Enforcement** – Police officers, crossing guards, and law enforcement officials participate throughout the SR2S process to encourage safer travel through the community. Targeted enforcement of speed limits and other traffic laws around schools make the trip to school more predictable for students. This Plan also includes enforcement enhancements and outreach to motorists through driver safety campaigns.
- **Evaluation** – Program participation is regularly monitored to determine the growth in student and parent participation

As detailed in **Table 3-6**, Manor Elementary School and White Hill Middle School have participated in the program. A SR2S Task Force was formed for the Ross Valley School District to create SR2S Travel Plans which include engineering, enforcement, motorist education program, encouragement program recommendations.

SR2S infrastructure projects completed in Fairfax include the Manor Bridge and sidewalks on the south side of Sir Francis Drake Boulevard as well as the crossing of Sir Francis Drake Boulevard at Cascade Canyon School. Funded SR2S infrastructure plans include bicycle and pedestrian improvements at Sir Francis Drake Boulevard and Glen Drive near White Hill School (recently completd) and new sidewalk on the east side of Oak Manor Drive accessing Manor School. Funded improvements at Oak Tree Lane include a new crosswalk and the installation of an actuated overhead flashing beacon in early 2008. Other unfunded SR2S infrastructure plans include a proposal to build a multi-use pathway along the former railroad right-of-way west of White Hill School.

3.4.3 Other Safety Programs

The Fairfax Police Department participates in the Marin County Bicycle Coalition's Share the Road Campaign. The campaign includes three components: checkpoints, basic street skills classes, and public presentations.

At checkpoints, uniformed police, highway patrol officers and volunteers from the bicycle coalition stop vehicles, bicyclists and pedestrians and provide them with share the road flyers. Flyers contain California Vehicle Code information, codes of conduct for bicyclists and motorists, and additional safety tips to prevent road rage. Fairfax hosted checkpoints in 2005 and 2006.

Basic Street Skills Classes are provided free of charge by the Marin County Bicycle Coalition. Classes provide information on how to avoid collisions and citations, how to ride safely, improve visibility, and the legal rights of bicyclists. Bicyclists who have received a bicycle violation may attend this class to reduce their fine to $50.

The Marin County Bicycle Coalition also provides a Share the Road presentation for the public. The presentation is available by request and includes information on the rights and responsibilities of bicyclists and motorists and focuses on ways each group can behave courteously to avoid collisions.

3.4.4 Other Promotional and Encouragement Efforts

Town residents have undertaken a variety of past promotion and encouragement efforts. Velo Club Fairfax and the Fairfax Chamber of Commerce created "Biketoberfest" at the Fair Anselm Plaza with the assistance of the Marin County Bicycle Coalition (MCBC) and Safe Routes to Schools. Film Night in the Park has held two shows in conjunction with the old location of the Fairfax Fat Tire Fest at the Fairfax ball field. The MCBC provided its first valet bike parking at the Fairfax Brewfest (held annually in March) and currently serves the Fairfax Festival for its two days in June. In the past, Fairfax hosted the start and finish of a road race as well as a downtown criterium (one-day bicycle race) called the Tour of Marin, which could be resurrected with sufficient funding and sponsorship. Fairfax has

become a famous hub for weekend riders leaving Town for rides to West Marin as well as a variety of formal and informal bicycling clubs and teams host road and mountain bike rides departing from various locations in Fairfax, primarily on weekend days. Multiple neighborhoods have come up with homegrown traffic calming measures that include making bicycling and walking safer. There is now a Town Council subcommittee for neighborhood traffic calming efforts. Non-profit initiatives such as Sustainable Fairfax's car reduction program titled "Reduce by 2" have been established to encourage walking and biking as traffic reduction and clean air initiatives.

Beginning in 2010 there have been many grassroots efforts to encourage and promote walking and biking in Fairfax both for commuters and recreational users. Fairfax Volunteers established a program to identify and clear public rights-of-way easements and alleys to provide walking access from the hills both for emergency egress and for easy walking to downtown, between various neighborhoods, and to open space.

Table 3-6: Safe Routes to Schools Education and Encouragement Programs

		Education								Encouragement			
2010-2011	**Grades**	SL&L	WB	HS	TS	WIM	Bike Skills	Clubs	S.Art	IWALK	W2SD	Spring Contests	TF
Manor	K-5	x	x	x	x	**X**				**X**	**X**	**X**	**X**
White Hill	6-8						**X**	**X**	**X**	**X**	**X**	**X**	**X**

Key:
X - Completed This Month; x - Previously Completed
Education:
SL&L - Stop Look and Listen; WB - Walk Around the Block; HS - Helmet Safety; Jeop - Jeopardy; Rodeo - Bicycle Rodeo; OTB - On the Bike (Middle School), Clubs - EcoVelocity
Clubs; S. Art - Safety Art; Yikes - Assembly; W2SD - Parade Prep; Earth - Earth Day Classes; Fam M - Family Management; NR - Neighborhood Rides
Encouragement:
Iwalk - International Walk to School Day, W2SD - Ongoing Walk to School Days; SP - SchoolPool; W&BA - Walk and Bike Across America; FRM - Frequent Rider Miles Contest
Notes:
On the bike can only be offered to 2-3 schools this year. Family Maintenance Clinics and Neighborhood Rides are new, so it is difficult to gauge who will use them this year.

Source: Marin County Safe Routes to Schools Program Evaluation (2011).
<http://www.saferoutestoschools.org/documents/TAMSR2SProgramEvaluationwithAppendix-LowRes-112211.pdf>

4 Needs Analysis

4.1 Land Use and Demand for Bicycling and Walking

The "demand" for bicycle and pedestrian facilities can be difficult to estimate. Unlike automobile use where historical trip generation studies and traffic counts allow one to estimate future "demand" for travel, bicycle and walk trip generation methods are less advanced and standardized. Land use patterns can help estimate demand and are important to bicycle and pedestrian planning because changes in land use (and particularly employment areas) will affect average commute distance, which in turn affects the attractiveness of bicycling and walking as a commute mode. **Figure 4-1** shows the Town's land use map from the Fairfax General Plan and Error! Reference source not found.**.**

The Fairfax bikeways network will connect the neighborhoods where people live to the places they work, shop, recreate, or learn. An emphasis will be placed on regional bikeways and transit connections centered on the major activity centers in Fairfax, including:

- Downtown commercial district
- Civic buildings such as the Town Hall and Library
- Schools
- The Parkade bus stops
- Neighborhood parks and regional recreational areas
- Shopping centers
- Employment centers
- Regional recreation areas (e.g. Mt. Tamalpais, Camp Tamarancho)

4.2 Settlement Patterns and Destinations

Fairfax's development has been determined in large part by the history of rail transport in the Ross Valley. The Northwestern Pacific Railway lines which formerly connected the Hub in San Anselmo to downtown Fairfax and West Marin encouraged neighborhoods within walking distance of the former train station in downtown.

When the train tracks were removed in the 1940's, new roads were placed on the train beds, creating the existing arterial road system including Center Boulevard. After WWII with the expansion of the private automobile, Fairfax grew away from its original dense settlement pattern around the downtown area, creating a variety of neighborhoods in the hilly areas of Town which were less accessible by bicycling and walking.

The people of Fairfax commute to three major employment centers: San Francisco, San Rafael, and businesses within Fairfax. Most get to their jobs within Marin County by car and some by bus or bicycle. Fairfax area school destinations include Manor Elementary, Whites Hill Middle School, Cascade Canyon School, the College of Marin in Kentfield, and Dominican University in San Rafael.

Figure 4-1: Land Use Map

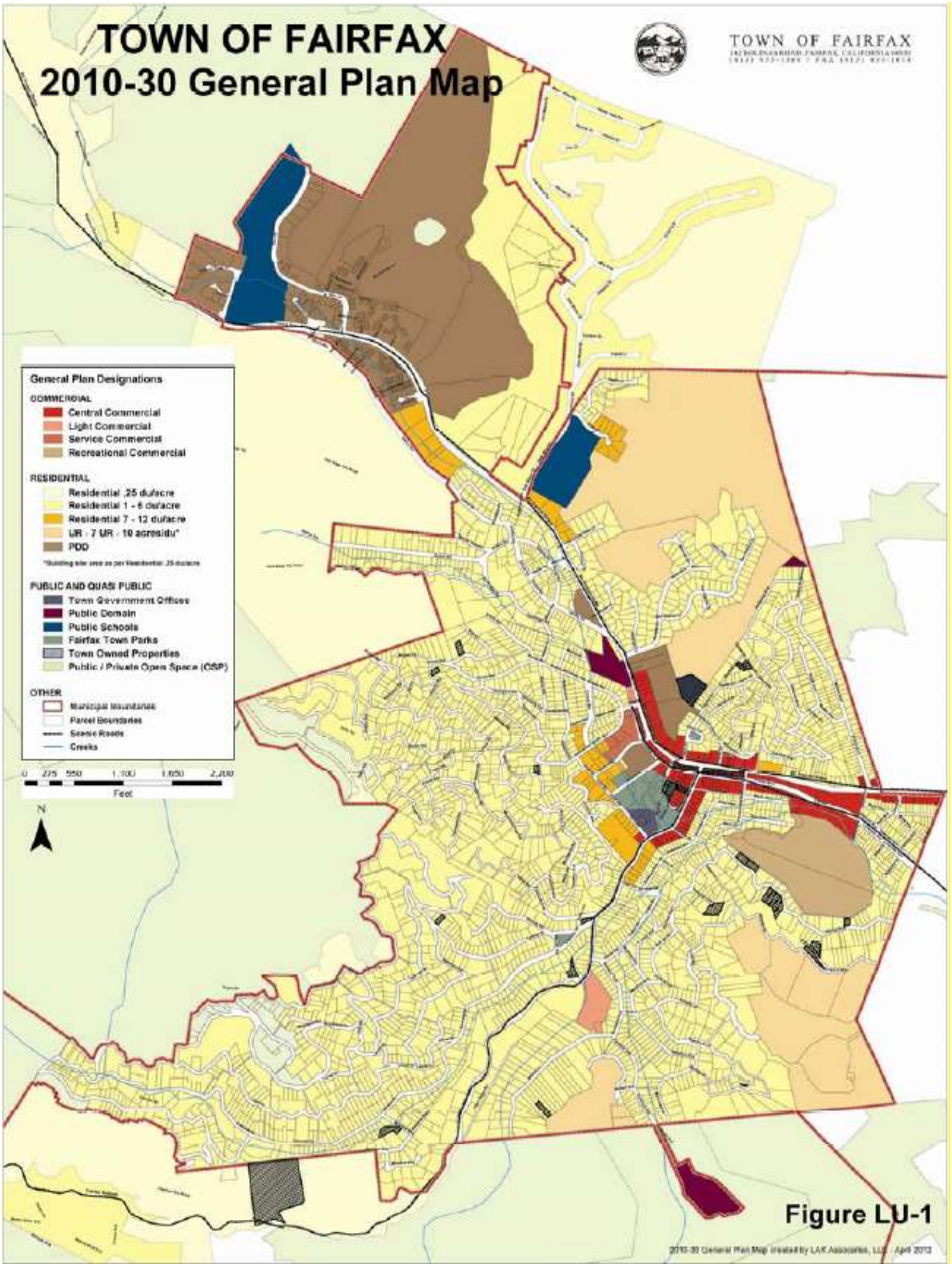
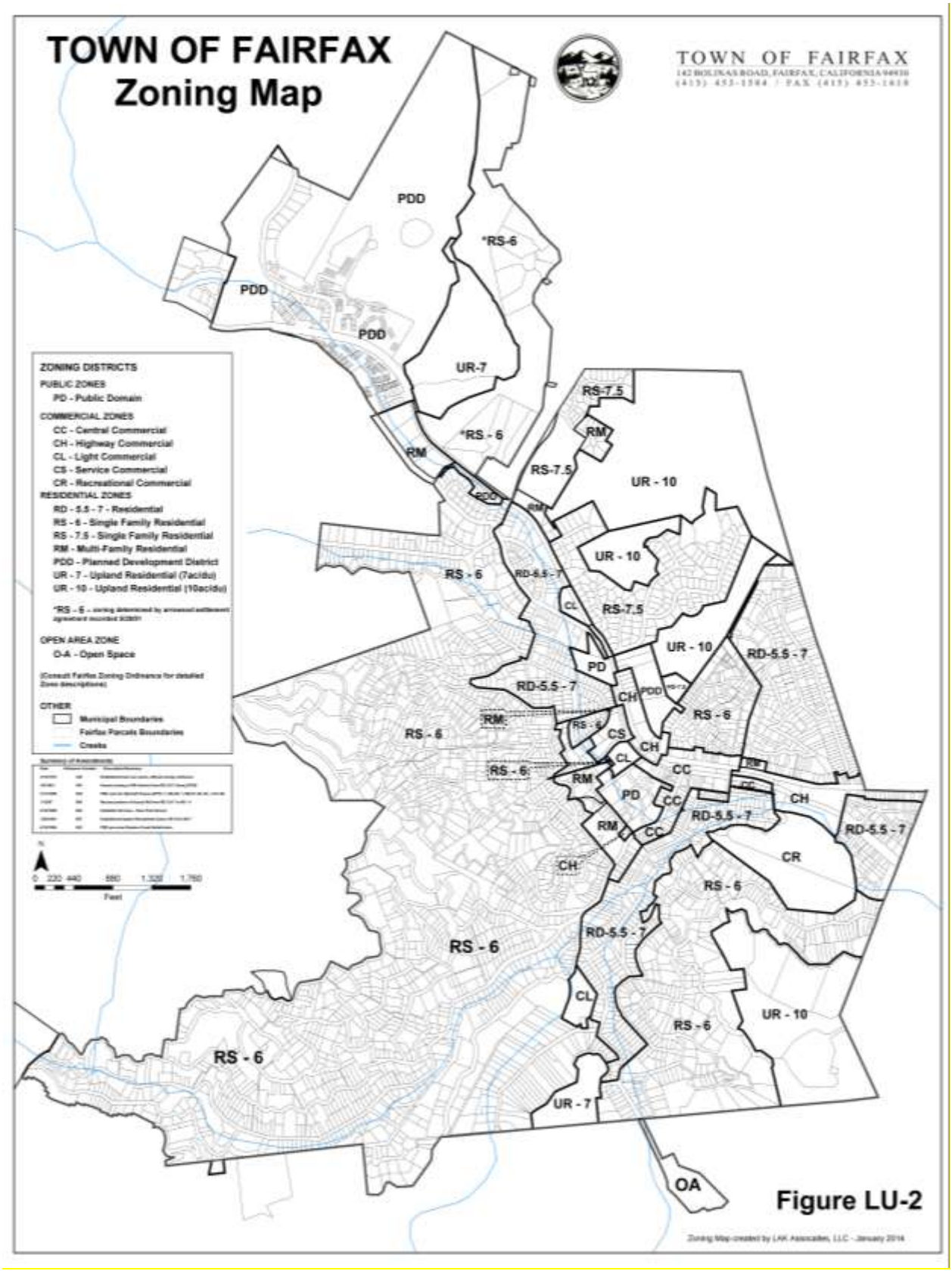


Figure 4-2: Zoning Map



4.3 Commute Patterns

A central focus of presenting commute information is to identify the current "mode split" of people that travel in Fairfax. Mode split refers to the choice of transportation a person selects to reach their destinations, be it walking, bicycling, taking a bus, or driving. One major objective of any bicycle or pedestrian facility improvement is to increase the percentage of people who choose to bicycle or walk rather than drive or be driven. Every saved vehicle trip or vehicle mile represents quantifiable reductions in air pollution.

Journey to work and travel time to work data were obtained from the 2010-2014 American Community Survey for Fairfax, Marin County, California, and the United States. Primary mode of journey to work data is shown in Error! Reference source not found..

Table 4-1: Commute Mode Split (ACS, 2010-2104)

Mode	United States	California	Marin County	Fairfax
Bicycle	0.6%	1.1%	1.7%	2.1%
Walk	2.8%	2.7%	3.4%	2.1%
Public Transit	5.1%	5.2%	9.0%	6.4%
Drove Alone	76.4%	73.2%	66.1%	67.6%
Carpool	9.6%	11.1%	9.1%	8.3%
Other	5.6%	6.6%	10.8%	13.5%

As shown, 2.1 percent of all employed Fairfax residents commute primarily by bicycle and 2.1 percent commute by foot. American Community Survey data do not include the number of people who bicycle or walk for recreation or for utilitarian purposes, students who bicycle or walk to school, and bicycle or pedestrian commuters who travel from outside Fairfax. Therefore, the commute rate is likely to underrepresent true bicycling and walking rates in Fairfax, especially given that recreational bicycling is especially popular in Fairfax due to its easy access to popular recreational routes in West Marin and other areas.

Comparatively, Fairfax's combined rate of commute bicycling and walking is greater than the county and state, but less than the county as a whole. This may be because Fairfax has a higher rate of "other" commute trips, which includes, but is not limited to travel, by motorcycle, taxi, and working from home.

4.4 Air Quality

Fairfax lies within the San Francisco Bay Area Basin, which is regulated by the Bay Area Air Quality Management District (BAAQMD). According to the California Air Resources Board, as of July 2012, the air quality in the San Francisco Bay Area Basin did not meet the minimum state health-based standards for one-hour concentrations ground-level ozone and the State standards for Particulate Matter (PM_{10}) and Fine Particulate Matter ($PM_{2.5}$).[1] Currently, the basin is classified as marginal non-attainment area for the federal eight-hour ozone standard and the federal 24-hour $PM_{2.5}$ standard.

According to the BAAQMD, motor vehicles are responsible for approximately 75 percent of the smog in the basin. Reducing vehicle miles traveled (VMT) is a key goal of the BAAQMD, and fully implementing Fairfax's bicycle and pedestrian network will help achieve this goal by providing residents safe and functional ways to get to work, school, or shopping without relying on motor vehicles. Based on data from the 2010-2014 American Community Survey and estimates of bicycle mode share for students and other, non-commute trip purposes, there are an estimated 2,200 daily bicycle and walk trips in Fairfax, saving an estimated 1,130 VMT per weekday.

Table 4-2 quantifies the estimated reduction in VMT in Fairfax following an increase in the adjusted bicycle and pedestrian mode share to 6.3 percent, and the estimated reduction in air pollutants based on the best available local and national data. It is conservatively estimated that the total number of daily bicycle and pedestrian trips would increase from 2,200 to 3,300. This would result in an estimated 1,700 VMT reduction per weekday, 336,000 lbs fewer greenhouse gas emissions, and 7,000 lbs fewer criteria pollutant emissions.

[1] *BAAQMD. Ambient Air Quality Standards & Bay Area Attainment Status. Last updated July 15, 2005. ‹www.baaqmd.gov/pln/air_quality/ambient_air_quality.htm›*

Table 4-2: Bicycle and Pedestrian Commute and Air Quality Projections

Topic	Value	Source
Population	7,546	American Community Survey (ACS), 2010-2014
Employed Population	4,253	ACS, 2010-2014 (workers 16 years and over)
Number of Bicycle-to-Work Commuters	89	ACS, 2010-2014
Bicycle-to-Work Mode Share	2.1%	ACS, 2010-2014
Number of Walk-to-Work Commuters	89	ACS, 2010-2014
Walk-to-Work Mode Share	2.1%	ACS, 2010-2014
Children Enrolled in School	1,178	2009-2013 ACS (grades K-12)
Estimated School Bicycle and Walk Commuters	400	Marin County Safe Routes to Schools, 2011 Program Evaluation (29 percent of hand tally respondents)
Students Enrolled in College	471	ACS, 2010-2014 (undergraduate, graduate, or professional school)
Estimated College Bicycle Commuters	24	National Bicycling & Walking Study, FHWA, Case Study No. 1, 1995. Review of bicycle commute share in seven university communities (5%)
Average Weekday Marin Ridership	323	Average weekday activity, Marin Transit Ridecheck Report – 2011 Local Bus Survey (San Anselmo-Fairfax-Ross weekday activity proportionate by population and divided by two for boardings and alightings)
Number of Daily Bike Marin Transit Users	3	Average weekday bike activity, Marin Transit Ridecheck Report – 2011 Local Bus Survey (percent of bike weekday activity in San Anselmo-Fairfax-Ross)
Estimated Total Number of Bicycle and Walk Commuters	605	Total weekday average of bike and walk to work, transit, school, college commuters
Estimated Adjusted Mode Share	8.0%	Estimated total bike and walk commuters divided by population
Total Daily Bicycle and Walking Trips	2,200	Impact Analysis, Alta Planning + Design
Reduced Vehicle Miles per Weekday	1,130	Impact Analysis, Alta Planning + Design

Potential Future Active Commuters	Value	Source
Future Total Daily Bicycle or Walking Trips	3,300	Impact Analysis, Alta Planning + Design
Future Reduced Vehicle Miles per Weekday	1,700	Impact Analysis, Alta Planning + Design
Future Reduced Vehicle Miles traveled per Year	623,000	Impact Analysis, Alta Planning + Design

Future Air Quality Benefits	Value	Source
Additional Reduced Greenhouse Gases (lbs/year)	336,000	EPA report 420-F-08-024 "Emission Facts: Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks." 2008.
Additional Reduced Criteria Pollutants (lbs/year)	7,000	

4.5 Collision History

In the five most recent years of available collisions data (January 1, 2008 to December 31, 2012), Fairfax had a total of 39 collisions that involved a bicyclist or pedestrian, resulting in 41 injuries. None of those collisions resulted in a fatality. Below is a detailed analysis of each type of collision, and **Figure 4-3** shows the locations of each bicycle- and pedestrian-involved collision.

4.5.1 Bicycle Collisions

Fairfax has the potential to be exceptional location for bicycling. Unfortunately, the more people bicycling on streets without appropriate bikeways means a higher probability of bicycle collisions, unless alternative facilities are provided. **Table 4-3** summarizes the number and severity of bicycle collisions from January 1, 2008 to December 31, 2012. Over that time period, 23.8 percent of the traffic collisions that occurred involved bicyclists, and injuries to bicyclists represented 17.8 percent of all traffic injuries.

Table 4-3: Bicycle-involved Collisions (SWITRS, 2008-2012)

	2008	2009	2010	2011	2012	Total
Total Collisions	23	13	10	17	17	80
Total Collisions Involving a Bicyclist	4	1	3	4	7	19
Total Bicyclist Injuries	4	1	3	4	6	18
Total Bicyclist Serious Injuries	0	0	0	0	1	1
Total Bicyclist Fatalities	0	0	0	0	0	0
Bicyclist-involved Collisions per Total Collisions	**17.4%**	**7.7%**	**30.0%**	**23.5%**	**41.2%**	

As shown in **Table 4-4**, between January 1, 2008 and December 31, 2012, the vast majority of collisions occurred during daylight hours (89.5 percent). These are the times when the most car and bicycle traffic is traveling on the streets.

Table 4-4: Bicycle-involved Collisions by Time of Day (SWITRS, 2008-2012)

	2008	2009	2010	2011	2012	Total
Daylight	3	1	2	4	7	17
Dark (Street Lights)	1	0	1	0	0	2
Total	**4**	**1**	**3**	**4**	**7**	**19**

4.5.2 Pedestrian Collisions

Table 4-5 summarizes the number and severity of pedestrian-involved collisions between January 1, 2008 and December 31, 2012. Over that time period, 26.3 percent of the traffic collisions that occurred involved pedestrians. Pedestrian injuries were 20.8 percent of all traffic injuries.

Table 4-5: Pedestrian-involved Collisions (SWITRS, 2008-2012)

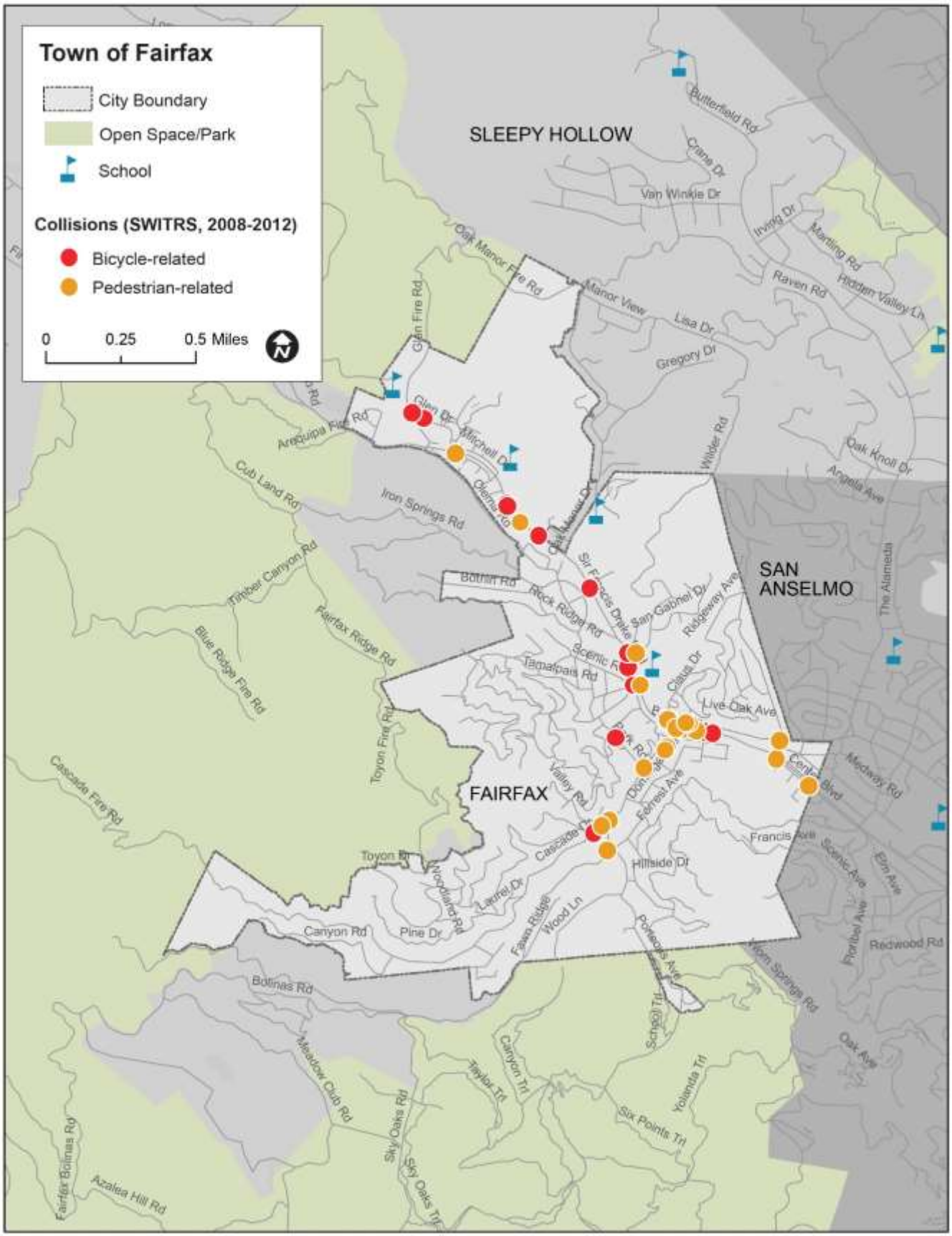
	2008	2009	2010	2011	2012	Total
Total Collisions	23	13	10	17	17	80
Total Collisions Involving a Pedestrian	8	1	2	6	4	21
Total Pedestrian Injuries	8	1	2	6	4	21
Total Pedestrian Serious Injuries	1	0	0	1	1	3
Total Pedestrian Fatalities	0	0	0	0	0	0
Pedestrians-involved Collisions per Total Collisions	**34.8%**	**7.7%**	**20.0%**	**35.5%**	**23.5%**	

Unlike the bicycle collision time comparison, pedestrian-involved collisions were more evenly distributed between daylight and dark conditions, as shown in **Table 4-6**. Countermeasures to prevent future collisions under low visibility conditions could include motorist education regarding pedestrian right-of-way, pedestrian safety education concerning visibility, and infrastructure improvements such as lighting or other means to improve visibility of pedestrians to motorists.

Table 4-6: Pedestrian-involved Collisions by Time of Day (SWITRS, 2008-2012)

	2008	2009	2010	2011	2012	Total
Daylight	5	1	0	4	4	14
Dark (Street Lights)	3	0	2	2	0	7
Total	**8**	**1**	**2**	**6**	**4**	**21**

Figure 4-3: Bicycle- and Pedestrian-involved Collisions (SWITRS, 2008-2012)



4.5.3 Collision Reduction Goal

Between 2008 and 2012, 39 collisions occurred in Fairfax involving either a bicyclist or a pedestrian, and four of those collisions resulted in serious injuries. This Plan recommends reducing the bicycle and pedestrian collision rate by 50 percent in five years after adoption of the plan (by 2021). Further, to follow the Vision Zero Initiative, Fairfax hopes to reduce the number of serious injuries to bicyclists and pedestrians on the Town's roadways to zero through supporting policies, programs, and design that have been proven to reduce bicycle- and pedestrian-involved collisions.

The Vision Zero Initiative began in Sweden with the idea that the primary responsibility for traffic safety is not on the road users themselves, as is often the case, but on the design of the roadway. Since initiation in 1997 to 2011, the number of fatalities on Sweden's roadways fell from 541 to 314, while the traffic volume increased. In 2014, New York City was the first city in the United States to adopt this initiative and soon San Francisco and Boston followed suit.

5 Proposed Network

This section provides information about the proposed improvements for bicycling and walking in the Fairfax, including both physical improvements (bike paths, lanes, routes, bike parking, walkways, crossing improvements) and education, enforcement and encouragement programs (e.g. Safe Routes to Schools). As shown in the Existing Conditions chapter, Fairfax's current walkway and bikeway system provides opportunities for non-motorized travel. However, significant gaps remain in the bikeway system which are critical to providing good connectivity for bicyclists and pedestrians.

The connections from residential areas to schools and from Fairfax to West Marin and San Anselmo still present significant obstacles to bicyclists. Improvements in pedestrian circulation are also needed to increase access from neighborhood areas to downtown and schools, as well as encourage safe walking throughout the Town.

As described in the **2008 Bicycle and Pedestrian Master Plan**, the vision for Fairfax is the construction of bikeways and walkways suitable for all users, connecting to commercial, residential, recreational and school destinations. The short-term vision for bicycling includes completing and improving existing bicycle routes and lanes, signing and stenciling proposed routes, installing parking and implementing programs. For pedestrians, the short-term vision is to maintain and improve existing walkways and crosswalks. The long-term vision for bicycling and walking in the Town calls for completing the east-west bikeway and implementing a series of traffic-calmed neighborhood streets which will prioritize safety for all roadway users and improve conditions for both bicyclists and pedestrians.

5.1 Bicycle Facility Improvements

Table 5-1 provides a summary of proposed bikeways.

Table 5-1: Summary of Proposed Bikeways

Class	Bikeway Type	Total Mileage
I	Multi-Use Paths	0.18
II	Striped Bicycle Lanes	0.30
III	Signed Bicycle Routes	4.25
All Bikeways		**4.73**

5.1.1 Proposed Class I – Multi-use pathway

As noted in the Existing Conditions, Fairfax's current bikeway system is composed primarily of Class II and III bicycle routes. The current update proposes a new Class I Pathway at the east end of Town, parallel to Center Boulevard. This path segment is proposed as a part of a long-term option for connecting San Anselmo and Fairfax which was originally part of the **2001 San Anselmo Bicycle Master Plan**. Due to significant construction challenges, this pathway is included in the plan primarily as an option for further study.

In addition to this pathway, a bicycle and pedestrian bridge is proposed connecting Hawthorne Court and Sir Francis Drake Boulevard, as a means of making Manor School more accessible by students. This bridge would be similar in design to the recently installed Manor Circle Bridge.

The small number of proposed pathways should be understood in terms of the lack of public right-of-way for such projects. Segment details can be found in **Table 5-2**.

Table 5-2: Proposed Class I Bikeways

Segment Name	Begin	End	Class	Length
Center Blvd. Sidepath	Pastori Ave.	Fairfax Town Limit	I	0.16
Hawthorne Ct. Bridge	Hawthorne Ct.	Sir Francis Drake Blvd.	I (bridge)	0.02
Total Proposed Class I Bikeways				**0.18**

5.1.2 Proposed Class II – Striped Bicycle Lanes

Proposed bicycle lanes in Fairfax are intended primarily to complete gaps in the east-west bikeway, as well as improving bicycle access to local businesses to transit at the Parkade. Three Class II bikeway segments are proposed:

- Broadway (Pacheco Avenue to Claus Drive): Bicycle lanes are proposed to close the gap through the main downtown area. On-street parking can be retained, although two travel lanes will need to be reduced to 11' in width. It is recommended that the westbound curb lane be maintained at 12' to accommodate bus traffic.
- Broadway (Bank Street to Claus Drive): This short segment connects the proposed bicycle lane described above to the proposed Class III bicycle lane proposed on Broadway between Azalea Avenue and Bank Street.
- Center Boulevard (Pastori Avenue to town limit): This bicycle lane segment is proposed as a part of a long-term option for connecting San Anselmo and Fairfax which was originally part of the **2001 San Anselmo Bicycle Master Plan**. Due to significant construction challenges, this bike lane is included in the plan primarily as an option for further study.

As with Class I Pathways, the small number of proposed bicycle lanes throughout the Town should be understood in terms of the lack of public right-of-way for road widening and the challenge of removing on-street parking in heavily used areas. Segment details can be found in **Table 5-3**.

Table 5-3: Proposed Class II Bikeways

Segment Name	Begin	End	Class	Length
Broadway	Bank St.	Claus Dr.	II	0.02
Broadway	Claus Dr.	Pacheco Ave.	II	0.13
Center Blvd.	Pastori Ave.	Fairfax Town Limit	II	0.15
Total Proposed Class II Bikeways				**0.30**

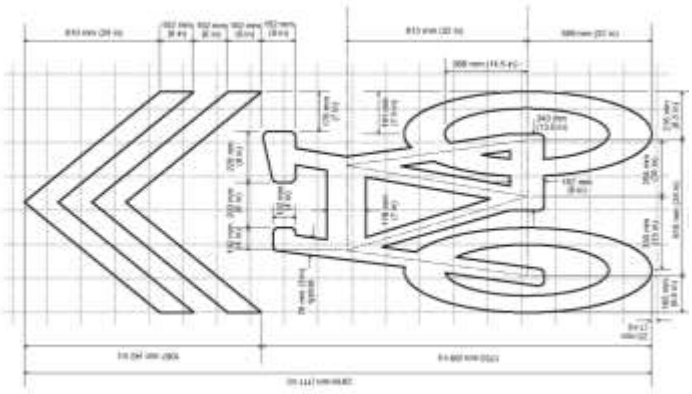
5.1.3 Proposed Class III – Signed Bicycle Routes

Proposed bicycle routes in Fairfax are intended to expand the existing east-west bikeway system, creating direct connections to and through neighborhoods and to schools, parks and other destinations, providing alternate routes to busier streets, and adding alternate connections to neighboring communities. The minimum treatment for these routes would be standard Bicycle Route signage. Segment details for Class III Signed Bicycle Routes can be found in **Table 5-4**.

Neighborhood and School Access Routes

In other Bay Area communities, the idea of Bicycle Boulevards has been advanced as a way to designate certain routes as priority streets for bicycling. The viability of bicycle boulevards depends on a number of factors. One key factor is the availability of multiple duplicative parallel routes which in most cases allow drivers to reach their destinations while avoiding the Bicycle Boulevard.

Figure 5-1: Class III Bicycle Route Pavement Marking ("Sharrow")



Due to its lack of a multiple parallel streets on a grid system, Fairfax is not really a candidate for a conventional Bicycle Boulevard treatment. However, the Town does have an excellent system of connected collector and neighborhood streets surrounding the downtown area that provide access to commercial and school destinations, serve as a "downtown detour," and in some cases parallel the main arterial routes.

It is recommended that some of these neighborhood and school access routes be designated for additional safety improvements that would give priority to bicycle and pedestrian users. For all segments, existing bicycle route signage would be retained. Potential improvements for these segments include:

- Shared Roadway Bicycle Markings ("Sharrows")
- Curb Extensions or Bulbouts
- Share the Road signs and other safety signage
- Stop sign removal
- Speed humps
- Additional traffic controls

In addition to changes, traffic control strategies are available, such as restricting turns during peak hours to improve bicycle and pedestrian safety. The BPAC has identified a "no right turn" restriction between 7 a.m. and 9 a.m. Monday-Friday from Sir Francis Drake Boulevard onto both Azalea Avenue and Broadway as an example of this treatment.

Further study of all segments would be necessary before deciding on specific traffic calming devices. Additional design guidance for traffic calmed streets is provided in **Appendix B**.

Table 5-4: Proposed Class III Bikeways

Segment Name	Begin	End	Class	Length
Belmont Ave.	Kent Ave.	Pastori Ave.	III	0.04
Blackberry Ln.	Creek Rd.	Forrest Ave.	III	0.04
Bolinas Rd.	Broadway	Park Rd.	III	0.18
Broadway	Azelea Ave.	Bank St.	III	0.23
Broadway	Library	Azelea Ave.	III	0.07
Cascade Dr.	Bolinas Rd.	Canyon Rd. (sharrows/traffic calming)	III	0.96
Cascade Dr.	Canyon Rd.	Cascade Fire Rd.	III	0.53
Claus Dr.	Sir Francis Drake Blvd.	Broadway	III	0.02
Creek Rd.	Porteous Ave.	Dominga Ave.	III	0.20
Dominga Ave.	Creek Rd.	Napa Ave.	III	0.25
Forrest Ave.	Meernaa Ave.	Fairfax Town Limit	III	0.80
Hill Ave.	Kent Ave.	Fairfax Town Limit	III	0.10
Kent Ave.	Hill Ave.	Sir Francis Drake Blvd.	III	0.05
Napa Ave.	Pacheco Ave.	Dominga Ave.	III	0.06
Pacheco Ave.	Center Blvd.	Napa Ave.	III	0.06
Pastori Ave.	Sir Francis Drake Blvd.	Center Blvd.	III	0.06
Porteous Ave.	Bolinas Rd.	Meernaa Ave.	III	0.41
Rockridge Rd.	Iron Springs Rd.	Manor Rd.	III	0.14
Sherman Ave.	Bolinas Rd.	Dominga Ave.	III	0.05
Total Proposed Class III Bikeways				**4.25**

5.2 Bicycle Parking and End-of-trip facilities

Bicycle parking includes standard bike racks, weather-protected bicycle parking, enclosed lockers, and secure "corrals". Other end-of-trip facilities include showers and changing facilities.

Recommendations

Increase Public Bicycle Parking Facilities and Encourage Provision of Shower and Changing Facilities

The Town should seek to continue to provide bike racks at public destinations, including major bus stops, community centers, libraries, parks, schools, and commercial areas. All bicycle parking should be in a secure area, if possible. Employers should be encouraged to provide secure indoor parking, covered bicycle parking, or bicycle lockers.

The following are potential new or improved locations for inverted u or equivalent bicycle racks as determined through the BPAC process:

- North side of Sir Francis Drake Boulevard businesses (Quality Liquors and Peri's Deli):
- Bev's Hair Design
- 4 additional racks at other locations along Broadway
- Grilly's
- White Hill School
- Manor School

In addition to the locations proposed above, the BPAC also requested racks on the sidewalk of the Fair-Anselm Shopping Plaza. However, because this location is on private property, it has been deferred pending discussion with the property owner.

The following are proposed trial locations for inverted u bicycle racks as determined through the BPAC process. Locations would use a free-standing rack with approximately a twelve (12) bicycle capacity and would be separated from the adjacent parking spaces and travel lane by flexible plastic bollards mounted to the pavement.

- Grilly's (rack in red curb zone on Bolinas Road)
- Fairfax Scoop (rack adjacent to curb in unused area near diagonal parking)

In addition to these two locations, the BPAC requested on-street parking in the red zone in front of Szechuan Chef and in the yellow loading zone in front of Ghiringhelli's Pizza. The former location was considered but noted that the red zone may exist to facilitate turns into Mono Lane from Bolinas Road, which has narrow travel lanes. The latter location is actively used by evening pizza delivery drivers.

Provide Valet Bike Parking at Public Events

A formal program to provide secure bicycle corrals at all large, public events to encourage residents and visitors to bicycle rather than drive should be instituted. In the past valet parking has been provided by the Marin County Bicycle Coalition and others at special events held in downtown such as the Fairfax Festival. Volunteers are critical to the success of such a program as they are typically used to staff the corral during the events. Examples of events which could benefit from such a program include the weekly Farmer's Market, where temporary bicycle parking is desired as an alternative to permanent racks which would require paving a large concrete pad in the park in order to be able to accommodate the larger number of weekly riders.

Create a "Bike Center"

Fairfax is an ideal staging point for some of the best recreational road bicycling and mountain biking in Marin County and the Bay Area region. The many riders who visit Fairfax constitute an underutilized resource for local businesses which could benefit from their patronage. For this reason the Town, in partnership with the Chamber of Commerce, should pursue development of a "Bicycle Center", potentially with the involvement of an existing gym or bicycle shop, which would allow bicyclists to store their bikes, change, and shower before dining, seeing a movie, or meeting up with friends at a local café or bar. The Center could offer optional services such as bike maintenance, cleaning, and laundry. The facility could be funded through a combination of these optional services, sales of energy bars and sport drinks, memberships, and/or per-use fees.

Improve and Increase Bicycle Parking Facilities at Fairfax Schools

Currently both of the public schools in Fairfax, Manor Elementary School and White Hill Middle School, have bicycle parking, as does Cascade Canyon, a private elementary. All indications are that bicycle parking needs will increase, given the increasing numbers of school bicycle commuters and ongoing promotion, education, and encouragement efforts of the Ross Valley SR2S Task Force. At this time SR2S parents and Town staff have identified a need for more bicycle racks.

- **Manor Elementary School** – Currently has capacity to accommodate 120 bikes on the field area, in addition to small racks for 4 bikes in front of the office. There is need for one more rack with space for 7-10 bikes to place at the kindergarten area.
- **White Hill Middle School** – Currently has a bike "corral" adjacent to the exiting curb of the parking lot. The corral is approximately 25' x 55', and has wire fencing and wooden posts with a locking gate. There are racks to accommodate 70 bikes. The "floor" of the corral is uneven dirt and crushed gravel. Ingress and egress is problematic as bicyclists have to either cross the paths of pedestrians or exiting cars. The corral also lacks any cover from inclement weather. An additional 30 spaces would accommodate future capacity needs. This parking area should be redesigned and relocated to address circulation safety issues with accessing the parking area, improve the cage, paving the parking area, add sheltered parking, and improve and/or reorganize the racks within the cage.
- **Cascade Canyon Elementary School** – has a rack with capacity for 12 bikes that is by the office and meets the needs of the school's bicycling community at this time.

5.3 Bicycle Signal Detection

Fairfax has no official policy regarding bicycle signal detection. The following recommendations are intended to expand the Town's existing signal detection efforts to include bicycles along all designated lanes/routes and at key intersections.

RECOMMENDATONS

Calibrate Loop Detectors and Video Detection Devices

While detector loops and video detection facilitate faster and more convenient motorist trips, if they aren't calibrated properly or stop functioning, they can frustrate bicyclists waiting for signals to change, unaware that their bicycle is not being detected. Where appropriate, the Town should ensure that all existing loops and video detection devices are calibrated and operable for bicycle users.

Develop Policy of Installing Bicycle-Calibrated Loop Detectors or Video Detection with Bicycle Zones at Signalized Intersections

The Town should develop a policy of installing bicycle-calibrated loop detectors at intersections along designated bike routes as they are repaved. For new installations it is recommended that the Town use Type D for lead loops in all regular travel lanes shared with bicycles. Within bicycle lanes it is recommended that the Town install Bicycle Loop Detectors (BLDs) using narrow Type C loops.

Where video detection is currently or planned to be in use, it is recommended that the Town continue and expand its practice of incorporating additional detection zones for bicycles, especially for intersections with sidepath, wide curb lane, or Class II bicycle lane facilities. Video image detection should sense bicycles in all approach lanes and also on the left side of right-turn channelization islands. Some video systems can estimate approach speed, and this capability could be used to extend the green time for slow objects assumed to be bicycles.

Apply Pavement Stenciling to Indicate Detection Areas

Since most bicyclists, as well as motorists, do not know how loop detectors or video detection work, all detector loops and video detection areas expected to be used by bicyclists should be marked by a pavement stencil such as the Caltrans Standard Plan A24C bicycle detection marking that shows bicyclists where to stop to activate the loop or video detection. Educational materials distributed by the Town should describe how to activate bicycle detectors. Stencils should be repainted as needed along with other roadway markings.

Potential Locations for Bicycle Detection

The following signalized intersections are potential locations for improved bicycle detection, subject to further feasibility analysis and traffic studies:

- Sir Francis Drake Boulevard and:
    - Oak Manor Drive
    - Claus Drive
    - Pastori Avenue
    - Kent Avenue
    - Any future traffic signal locations

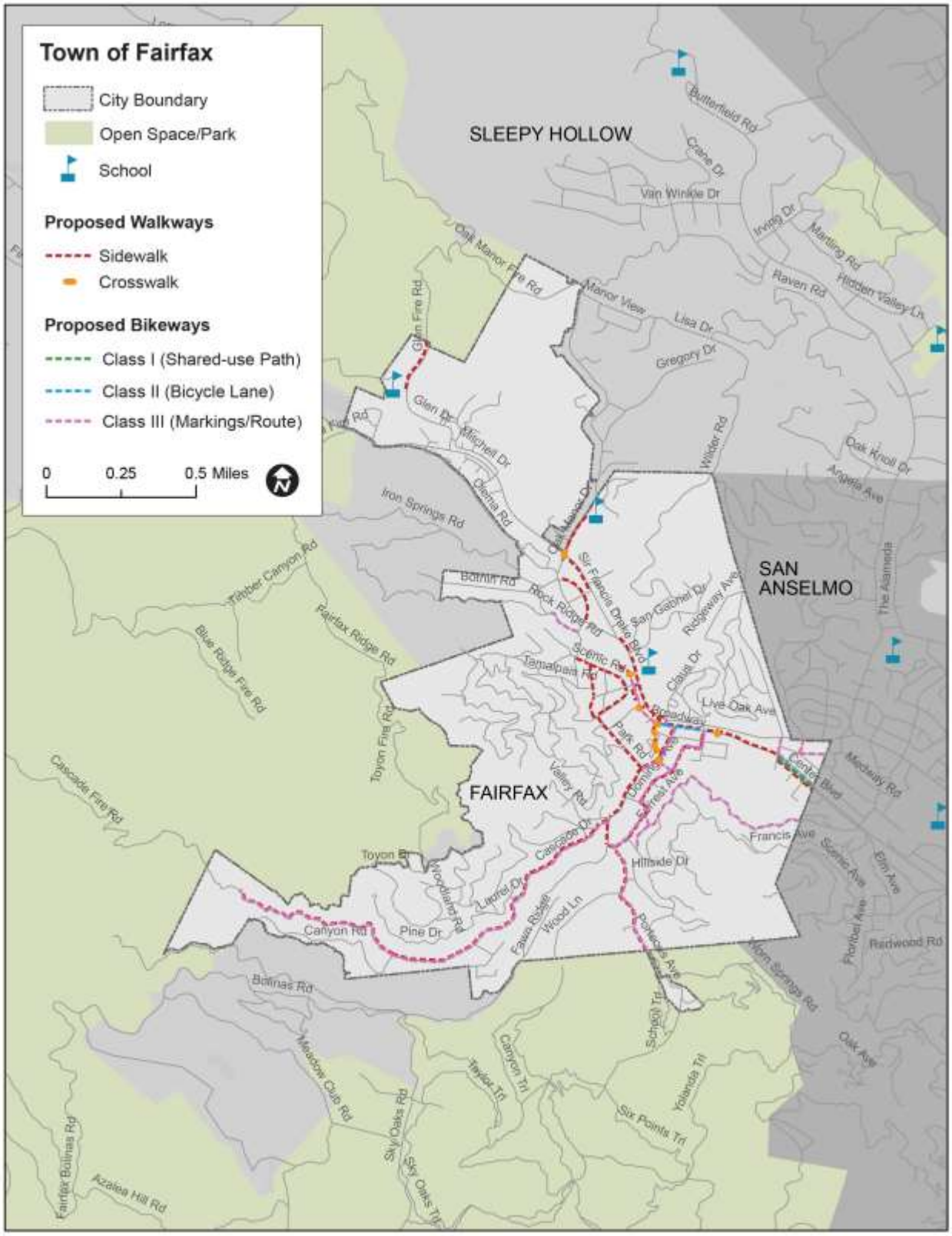
5.4 Share the Road Signs

Fairfax has yellow "Share the Road" bicycle warning signs posted at several locations within town limits intended to increase motorist and bicyclist awareness of the need to share narrow roadways with limited sightlines or other potential safety issues.

RECOMMENDATON

The Fairfax BPAC should make recommendations for where future "Share the Road" signs should be installed, keeping in mind the goal of minimizing "sign pollution." Share the Road signs are intended for installation on Class III bike routes and in other locations where there may be fast moving traffic and narrow right-of-way, limited sightlines or other potential safety concerns. The Share the Road signs are intended to compliment that County Bicycle Route Guide Sign System.

Figure 5-2: Proposed Bicycle and Pedestrian Facilities



6 Pedestrian Facility Improvements

This section discusses capital project recommendations for Fairfax's pedestrian network. These infrastructure improvements are intended to enhance pedestrian access and circulation as well as help pedestrians feel more comfortable when walking in Fairfax.

A number of recommendations are made for infrastructure projects that should be implemented on a Town-wide basis. These projects were divided into several categories of improvements: sidewalk gaps, curb ramps, signalized intersections, signal timing, and unsignalized intersections. Following the Town-wide project recommendations, a number of example project recommendations were identified. These projects seek to improve specific intersections, corridors, or other locations that were identified through the existing conditions and public input process as needed improvement areas.

6.1 Infill of Walkway Gaps

Walk gaps are areas in Fairfax where there is no walkway or the walkway ends abruptly, resulting in a discontinuous pedestrian network. Areas without walkways may force pedestrians to walk along the edge of the roadway or may cause pedestrians to cross at undesignated crossing locations. Where feasible, providing a continuous pedestrian sidewalk along both sides of all of Fairfax's roadways is recommended.

RECOMMENDATION

A complete Town-wide inventory of walkway gaps was not within the scope of this plan update. However, the BPAC did make specific recommendations for completing pedestrian corridors and gaps which make it dangerous for pedestrians to walk certain routes to access Downtown and local schools. Additionally, the Town should conduct a comprehensive sidewalk and pathway inventory in order to develop a detailed electronic inventory of sidewalk gaps needing to be installed and develop a process for prioritizing and filling these gaps. In addition, the Town should continue to work to establish walkways along the existing and proposed pedestrian rights-of-way identified by the Fairfax Volunteers, as feasible.

6.2 Reduction of Curb Radii

Historically roadway design standards called for wide curb radii at intersections to promote intersection capacity for motor vehicles. As a result, many of Fairfax's intersections have corners that force pedestrians to walk further to cross the street than at intersections with small or medium turning radii. This design also allows vehicles to make right-turns at relatively high speeds compared to smaller intersections. This should be studied on a case-by-case basis.

RECOMMENDATION

As a Town-wide policy, Fairfax should reduce corner curb radii when re-paving streets and installing curb ramps where it increases safety of bicyclists and pedestrians. Fairfax should also consider, where necessary, retrofitting curb radii at all arterial and collector intersections in the downtown area.

6.3 Curb Ramp Improvements

Curb Ramps

An inventory of curb ramps was not conducted for the Plan update. As a part of a curb ramp inventory, data on the slope, side slope, landing dimensions, and other attributes of the curb ramp are measured in the field. An analysis of this data considers compliance with current ADA regulations for slope, lip height, and presence of tactile warnings ("truncated domes"). Retrofitting the cities non-compliant curb ramps is generally something the Town will accomplish as part of roadway re-paving projects (ADA requires that curb ramps be installed or brought up to compliance during street overlays).

RECOMMENDATION

Fairfax should install curb ramps at all locations in the downtown and surrounding neighborhood areas where they currently do not exist. Fairfax should conduct a detailed curb ramp inventory throughout the Town to determine other locations that lack curb ramps. Priority locations for additional inventory would include schools, neighborhood parks, and community centers. As part of normal street re-paving projects, the Town should continue to install curb ramps if none currently exist, and to upgrade existing ramps to current standards.

A curb ramp with truncated domes

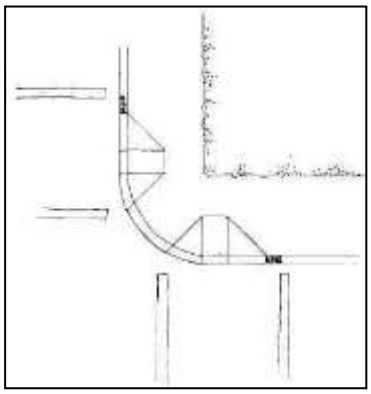
Truncated Domes

Truncated domes provide a cue to visually-impaired pedestrians that they are entering a street or intersection. Since 2002, ADA Guidelines have called for truncated domes on curb ramps.

Although it is not required for Fairfax to install truncated domes at existing curb ramps that were built prior to 2002, it is recommended that the Town continue installing these devices at high priority pedestrian locations and when re-paving and upgrading existing curb ramps to meet ADA guidelines. Truncated domes are a very visible improvement, and they are relatively inexpensive to install.

RECOMMENDATION

Fairfax should install truncated domes at all arterial and collector intersections in the downtown and along streets that provide access to the commercial areas. Fairfax should also install truncated domes when re-paving streets and improving existing curb ramps and elsewhere to be in compliance with ADA requirements.



Perpendicular Curb Ramps

Perpendicular curb ramps are designed so two ramps are included at intersection corners. Perpendicular ramps allow pedestrians and people in wheelchairs to access the sidewalk perpendicular to stopped traffic and to enter into the crosswalk directly in their line of travel. Perpendicular ramps are not required by ADA or any other standard. However, perpendicular ramps are the preferred curb ramp style from a pedestrian standpoint since they provide the most direct access into the crosswalk. Perpendicular ramps do require more space to install than a single diagonal ramp, are more costly, and sometimes cannot be accommodated due to utilities or other obstructions at the corner. However, especially at major intersections in high pedestrian zones, it is recommended that they be installed where feasible.

RECOMMENDATION

Fairfax should install perpendicular curb ramps in the downtown area and on adjacent streets and throughout the Town as needed.

6.4 Signalized Intersection Improvements

There are a variety of engineering improvements that can improve pedestrians' walking experience when crossing signalized intersections. All of these improvements are discussed in detail in Appendix A - Design Guidelines. An improvement that is recommended for some of Fairfax's signalized intersections is signal retiming. This improvement is described below.

Signal Timing

Signal timing is the amount of time each phase of a signal is allotted for vehicles to pass through or pedestrians to cross the street. Per the MUTCD, standard traffic engineering design assumes that pedestrians travel at 3.5-feet per second, which is used to determine the amount of time to assign to the pedestrian clearance interval. For slower pedestrians, such as the elderly and children, this assumed walking speed may result in them not being able to fully cross the street before the light changes. By adjusting the signal timing to a slower walking rate, slower pedestrian will have more time to cross the street.

RECOMMENDATION

Fairfax should consider adjusting signal timing at the three signals within the Town to allow for a pedestrian pace of 2.8-feet per second. This slower walking speed is consistent with MUTCD recommendations for walking rates for slower pedestrians. Consideration of signal operation and signal coordination by the County of Marin is necessary for this recommendation, since all three signals are along Sir Francis Drake Boulevard.

Audible Signals

Audible signals provide a cue to visually-impaired pedestrians that there is a 'Walk' signal. Audible signals are usually chirping sounds and can also be the name of the street to cross. Sounds are activated

by the pedestrian push-button. The MUTCD states that installation of audible signals should be based on an engineering study that considers:

- "Potential demand for accessible pedestrian signals
- A request for accessible pedestrian signals
- Traffic volumes during times when pedestrians might be present; including periods of low traffic volumes or high turn-on-red volumes.
- The complexity of traffic signal phasing.
- The complexity of intersection geometry.

RECOMMENDATION
Fairfax should consider installing audible signals at signalized intersections.

6.5 Uncontrolled Crosswalk Improvements

Infrastructure improvements at uncontrolled crosswalk locations can help increase the visibility of pedestrians to motorists and improve the pedestrians' walking experience.

High-Visibility Crosswalk Markings
There are a variety of different striping styles for crosswalks. Fairfax utilizes two different marking styles for pedestrian crosswalks: the standard "transverse" style, consisting of two parallel lines; and the "ladder" style consisting of the two parallel lines with perpendicular ladder bars striped across the width of the crosswalk. Ladder style crosswalks are used in locations where heightened pedestrian visibility is important, such as around school areas. However, the Town does not currently have a consistent policy to guide the application of ladder crosswalks.

RECOMMENDATION
As a Town-wide policy, Fairfax should install ladder crosswalk markings at all uncontrolled crosswalk locations where there are existing tranverse style markings. The Town should also continue its policy of installing high-visibility ladder crosswalk markings at uncontrolled crosswalks on local streets adjacent to schools and at other locations, on a case-by-case basis.

Raised Crosswalks
As described in the MUTCD, raised crosswalks are a combination of speed hump or speed table and crosswalk, which raises a conventional crosswalk, with the goal of increasing visibility of the crosswalk and encouraging frequent users to get in the habit of slowing for the pedestrian crossing.

RECOMMENDATION
Fairfax should consider the use of raised crosswalks at uncontrolled crosswalk locations where there is an existing marked crosswalk and a history of poor motorist awareness of and yielding at the existing crosswalk. Raised crosswalks are appropriate for roadways with lower traffic volumes and are not typically used on high-volume arterial streets. As a form of traffic calming, raised crosswalks should be installed in consultation with police and fire to ensure prompt access for emergency vehicles.

In-Street Yield to Pedestrian Signs

In-Street Yield to Pedestrian Signs are flexible plastic "paddle" signs installed in the center of a roadway to enhance a crosswalk at uncontrolled crossing locations. Currently these signs are in use throughout the downtown area on Broadway and Bolinas Road and at selected school crosswalk locations such as Oak Manor Drive.

RECOMMENDATION

Fairfax should continue the use of "paddle" crosswalk signs along downtown commercial streets and at selected school locations by installing new signs as needed and maintaining existing sign locations.

In-Pavement Crosswalk Lights

This push-button activated device is designed to improve pedestrian safety by increasing motorist awareness of pedestrians at mid-block crosswalk locations. When pedestrians push the button, lights imbedded in the pavement on either side of the crosswalk illuminate in a flashing pattern. In-pavement lights have been used at the Marin County Civic Center where they have been sucessful at improving motorist yielding to pedestrians in the crosswalk.

It has been the policy of the Fairfax members of the Safe Routes to Schools Task Force not to recommend push button pavement embedded flashing lights for use in the crosswalks on Sir Francis Drake Boulevard because of lessened visibility for drivers other than those immediately adjacent to the crosswalk. In addition, The Town of San Anselmo has experienced some unexpected maintenance cost where they have been used along Sir Francis Drake Boulevard, and they are slowly being considered obsolete and being replaced by flashing beacons at the sides of the crosswalks. There are several overhead mast type crossing signals already along Sir Francis Drake Boulevard within Fairfax which are still effective.

RECOMMENDATION: Install flashing beacons when upgrades to existing crosswalk flashing signals are approved or new sites are approved for signalization.

Curb Extensions

Curb extensions, also called "bulbouts" to describe their shape, are engineering improvements intended to reduce pedestrian crossing distance and increase visibility. In addition to shortening the crosswalk distance, curb extensions serve to 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 drivers. Curb extensions can also improve safety by visually narrowing the roadway, cueing drivers to reduce their speed. Despite their advantages, curb extensions can require major re-engineering of the street, can be extremely costly, and are not appropriate for all situations.

RECOMMENDATION: Fairfax should consider the feasibility of installing curb extensions at crosswalk locations where appropriate.

6.6 Example Pedestrian Projects

The following lists of pedestrian projects was developed based on past public input and the input from Staff and the BPAC. A number of these projects are already developed and funded. Note that all new crosswalk locations assume installation of curb ramps to meet ADA requirements. **Table 6-1** summarizes proposed sidewalk segments and Error! Reference source not found. summarizes roposed crosswalk locations.

- **Cascade Drive Improvements** – ongoing project currently being studied, which includes potential improvements as appropriate for various segments, such as:
  - Walkway on at least one side of the street. Volunteer Joe Breeze has developed a proposal for a walkway with a pervious surface along Cascade Drive that takes advantage of existing public right-of-way. The project would require retaining walls in several areas and may need to be studied further for ADA compliance
  - Crosswalks at intersection locations as needed
  - Pedestrian safety signage including "paddle" signs
  - Traffic Calming such as curb extensions
- **Porteous Road Project** – conceptual project which includes the following potential improvements, to be developed through a process in partnership with local residents:
  - Walkway with context-sensitive surface such as crushed granite has been proposed by residents, compliant with Town goals of maintaining water pervious surfaces especially in creek areas.
  - Crosswalks at intersection locations as needed
  - Traffic calming such as curb extensions at identified problem locations such as the intersection of Porteous and Creek
  - Speed limit reduction to create "Neighborhood Zone" or "Village Speed Limit"
- **Downtown pedestrian improvements (Broadway and Bolinas)** – conceptual improvement project to improve conditions for pedestrians in the downtown business district, including the following potential improvements:
  - Sidewalk surface maintenance
  - Improved crosswalks at intersection and mid-block locations as needed
  - Curb extensions/traffic calming at intersection and mid-block locations as needed
  - Maintenance and reinstallation of existing "paddle" crosswalk sign locations
  - New crosswalk of Sherman at Bolinas Road
  - New crosswalk of Bolinas Road at Mono Way
  - New crosswalk of Broadway Avenue near School Street; would require high-visibility treatment and advance warning signs/beacons due to line of sight topography issues; thorough study recommended before implementing a new crosswalk in this area
  - Potential speed limit reduction if warranted by traffic study
- **Sir Frances Drake crossing improvements** – conceptual project that proposes improved crosswalks at intersection and mid-block locations, including the following potential improvements:
  - High-visibility crosswalks
  - Improved warning signage
  - Overhead flashing beacons
- **Elsie/Mono/Bank sidewalk and streetscape** project – this conceptual project has been discussed by both the General Plan Advisory Committee as well as the BPAC. The project is

proposed for an area with an undeveloped streetscape. The project includes the following potential improvements:

- Continuous sidewalks on both sides of the street
- Addition of curb and gutter, landscaping, and traffic calming
- Potential or partial closure of Mono
- Crosswalks at intersection and mid-block locations as needed

- **Pacheco/Dominga/Creek** – this corridor has been identified as a key pedestrian connection to and from the downtown warranting the following potential improvements:
  - Filling sidewalk gaps
  - Improving crosswalks at intersection locations
  - Traffic calming such as curb extensions at intersections
  - Speed limit reduction to create "Neighborhood Zone" or "Village Speed Limit"
- **Park/Sequoia/Spruce/Scenic/Manor** – this corridor has been identified by both the BPAC and the SR2S task force as a key pedestrian connection to and from the downtown and to schools, warranting the following potential improvements:
  - Filling sidewalk gaps
  - Improving crosswalks at intersection locations
  - Installing new crosswalks as needed
  - Traffic calming such as curb extensions and speed humps
  - Speed limit reduction to create "Neighborhood Zone" or "Village Speed Limit"
- **Hawthorne Bike/Ped Bridge** – similar to the new Manor Bridge, a bridge at this location would connect Hawthorne Court to the intersection of Sir Francis Drake Boulevard and Oak Manor Drive, creating a direct pedestrian route from the neighborhood to Oak Manor School.
- **Lansdale Walkway** – this conceptual project would add a walkway alongside Lansdale Avenue to fill a pedestrian connection gap in an area where there is currently no separated walkway leading to existing sidewalks in San Anselmo. This project is likely to be extremely challenging due to the need to remove either parking or vegetation and do significant grading and construction of retaining walls. This project would be an option instead of the long-term alternative for the connection between Fairfax and San Anselmo. A third option for this area would involve creation of a low-speed traffic-calmed "Living Street" where cars would travel at the same speed at bicycles and pedestrians and all users would share the same right of way. This design is not typical in the United States but has been implemented in many areas of Europe.

Table 6-1: Proposed Sidewalk Segments

Segment Name	Begin	End	Length
Elsie Ln./Bank St.	Bolinas Rd.	Broadway	0.10
Sir Francis Drake Blvd./Bank St. (ROW)	First Federal Savings & Loan	Broadway	0.04
Merwin Ave. (ROW)	Sir Francis Drake Blvd.	Broadway	0.01
Azelea Ave.	Sir Francis Drake Blvd.	Broadway	0.01
Broadway	Library parking lot exit	End of sidewalk on Broadway	0.02
Fairfax Lumber	Broadway	Broadway	0.04
Sir Francis Drake Blvd.	Olema Rd.	Claus Dr.	0.31
Sir Francis Drake Blvd.	Oak Manor Dr.	Marin Rd.	0.16
Library parking lot	Broadway	Existing parking lot path	0.03
Bolinas Rd.	Broadway	Porteous Ave.	0.42
Broadway	Pacheco Ave.	Claus Rd.	0.11
Cascade Dr.	Bolinas Rd.	Canyon Rd.	0.91
Cascade Dr.	Canyon Rd.	Cascade Fire Rd.	0.64
Center Blvd.	Pastori Ave.	Pacheco Ave.	0.25
Creek Rd.	Porteous Ave.	Dominga Ave.	0.19
Dominga Ave.	Creek Rd.	Napa Ave.	0.23
Glen Dr.	White Hall Middle School	Fairfax Town Limit	0.19
Landsdale Ave.	Center Blvd.	Fairfax Town Limit	0.14
Manor Rd./Bothin Rd.	Olema Rd.	Olema Rd.	0.18
Napa Ave.	Dominga Ave.	Pacheco Ave.	0.06
Oak Manor Dr.	Sir Francis Drake Blvd.	Manor Elementary	0.14
Pacheco Ave.	Napa Ave.	Center Blvd.	0.04
Park Rd.	Spruce Rd.	Bolinas Rd.	0.21
Porteous Ave.	Bolinas Rd.	Meernaa Ave.	0.39
Scenic Rd.	Manor Rd.	Azalea Ave.	0.18
Sequoia Rd.	Scenic Rd.	Spruce Rd.	0.18
Spruce Ave.	Sequoia Rd.	Azalea Ave.	0.15
Total Proposed Sidewalk Segments			**5.33**

Table 6-2: Proposed Crosswalk Locations

Segment Name	Length
Winnie	0.01
Bank St.	0.01
Broadway (align crosswalk and curb ramps)	0.01
Broadway (multiple locations)	0.01
Bolinas Rd. at Sherman Ave. (with center refuge)	0.01
Center Blvd. Bolinas Rd. at Mono Ln.	0.01
Fairfax Pavilion exit	0.01
Oak Manor Dr.	0.01

7 Recommended Policies and Programs

Policies and programs are an important component in supporting a bicycle and pedestrian network. Programs such as bikeway and sidewalk management and maintenance, as well as promotional and educational programs, may contribute to improved convenience and safety for bicyclists and pedestrians. They also help create the cultural shift that is necessary to increase bicycling and walking as a mode of transportation. The following section includes both general and specific recommendations for policies and programs.

7.1 Development and Capital Projects

One of the critical challenges of providing bicyclist and pedestrian improvements is funding their construction. Private projects such as new or redevelopment and public projects such as planning Capital Improvements Projects (CIP) provide excellent opportunities for cost-effective implementation of bikeways.

RECOMMENDATION - Development and Redevelopment

A policy should be developed requiring bicycle and pedestrian improvements as a condition of private redevelopment or new construction. Based on specific criteria, construction of bikeways and walkways as a part of such projects could be required for development permits. Bicycle and pedestrian facilities can also be incorporated into the Town's traffic mitigation strategies as an option for developers. Bikeways and walkways to be constructed should be from the adopted Town of Fairfax Bicycle and Pedestrian Master Plan and be reviewed by staff with the involvement of the BPAC. End-of-trip facilities such as secure, indoor bicycle parking, showers, and lockers should be integrated according to national best practices, as needed.

RECOMMENDATION – Transportation Capital Projects

A policy should be developed to integrate bikeway and pedestrian facility construction into the Town's Capital Improvements Projects program and other larger roadway projects. To achieve cost-savings, projects such as striping bicycle lanes and high-visibility crosswalks can be added to roadway construction, reconstruction, and resurfacing at much lower cost proportionally to a stand-alone bicycle or pedestrian project.

7.2 Maintenance

Maintenance is often identified as one of the chief obstacles in the implementation of local bike and pedestrian plans in Marin County. Fairfax's bikeways and walkways should be well-maintained. Some tasks, such as repairing damaged and potholed roadway surfaces, clearing plant overgrowth, and regular sweeping are associated with routine roadway maintenance. Additional care and attention should be taken to ensure bikeways are included in the regular maintenance schedule. For example, street sweeping activities should include the bicycle lane and should not transfer debris out of the roadway and into the bicycle lane. Other maintenance activities are bikeway specific, and could include restriping lanes, repainting stencils, and replacing signs. Clearing storm debris, repairing cracks in the

sidewalk, and fixing trip-and-fall hazards are all typical routine sidewalk maintenance to ensure continued ADA accessibility.

RECOMMENDATION - Routine Maintenance
Bikeways and walkways are an integral part of Fairfax's transportation network, and maintenance of the bikeway network should be part of the ongoing maintenance program for all Town transportation facilities.

RECOMMENDATION – Roadway and Construction Projects
Bikeways and walkways should be maintained and preserved during roadway and construction projects that impact their use. Bikeways and sidewalks should be kept free of construction debris. In the case that bicycle or pedestrian facilities must be obstructed for the purposes of construction an appropriate, clearly-signed route should be signed through or around the construction area that does not increase users' exposure to safety hazards.

RECOMMENDATION – "Spot Improvement" Maintenance
The Town should ensure that a mechanism exists to alleviate potential hazards for bicyclists and pedestrians at specific locations. Training should be provided if necessary to ensure that Public Works maintenance employees recognize recurring bicycle and pedestrian issues such as:

- Improperly designed or placed drainage grates
- Cracks or seams in the pavement or sidewalk
- Overhanging tree limbs or encroaching vegetation located along bikeways and walkways
- Areas where debris accumulates in bicycle lanes and on sidewalks and pathways

Recommendation – Integrate Maintenance into DPW process
All printed and online bicycle education materials and maps should include the Department of Public Works maintenance request website and phone number.

7.3 Protect Non-motorized Facilities from Removal

RECOMMENDATON
The Town should implement a practice that existing bikeway and pedestrian facilities will not be removed. For example, Class II bicycle lanes should not be removed at a future date to increase motor vehicle capacity without a thorough study analyzing the alternatives and unless the bicycle accommodation is replaced by another facility of equal or greater utility to bicyclists.

7.4 Multi-modal Connections

RECOMMENDATON
The Town of Fairfax should work with the Marin County Transit District and Golden Gate Transit to continue to expand bicycle access to buses. Bicycle travel to transit stops and stations should be enhanced in order to make the transfer between bicycle and transit travel as convenient as possible. Key components to enhancing transit-bike connections include: providing bicycle parking at transit

stops, including bike racks at key bus stops and transfer points; providing educational materials regarding transit and bikes-on-transit, including maps to and from stations and stops. Improvements to bicycle rack capacity on buses will benefit Fairfax bicyclists who take buses to the wide variety of destinations.

7.5 Traffic Calming

Traffic calming programs are beneficial for all roadway users, especially if programs succeed in reducing the speed differential between automobile and bicyclist travel speeds. However, if not appropriately designed, some physical traffic calming devices can present hazards for bicyclists. For example, "chokers" or traffic islands can narrow the space between bicycles and cars and, depending the context, may compromise a bicyclist's safety if not properly designed.

RECOMMENDATION

All physical traffic calming solutions should take into account bicyclists' needs; incorporate design features and signage that ensure that bicyclists and motorists have enough room to share the lane; and clearly establish right-of-way priorities. In cases where bicyclists' operating space is reduced, care should be taken to clearly indicate bicyclists' proper roadway positioning using stencils and/or signage as well as other means to increase visibility of bicyclists to motorists.

7.6 Education and Enforcement Programs

Statewide trends show that the lack of education for bicyclists, especially younger students, continues to be a leading cause of collisions and traffic violations involving bicyclists. For example, the most common type of bicycle collision reported in California involves a younger person (between 8 and 16 years of age) riding on the wrong side of the road in the evening hours. Studies of collision locations around California consistently show the greatest concentration of accidents is directly adjacent to elementary, middle, and high schools.

Most education and enforcement programs and activities will likely be cooperative efforts between the Town of Fairfax, the Fairfax Police Department, the Marin County Sheriff's office, the County of Marin, the Transportation Authority of Marin, SR2S, and local bicycle groups such as the Marin County Bicycle Coalition.

RECOMMENDATIONS - Continue and Expand Existing Education and Enforcement Programs

Existing school education programs should be continued. With the passage of Measure A funding for Safe Routes to Schools, the program will continue to be available to Fairfax schools and can be expanded to include non-participating schools. Measure A funding also provides Safe Pathways funding, which provides an incentive for SR2S programs to develop infrastructure improvement concepts. More information is found under the separate Safe Routes to Schools section below.

For adult education, the Town should work with law enforcement and the Marin County Bicycle Coalition (MCBC) to publicize local adult bicycle education and safety programs, including family bicycling and street skills classes. Fairfax should continue to offer "bicycle traffic school" in the form of street skills classes in lieu of fines and should partner with SR2S and MCBC to sponsor adult "cycling skills" classes to prevent future traffic violations and unsafe behavior.

In terms of enforcement, the Fairfax Police Department should continue its enforcement efforts of bicycling traffic violations, and officers should provide Share the Road literature with every citation made to a bicyclist. The Fairfax Police Department should also begin "bicycle sting" and "pedestrian sting" operations in which motorists and bicyclists are cited for failing to yield the right-of-way to other road users. Additionally, police should begin enforcing the ordinance for no parking on the sidewalks that creates potentially dangerous conditions for pedestrians when cars block the public right-of-way.

The Town should continue and expand Share the Road Checkpoints with advocacy groups and offer Share the Road safety presentations to community groups and at events. Outreach opportunities such as a "Bike-In Film Night" at the baseball field with a Share the Road presentation prior to presentation of bicycle-themed movies could reach a large number of bicyclists and non-bicyclists alike.

7.7 Encouragement Programs

Encouragement programs are vital to the success of this Plan. Encouragement programs work to get more people out of their cars and bicycling or walking, which will help reduce air pollution as well as improve the quality of life in Fairfax. In addition to government efforts, involvement by the private and non-profit sector in raising awareness of the benefits of bicycling and walking is important and can range from small incremental activities by local citizens to larger coordinated efforts by established non-profit groups. Specific programs are described below.

RECOMMENDATION - Facilitate the Development of Employer Incentive Programs

Facilitate the development of employer incentive programs to encourage employees to try bicycling or walking to work or to transit as a part of their commute. The Town may offer incentives to employers to institute these improvements through lowered auto parking requirements, reduced traffic mitigation fees, or other means. Other efforts could include:

- Developing, promoting and publicizing bicycle commuter services, such as bike shops selling commute gear, bike-on-transit policies, and regular escorted commute bicycle rides.
- Creating an annual commuter challenge for area businesses, including both bicycling and walking.

RECOMMENDATION - Utilitarian and Recreational Trip Incentive Programs

The Town may develop and implement encouragement programs for utilitarian and recreational purposes. Local businesses such as movie theaters and cafés should be involved to encourage customers to use a bicycle or walk for their trips. Such efforts may include:

- Creating events such as "Shop by Bike" days, when bicyclists get vouchers for, or coupons off items in the store, or "bicycle to the movies" days where bicyclists receive free popcorn or a discount on a movie or refreshments.
- Holding a community event to encourage residents to replace one car trip a week with a bicycle or walking trip.
- Supporting the planning and implementation of an annual bicycle ride in Fairfax to attract new riders, showcase the Town, and demonstrate the benefits of bicycling.
- Develop and implement a public education campaign to encourage bicycling and walking.

RECOMMENDATION - Bike challenges and celebrations

Hosting 'open streets' events such as Streets For People where people are strongly encouraged to transport themselves by bicycling, walking, riding transit, or carpooling and other events such as bike fairs and races in Fairfax can raise the profile of bicycling in the area and provide entertainment for all ages at the same time. Bike-to-work day events and bike rodeos currently taught in the Schools by SR2S provide an opportunity to educate and encourage current and potential bicyclists. These events can also bring visitors to Fairfax that may contribute to the local economy.

RECOMMENDATION - Walking Tours and Events

Walking tours and events are an excellent way to publicize walking for recreation and transportation. Tours can showcase the Town's history and geography and take advantage of the many scenic walks in the area as well as raising awareness of the need for pedestrian improvements and restoration of the pathways from the hills which will be critical for emergency egress in case of fire.

RECOMMENDATION - Fairfax Bicycle Route Map and Kiosks

Providing a bicycle route map is the primary tool for showing bicyclists all the designated bikeways in Fairfax and is a high priority for the BPAC. Such a map could be displayed at bike shops and kiosks. A Bicycle Route Map of Fairfax should clearly show the type of facility (path, lane, or route) as well as include basic safety information, significant destinations, location of bicycle parking facilities, public bathrooms, water fountains, transit stops and bicycle facilities in the neighboring communities. The map should clearly communicate traffic laws relevant to bicyclists and the fact that Fairfax takes enforcement of those laws seriously. Posting points for the map include: Town Hall, the library, the community center, local schools, bike shops, and existing and proposed kiosks located:

- The Java Hut parking lot (moved to The Good Earth)
- Lansdale Avenue/Center Boulevard (existing)
- The Parkade at Transit Stop (proposed)
- Sir Francis Drake Boulevard/Olema Road (proposed)
- Town Hall (proposed)

RECOMMENDATION - Bike-to-Work and Bike-to-School/Walk-to-Work and Walk-to-School Days

The Town of Fairfax should continue to participate in the annual Bike-to-Work day in May, in conjunction with the California and Marin County bike-to-work week activities. Town staff should be present at "energizer" stations along the route. The Town should also encourage continued participation by local schools in Walk and Bike to School Day and may also consider implementing Walk-to-Work or Walk-to-Transit days.

7.8 Safe Routes to Schools (SR2S)

Identifying and improving routes for children to walk or bicycle to school is an effective means of reducing morning traffic congestion and addressing potential safety concerns around schools. Most effective school commute programs are joint efforts of the school district and Town or County, with parent organizations adding an important element. The traffic calming, route maps and infrastructure improvements that result from an extensive SR2S plan benefit not only students bicycling and walking to school, but also other bicyclists and pedestrians that are using routes near schools. As the SR2S' Task Force develops capital recommendations, they should be presented to the BPAC for review. Consistent with the policies in Section 2, when appropriate, SR2S capital projects should be forwarded to the Town Council for approval through the existing capital projects bid process.

RECOMMENDATIONS

The Town of Fairfax should continue its support of the SR2S program within the Ross Valley School District. Safe Routes infrastructure improvements at local schools should be coordinated with Town-wide bicycle and pedestrian infrastructure improvements to create a seamless network by which school-aged children can travel by bicycle and on foot.

8 Plan Implementation

This chapter identifies steps towards implementation of the proposed facilities and programs of this plan, the estimated costs for the proposed improvements and maintenance, and strategies on funding and financing.

8.1 IMPLEMENTATION PROCESS

The steps between the network improvements and concepts identified in this Plan and the final completion of the improvements will vary from project to project, but typically include:

1. Adoption of the 2016 Fairfax Bicycle and Pedestrian Master Plan Update by the Fairfax Town Council.
2. Consider the parking needs of businesses and residents in the development of new bicycle lanes through a thorough community engagement process
3. Preparation of a Feasibility Study involving a conceptual design (with consideration of possible alternatives and environmental issues) and cost estimate for individual projects as needed.
4. Secure, as necessary, outside funding and any applicable environmental approvals.
5. Approval of the project by the Town Council, including the commitment by the latter to provide for any unfunded portions of project costs.
6. Completion of final plans, specifications and estimates, advertising for bids, receipt of bids and award of contract(s).
7. Construction of Project.

8.2 Infrastructure Project Prioritization

Once a bicycle and pedestrian system has been identified, the greatest challenge is to identify the top priority projects that will offer the greatest benefit to bicyclists and pedestrians if implemented. The project prioritization in the following section was developed through a qualitative analysis based on stated priorities of the BPAC and Town staff, priorities communicated by the public in public meetings and workshops, priorities from the **2008 Fairfax Bicycle and Pedestrian Master Plan**, and the criteria detailed below.

- **Continuity** – Does the project provide new or significantly improved connectivity on established corridors or between major activity areas that does not currently exist or is not currently usable by the general public?

- **Gap Closure** – Does the project provide a new connection between major activity centers or on a major corridor that currently either does not exist or has convenience/safety issues?

- **Demand Patterns** – Does the project serve a significant existing or potential demand, as evidenced by (a) counts or observed activity, (b) comments from the public, (c) connectivity and proximity to major generators, and/or (d) projections from an acceptable demand model?

- **Safety** – Does the project address a significant safety concern in a community as evidenced by collision data, field observations, and/or public perception and comments?

- **Project Readiness** – Are the key feasibility issues of the project (right-of-way, environmental impacts, engineering issues, cost issues, neighborhood support) understood and not expected to negatively affect or delay the project? Has any formal feasibility study, engineering or design been conducted?

- **Multi-modal Integration** – Does the project provide enhanced connectivity to existing transit services?

- **Cost/Benefit Analysis** – Will the project provide the greatest benefit to bicyclists and pedestrians for the amount needed to build it?

It is important to remember that the lists of bikeway and pedestrian projects and programs are flexible concepts that serve as guidelines to those responsible for implementation. The project priorities, and perhaps even the overall system and segments themselves, may change over time as a result of changing bicycling and walking patterns, as well as implementation constraints and opportunities. Project prioritization is not meant as an absolute value, rather as an indication of projects' relative importance only. These priorities should be considered a "living document". The BPAC and Town staff should review the project priorities on an annual basis to ensure that it reflects the most current priorities, needs, and opportunities for implementing the bikeway and pedestrian network in a logical and efficient manner., and that in particular the list takes advantage of all available funding opportunities and grant cycles. As projects are implemented and taken off the list, new projects should be moved up in status.

8.3 Bicycle Project Prioritization and Phasing:

Prioritization and phasing is presented as a guideline for the Town, and additional circumstances including available funding and implementation of roadway and transit capital projects, or development projects, could result in changes to the priorities to maximize opportunities.

Near-term

- Bolinas Road Class III Signage and Shared Roadway Bicycle Markings (Sharrows) II or III?
- Pacheco/Napa/Dominga/Creek/Porteous Class III Signage and Sharrows
- Park/Sequoia/Spruce/Scenic/Manor Class III Signage and Sharrowsdone
- Cascade Drive Class III Signage and Sharrows (Bolinas Road to Canyon Road)
- Rock Ridge Road, Forrest Avenue, Cascade Drive (Canyon Road to Elliot Nature Preserve Open Space) "Recreational Access" Class III signage only
- Cascade Drive Class III and Traffic Calming (Bolinas Road to Canyon Road, as feasible)
- All remaining Class III signage

- Maintain all existing signs, striping and stencils

Mid-term:

- Broadway Class II Bicycle Lanes (Center Boulevard to Claus Drive)Parkade redesign
- Pacheco/Napa/Dominga/Creek/Porteous Traffic Calming
- Park/Sequoia/Spruce/Scenic/Manor Traffic Calming Bike Spine
- Cascade Class III Sharrows and Traffic Calming (Canyon Road to Open Space, as feasible)
- Sir Frances Drake Class II (eastbound) done to Claus

Long-term:

- Hawthorne Bike/Ped Bridge
- Implementation of recommendations from San Rafael-Fairfax Corridor Study for connection to San Anselmo:
  - Class I Pathway between Center Boulevard and Lansdale
  - Class II Bicycle Lanes on Center Boulevard (Pastori to Town Limits)
  - Class III Bicycle Route with Sharrows and Traffic Calming

Table 8-1 Prioritized Bicycle Projects

Segment Name	Begin	End	Class	Length	Phase
Center Blvd.	Pastori Ave.	Fairfax Town Limit	I	0.16	Long-term
Hawthorne Ct. Bridge	Hawthorne Ct.	Sir Francis Drake Blvd.	I (bridge)	0.02	Long-term
Broadway	Pacheco Ave	Claus Dr	Class II	0.13	Near-term
Broadway	Claus Dr	Bank St	Class II	0.03	Near-term
Center Blvd	Pastori Ave	town line	Class II	0.16	Mid-term
Broadway	Library	Azelea Ave	Class III	0.03	Near-term
Broadway	Azelea Ave	Bank St	Class III	0.16	Near-term
Belmont Ave	Kent Ave	Pastori Ave	Class III	0.04	Near-term
Blackberry Ln	Creek Rd	Forrest Ave	Class III	0.04	Near-term
Bolinas Rd	Broadway	Park Ave	Class III	0.19	Near-term
Cascade Rd	Bolinas Rd	Canyon Rd	Class III	0.96	Near-term
Cascade Rd	Canyon Rd	Cascade Fire Rd	Class III	0.65	Mid-term
Claus Dr	Sir Francis Drake Blvd	Broadway	Class III	0.02	Near-term
Creek Rd	Porteous Ave	Dominga Ave	Class III	0.20	Near-term
Napa Ave	Pacheco Ave	Dominga Ave	Class III	0.06	Near-term
Sherman Ave	Bolinas Rd	Dominga Ave	Class III	0.05	Near-term
Dominga Ave	Creek Rd	Napa Ave	Class III	0.25	Near-term
Forrest Ave	Meernaa Ave	town line	Class III	0.80	Mid-term
Hill Ave	Kent Ave	town line	Class III	0.10	Near-term
Kent Ave	Hill Ave	Sir Francis Drake Blvd	Class III	0.05	Near-term
Pacheco Ave	Center Blvd	Napa Ave	Class III	0.06	Near-term
Pastori Ave	Sir Francis Drake Blvd	Center Blvd	Class III	0.06	Near-term
Porteous Ave	Bolinas Rd	Meernaa Ave	Class III	0.41	Near-term
Rockridge Rd.	Iron Springs Rd.	Manor Rd.	Class III	0.13	Near-term

8.4 Pedestrian Project Prioritization and Phasing:

Near-term:

- Oak Manor Sidewalk projectdone
- Center Boulevard Projectdone
- Pastori Sidewalk Projectdone
- Glen Drive Improvements
- Oak Manor Drive/Sir Francis Drake Boulevard Crosswalk (done) and Pedestrian Beacon (only imbedded in pavement)
- Cascade Drive Improvements:
  - Crosswalks at intersection locations as needed for existing sidewalks
  - Pedestrian safety signage including "paddle" signs
  - Traffic Calming such as curb extensions for existing sidewalk areas
  - Pedestrian rights-of-way improvements at 200 block below Laurel at curve
- Downtown pedestrian improvements (Broadway and Bolinas):
  - Sidewalk surface maintenance
  - Improved crosswalks at intersection and mid-block locations as needed
  - Maintenance and reinstallation of existing "paddle" crosswalk sign locations
  - New crosswalk on Bolinas Road at Mono Way
  - New crosswalk on Bolinas Road at Sherman Avenue (center refuge)
  - New crosswalk of Broadway Avenue at School Street (pending safety study)
- Sir Frances Drake crossing improvements:
  - High-visibility crosswalks
  - Improved warning signage
- Pacheco/Napa/Dominga/Creek:
  - Improving existing crosswalks at intersection locations
  - Installing new crosswalks as needed
  - Potential speed limit reduction
- Park/Sequoia/Spruce/Manor:
  - Improving existing crosswalks at intersection locations
  - Installing new crosswalks as needed
  - Potential speed limit reduction

Mid-term:

- Sir Frances Drake Sidewalk Project
- Downtown pedestrian improvements (Broadway and Bolinas):
  - Curb extensions/traffic calming at intersection and mid-block locations as needed
- Sir Frances Drake crossing improvements:
  - In-pavement flashing crosswalk lights (east of Claus Drive)
- Pacheco/Napa/Dominga/Creek:
  - Filling sidewalk gaps
  - Traffic calming such as curb extensions at intersections
- Park/Sequoia/Spruce/Manor:

    - Filling sidewalk gaps
    - Traffic calming such as curb extensions and speed humps
- Cascade Drive Improvements:
    - Walkway on at least one side of the street (Bolinas Road to Canyon Road)
    - Traffic Calming such as curb extensions (Bolinas Road to Canyon Road)

Long-term:

- Porteous Road Project:
    - Walkway with context-sensitive surface such as soft-surface with pine resin binder, colored asphalt pathway, and/or crushed granite
    - Crosswalks at intersection locations as needed
    - Traffic calming such as curb extensions at identified problem locations such as the intersection of Porteous and Creek
- Elsie/Mono/Bank sidewalk and streetscape project:
    - Continuous sidewalks on both sides of the street
    - Addition of curb and gutter, landscaping and traffic calming
    - Potential or partial closure of Mono or Elsie
    - Crosswalks at intersection and mid-block locations as needed
- Hawthorne Bike/Ped Bridge
- Lansdale Sidewalk

Table 8-2: Prioritized Pedestrian Projects

Segment Name	Begin	End	Type	Length	Phase
Elsie Ln/BankSt	Bolinas Rd	Broadway	Sidewalk	0.10	Mid-term
Sir Francis Drake Blvd/Bank St (ROW)	First Federal Savings & Loan	Broadway	Sidewalk	0.04	Near-term
Merwin Ave (ROW)	Sir Francis Drake Blvd	Broadway	Sidewalk	0.01	Mid-term
Azelea Ave	Sir Francis Drake Blvd	Broadway	Sidewalk	0.01	Mid-term
Broadway	Library parking lot exit	End of sidewalk on Broadway	Sidewalk	0.02	Near-term
Fairfax Lumber	Broadway	Broadway	Sidewalk	0.04	Mid-term
Sir Francis Drake Blvd	Olema Rd	Claus Dr	Sidewalk	0.31	Near-term
Sir Francis Drake Blvd	Oak Manor Dr	Marin Rd	Sidewalk	0.16	Near-term
Library parking lot	Broadway	Existing parking lot path	Sidewalk	0.03	Near-term
Bolinas Rd	Broadway	Porteous Ave	Sidewalk	0.42	Mid-term
Broadway	Pacheco Ave	Claus Rd	Sidewalk	0.11	Mid-term
Cascade Dr	Bolinas Rd	Canyon Rd	Sidewalk	0.91	Mid-term

Segment Name	Begin	End	Type	Length	Phase
Cascade Dr	Canyon Rd	Cascade Fire Rd	Sidewalk	0.64	Long-term
Creek Rd	Porteous Ave	Dominga Ave	Sidewalk	0.19	Mid-term
Dominga Ave	Creek Rd	Napa Ave	Sidewalk	0.23	Mid-term
Landsdale Ave	Center Blvd	town line	Sidewalk	0.14	Near-term
Manor Rd/Bothin Rd	Olema Rd	Olema Rd	Sidewalk	0.18	Near-term
Pacheco Ave	Napa Ave	Center Blvd	Sidewalk	0.04	Near-term
Porteous Ave	Bolinas Rd	Meernaa Ave	Sidewalk	0.39	Mid-term
Scenic Rd	Manor Rd	Azalea Ave	Sidewalk	0.18	Mid-term
Sequoia Rd	Scenic Rd	Spruce Rd	Sidewalk	0.18	Mid-term
Spruce Ave	Sequoia Rd	Azalea Ave	Sidewalk	0.15	Mid-term
Winnie	N/A	N/A	Crosswalk	0.01	Mid-term
Bank St	N/A	N/A	Crosswalk	0.01	Near-term
Broadway (align crosswalk and curb ramps)	N/A	N/A	Crosswalk	0.01	Near-term
Broadway	N/A	N/A	Crosswalk	0.01	Near-term
Broadway	N/A	N/A	Crosswalk	0.01	Near-term
Bolinas Rd (crosswalk with center refuge)	N/A	N/A	Crosswalk	0.01	Near-term
Center Blvd	N/A	N/A	Crosswalk	0.01	Near-term
Pavillion exit	N/A	N/A	Crosswalk	0.01	Near-term
Oak Manor Dr	N/A	N/A	Crosswalk	0.01	Near-term

8.5 Cost Estimates

A breakdown of conceptual cost estimates for the recommended bicycle and pedestrian network detailed in this plan is presented in **Table 8-3** through **Table 8-9**. The final construction cost for the bicycle and pedestrian network may be less than the sum of these options, since in some cases one option will be chosen above another. It is important to note the three following assumptions about the cost estimates. First, all cost estimates are highly conceptual, since there is no feasibility or preliminary design completed, and second, the design and administration costs included in these estimates may not be sufficient to fund environmental clearance studies. In particular, pedestrian project cost estimates provided here would need to be further refined through project development because in most cases specific existing conditions (e.g. exact length of sidewalk gaps, presence or absence of curb ramps) are not known as of this writing. Due to their complexity, costs for the Class I Pathways proposed here would need to be reexamined as a part of future planning and design studies, and are presented as a rough starting point only. Finally, cost estimates are a moving target over time as construction costs escalate quickly.

All the projects are recommended to be implemented on near-term, mid-term or long-term timelines, or as funding is available. The more expensive and complex projects may take longer to implement. In addition, many funding sources are highly competitive, and therefore impossible to determine exactly which projects will be funded by which funding sources. Timing of projects is also something difficult to pinpoint exactly, due to the dependence on competitive funding sources, timing of roadway and development, and the overall economy.

The projects listed may be funded through various sources and some have already secured full or partial funding. The funding section in this chapter outlines some of the local, regional, state, and federal funding methods and resources for non-motorized transportation projects.

Table 8-3: Proposed Class I Bikeway Cost Estimates

Segment Name	Begin	End	Class	Length	Cost Estimate
Center Blvd. Sidepath	Pastori Ave.	Fairfax Town Limit	I	0.16	$252,000
Hawthorne Ct. Bridge	Hawthorne Ct.	Sir Francis Drake Blvd.	I (bridge)	0.02	$504,000
Total Proposed Class I Bicycle Pathways				**0.18**	**$756,000**

Base cost for installation of a typical Class I Shared Use Pathway is roughly $700,000/mi; additional costs are based on the need for excavation, retaining walls, and undergrounding drainage.

Table 8-4: Proposed Class II Bikeway Cost Estimates

Segment Name	Begin	End	Class	Length	Cost Estimate
Center Blvd.	Fairfax Town Limit	Pastori Ave.	II	0.17	$33,000
Sir Francis Drake Blvd. (eastbound)	Olema Rd.	Claus Dr.	II	0.33	$32,000
Center Blvd.	Pastori Ave.	Pacheco Ave.	II	0.26	$6,000
Broadway Ave.	Pacheco Ave.	Claus Dr.	II	0.13	$7,000
Total Class II Bicycle Lanes				**0.89**	**$78,000**

Base cost for installation of a typical Class II Bicycle Lane is $$/mi; additional costs based on roadway widening and grading.

Table 8-5 Class III Bikeway Cost Estimates

Segment Name	Begin	End	Class	Length	Cost Estimate
Belmont Ave.	Kent Ave.	Pastori Ave.	III	0.06	$200
Blackberry Ln.	Creek Rd.	Forrest Ave.	III	0.04	$200
Bolinas Rd.	Broadway Blvd.	Porteous Ave.	III - Sharrows	0.48	$2,700
Cascade Dr.	Bolinas Rd.	Canyon Rd.	III - Shar/ TrafCalm	0.94	$300,000
Cascade Dr.	Canyon Rd.	Cascade Fire Road	III - Shar/ TrafCalm	0.50	$104,000
Claus Dr.	Sir Francis Drake Blvd.	Broadway Blvd.	III - Sharrows	0.02	$600
Creek Rd.	Porteous Ave.	Dominga Ave.	III - Shar/ TrafCalm	0.20	$42,000
Dominga Ave.	Creek Rd.	Napa Ave.	III - Shar/ TrafCalm	0.25	$52,000
Forrest Ave.	Meernaa Ave.	Fairfax Town Limit	III	0.80	$3,000
Glen Dr.	Sir Francis Drake Blvd.	Fairfax Town Limit	III	0.46	$1,500
Hill Ave.	Ramona Ave.	Kent Ave.	III	0.11	$300
Kent Ave.	Belmont Ave.	Sir Francis Drake Blvd.	III	0.09	$300
Lansdale Ave.	Center Blvd.	Fairfax Town Limit	III - Shar/ TrafCalm	0.16	$34,000
Manor Rd.	Olema Rd.	Olema Rd.	III - Shar/ TrafCalm	0.19	$39,000
Manor Rd.*	Olema Rd.	Scenic Rd.	III - Shar/ TrafCalm	0.13	$27,000
Napa Ave.	Dominga Ave.	Pacheco Ave.	III - Shar/ TrafCalm	0.06	$13,000
Oak Manor Dr.	Sir Francis Drake Blvd.	Manor Elem. Sch.	III	0.19	$500
Pacheco Ave.	Napa Ave.	Center Blvd.	III - Shar/ TrafCalm	0.05	$9,500
Park Rd.	Spruce Rd.	Bolinas Rd.	III - Shar/ TrafCalm	0.23	$5,000
Pastori Ave.	Sir Francis Drake Blvd.	Center Blvd.	III	0.05	$200
Porteous Ave.	Bolinas Rd.	Meernaa Ave.	III - Shar/ TrafCalm	0.41	$85,000

Segment Name	Begin	End	Class	Length	Cost Estimate
Rockridge Rd.	Iron Springs Rd.	Manor Rd.	III	0.13	$400
Scenic Rd.*	Manor Rd.	Azalea Ave.	III - Shar/ TrafCalm	0.20	$41,000
Sequoia Rd.	Scenic Rd.	Spruce Rd.	III - Shar/ TrafCalm	0.19	$40,000
Sherman St.	Bolinas Rd.	Dominga Ave.	III	0.05	$200
Spruce Ave.	Sequoia Rd.	Azalea Ave.	III - Shar/ TrafCalm	0.17	$35,000
Total Class III Bicycle Routes				**6.17**	**$836,000**

Base cost for installation of a typical Class III Signed Bicycle Route is roughly $2,250/mi; additional costs based on shared lane and school bike route stencils and traffic calming.

Table 8-6: Bicycle Detection Cost Estimates

Item	Approximate Cost Per Leg of Intersection
Calibrate existing loops	$400
Calibrate or re-zone existing video detection	$200
Install new detection loops	$3,500
Install new zoned video detection	$6,000
Install stencils	$200

Table 8-7: Bicycle Detection Locations

Intersections	Number of Legs of Intersection
Sir Francis Drake Blvd. at Oak Manor Dr.	3
Sir Francis Drake Blvd. at Claus Dr.	4
Sir Francis Drake Blvd. at Pastori Ave.	4
Sir Francis Drake Blvd. at Kent Ave.	4
Total number locations	**15**

Exact cost estimates cannot be provided for these projects because existing conditions at the candidate intersections were not known as of this writing. However, based on 4 candidate on-street bikeway signalized intersections with a total of 15 potential locations for bicycle detection and assuming that 50% of the locations have functional loop detectors that can be recalibrated to detect bicycles, the total cost estimate for this project is approximately $28,000. It should be noted that this cost estimate is speculative at best. Real costs cannot be identified until a further survey of existing conditions is completed and bicycle detection improvements may also be implemented as part of other intersection improvements.

Table 8-8: Proposed Bicycle Parking Locations

Location	Recommended Number Additional Racks	Cost
On Sidewalk*		
Bev's Hair Design	1	$250
Peri's Deli	1	$250
Quality Liquors	1	$250
On-Street**		
Grilly's	1	$250
School Locations***		
White Hill School	5	$1,250
Manor School	15	$3,750
Total	**24**	**$6,000**

***Costs are based on inverted-U style racks with two-bike capacity; costs may be higher if alternate rack design is used**
****Costs are based on free-standing multiple-element rack with 12-bike capacity and flexible plastic posts.**
*****Cost includes adding 15 new inverted-U style racks, paving entire existing parking area and weather-protecting shelter for 50% of racks (assuming fewer riders in inclement weather)**

Table 8-9: Informational Kiosk Locations

Location	Notes	Cost
Parkade at Transit Stop	New	$1,500
Sir Francis Drake Boulevard/Lansdale Avenue	Replace/relocate	$1,500
Sir Francis Drake Boulevard/Olema Road	Replace/relocate	$1,500
Totals		**$4,500**

Table 6-6 Example Pedestrian Improvements Cost Estimates by Segment*

Segment Name	Begin	End	Length	Cost Estimate
Bolinas Rd.	Broadway Blvd.	Porteous Ave.	0.48	$47,000
Broadway Ave.	Pacheco Ave.	Claus Dr.	0.13	$69,000
Cascade Dr.	Bolinas Rd.	Canyon Rd.	0.94	$649,000
Cascade Dr.	Canyon Rd.	Cascade Fire Road	0.50	-
Center Blvd.	Pastori Ave.	Pacheco Ave.	0.26	$1,215,000
Creek Rd.	Porteous Ave.	Dominga Ave.	0.20	$60,000
Dominga Ave.	Creek Rd.	Napa Ave.	0.25	$12,000
Elsie/Mono/Bank Project	Broadway Ave.	Bolinas Rd.	0.11	$196,000
Glen Dr.	White Hall Middle School	Fairfax Town Limit	0.19	$22,000
Lansdale Ave.	Center Blvd.	Fairfax Town Limit	0.16	$134,000
Manor Rd.	Olema Rd.	Olema Rd.	0.32	$12,000
Napa Ave.	Dominga Ave.	Pacheco Ave.	0.06	$10,000
Oak Manor Dr. Sidewalk	Sir Francis Drake Blvd.	Manor Elem. Sch.	0.19	$61,000
Oak Manor Drive/Sir Francis Drake Boulevard Crosswalk and Pedestrian Beacon	Oak Manor Drive/Sir Francis Drake Boulevard	Oak Manor Drive/Sir Francis Drake Boulevard	0.00	$165,000
Pacheco Ave.	Napa Ave.	Center Blvd.	0.05	$12,000
Park Rd.	Spruce Rd.	Bolinas Rd.	0.23	$10,000
Pastori Ave.	Sir Francis Drake Blvd.	Center Blvd.	0.05	$56,000
Porteous Ave.	Bolinas Rd.	Meernaa Ave.	0.41	$155,000
Scenic Rd.	Manor Rd.	Azalea Ave.	0.20	$10,000
Sequoia Rd.	Scenic Rd.	Spruce Rd.	0.19	$10,000
Sir Francis Drake Blvd. Crosswalk Improvements	Pacheco Ave.	Claus Dr.	0.13	$332,000
Sir Francis Drake Blvd. Sidewalk Project	Olema Rd.	Claus Dr.	0.33	$96,000
Spruce Ave.	Sequoia Rd.	Azalea Ave.	0.17	$50,000
Total Pedestrian Improvements			**5.55**	**$3,383,000**

8.6 Maintenance

Additional maintenance costs for the bikeway and pedestrian network should be relatively low due to the limited number of new Class I pathway and sidewalk facilities. The recommended bikeway network is predominately made up of on-street bike lanes and routes that will be treated as part of the normal roadway maintenance program. As part of routine maintenance, extra emphasis should be put on keeping the bicycle lanes and roadway shoulders clear of debris and keeping vegetation overgrowth from blocking visibility, creeping into the roadway, or obstructing sidewalks.

8.7 Marketing the Bicycle and Pedestrian Master Plan

The success of this Plan depends largely on the community's acceptance and promotion of the Plan's contents. Town departments and commissions should incorporate the policies, objectives, and spirit of this Plan into their respective projects and responsibilities. The following steps will help ensure the Plan becomes a living document, helping shape Fairfax's future.

- Distribute copies of the Plan to members of the Planning Commission
- Distribute copies of the Plan to Town of Fairfax's Engineering, Parks and Recreation, Planning, Police, and Public Works Departments.
- Provide copies of the Town of Fairfax bicycle facilities map to local schools, bicycle and recreational groups, transit agencies, bicycle shops, and major employers.
- Post the plan on the Town's website.
- Publish a press release about the creation of the plan.
- Provide a copy of the Plan to the public library.

8.8 Funding Opportunities

This chapter provides information on potential funding sources for bicycle and pedestrian improvements. Federal, state and local government agencies invest billions of dollars every year in the nation's transportation system. Only a fraction of that funding is used in development projects, policy development and planning to improve conditions for bicyclists and pedestrians. Even though funds are limited and competitive, they are available. To support agency efforts to find outside funding sources to implement bicycle and pedestrian improvements, a summary by source type is provided below.

8.8.1 Federal Funding Sources

Fixing America's Surface Transportation (FAST) Act

Enacted in December 2015, the Fixing America's Surface Transportation (FAST) Act dedicates a combined $305 billion from the Highway Trust Fund (HTF) and the General Fund (GF) of the United States Treasury to fund federal highway, highway safety, transit, and rail programs for fiscal years (FY) 2016-2020. The FAST Act replaces the Moving Ahead for Progress in the 21st Century Act (MAP-21) and represents the federal government's first long-term comprehensive surface transportation legislation since 2005. Compared to MAP-21, the FAST Act contains a 15 percent increase in highway investment ($233 billion), an 18 percent increase in transit funding ($49 billion), and an equivalent level of federal passenger rail investment ($10 billion) over the five year period. The FAST Act will provide every state a 5.1 percent increase in formula funds in FY 2016 followed by annual increases ranging from 2.1 percent in FY 2014 to 2.4 percent in FY 2017.

National Highway Performance Program (NHPP)

The NHPP is the most significant highway program, receiving 63.7 percent of formula funds remaining after funding is provided for the Congestion Mitigation & Air Quality (CMAQ) Program, metropolitan planning, and national freight programs. The FAST Act will add two permissible uses for NHPP funds: to pay subsidy and administrative costs for Transportation Infrastructure Finance and Innovation Act (TIFIA) projects and for improvements to bridges that are not on the National Highway System.

Surface Transportation Block Grant Program (STBGP)

The FAST Act expands the existing Surface Transportation Program (STP) into the STBGP which places more decision-making power in the hands of state and local governments. The FAST Act simplifies the list of uses eligible for program funds and increases the ways that funds can be used for local roads and rural minor collectors. The new program requires 55 percent of program funds be distributed within each state on the basis of population, compared to 50 percent under STP. In addition, $835 million to $850 million of funding is set aside for the transportation alternatives program, which supports a variety of pedestrian, bicycling, and environmental activities. The bill requires states to invest the same amount each year in recreational trails as invested in 2009, although

states are able to opt out of the Recreational Trails Program. The STBGP receives the same 29.3 percent of formula funds under the FAST Act as STP did under MAP-21.

STBGP Set-aside

What used to be the Transportation Alternatives Program (TAP) under MAP-21, which included the Transportation Enhancements, Safe Routes to School, and Recreational Trails programs, is now the Surface Transportation Block Grant Set-aside Program. These funds may be used for a variety of pedestrian, bicycle, and complete street projects including sidewalks, bikeways, multi-use paths, and rail-trails. The FAST Act changes funding for this program from 2 percent of annual apportionments (about $820 million per year) to a flat $835 million in FY 2016 and FY 2017 and then to $850 million per year thereafter. The FAST Act also expands eligible recipients for funds to include nonprofits responsible for administration of local transportation safety programs and requires annual reports from state and local planning organizations on the number of project applications and awards.

Highway Safety Improvement Program (HSIP)

The FAST Act eliminates the ability of states to shift funds designated for infrastructure safety programs to behavioral or educational activities, ensuring resources remain in construction-related programs. It also designates several new safety improvements eligible for funding including vehicle-to-infrastructure communication and roadway improvements that provide separation between pedestrians and motor vehicles.

With regards to unpaved roads, the FAST Act allows states to "opt out" of collecting safety inventory data for unpaved/gravel roads if certain conditions are met, as long as the states continue to collect data related to serious crashes and fatalities. It also requires that U.S. DOT to review data and report to Congress on best practices for roadway infrastructure improvements that enhance commercial motor vehicle safety.

Nationally Significant Freight and Highway Projects Program

This program will provide an average of $900 million per year in grants of at least $25 million for highway, bridge, rail-grade crossing, intermodal and freight rail projects costing more than $100 million that improve movement of both freight and people, reduce bottlenecks, and improve intermodal connectivity. Projects will be awarded competitively, with at least 25 percent of funds to be spent in rural areas.

Transportation Investments Generating Economic Recovery

The Transportation Investment Generating Economic Recovery (TIGER Discretionary Grant Program) provides a unique opportunity for the U.S. Department of Transportation to invest in road, rail, transit and port projects that promise to achieve critical national objectives. The U.S. Congress has dedicated more than $4.1 billion to the program since inception: $1.5 billion for TIGER I, $600.0 million for TIGER II, $526.9 million for FY2011, $500.0 million for FY2012, $473.8 million for FY2013, and $600.0 million for the FY2014 round to fund projects that have a significant impact on the nation, a region or a metropolitan area. The TIGER Discretionary Grant Program's highly competitive process, galvanized by tremendous applicant interest, has allowed USDOT to fund 271 innovative capital projects throughout the nation. Each project is multi-modal, multi-jurisdictional or

otherwise challenging to fund through existing programs. The TIGER Discretionary Grant Program enables USDOT to use a rigorous process to select projects with exceptional benefits, explore ways to deliver projects faster and save on construction costs, and make investments in the nation's infrastructure that make communities more livable and sustainable. Many awards have been made to construct bicycle and pedestrian infrastructure, including projects in Atlanta, GA, Birmingham, AL, Fresno, Indianapolis, IN, and Philadelphia, PA.

Partnership for Sustainable Communities

Founded in 2009, the Partnership for Sustainable Communities is a joint project of the Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (USDOT). The partnership aims to "improve access to affordable housing, provide more transportation options, and lower transportation costs while protecting the environment in communities nationwide." The Partnership is based on five Livability Principles, one of which explicitly addresses the need for bicycle and pedestrian infrastructure - "Provide more transportation choices: Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health." The Partnership is not a formal agency with a regular annual grant program. Nevertheless, it is an important effort that has already led to some new grant opportunities (including the TIGER grants). MCOG and Caltrans should track Partnership communications and be prepared to respond proactively to announcements of new grant programs.

More information: http://www.epa.gov/smartgrowth/partnership/

Rivers, Trails, and Conservation Assistance Program

The Rivers, Trails and Conservation Assistance Program (RTCA) is the community assistance arm of the National Park Service. RTCA provides technical assistance to communities in order to preserve open space and develop trails. The assistance that RTCA provides is not for infrastructure, but rather building plans, engaging public participation, and identifying other sources of funding for conversation and outdoor recreation projects.

More information: http://www.nps.gov/pwro/rtca/who-we-are.htm

Community Development Block Grants

The Community Development Block Grants (CDBG) program provides money for streetscape revitalization, which may be largely comprised of pedestrian improvements. Federal CDBG grantees may "use Community Development Block Grant funds for activities that include (but are not limited to): acquiring real property; reconstructing or rehabilitating housing and other property; building public facilities and improvements, such as streets, sidewalks, community and senior citizen centers and recreational facilities; paying for planning and administrative expenses, such as costs related to developing a consolidated plan and managing Community Development Block Grant funds; provide public services for youths, seniors, or the disabled; and initiatives such as neighborhood watch programs." Trails and greenway projects that enhance accessibility are the best fit for this funding

source. CDBG funds could also be used to write ADA Transition Plans. *More information: www.hud.gov/cdbg*

Community Transformation Grants

Community Transformation Grants administered through the Centers for Disease Control (CDC) support community–level efforts to reduce chronic diseases such as heart disease, cancer, stroke, and diabetes. Active transportation infrastructure and programs that promote healthy lifestyles are a good fit for this program, particularly if such improvements benefit groups experiencing the greatest burden of chronic disease.

More information: http://www.cdc.gov/communitytransformation/

National Scenic Byways Program

The Federal Highway Administration (FHWA), part of the USDOT manages the National Scenic Byways Grant Program, which recognizes roads having outstanding scenic, historic, cultural, natural, recreational, and archaeological qualities by providing grants that support projects that manage and protect these roads and improve visitor facilities.

More information: ***http://www.fhwa.dot.gov/discretionary/2012nsbp.cfm***

Federal Recovery Act State Fiscal Stabilization Funding

As part of the Federal Recovery Act of 2009, states will be receiving $53.6 billion in state fiscal stabilization funding. States must use 18.2% of their funding – or $9.7 billion – for public safety and government services. An eligible activity under this section is to provide funding to K-12 schools and institutions of higher education to make repairs, modernize, and make renovations to meet green building standards. The Leadership in Energy and Environmental Design (LEED) Green Building Rating System, developed by the U.S. Green Building Council (USGBC), addresses green standards for schools that include bicycle and pedestrian facilities and access to schools. Another $5.0 billion is provided for the Energy Efficiency and Conservation Block Grant Program. This provides formula funding to cities, counties and states to undertake a range of energy efficiency activities. One eligible use of funding is for bicycle and pedestrian infrastructure.

More information: http://www2.ed.gov/policy/gen/leg/recovery/factsheet/stabilization-fund.html

Smart City Challenge

The USDOT's Smart City Challenge will award up to $40 million in federal funding to a mid-size city (200,000 to 850,000 people within city limits) to conduct a "Smart City Demonstration" in an effort to encourage cities to test how creative ideas involving transportation data, technologies, and applications can be integrated with existing systems in a city to address transportation challenges. The USDOT will issue two separate solicitations to carry out this challenge. This solicitation will result in selection of an estimated five Smart City Challenge finalists who will receive funding to support concept development and planning activities. The second solicitation will invite the Smart City Challenge finalists to apply for funding to support implementation of their proposed demonstration.

8.8.2 State Sources

Active Transportation Program

The California State Legislature consolidated a number of state-funded programs centered on active transportation into a single program. The resulting Active Transportation Program (ATP) consolidated the federal programs, Bicycle Transportation Account, the Safe Routes to Schools Program, and the Recreational Trails Program. The ATP's authorizing legislation (signed into law by the Governor on September 26, 2013) also includes placeholder language to allow the ATP to receive funding from the newly established Cap-and-Trade Program in the future. The Statewide Competitive ATP will have $180 million available statewide for the 2014/2015 and 2015/2016 fiscal cycles. The Regional Competitive ATP will have $30 million available for the Metropolitan Transportation Commission (MTC) region 2014/2015 and 2015/2016 fiscal cycles. The California Transportation Commission writes guidelines and allocates funds for the ATP, while the ATP will be administered by the Caltrans Division of Local Assistance. Goals of the ATP are currently defined as the following:

1) Increasing the proportion of trips accomplished by biking and walking;
2) Increasing safety and mobility for active transportation users;
3) Advancing active transportation efforts of regional agencies to achieve the greenhouse gas reduction goals;
4) Enhancing public health;
5) Ensuring that disadvantaged communities fully share in the benefit of the program; and,
6) Providing a broad spectrum of projects to benefit many types of active transportation users.

More information: http://www.dot.ca.gov/hq/LocalPrograms/atp/index.html

State Highway Operations & Protection Program

The State Highway Operations and Protection Program (SHOPP) is a four year program that funds projects on the state highway system to maintain and preserve the asset. The program is primarily funded by federal highway trust funds. The federal funds that make up the SHOPP are National Highway Performance Program (NHPP), the Surface Transportation Program (STP), and the Highway Safety Improvement Program (HSIP). The new federal act, Fixing America's Surface Transportation (FAST) Act, requires that states implement targets based on performance measures that will be forthcoming. This will dictate how funds need to be programmed based on meeting the targets. The emphasis of the federal bill is to maintain and/or improve the current asset condition and to address the safety needs. The cycle includes identification of rehabilitation and reconstruction needs in the ten year plan, the estimation of available funding in the fund estimate, and finally a financially-constrained portfolio of projects in the four-year SHOPP. As required by statutes, the SHOPP is updated every two years. The SHOPP project funding process is internal to Caltrans. SHOPP projects are originally scoped through the ten year SHOPP plan process. The ten year SHOPP plan has a fiscally-constrained list of program areas that have specific estimated amounts of funding. The determination of the balance of funds for each of the areas is based on federal funding

programs, priorities as agreed between the Caltrans and the CTC, and direction from the Caltrans SHOPP Executive Committee. The priorities are:

1. Collision reduction, major damage restoration, and mandates such as ADA and storm water management
2. Pavement, bridge, roadside, and facility preservation
3. Mobility

There is clearly not enough funding to fund the SHOPP needs and thus each category has constrained funding. More information:

http://www.dot.ca.gov/hq/transprog/SHOPP/2014%20SHOPP/SHCC%20SHOPP%20issue%20paperpdf.pdf

Caltrans Planning Grants

Caltrans also administers the Transportation Planning Grant Program that funds projects to improve mobility. In the past year, Caltrans awarded $10.0 million in grant funding to 70 applicants, in two sub-categories: Environmental Justice grants and Community Based Transportation Plan grants.

More information: http://www.dot.ca.gov/hq/tpp/grants.html

Environmental Justice Grant Program

The Environmental Justice (EJ) Grant Program promotes the involvement of low-income, minority communities, and Native American tribal governments in the planning for transportation projects. EJ grants have a clear focus on transportation and community development issues to prevent or mitigate disproportionate, negative impacts while improving mobility, access, safety, and opportunities for affordable housing and economic development. Grants are available to cities, counties, transit districts, and tribal governments.

More information: http://www.dot.ca.gov/hq/tpp/offices/ocp/completed_projects_ej.html

Community Based Transportation Planning Grant Program

The Community Based Transportation Planning (CBTP) grant program promotes transportation and land use planning projects that encourage community involvement and partnership. These grants include community and key stakeholder input, collaboration, and consensus building through an active public engagement process. CBTP grants support livable and sustainable community concepts with a transportation or mobility objective to promote community identity and quality of life.

More information: http://www.dot.ca.gov/hq/tpp/offices/ocp/completed_projects_cbtp.html

Petroleum Violation Escrow Account

In the late 1970s, a series of federal court decisions against selected United States oil companies ordered refunds to the states for price overcharges on crude oil and refined petroleum products during a period of price control regulations. To qualify for Petroleum Violation Escrow Account (PVEA) funding, a project must save or reduce energy and provide a direct public benefit within a reasonable time frame. In the past, the PVEA has been used to fund programs based on public transportation,

computerized bus routing and ride sharing, home weatherization, energy assistance and building energy audits, highway and bridge maintenance, and reducing airport user fees. In California, Caltrans Division of Local Assistance administers funds for transportation-related PVEA projects. PVEA funds do not require a match and can be used as match for additional federal funds.

More information: www.dot.ca.gov/hq/LocalPrograms/lam/prog_g/g22state.pdf

Office of Traffic Safety Grants

The Office of Traffic Safety (OTS) distributes grants statewide to establish new traffic safety programs or fund ongoing safety programs. OTS grants are supported by federal funding under the National Highway Safety Act and FAST. Grants are used to establish new traffic safety programs, expand ongoing programs or address deficiencies in current programs. Bicycle safety is included in the list of traffic safety priority areas. Eligible grantees are governmental agencies, state colleges, state universities, local town and county government agencies, school districts, fire departments, and public emergency services providers. Grant funding cannot replace existing program expenditures, nor can traffic safety funds be used for program maintenance, research, rehabilitation, or construction. Grants are awarded on a competitive basis, and priority is given to agencies with the greatest need. Evaluation criteria to assess need include potential traffic safety impact, collision statistics and rankings, seriousness of problems, and performance on previous OTS grants. The California application deadline is January of each year. There is no maximum cap to the amount requested; however, all items in the proposal must be justified to meet the objectives of the proposal.

More information: http://www.ots.ca.gov/Grants/Apply/default.asp

Environmental Enhancement and Mitigation Funds

The Environmental Enhancement Mitigation Program (EEMP) provides grant opportunities for projects that indirectly mitigate environmental impacts of new transportation facilities. Projects should fall into one of the following three categories: highway landscaping and urban forestry, resource lands projects, or roadside recreation facilities. Funds are available for land acquisition and construction. The local Caltrans district must support the project. The average award amount is $250,000.

More information: http://www.dot.ca.gov/hq/LocalPrograms/EEM/homepage.htm

Land and Water Conservation Fund

The Land and Water Conservation Fund is a federal program that provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. The fund is administered by the California State Parks Department. Cities, counties, and districts authorized to acquire and develop park and recreation space are eligible for grant funding. While non-profits are ineligible, they are allowed to apply in partnerships with eligible agencies. Applicants must fund the project entirely and will be reimbursed for half of the cost. Up to $2.0 million was available in California in the 2012 round of grant funding.

More Information: http://www.parks.ca.gov/?Page_id=21360

California Strategic Growth Council

The Strategic Growth Council is a state agency that manages the Sustainable Communities Planning Grant and Incentives Program, as well as the Affordable Housing and Sustainable Communities (AHSC) program. The first program provides grants for development and implementation of plans that lead to significant reductions in greenhouse gas emissions, improve air and water quality, promote public health, promote equity, increase housing affordability, increase infill and compact development, revitalize urban and community centers, protect natural resources and agricultural lands, reduce automobile usage and fuel consumption, improve infrastructure systems, promote water conservation, promote energy efficiency and conservation, and strengthen the economy. The second program provides funding for land use, housing, transportation, and land preservation projects to support infill and compact development that reduces greenhouse gas emissions.

More information: http://sgc.ca.gov/m_grants.php

Climate Ready Grant Program - California State Coastal Conservancy

Climate Ready grants are intended to encourage local governments and non-governmental organizations to advance planning and implementation of on-the-ground actions that reduce greenhouse gas emissions and lessen the impacts of climate change on California's coastal communities. The grant program makes eligible "development of multi-use trails with clearly identified greenhouse gas (GHG) reduction goals; (and) protecting and managing open space lands with clearly identified GHG reduction goals." A total of $1,500,000 is available on a competitive basis, with a minimum award of $50,000 and a maximum of $200,000. The size of awarded grants will be based on each project's needs, its overall benefits, and the extent of competing demands for funds. Applications were due November 17, 2014. It is not clear whether additional application solicitations will be made.

More information: http://scc.ca.gov/webmaster/pdfs/Climate_Ready_Announcement3.pdf

8.8.3 Regional & Local Sources

Developer Impact Fees

As a condition for development approval, municipalities can require developers to provide certain infrastructure improvements, which can include bikeway projects. These projects have commonly provided Class II facilities for portions of on-street, previously-planned routes. They can also be used to provide bicycle parking or shower and locker facilities. The type of facility that should be required to be built by developers should reflect the greatest need for the particular project and its local area. Legal challenges to these types of fees have resulted in the requirement to illustrate a clear nexus between the particular project and the mandated improvement and cost.

Roadway Construction, Repair and Upgrade

Future road widening and construction projects are one means of providing improved pedestrian and bicycle facilities. To ensure that roadway construction projects provide these facilities where needed, it is important that the review process includes input pertaining to consistency with the proposed

system. In addition, California's 2008 Complete Streets Act and Caltrans's Deputy Directive 64 require that the needs of all roadway users be considered during "all phases of state highway projects, from planning to construction to maintenance and repair."

More information: http://www.dot.ca.gov/hq/tpp/offices/ocp/complete_streets.html

Utility Projects

By monitoring the capital improvement plans of local utility companies, it may be possible to coordinate upcoming utility projects with the installation of bicycle and pedestrian infrastructure within the same area or corridor. Often times, the utility companies will mobilize the same type of forces required to construct bikeways and sidewalks, resulting in the potential for a significant cost savings. These types of joint projects require a great deal of coordination, a careful delineation of scope items and some type of agreement or memorandum of understanding, which may need to be approved by multiple governing bodies.

Cable Installation Projects

Cable television and telephone companies sometimes need new cable routes within public right-of-way. Recently, this has most commonly occurred during expansion of fiber optic networks. Since these projects require a significant amount of advance planning and disruption of curb lanes, it may be possible to request reimbursement for affected bicycle facilities to mitigate construction impacts. In cases where cable routes cross undeveloped areas, it may be possible to provide for new bikeway facilities following completion of the cable trenching, such as sharing the use of maintenance roads.

Marin County Measure A

A one-quarter cent retail transactions and use tax passed as Measure A in November 2012 to care for Marin's existing parks and open spaces, support regional community parks projects and programs, and further farmland preservation. An expenditure plan guides the use of the funds, as follows:

- 65 percent will be used by Marin County Parks to restore natural resources, maintain county parks and open space preserves, restore and improve public access, and protect natural lands.
- 20 percent will be dedicated to saving family farms and ranches through the purchase of agricultural conservation easements in voluntary transactions and landowners.
- 15 percent will be used by cities, towns, and applicable special districts to enhance and manage parks, nature preserves, recreation programs, and vegetation to reduce wildfire risk.

Several grant programs have been established to distribute funds including the Breathe/Respira Community Grant Program, Marin County Park and Open Space Program, and the City, Town, and Special District Program.

More information: http://www.marincountyparks.org/depts/pk/about-us/main/measurea

BAAQMD Grants

The Bay Area Air Quality Management District (BAAQMD) established several grant programs aimed at reducing emissions of oxides of nitrogen, reactive organic gasses, and particulate matter.

- Transportation Fund for Clean Air (TFCA) – provides grants to projects that implement the most cost-effective projects in the Bay Area that will decrease motor vehicle emissions, and thereby improve air quality. Projects must be consistent with the 1988 California Clean Air Act and the Bay Area Ozone Strategy.

- Environmental Justice Small Grants Program – provides up to $20,000 in grants to eligible community-based grassroots organizations and federally recognized tribal governments that are located in areas adversely affected by environmental pollution and hazards and are involved in addressing environmental justice concerns.

More information: http://www.baaqmd.gov/Divisions/Strategic-Incentives/Funding-Sources.aspx

MTC Grants

The OneBayArea Grant Program (OBAG) established program commitments and policies for investing roughly $800 million over the four-year Cycle 2 period (FY's 2012-13 through 2015-16), funded by federal funds authorized by Congress in Moving Ahead for Progress in the 21st Century (MAP-21), the predecessor to the current Fixing America's Surface Transportation (FAST) Act.

OBAG is a new funding approach that integrates the region's federal transportation program with California's climate law (Senate Bill 375, Steinberg, 2008) and the Sustainable Communities Strategy. Funding distribution to the counties will consider progress toward achieving local land use and housing policies by:

- Rewarding jurisdictions that accept housing allocations through the Regional Housing Need Allocation (RHNA) process and produce housing using transportation dollars as incentives.

- Supporting the Sustainable Communities Strategy for the Bay Area by promoting transportation investments in Priority Development Areas (PDAs) and by initiating a pilot program that will support open space preservation in Priority Conservation Areas (PCAs)

- Providing a higher proportion of funding to local agencies and additional investment flexibility by eliminating required program investment targets. The OBAG program allows flexibility to invest in transportation categories such as Transportation for Livable Communities, bicycle and pedestrian improvements, local streets and roads preservation, and planning activities, while also providing specific funding opportunities for Safe Routes to Schools (SR2s) and Priority Conservation Areas.

More information: http://www.mtc.ca.gov/funding/onebayarea/

San Francisco Bay Trail Grant Program

The Bay Trail offers grant funding to jurisdictions for planning, design, and construction of the Bay Trail. While funds associated with the current allocation from the Coastal Conservancy via Proposition 84 are fully committed, future measures may result in additional Bay Trail funding.

8.8.4 Private Sources

Private funding sources can be acquired by applying through the advocacy groups such as the League of American Bicyclists and the Bikes Belong Coalition. Most of the private funding comes from foundations seeking to enhance and improve bicycle facilities and advocacy. Grant applications will typically be through the advocacy groups as they leverage funding from federal, state and private sources. Following are several examples of private funding opportunities available.

PeopleForBikes Community Grant Program

PeopleForBikes (FKA Bikes Belong) is a coalition of bicycle suppliers and retailers that has awarded $2.5 million in grants and leveraged an additional $650 million since its inception in 1999. The program funds small corridor improvements, mountain bike trails, BMX parks, trail, and park access. PeopleForBikes also administers the Green Lane Project, which is a technical support and peer exchange program for U.S. cities working on the installation of protected bicycle lanes and cycle tracks. PeopleForBikes is funded through private donations.

More information: http://www.peopleforbikes.org/pages/community-grants

Bank of America Charitable Foundation, Inc.

The Bank of America Charitable Foundation is one of the largest in the nation. The primary grant program is called Neighborhood Excellence, which seeks to identify critical issues in local communities. Another program that applies to greenways is the Community Development Program, and specifically the Program Related Investments subcategory. This program targets low- and moderate-income communities and seeks to encourage entrepreneurial business development.

More information: http://www.bankofamerica.com/foundation

The Robert Wood Johnson Foundation

The Robert Wood Johnson Foundation was established as a national philanthropy in 1972, and today, it is the largest U.S. foundation devoted to improving the health and health care of all Americans. Grant making is concentrated in four areas:

- To assure that all Americans have access to basic health care at a reasonable cost
- To improve care and support for people with chronic health conditions
- To promote healthy communities and lifestyles
- To reduce the personal, social and economic harm caused by substance abuse: tobacco, alcohol, and illicit drugs

More information: http://www.rwjf.org/applications/

The Wal-Mart Foundation

The Wal-Mart Foundation offers a Local, State, and National Giving Program. The Local Giving Program awards grants of $250 to $5,000 through local Wal-Mart and Sam's Club Stores. Application opportunities are announced annually in February with a final deadline for applications in December. The State Giving Program provides grants of $25,000 to $250,000 to 501c3 nonprofits working within one of five focus areas: Hunger Relief & Nutrition, Education, Environmental Sustainability, Women's Economic Empowerment, or Workforce Development. The program has two application cycles per year: January through March and June through August. The Wal-Mart Foundation's National Giving Program awards grants of $250,000 and more, but does not accept unsolicited applications.

More information: http://foundation.walmart.com/apply-for-grants

The Kodak American Greenways Program

The Conservation Fund's American Greenways Program has teamed with the Eastman Kodak Corporation and the National Geographic Society to award small grants ($250 to $2,000) to stimulate the planning, design and development of greenways. These grants can be used for activities such as mapping, conducting ecological assessments, surveying land, holding conferences, developing brochures, producing interpretive displays, incorporating land trusts, and building trails. Grants cannot be used for academic research, institutional support, lobbying or political activities.

More information: http://www.conservationfund.org

Community Action for a Renewed Environment (CARE)

CARE is a competitive grant program that offers an innovative way for a community to organize and take action to re-duce toxic pollution in its local environment. Through CARE, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them. By providing financial and technical assistance, EPA helps CARE communities get on the path to a renewed environment. Transportation and "smart-growth" types of projects are eligible. Grants range between $90,000 and $275,000.

More information: http://www.epa.gov/care/

Corporate Donations

Corporate donations are often received in the form of liquid investments (i.e. cash, stock, bonds) and in the form of land. Employers recognize that creating places to bike and walk is one way to build community and attract a quality work force. Bicycling and outdoor recreation businesses often support local projects and programs. Municipalities typically create funds to facilitate and simplify a transaction from a corporation's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented. Such donations can improve capital budgets and/or projects.

8.8.5 Other Sources

Local sales taxes, fees and permits may be implemented as new funding sources for pedestrian and bicycling projects, such as Measure A approved by voters in 2004. However, any of these potential sources would require a local election. Volunteer programs may be developed to substantially reduce the cost of implementing some routes, particularly multi use paths. For example, a local college design class may use such a multi-use route as a student project, working with a local landscape architectural or engineering firm. Work parties could be formed to help clear the right of way for the route. A local construction company may donate or discount services beyond what the volunteers can do. A challenge grant program with local businesses may be a good source of local funding, in which the businesses can "adopt" a route or segment of one to help construct and maintain it.

Appendix A: Bicycle Law and Etiquette

The California Vehicle Code - Laws Regarding Bicycles

As with most laws, the underlying idea behind the laws contained in the California Vehicle Code (CVC) is safety. What follows is a selection of some of the most common laws which pertain to bicyclists.

Definitions:

Bicycle CVC231: A bicycle is a device upon which any person may ride, propelled exclusively by human power through a belt, chain, or gears, and having one or more wheels.

Darkness CVC280: Darkness is any time from one-half hour after sunset to one-half hour before sunrise and any other time when visibility is not sufficient to render clearly discernible any person or vehicle at a distance of 1000 feet.

Highway CVC 360: Highway is a way or place or whatever nature, publicly maintained and open to the use of the public for purposes of vehicular travel. Highway includes street.

Vehicle Code Section:

Laws Applicable to Bicycle Use CVD 21200

Every person riding a bicycle upon a highway has all the rights and is subject to all the provisions applicable to the driver of a vehicle including, but not limited to, provisions concerning driving under the influence of alcoholic beverages or drugs.

Equipment Requirements CVC 21201

A) No person shall operate a bicycle on a roadway unless it is equipped with a brake which will enable the operator to make one brake wheel skid on dry, level, clean pavement.

B) No person shall operate on a highway any bicycle equipped with handlebars so raised that the operator must elevate his hands above the level of his shoulders in order to grasp the normal steering grip area.

C) No person shall operate upon any highway a bicycle which is of such a size as to prevent the operator from safely stopping the bicycle, supporting it in an upright position with at least one foot on the ground, and restarting it in a safe manner.

D) Every bicycle operated upon any highway during darkness shall be equipped 1) with a lamp emitting a white light which, while the bicycle is in motion illuminated the highway in front of the bicyclist and is visible from a distance of 300 feet in front of and from the sides of the bicycle; 2) with a red reflector on the rear which shall be visible from a distance of 500 feet to the rear when directly in front of headlamps on a motor vehicle; 3) with a white or yellow reflector on each pedal visible from the front and rear of the bicycle from a distance of 200 feet; and 4) with a white or yellow reflector on each side

forward of the center of the bicycle, and with a white or red reflector on each side to the rear of the center of the bicycle, except that bicycles equipped with reflectors on the front and rear tires.

Operations on Roadway CVC21202

Any person operating a bicycle upon a roadway at a speed less than the normal speed of traffic moving in the same direction at that time shall ride as close as practicable to the right-hand curb or edge of the roadway except under the following condition:

1. When overtaking and passing another bicycle or vehicle proceeding in the same direction.

2. When preparing for a left turn at an intersection or into a private road or driveway.

3. When reasonably necessary to avoid conditions (including, but not limited to fixed or moving objects, vehicles, bicycles, pedestrians, animals, surface hazards, or substandard width lanes) that make it unsafe to continue along the right-hand curb edge.

4. When approaching a place where a right-hand turn is authorized.

6. Permitted Movements form Bicycle Lanes 21208CVC

Whenever a bicycle lane has been established on a roadway, any person operating a bicycle on the roadway at a speed less than the normal speed of traffic moving in the same direction at that time shall ride within the bicycle lane, except under the following conditions (see 1-4 under 21202CVC).

Bicycle Parking 21210 CVC

No person shall leave a bicycle lying on its side on any sidewalk, or shall park a bicycle on a sidewalk in any other position, so that there is not an adequate path for pedestrian traffic.

Bicycle Operated on Roadway or Highway Shoulder 21650.1 CVC: A bicycle operated on a roadway, or the shoulder of a highway, shall be operated in the same direction as vehicles are required to be driven upon the roadway.

Hand Signals 22111CVC

All required signals given by hand and arm shall be given from the left side in the following manner.

1. Left turn-hand and arm extended horizontally.

2. Right turn-hand and arm upward, except bicyclist may extend the right hand and arm horizontally to the right side of the bicycle.

3. Stop-hand and arm extended downward.

Wearing of Headsets or Earplugs 27400CVC

No person operating any motor vehicle or bicycle shall wear any headset covering, or any earplugs in, both ears.

Motorist Etiquette Regarding Bicyclists from the California Driver Handbook

Sharing the Road With Other Vehicles: *Bicycles*

Bicycle riders on public streets have the same rights and responsibilities as automobile drivers. Drivers of motor vehicles must treat bicycle riders the same as drivers of other motor vehicles. Bicyclists are not out of place on the roadway -- they are part of the traffic and share the road with other drivers. They must obey stop signs, traffic lights, and most other traffic laws and signs. Special care must be used near them because any accident with them will probably result in serious injury. This means that automobile drivers must leave safe passing room and must not turn so close to them that the bicyclist is in danger of being hit.

Although bicyclists will normally ride near the right hand curb or edge of the roadway, they can legally move left to turn left, to pass another vehicle or bicycle, or to avoid debris or parked cars. They may have to swerve to avoid a car door suddenly opening. Expect any of these moves by bicyclists in a main traffic lane. Remember, on one-way streets, this can be the left-hand lane.

When the lane is too narrow to pass a bicyclist safely, wait until the next lane is clear and give the bicyclist all the rights of any other slow moving vehicle.

A motorist parked at a curb must not open a door on the traffic side of a vehicle without looking for other vehicles, including bicycles or motorcycles.

Bicycle riders may give right turn signals with their right arm held straight out, pointing right. Remember, bicycles are small and sometimes drivers do not see them.

I. Introduction

With few exceptions, bicyclists on public roadways assume the same rights and responsibilities as automobile drivers, and are subject to the same state laws and local ordinances.

It is imperative that bicyclists hold up their end of the bargain. Bicycling is beneficial for personal health and when used instead of a car as transit to town or country it is beneficial to our environment. Many people are working hard to improve bicycling conditions in Marin County. We will not succeed if manner-less bicycling is the norm.

Bicyclists need to show respect to get respect. We hope that you will make it a point to ride as an ambassador of bicycling. If you have friends who ride as if no one else mattered, do bicyclists everywhere a favor by trying to talk them down from bogus rationalizations.

Ride responsibly! We must ALL adopt this Bicyclists' Code of Conduct.

Bicyclists' Code of Conduct

1) Never ride against traffic.
2) Ride as near to the right as practicable*.
3) Stop at stop signs and red lights*.
4) Honor others' right of way.
5) Use hand signals.
6) With traffic, ride single file.
7) Be predictable; don't weave.
8) Follow lane markings.
9) Don't needlessly block the road*.
10) Use lights at night.

*--Note that the two most common offenses of bicyclists are running stop signs, and groups of bicyclists blocking the road.

1. Stop at stop signs/lights: Stop at all stop signs and red lights. If two vehicles arrive at an intersection at the same time, the vehicle to the right has the right of way. Politely indicate others' right of way with a hand gesture. For your own safety, never insist on your own right of way. Pedestrians always have the right of way. Your courtesy will be noticed and appreciated by other road users.

2. Group riding: a) The California Vehicle Code (CVC sec. 21202(a) and sec. 21750) states that bicyclists are entitled to the full width of the road for at least purposes of overtaking, left turns, avoiding obstacles, when approaching a place where a right turn is authorized, and when riding in a substandard width lane. Generally, it is prudent to stay as far to the right as practicable. When riding with others, do not block traffic, ride single file. Be aware of other road users at all times. b) When stopping for a stop sign in a group, queue up in small numbers and proceed when it is your turn, allowing other road users their right of way. The idea is to cross the intersection as safely and quickly as possible without testing the patience of other road users. Self-policing and courteous riding will go far.

Wear a helmet, bright clothing, and keep your bicycle in good working order. Helpful hint: modern, good quality brakes along with good technique make stopping at stop signs much easier.

Bicyclists and any passengers under 18 years of age (including children in attached bicycle seats or in or on towed trailers) are required to wear a properly fitted and fastened bicycle helmet. This helmet must be labeled to show that it meets applicable safety standards.

Youngsters under the age of nine lack the physical and mental development to interact safely in a complex traffic environment.

Marin County Bicycle Coalition's Bicycling Laws and Safety Tips

Bicyclists on public roadways assume all the same rights and responsibilities as automobile drivers, and are subject to the same state laws and local ordinances. For everyone's safety, observe these bicycling rules:

*** BE PREDICTABLE:** Never ride against traffic. Motorists aren't looking for bicyclists riding on the wrong side of the road. Many other hazards threaten the wrong-way rider.

Obey traffic signs and signals, and basic right-of-way rules. Bicyclists must operate like motorists if they want to be taken seriously. Doing so is also the safest behavior. When approaching a stop sign or red light, you are required to come to a complete stop and proceed only when safe to do so.

Use hand signals. Hand signals tell other road users what you intend to do. Signal as a matter of law, of courtesy, and of self-protection.

Ride in a straight line. Whenever possible, ride in a straight line, to the right of traffic but about a car door's width away from parked cars.

Don't weave between parked cars. Don't ride to the curb between parked cars, unless they are far apart. Motorists may not see you when you try to move back into traffic.

Follow lane markings. Don't turn left from the right lane. Don't go straight in a lane marked "right-turn-only." Stay to the left of the right-turn-only lane if you are going straight.

Choose the best way to turn left. There are two ways to make a left turn. 1) Like an auto. Signal, move into the left lane, and turn left. 2) Like a pedestrian. If you are with-in a designated crosswalk, dismount and walk your bike across.

*** BE ALERT:** Watch for right-turning traffic. Motorists turning right may not notice bicyclists on their right. Watch for any indications that a motorist may turn into your path. When approaching intersections try to stay far enough from the curb to allow cars to turn right on your right. Motorists may not look for or see a bicycle passing on the right.

Look back before you pass or merge. Leave a good 3-4 feet when passing a pedestrian or another bicyclist. A rear-view mirror is a good idea, but don't rely on it alone.

Respect pedestrians' rights. Pedestrians have the right-of-way. Don't cross sidewalks via driveways without yielding to pedestrians. Don't ride on sidewalks. Use the street, bike lane, or bike path. Give a warning: use your bike bell, or call out "Passing on your left".

Keep both hands ready to brake. You may not stop in time if you brake one-handed. Allow extra distance for stopping in rain, since brakes are less efficient when wet.

Avoid road hazards. Watch out for street car tracks and old railroad tracks. Cross them perpendicularly. Avoid parallel-slat sewer grates, slippery manhole covers, oily pavement, gravel, potholes. All are hazardous, especially when wet.

Watch your speed. Observe posted speed limits and obey the basic speed law: Never ride faster than is safe under the existing conditions.

*** BE EQUIPPED:** Use good lights at night. Front light, wheel and pedal reflectors are required. The front light must be visible from 300 feet. Use a rear red light for enhanced visibility. Wear light-colored or reflective clothing.

Ride a well-equipped bike. Be sure your bike is adjusted to fit you properly. For safety and efficiency, outfit it with bells, rear-view mirrors, racks or baskets, lights and reflectors.

Be visible. Wear light or bright-colored clothing.

Wear a helmet when you ride. Helmets that have passed Snell Foundation or ANSI Z90.4 standard crash tests should be worn. Bike helmets may need to be replaced after a fall. All youths 18 and under must wear a bicycle helmet when operating a bicycle or when riding as a passenger.

Passengers must ride on a separate attached seat. If the passenger is 4 years old or younger, or weighs 40 pounds or less, the seat shall adequately retain the passenger in place and protect him/her from the bicycle's moving parts. In addition, this passenger must wear a helmet of good fit, fastened securely, meeting ANSI Z90.4 helmet standards or Snell Memorial Foundation's 1984 standard for protective headgear.

Keep your bike in good repair. Maintain your bike in good working condition. Check brakes regularly and keep tires properly inflated. Learn to do routine maintenance yourself or leave it to the experts at your local bike shop.

Get in shape. Before riding, spend a few minutes stretching your legs and body. If you are not an experienced bicyclist, start with short trips and work up to longer distances.

*** PARKING TIPS**: Park considerately. Bicycle parking should not interfere with pedestrian and vehicle movements. Use bike racks properly, so more bikes may park.

Buy a lock that is appropriate and use it correctly. U-shaped locks offer the best security but require the removal of the front wheel in order to secure both wheels and frame. Lay the front wheel alongside the rear wheel and loop the 'U' around both wheels and frame of your bike. If the 'U' portion of the lock is completely filled with the wheels and frame, the lock has less chance of being broken open. Tall signposts and ironwork are the best objects to lock your bike against. Small trees are easily cut, permitting thieves to lift a locked bike away from its support. Chains should be hardened and have 1/16-inch diameter links, and a key lock with hardened hasp of the same diameter. Be sure to secure both wheels and the frame, and never leave the padlock resting on the ground. Smaller diameter chains and cables are appropriate for short-time use only, usually in instances where you can see the bike when it's locked. Keep a record of your bike serial number. Should your bike be stolen, report the serial number and description of your bike to the police department.

*** RIDE SAFELY AND COURTEOUSLY**

Probably the single most important thing a bicyclist can do to earn bicyclists greater respect on the road is to obey stop signs and traffic signals.

Appendix B: Supplemental Bikeway Design Guidelines

This appendix provides basic bikeway planning and design guidelines for use in developing the Fairfax bikeway system and support facilities. All recommendations in this appendix fall into one of three categories:

- "Design Requirements" for Class I, II, III, and IV bicycle facilities contain elements required by the State of California for compliance with Caltrans Chapter 1000 "Bikeway Planning and Design" guidelines.
- "Additional Design Recommendations" provide information on optional design treatments. Although this information meets Caltrans requirements it is not intended to state a minimum or maximum accommodation or to replace any existing adopted roadway design guidelines.
- "Experimental or Non-standard Best Practices" provides information about optional innovative bikeways and support facilities that have not been adopted for use in California and do not meet Caltrans Chapter 1000 design requirements.

All facility designs are subject to engineering design review.

Bikeway Facility Classifications

According to Caltrans, the term "bikeway" encompasses all facilities that facilitate bicycle travel. Caltrans has defined three types of bikeways in Chapter 1000 of the Highway Design Manual: Class I, Class II, and Class III bicycle facilities (see **Figure B-1**). In addition, DIB 89 provides guidance for Class IV bicycle facilities.

Class I Bikeway – Design Requirements

Typically called a "bike path" or "shared use path," a Class I bikeway provides bicycle travel on a paved right-of-way completely separated from any street or highway. The recommended width of a shared use path is dependent upon anticipated usage:

- 8' (2.4 m) is the minimum width for Class I facilities
- 8' (2.4 m) may be used for short neighborhood connector paths (generally less than one mile in length) due to low anticipated volumes of use
- 10' (3.0 m) is the recommended minimum width for a typical two-way bicycle path
- 12' (3.6 m) is the preferred minimum width if more than 300 users per peak hour are anticipated, and/or if there is heavy mixed bicycle and pedestrian use

A minimum 2' (0.6 m) wide graded area must be provided adjacent to the path to provide clearance from trees, poles, walls, guardrails, etc. On facilities with expected heavy use, a yellow centerline stripe is recommended to separate travel in opposite directions. **Figure B-2** illustrates a typical cross-section of a Class I multi-use path.

Figure B-1: Class I, II, and III Bicycle Facility Types

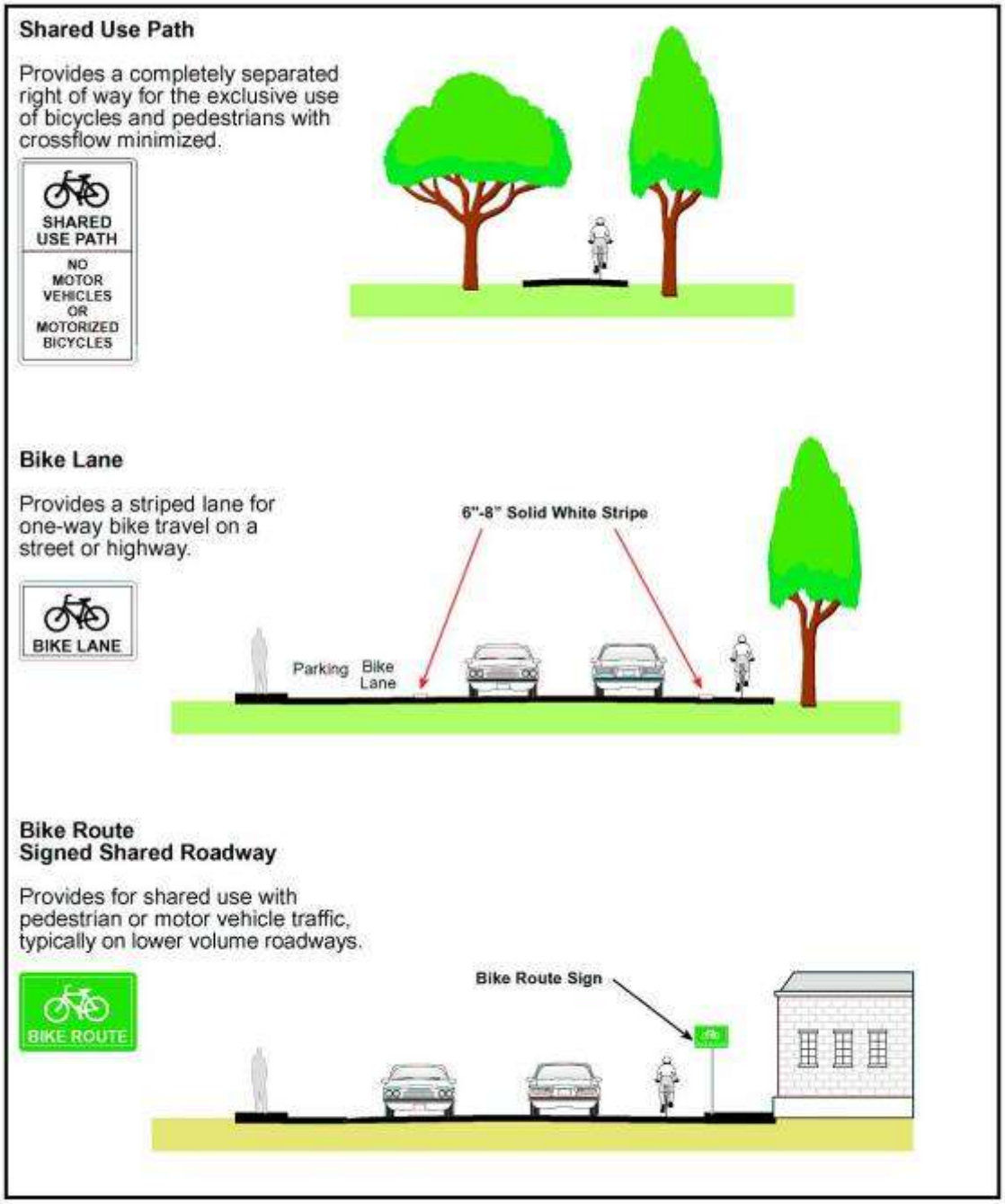
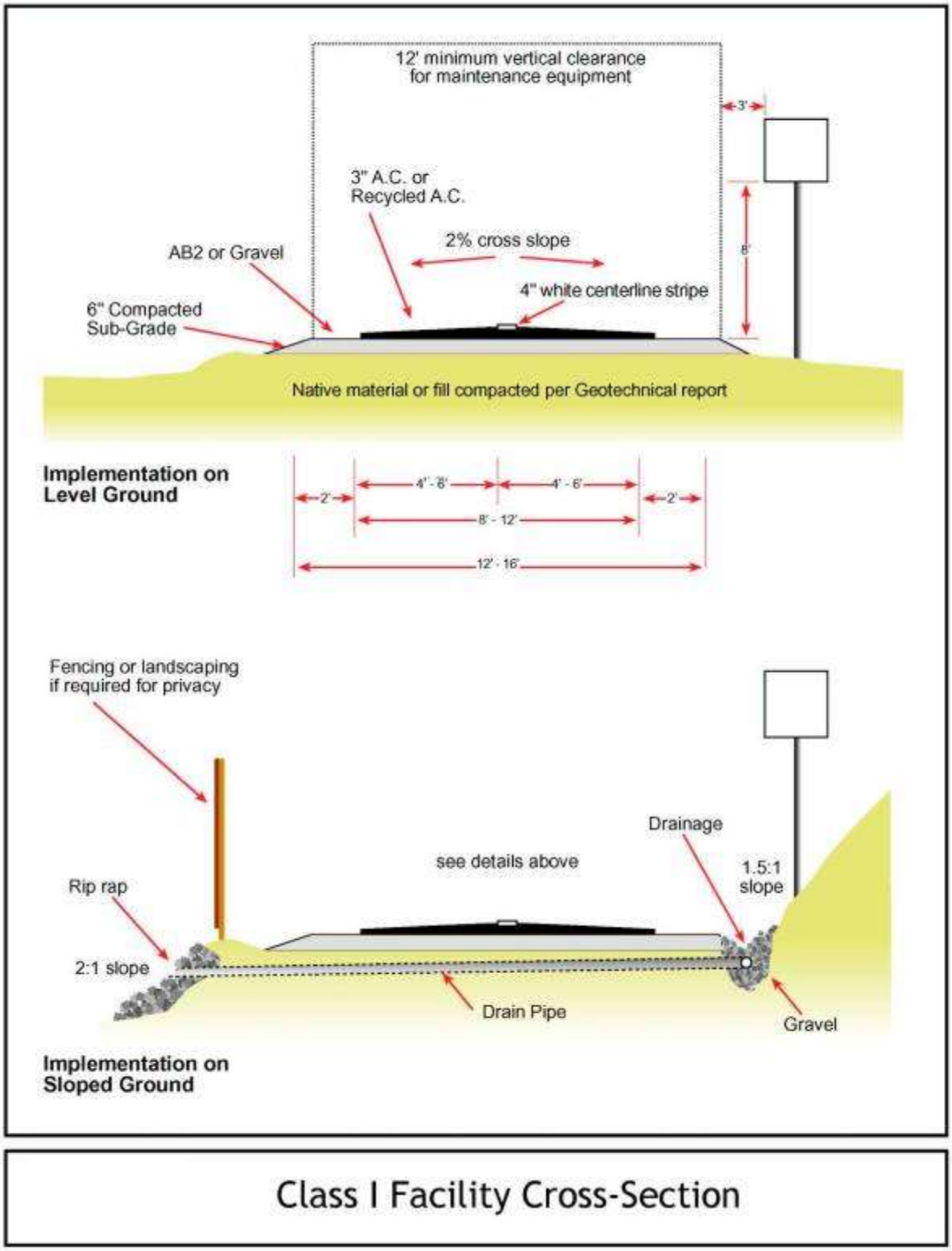


Figure B-2: Class I Bicycle Facility Cross-Section



Class I Facility Cross-Section

Class I Bikeway - Additional Design Recommendations:

1. Shared use trails and unpaved facilities that serve primarily a recreation rather than a transportation function and will not be funded with federal transportation dollars may not be required to be designed to Caltrans standards. However, state and national guidelines have been created with user safety in mind and should be followed. Wherever any trail facility intersects with a street, roadway, or railway, standard traffic controls should always be used.
2. Class I bike path crossings of roadways require preliminary design review. Generally speaking, bike paths that cross roadways with average daily trips (ADTs) over 20,000 vehicles will require signalization or grade separation.
3. Landscaping should generally be low water consuming native vegetation and should have the least amount of debris.
4. Lighting should be provided where commuters will use the bike path during hours of darkness.
5. Barriers at pathway entrances should be clearly marked with reflectors and be ADA accessible (minimum five feet clearance).
6. Bike path construction should take into account impacts of maintenance and emergency vehicles on shoulders and vertical and structural requirements. Paths should be constructed with adequate sub grade compaction to minimize cracking and sinking.
7. All structures should be designed to accommodate appropriate loadings. The width of structures should be the same as the approaching trail width, plus minimum two-foot wide clear areas.
8. Where feasible, provide two-foot wide unpaved shoulders for pedestrians/runners, or a separate tread way.
9. Direct pedestrians to the right side of pathway with signing and/or stenciling.
10. Consider using bicycle signal heads at locations where sidepaths meet signalized intersections.

Class IV Bikeway – Separated Bikeways

The treatment provides a physical barrier between bikes and cars. It is useful along streets with minimal crossings. Installation of a one-way bike path should be undertaken only after careful consideration due to the problems of enforcing one-way operation, the difficulties in maintaining a path of restricted width and the potential for increased motor vehicle-bicycle conflicts at driveways, side streets and intersections.

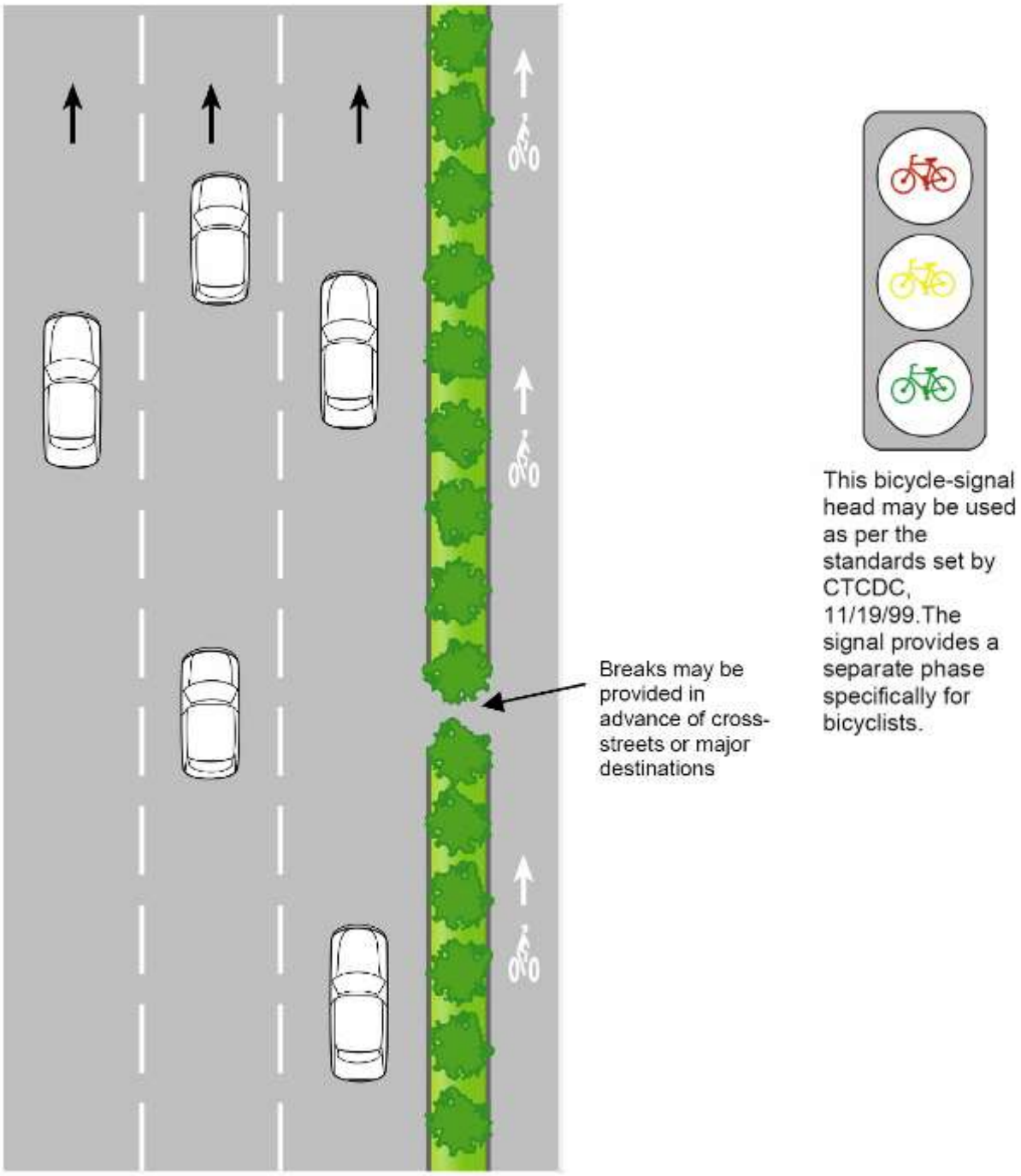
Potential applications include:

- When adequate pedestrian facilities exist so that the bike facility will not be considered a "multi-use path"
- Relatively few driveways or intersections
- Provides connection between two shared-use path facilities
- Intersection transitions can be made
- Moderate to high speeds

- Regular street sweeping of track is possible
- There is an equivalent bikeway for the opposite direction that will be more attractive for cyclists in lieu of riding the wrong way on the track
- Where path does not interfere with transit stops

Breaks may be provided in advance of cross streets or major destinations. On some routes, it may be appropriate to use soft hit posts or other means of physical separation 40 inches in height. However, Caltrans Chapter 1000 prohibits use of raised pavement markers to delineate bicycle lanes. There must be an equivalent bikeway for the opposite direction of travel that will be more attractive to bicyclists than riding the wrong way in the one-direction cycle track. To minimize conflicts between bicyclists and motorists it may be advisable to use bicycle signal heads at signalized intersections.

Figure B-3: Class IV Bikeway and Bicycle Signal Head



Class II Bikeway – Design requirements

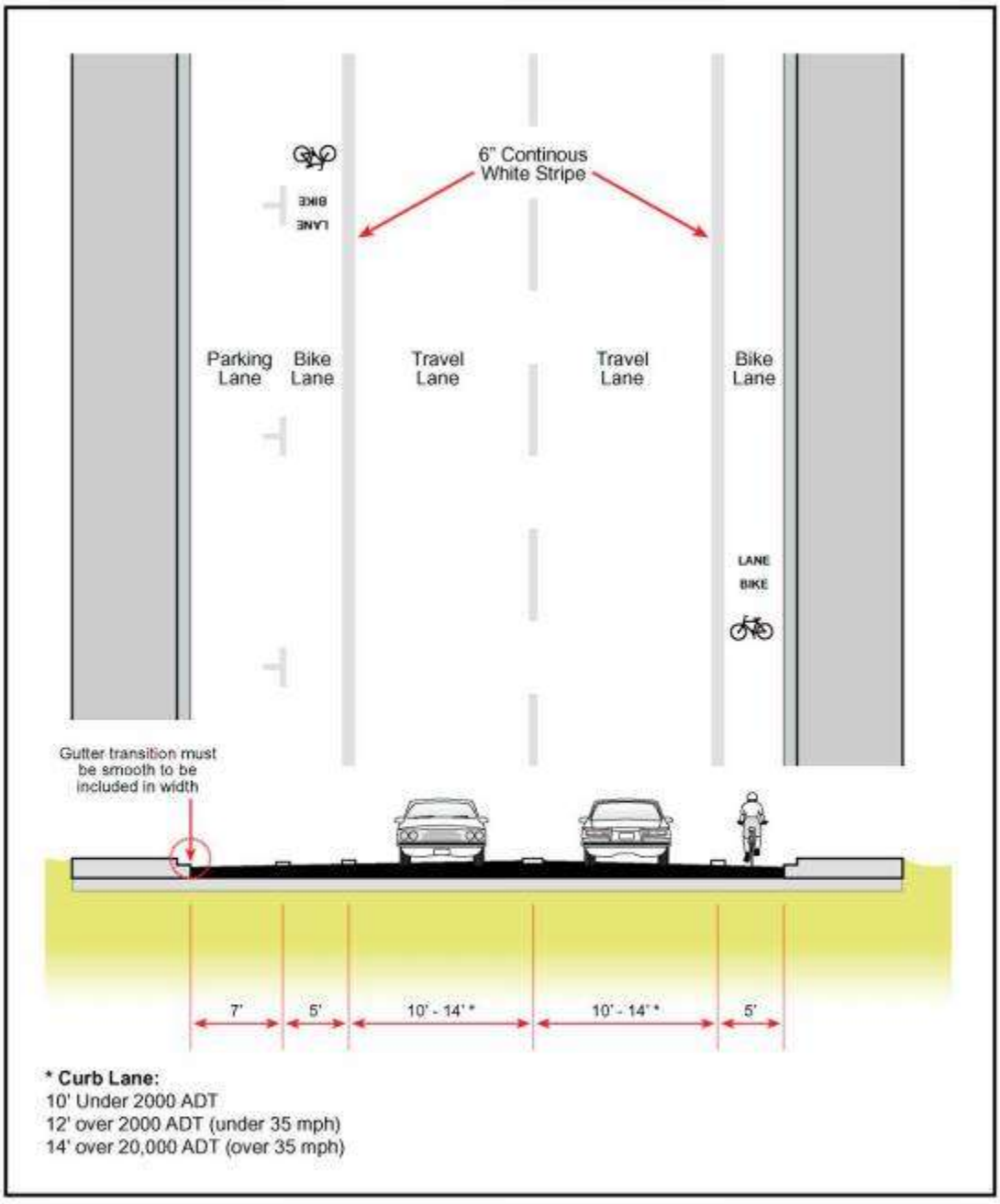
Often referred to as a "bicycle lane," a Class II bikeway provides a striped and stenciled lane for one-way travel on either side of a street or highway. **Figure B-4** shows a typical Class II cross-section. To provide bicycle lanes along corridors where insufficient space is currently available, extra room can be provided by removing a traffic lane, narrowing traffic lanes, or prohibiting parking. The width of bicycle lanes vary according to parking and street conditions. Note that these dimensions are for reference only, may not meet Fairfax standards, and are subject to engineering design review.

- 4' (1.2 m) minimum if no gutter exists, measured from edge of pavement
- 5' (1.5 m) minimum with normal gutter, measured from curb face; or 3' (0.9 m) measured from the gutter pan seam
- 5' (1.5 m) minimum when parking stalls are marked
- 11' (3.3 m) minimum for a shared bike/parking lane where parking is permitted but not marked on streets without curbs; or 12' (3.6 m) for a shared lane adjacent to a curb face.

Class II Bikeway - Additional Design Recommendations:

1. The Department of Public Works should recommend that wider bike lanes beyond the minimum standard be installed.
2. Intersection and interchange treatment – Caltrans provides recommended intersection treatments in Chapter 1000 including bike lane "pockets" and signal loop detectors. The Department of Public Works should develop a protocol for the application of these recommendations, so that improvements can be funded and made as part of regular improvement projects.
3. Signal loop detectors, which sense bicycles, should be considered for all arterial/arterial, arterial/collector, and collector/collector intersections. A stencil of a bicycle and the words "Bicycle Loop" should identify the location of the detectors.
4. When loop detectors are installed, traffic signalization should be set to accommodate bicycle speeds.
5. Bicycle-sensitive loop detectors are preferred over a signalized button specifically designed for bicyclists (see discussion of loop detectors, below).
6. Bike lane pockets (min. 4' wide) between right turn lanes and through lanes should be provided wherever available width allows, and right turn volumes exceed 150 motor vehicles/hour.
7. Where bottlenecks preclude continuous bike lanes, they should be linked with Class III route treatments.
8. A bike lane should be delineated from motor vehicle travel lanes with a solid 6" white line, per MUTCD. An 8" line width may be used for added distinction.
9. Word and symbol pavement stencils should be used to identify bicycle lanes, as per Caltrans and MUTCD specifications.
10. Narrowing automobile travel lane widths.
11. Bicycle signal heads may be used at locations with extremely high motorist-bicyclist conflicts.

Figure B-4: Typical Class II Facility Cross-Section



Class II Facility Cross-Section

Installing bicycle lanes may require more attention to continuous maintenance issues. Bicycle lanes tend to collect debris as vehicles disperse gravel, trash, and glass fragments from traffic lanes to the edges of the roadway. Striping and stenciling will need periodic replacing.

Poorly designed or placed drainage grates can often hazardous to bicyclists. Drainage grates with large slits can catch bicycle tires. Poorly placed drainage grates may also be hazardous, and can cause bicyclists to veer into the auto travel lane.

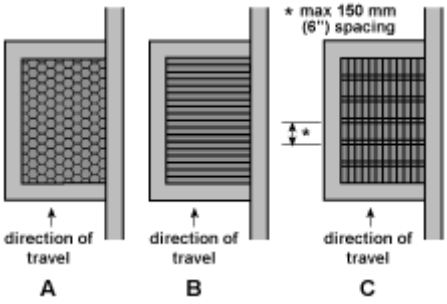


Figure B-5: Examples of Bicycle-Friendly Drainage Grates

Colored Bicycle Lanes

Colored bicycle lanes could be used in high-conflict areas, to alert drivers of the presence of bicyclists and bicycle lanes. These areas can be painted or treated with a thermoplastic. Typically, yield signs that instruct bicyclists and drivers about the lanes are installed with the colored lane treatments.

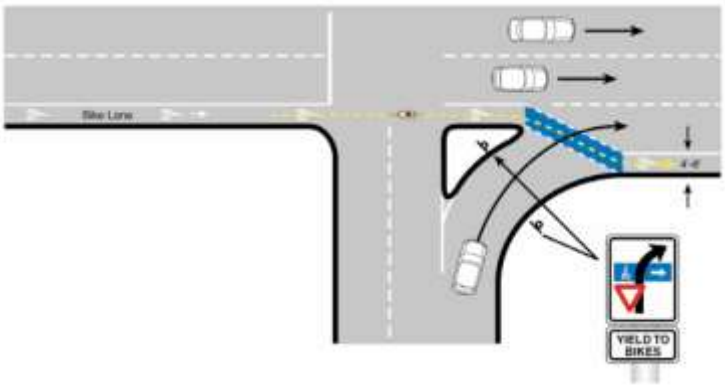
Potential applications include:

- High volume of vehicles turning across bike lane to exit or enter a roadway in a ramp-like configuration. This should not be used in typical 4-legged intersection situations that simply have a high volume of turning motor vehicles
- Roadways / ramps merge at angles where motorist sight distance is impaired, or that cause motorists to be looking to merge in such a way that they may not see bicyclists in a normally marked bike lane
- High volume of bicyclists
- Bicyclists have priority movement

Other potential situations for application of colored bike lanes include:

- Contra-flow bike lanes
- Left-side bike lanes on high volume roads
- Bike-only left-turn pockets

Figure B-6: Colored Bicycle Lane through Conflict Zone



Bicycle Boxes

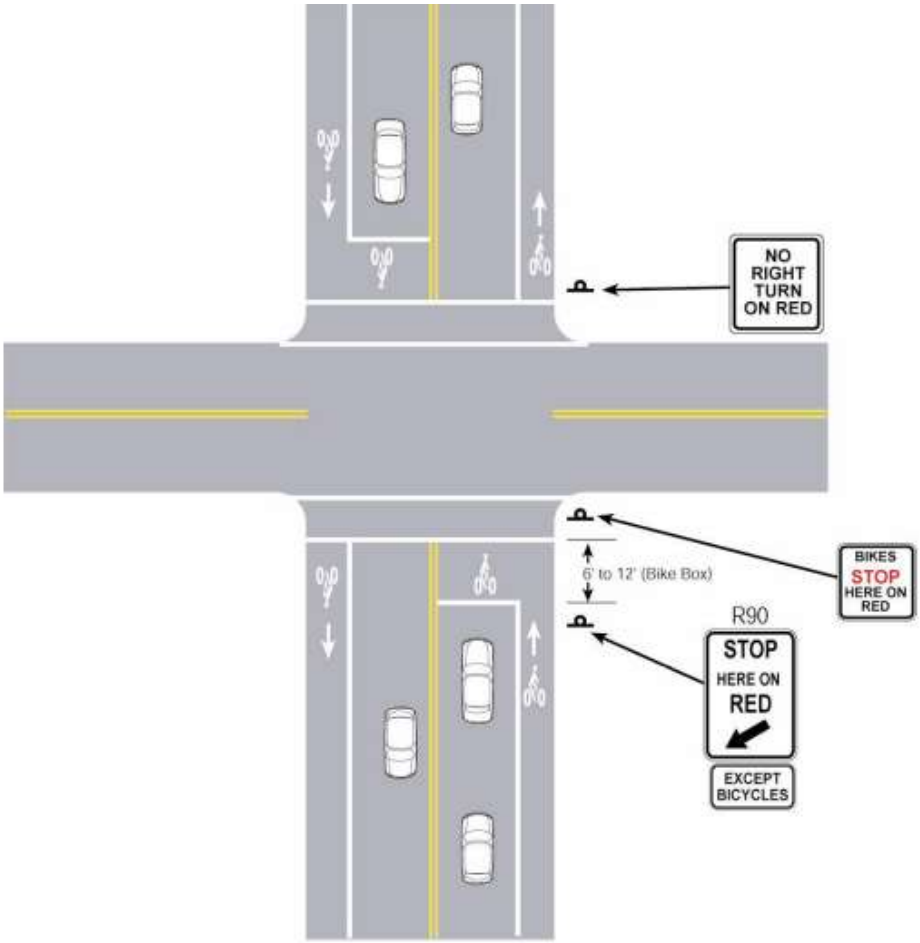
This treatment includes a bicycle lane leading to a "box" situated behind the crosswalk and in front of the motor vehicle stop bar. The bike box allows bicyclists to move to the front of the queue and position themselves for turning movements. The treatment is also intended to improve the visibility of bicyclists. A bicycle marking is stenciled in the box and should be accompanied by signs communicating where bicycles and motor vehicles should stop.

Potential applications include:

- At intersections with a high volume of bicycles and motor vehicles
- Where there are frequent turning conflicts and/or intersections with a high percentage of turning movements by both bicyclists and motorists
- No right turn on red
- Can be combined with a bicycle signal (optional)

In the US, bicycle boxes have been used in Cambridge, MA, Portland, OR, and Eugene, OR. They have been used in a variety of locations throughout Europe.

Figure B-9: Bicycle Box



Class II Bikeway – experimental or non-standard best practices

The following section provides information about optional innovative designs for bicycle lanes that have not been adopted for use in California and do not meet Caltrans Chapter 1000 design requirements.

Contraflow Bicycle Lanes

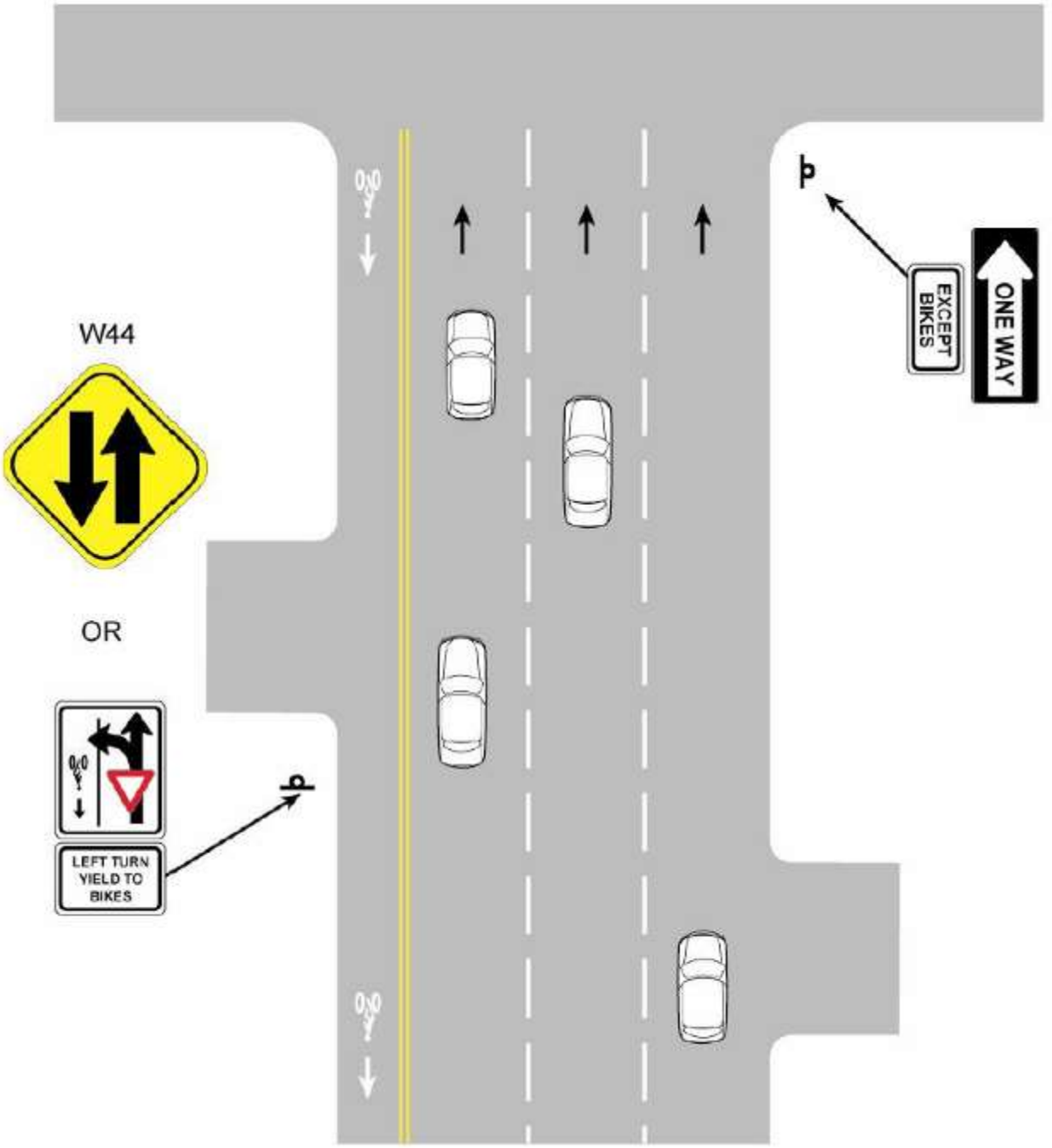
A contra-flow bicycle lane provides a striped lane going against the flow of automobile travel. The lanes should be separated by a double-yellow line. This type of treatment should only be considered after all other methods to accommodate bicycles along a corridor have been considered. This treatment is to be considered the exception, and not the rule, for one-way streets. As a part of trial implementation, an effective sign design to accompany this treatment needs to be determined. A standard two-way traffic warning sign (W44) may be most appropriate.

Potential applications include:

- Provides direct access to key destination
- Improves safety
- Infrequent driveways on bike lane side
- Bicyclists can safely and conveniently re-enter traffic at either end
- Sufficient width to provide bike lane
- No parking on side of street with bike lane
- Existing high bicycle usage of street
- Less than three blocks in length
- No other reasonable route for bicyclist

Contraflow bicycle lanes have been used in Portland, OR, Madison, WI, San Francisco, CA, and Cambridge, MA.

Figure B-7: Contraflow Bicycle Lane



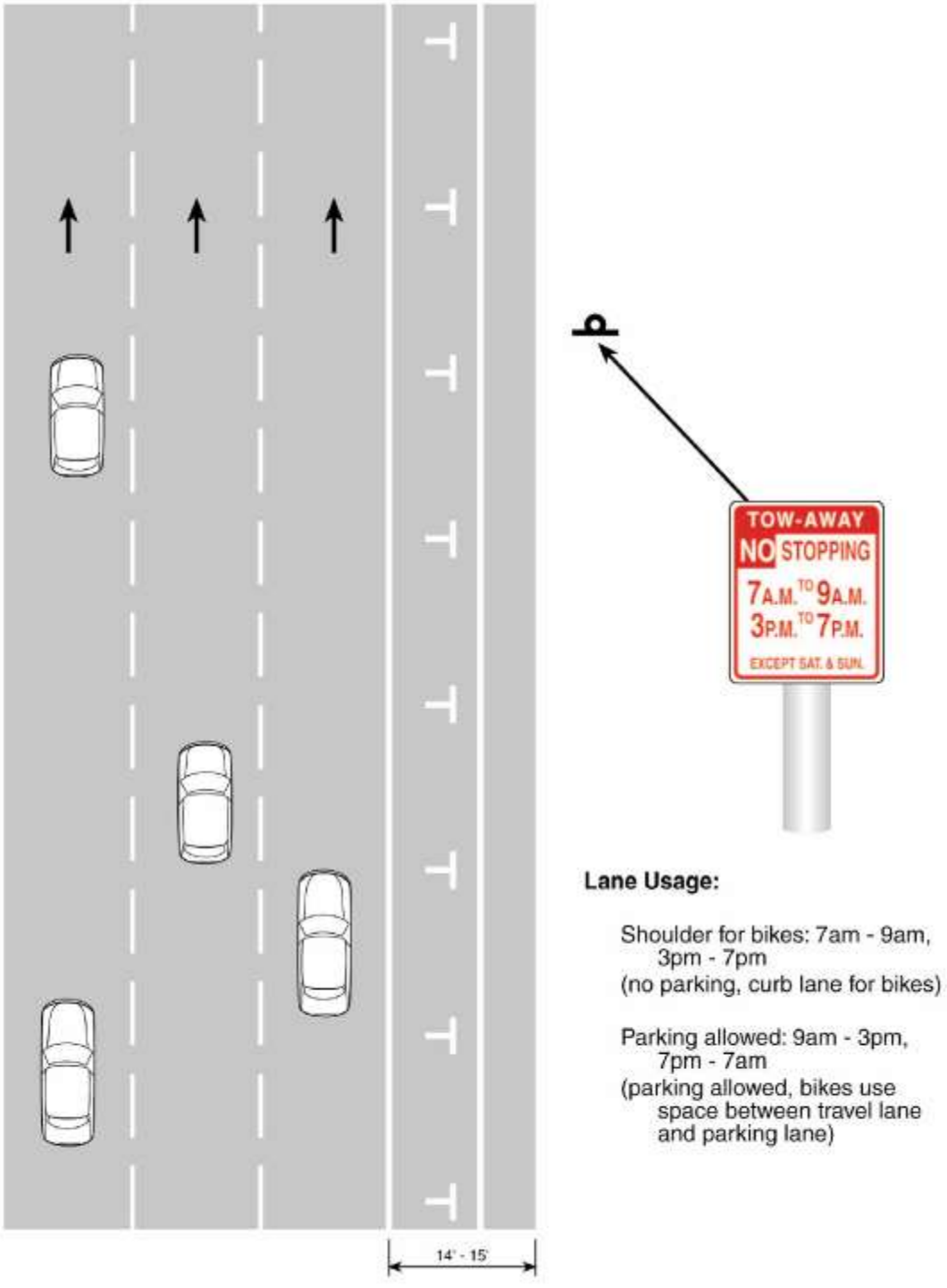
Floating Bicycle Lanes

This treatment designates a single lane to function as a parking lane, a designated bicycle route, and then both, depending on the time of day. During peak commute times when parking is not allowed, bicyclists will use the shoulder. During off-peak hours when parking is allowed, bicyclists can use the space between the remaining automobile travel lanes and the parking lane. Beginning of each block must be cross hatched appropriately to prohibit parking in this location. Various treatments can be implemented as necessary, such as: cross hatching at beginning of facility, wider lane lines, merge signs, and longer parking T's to discourage use of lane by motor vehicles during off-peak hours. This treatment is used on The Embarcadero in San Francisco.

Potential applications include:

- Primary bicycle commute routes
- Not enough width to provide standard bike lane and parking

Figure B-8: Floating Bicycle Lane



Lane Usage:

Shoulder for bikes: 7am - 9am, 3pm - 7pm
(no parking, curb lane for bikes)

Parking allowed: 9am - 3pm, 7pm - 7am
(parking allowed, bikes use space between travel lane and parking lane)

Bicycle Left-turn Pocket Lane

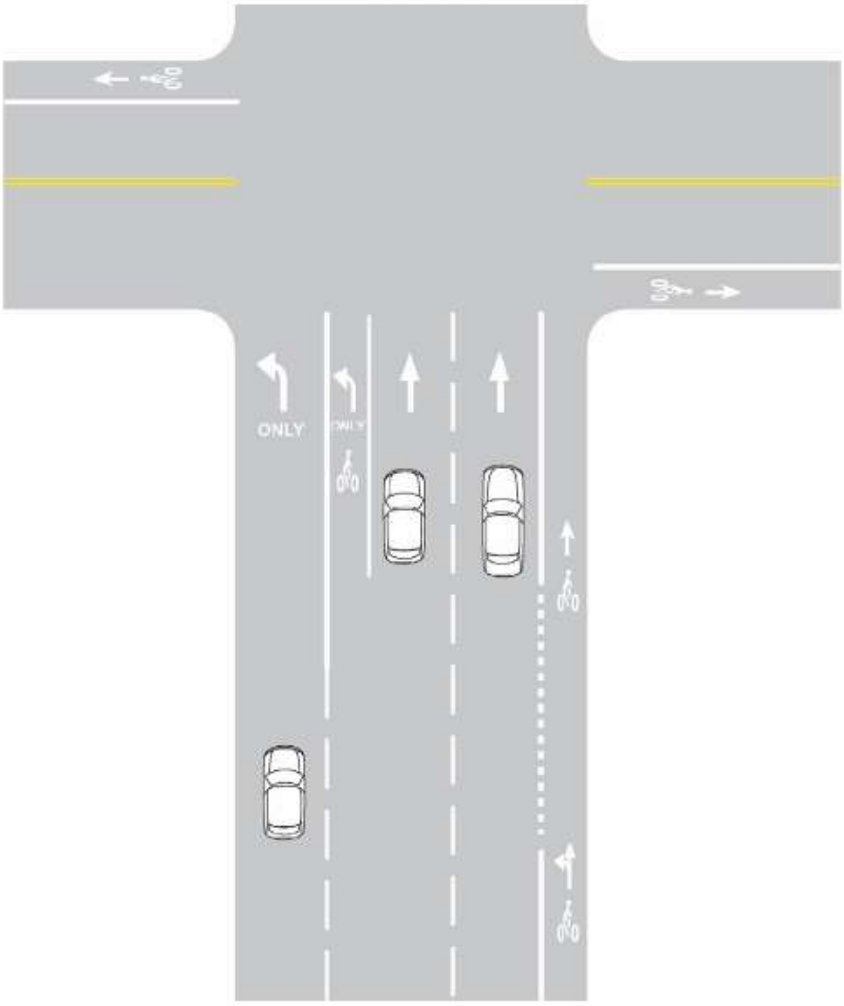
This treatment shows a standard-width bicycle lane adjacent to the left-hand turn lane in order to reduce conflicts with turning vehicles. The Bicyclists Merging sign may be placed on the right side of the road before the left-side turn pocket. This treatment has been used in San Francisco, CA, and Flagstaff, AZ.

Potential applications include:

- Low-moderate speeds
- On lower volume arterials and collectors
- Heavy vehicular left-hand turning movements

In the US, bicycle boxes have been used in Cambridge, MA, Portland, OR, and Eugene, OR. They have been used in a variety of locations throughout Europe.

Figure B-10: Bicycle Left-turn Pocket Lane



Class III Bikeway – Design Requirements

Generally referred to as a "bike route," a Class III bikeway provides routes through areas not served by Class I, II, or IV facilities or to connect discontinuous segments of a bikeway.

Class III facilities can be shared with motorists and are identified by signage and/or pavement markings. There are no recommended minimum widths for Class III facilities, but when encouraging bicyclists to travel along selected routes, traffic speed and volume, parking, traffic control devices, and surface quality should be acceptable for bicycle travel. Although it is not a requirement, a wide outside traffic lane (14') is typically preferable to enable cars to safely pass bicyclists without crossing the centerline. Caltrans Chapter 1000 provides details regarding the design requirements for placement and spacing of bicycle route signage.

Class III Bikeway - Additional Design Recommendations

Shared Roadway Bicycle Marking

Recently, Shared Lane Marking stencils (also called "Sharrows"), were introduced for use in California as an additional treatment for Class III facilities. The stencil can serve a number of purposes, such as making motorists aware of bicycles potentially in their lane, showing bicyclists the direction of travel, and, with proper placement, reminding bicyclists to bike further from parked cars to prevent "dooring" collisions. **Figure B-11** illustrates recommended on-street Shared Lane Marking stencil placement. The "Chevron" marking design recommended by Caltrans is shown below in **Figure B-12.** The following pavement markings were adopted for official use by Caltrans on 9/12/2005 as part of the California MUTCD.

Guidance language provided by Caltrans for use of the Shared Lane Marking is as follows:

Section 9C.103 Shared Roadway Bicycle Marking

Option:

The Shared Roadway Bicycle Marking shown in Figure 9C-107 may be used to assist bicyclists with positioning on a shared roadway with on-street parallel parking and to alert road users of the location a bicyclist may occupy within the traveled way.

Standard:

The Shared Roadway Bicycle Marking shall only be used on a roadway which has on-street parallel parking. If used, Shared Roadway Bicycle Markings shall be placed so that the centers of the markings are a minimum of 3.3 m (11 ft) from the curb face or edge of paved shoulder. On State Highways, the Shared Roadway Bicycle Marking shall be used only in urban areas.

Option:

For rural areas, the SHARE THE ROAD (W16-1) plaque may be used in conjunction with the W11-1 bicycle warning sign (see Sections 2C.51 and 9B.18). Information for the practitioner regarding classification of rural versus urban roadways can be found at the following California Department of Transportation website: http://www.dot.ca.gov/hq/tsip/hpms/Page1.php

Guidance:

If used, the Shared Roadway Bicycle Marking should be placed immediately after an intersection and

spaced at intervals of 75 m (250 ft) thereafter. If used, the Shared Roadway Bicycle Marking should not be placed on roadways with a speed limit at or above 60 km/h, (40 mph).

Option:

Where a Shared Roadway Bicycle Marking is used, the distance from the curb or edge of paved shoulder may be increased beyond 3.3 m (11 ft). The longitudinal spacing of the markings may be increased or reduced as needed for roadway and traffic conditions. Where used, bicycle guide or warning signs may supplement the Shared Roadway Bicycle Marking.

Support:

The Shared Roadway Bicycle Marking is intended to:

- Reduce the chance of bicyclists impacting open doors of parked vehicles on a shared roadway with on-street parallel parking.
- Alert road users within a narrow traveled way of the lateral location where bicyclists ride.
- Be used only on roadways without striped bicycle lanes or shoulders.

Figure B-11: Shared Lane Marking Placement

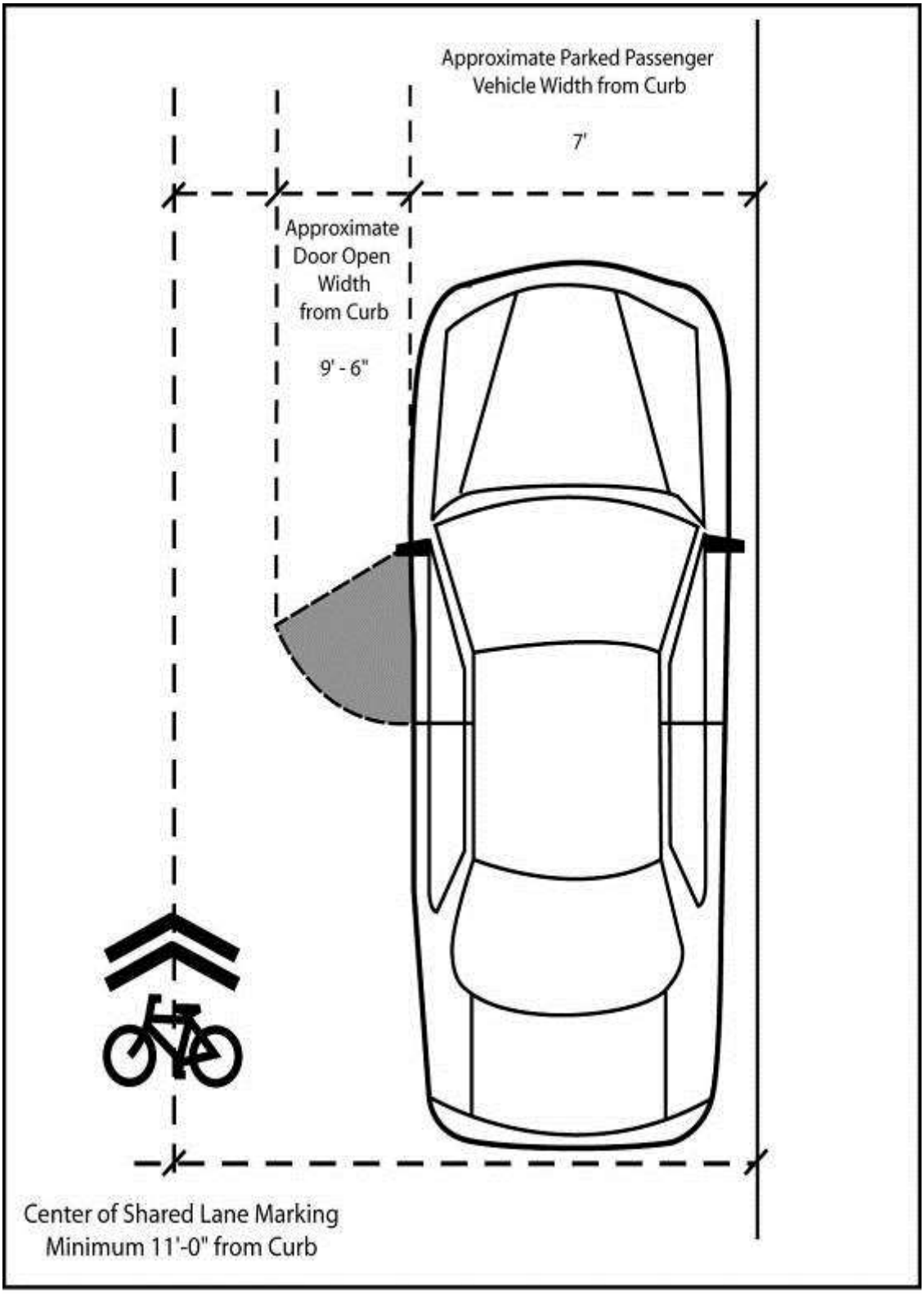
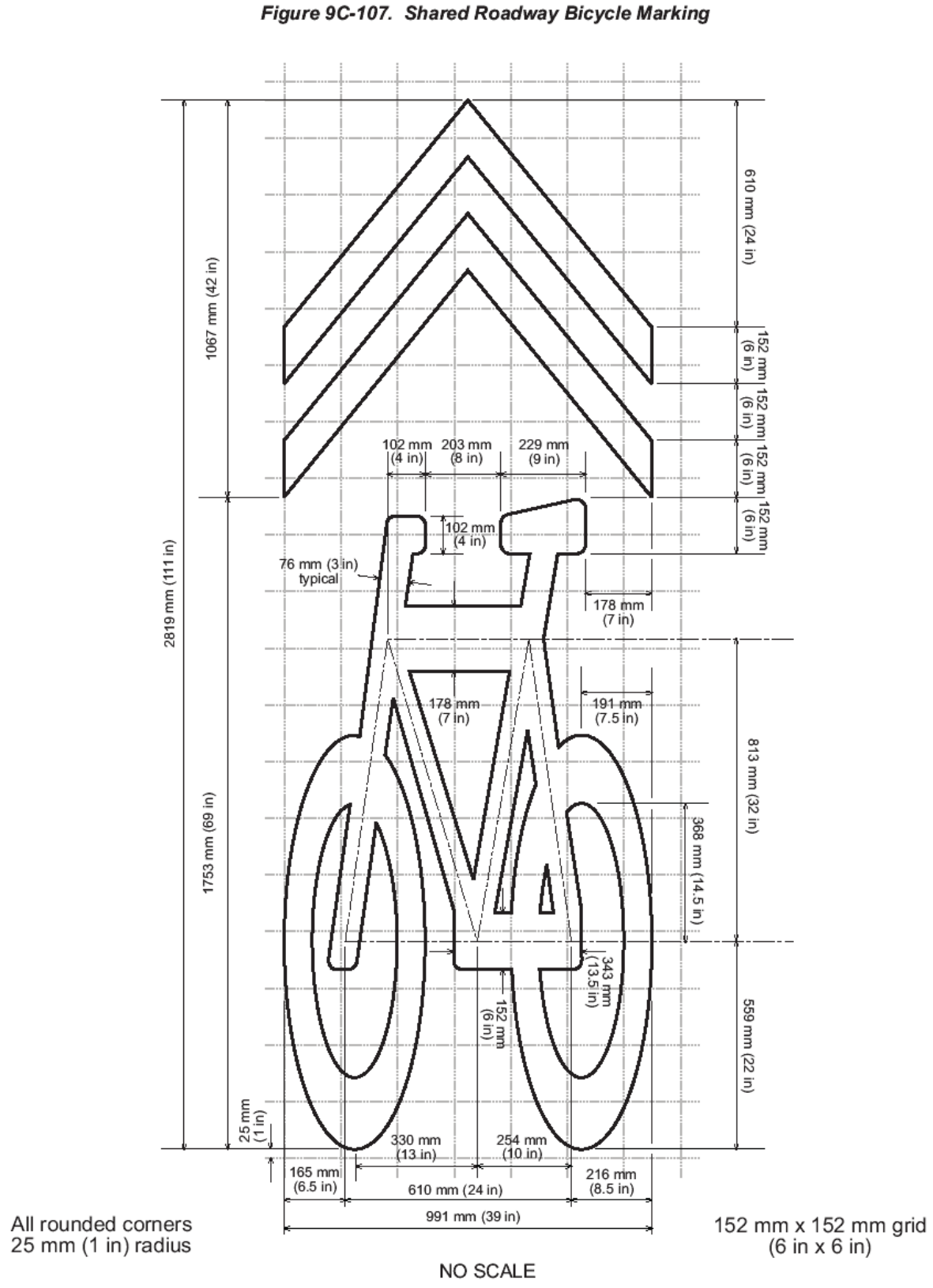


Figure B-12: Shared Roadway Bicycle Marking



Bicycle Boulevard

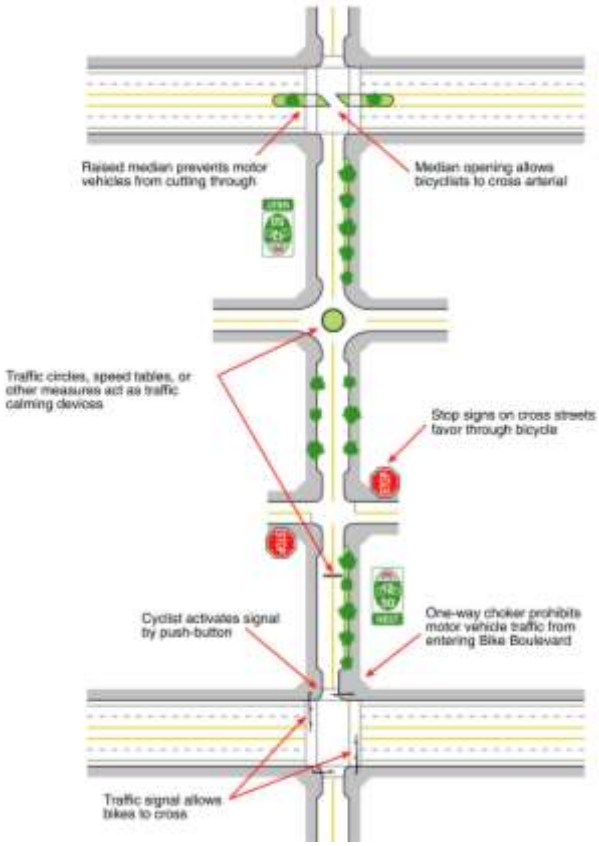
A bicycle boulevard treatment is typically a lower volume street with traffic calming treatments that parallels a higher volume arterial. Traffic calming typically includes a set of improvements to slow traffic and prevent cut-through traffic such as: traffic circles, chokers, and medians. In addition, stop signs favor bicyclists by stopping perpendicular traffic. Sensor loops activate traffic signals to allow safe crossings of higher volume roadways. The following design considerations apply to a bicycle boulevard:

- Typically used on low-volume streets
- Traffic-calmed streets located within 1/4 mile of parallel arterials
- Allows access to key destinations
- Provides safe arterial street crossing for bicyclists
- Possible speed limit reduction from 25 MPH to 20 MPH

Figure B-13 illustrates a typical bicycle boulevard street configuration.

For more information, see the City of Berkeley Bicycle Boulevard *Design Tools and Guidelines* at http://www.ci.berkeley.ca.us/transportation/Bicycling/BB/Guidelines/linkpag.htm

Figure B-13: Example Bicycle Boulevard



Bikeway Support Facilities

In a nationwide Harris Poll conducted in 1991, almost half the respondents stated that they would sometimes commute to work by bicycle, or commute more often, if there were showers, lockers, and secure bicycle storage at work. Bicyclists' needs for bicycle parking range from simply a convenient piece of street furniture, to storage in a bicycle locker that affords weather, theft and vandalism protection, gear storage space, and 24-hour personal access. Most bicycles today cost 350 dollars to over 2,000 dollars and are one of the top stolen items in all communities, with components being stolen even when a bicycle is securely locked. Theft can be a serious deterrent to riding, especially for low-income riders or those with particularly expensive or bicycles. Where a bicyclist's needs falls on this spectrum is determined by several factors:

Type of trip being made: whether or not the bicycle will be left unattended all day or just for a few minutes.

Security of area: determined by the bicyclist's perception

Value of the bicycle: the more a bicyclist has invested in a bicycle, the more concern she or he will show for theft protection or how prone a given area is to bicycle theft.

A final need for some potential commuting bicyclists are shower, locker, and changing rooms at trip destinations. For those bicyclists needing to dress more formally, travel longer distances, or bicycle during wet or hot weather, the ability to shower and change clothing can be as critical as bicycle storage.

Types of Bicycle Parking

Bicycle parking facilities in California are classified as follows:

Class I: Class I bicycle parking facilities (see **Figure B-14**) accommodate employees, students, residents, commuters, and others expected to park more than two hours. This parking is to be provided in a secure, weather-protected manner and location. Class I bicycle parking will be either a bicycle locker or a secure area like a 'bike corral' that may be accessed only by bicyclists.

Bike lockers are covered storage units that typically accommodate one or two bicycles per locker, and provide additional security and protection from the elements. These are typically located at large employment center, colleges, and transit stations.

Bike corrals can be found at schools, stadiums, special events, and other locations, and typically involve a movable fencing system that can safely store numerous bicycles. Either locking the enclosure or locating it near other activities so that it can be supervised provides security.

Class II: Class II bicycle parking facilities (see **Figure B-15**) are best used to accommodate visitors, customers, messengers, and others expected to depart within two hours. Bicycle racks provide support for the bicycle but do not have locking mechanisms. Racks are relatively low-cost devices that typically hold between two and eight bicycles, allow bicyclists to securely lock their frames and wheels, are secured to the ground, and are located in highly-visible areas. They are usually located at schools, commercial locations, and activity centers such as parks, libraries, retail locations, and civic centers. Class II racks are typically located on sidewalks. Due to narrow sidewalk widths in many areas, interest

has been increasing in on-street bicycle parking, sometimes in place of car parking spaces (see **Figure B-16** for an example).

Figure B-14: Class I Bike Lockers

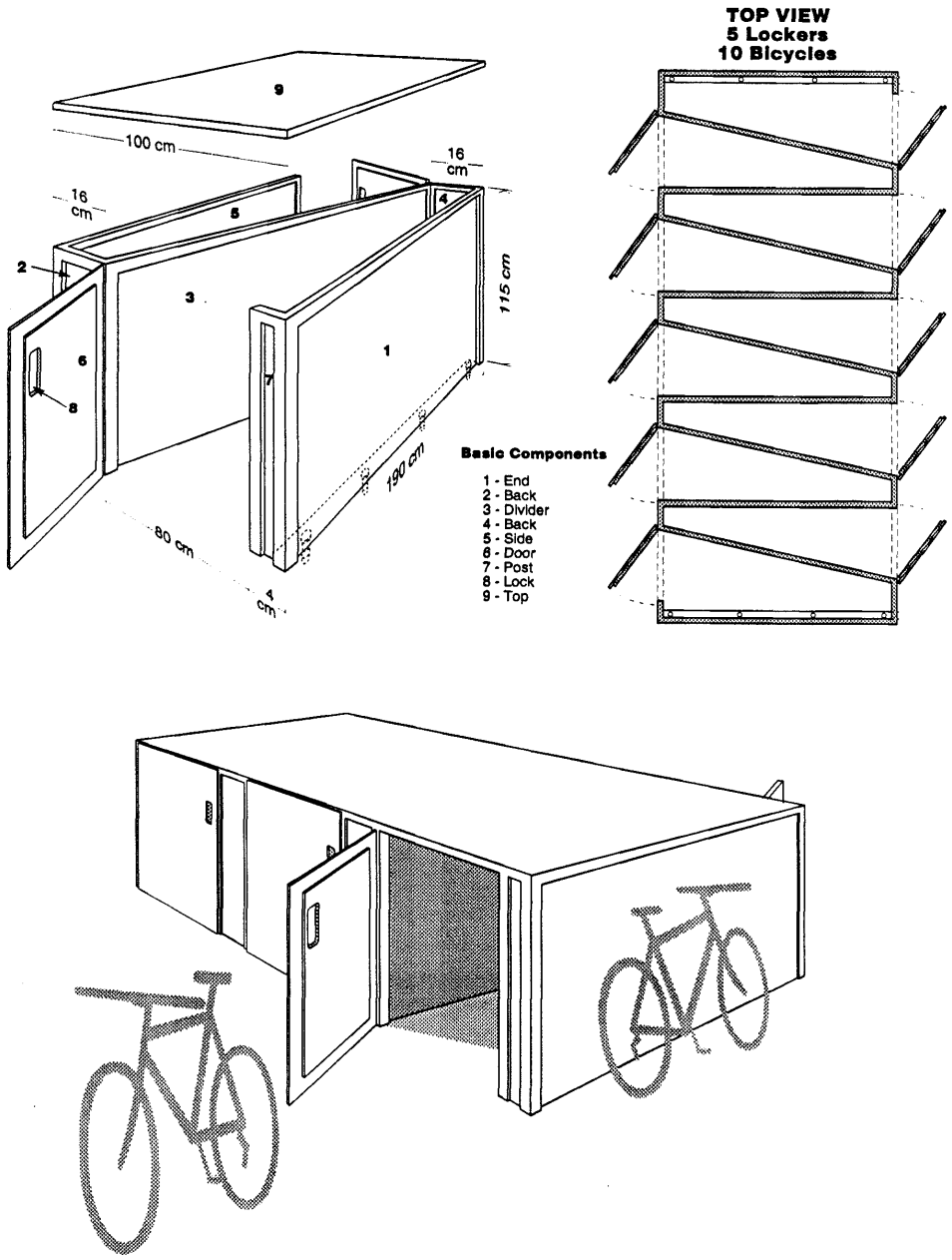


Figure B-15: Class II Racks

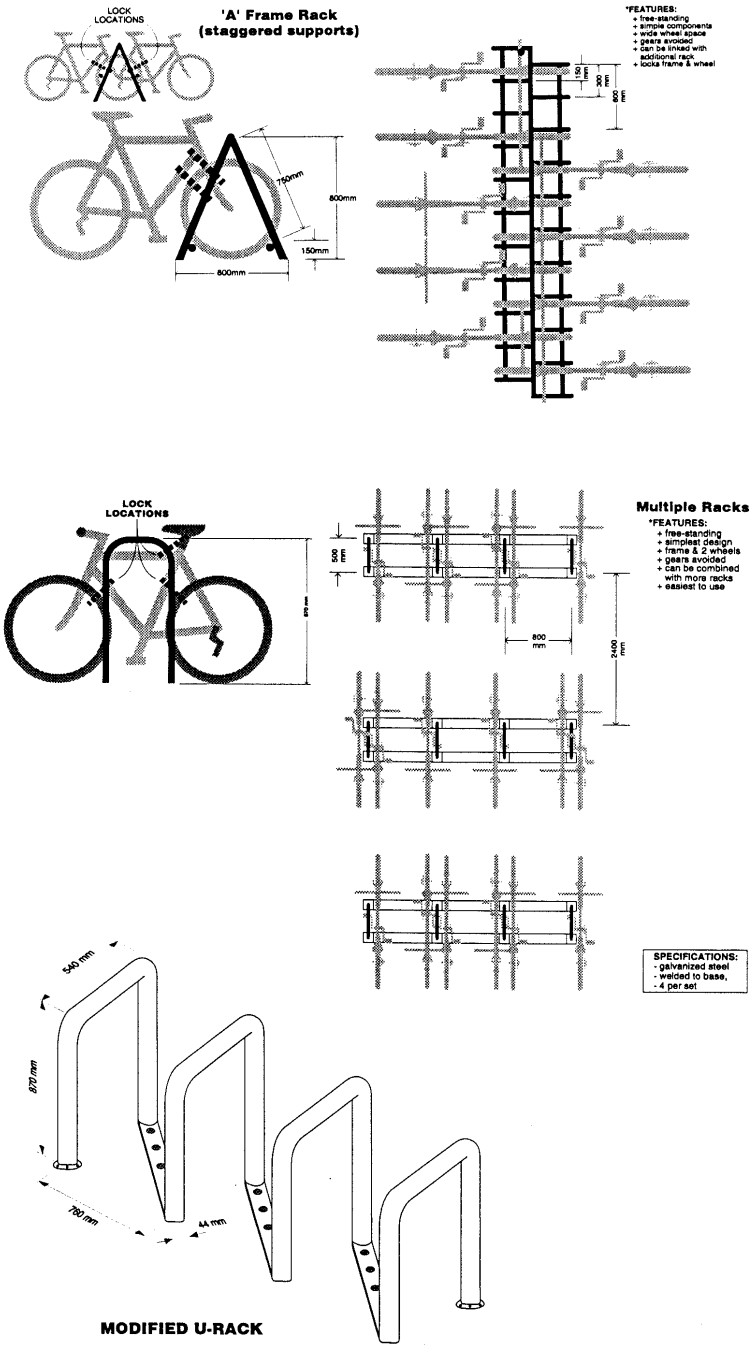
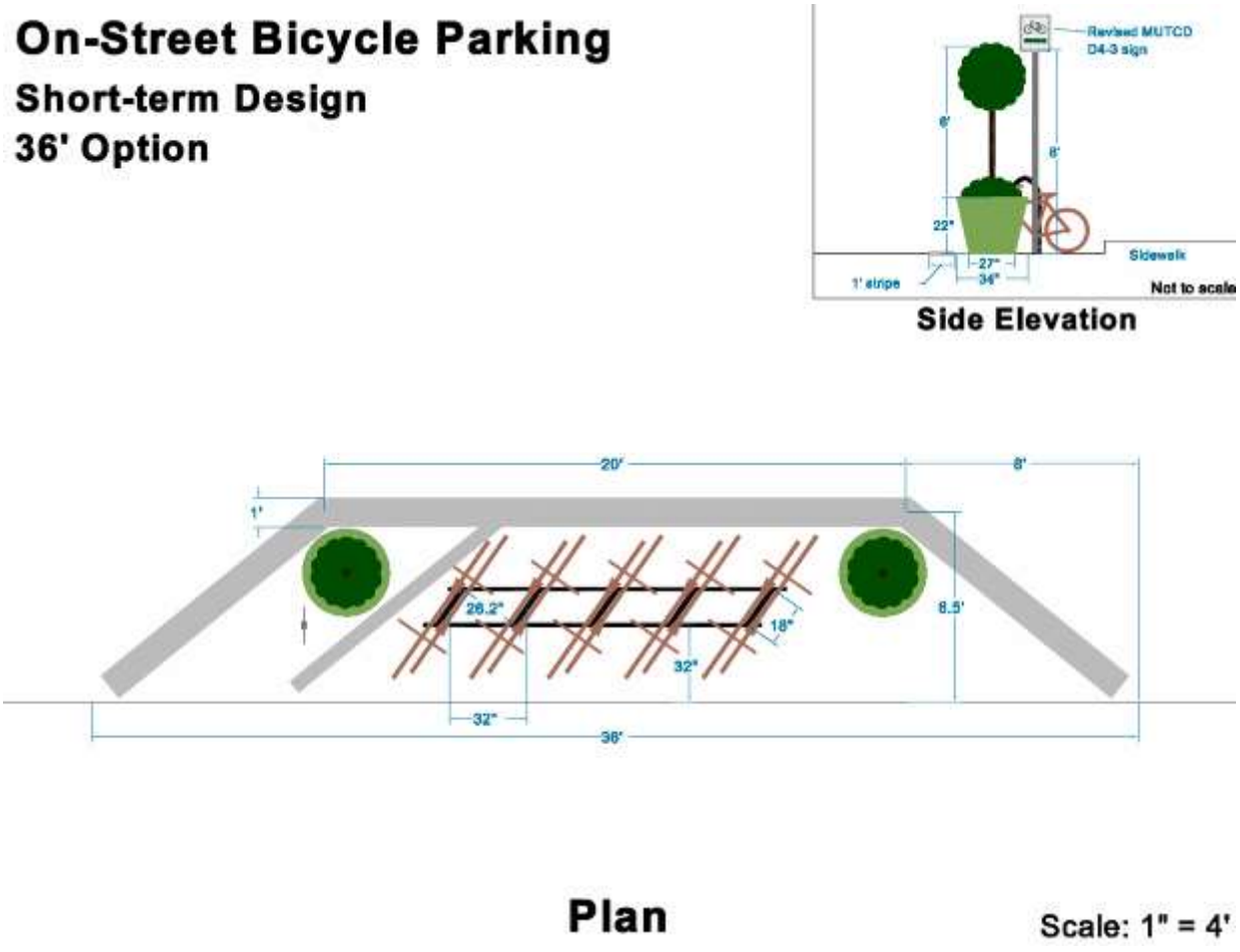


Figure B-16: On-street Bicycle Parking Diagram



Appendix C: Supplemental Pedestrian Facility Design Guidelines

State and Federal Guidelines

The design of many streetscape elements is regulated by state and federal law. Traffic control devices must follow the procedures set forth in the Manual of Uniform Traffic Control Devices (MUTCD), while elements such as sidewalks and curb cuts must comply with guidelines implementing the Americans with Disabilities Act (ADA).

Manual of Uniform Traffic Control Devices

Fairfax follows the procedures and policies set out in the MUTCD. Traffic control devices include traffic signals, traffic signs, and street markings. The manual covers the placement, construction, and maintenance of devices. The 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.

Principles for Pedestrian Design

The following design principles represent a set of ideals which should be incorporated, to some degree, into every pedestrian improvement. They are ordered roughly in terms of relative importance.

1. The pedestrian environment should be safe.
   Sidewalks, walkways, and crossings should be designed and built to be free of hazards and to minimize conflicts with external factors such as noise, vehicular traffic, and protruding architectural elements.

2. The pedestrian network should be accessible to all.
   Sidewalks, walkways, and crosswalks should ensure the mobility of all users by accommodating the needs of people regardless of age or ability.

3. The pedestrian network should connect to places people want to go.
   The pedestrian network should provide continuous direct routes and convenient connections between destinations, including homes, schools, shopping areas, public services, recreational opportunities and transit.

4. The pedestrian environment should be easy to use.
   Sidewalks, walkways, and crossings should be designed so people can easily find a direct route to a destination and will experience minimal delay.

5. The pedestrian environment should provide good places.
   Good design should enhance the look and feel of the pedestrian environment. The pedestrian environment includes open spaces such as plazas, courtyards, and squares, as well as the building facades that give shape to the space of the street. Amenities such as

seating, street furniture, banners, art, plantings, shading, and special paving, along with historical elements and cultural references, should promote a sense of place.

6. The pedestrian environment should be used for many things.
   The pedestrian environment should be a place where public activities are encouraged. Commercial activities such as dining, vending, and advertising may be permitted when they do not interfere with safety and accessibility.

7. Pedestrian improvements should preserve or enhance the historical qualities of a place.
   Fairfax's history must be preserved in the public space. Where applicable, pedestrian improvements should restore and accentuate historical elements of the public right-of-way. Good design will create a sense of time that underscores the history of Fairfax.

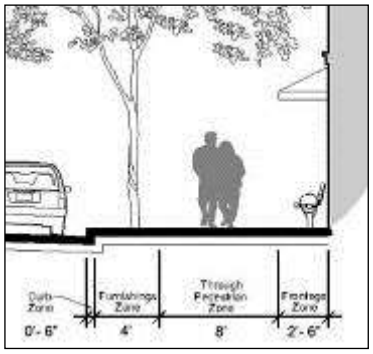
8. Pedestrian improvements should be economical.
   Pedestrian improvements should be designed to achieve the maximum benefit for their cost, including initial cost and maintenance cost as well as reduced reliance on more expensive modes of transportation. Where possible, improvements in the right-of-way should stimulate, reinforce, and connect with adjacent private improvements.

Sidewalk Corridor Guidelines

The width and zone guidelines presented in this sidewalk section would apply to sidewalks in new development areas, redevelopment areas, and in areas where street reconstruction is planned. For the entire above listed project types, sufficient right of way must exist for implementation of the appropriate sidewalk width guideline.

Sidewalk Corridor Width

Proposed sidewalk guidelines apply to new development and depend on available street width, motor vehicle volumes, surrounding land uses, and pedestrian activity levels. Standardizing sidewalk guidelines for different areas of the Town, dependent on the above listed factors, ensure a minimum level of quality for all sidewalks.



Fairfax currently installs sidewalks that conform to the Americans with Disabilities Act Accessibility Guidelines (ADAAG) that call for minimum 4-foot wide sidewalks for passage.

The Institute of Transportation Engineers (ITE) recommends planning all sidewalks to include a minimum width of 5 feet (60 inches) with a planting strip of 2 feet (24 inches) in both residential and commercial areas.

Sidewalk Zones

Sidewalks are the most important component of Fairfax's pedestrian circulation network. Sidewalks provide pedestrian access to virtually every activity and provide critical connections between other modes of travel, including the automobile, public transit, and bicycles. The Sidewalk Corridor is typically located within the public right-of-way between the curb or roadway edge and the property

line. The Sidewalk Corridor contains four distinct zones: the Curb Zone, the Furnishings Zone, the Through Pedestrian Zone, and the Frontage Zone.

Curb Zone

Curbs prevent water in the street gutters from entering the pedestrian space, discourage vehicles from driving over the pedestrian area, and make it easy to sweep the streets. In addition, the curb helps to define the pedestrian environment within the streetscape, although other designs can be effective for this purpose. At the corner, the curb is an important tactile element for pedestrians who are finding their way with the use of a cane. Strait curbs rather than rolled curbs are strongly recommended because it eliminates the potential for cars to park on the sidewalk or partially obstructing the sidewalk.

Furnishings Zone

Most streets require a utility zone to accommodate above ground public infrastructure, signage, and street trees. Locating this infrastructure in the furnishings zone prevents it from encroaching on the through passage zone, where it is likely to cause accessibility issues. The furnishings zone also creates an important buffer between pedestrians and vehicle travel lanes by providing horizontal separation. Elements like utility poles, sign posts, and street trees improve pedestrian safety and comfort by further separating the sidewalk from moving vehicles. Guidelines for furnishings zone widths are presented below in Table C-1.

Through Passage Zone

Most residential areas outside the downtown area in Fairfax are low to medium density and therefore have lower pedestrian volumes, compared to more urbanized areas such as the downtown and adjacent neighborhoods. A four to five foot minimum through passage zone is recommended for these conditions, depending on available right of way. Some commercial areas, school zones, and other public areas generate greater pedestrian volumes and should have a wider through zone. Table C-1 presents recommended standards for the through zone width for each of the predominant land uses in Fairfax.

Frontage Zone

The frontage zone is the space between the pedestrian through zone and the adjacent property line. 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 close to the roadway. In most cases the frontage zone should be at least 12 inches. However, if the sidewalk is adjacent to a wide open or landscaped space, such as in residential areas where fences are not typically found or not allowed, the frontage zone can be eliminated. Guidelines for frontage zone widths are presented below in Table C-1. As shown in the table, a frontage zone may not be required in many residential areas of Fairfax due to lack of public right of way or deep yard setbacks.

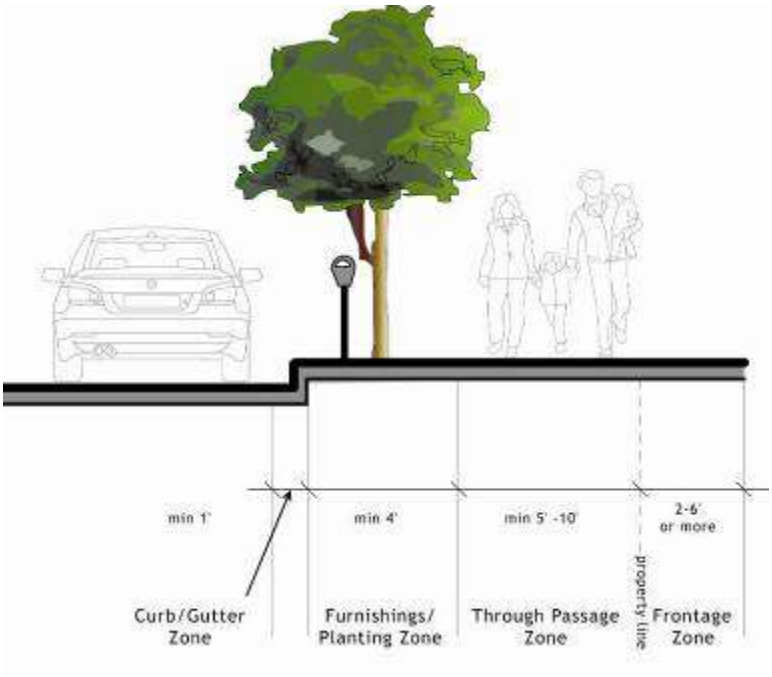


Figure C-1: Sidewalk Zones

Table C-1: Recommended Minimum Zone Widths By Street Type

Street Type	Curb Zone	Utility Zone (Buffer Zone)	Through Passage Zone	Frontage Zone	Total Sidewalk Width
Arterial and Collector Street	1 ft.	2-4 ft.	5-8 ft.	2 ft.	10-15 ft.
Local Neighborhood Street	0-1 ft.	0-2 ft.	4-5 ft.	none	4-8 ft.
Commercial Walkways	1 ft.	2-4 ft.	8-10 ft.	2 ft.	13-17 ft.
Multi-Use Trail	NA	4 ft. graded soft surface (2 ft. either side)	8-10 ft. (two-way travel)	NA	12-14 ft.

Sidewalk Cross Section Examples

Basic sidewalk cross-section examples are presented on the following pages. These recommendations consist of both prototype and site-specific types and are intended to complement existing local and Caltrans roadway standards and the design guidelines provided above.

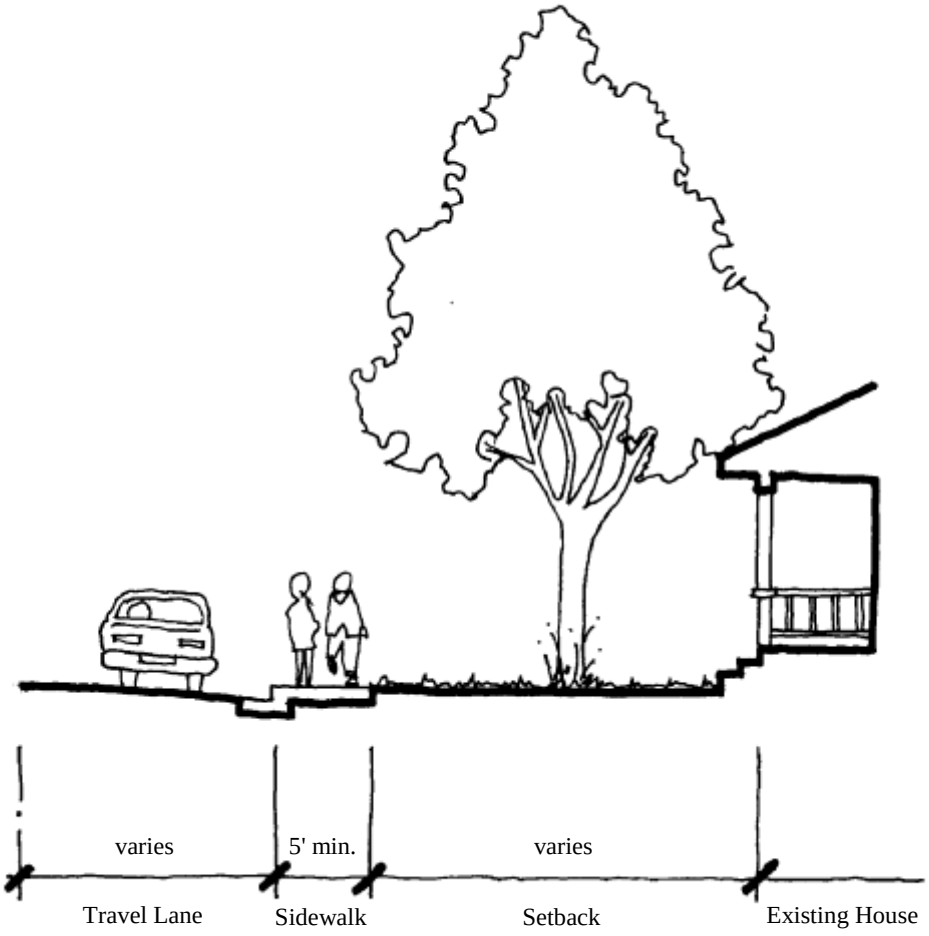
New Sidewalks in Residential Neighborhoods

Although not every neighborhood may desire sidewalks, there will be places that could benefit from their installation. Safer trips by schoolchildren, shopping trips and recreation are just some of the reasons that a community may wish to see sidewalks built in one of their existing neighborhoods.

Sidewalks on Narrow Streets

Figure C-2 shows the minimal solution for new sidewalks in existing neighborhoods. It shows a site constrained by a small setback to the existing house or significant landscaping and a narrow street condition that does not allow for a parking lane between the pedestrians on the sidewalk and the vehicular travel lane.

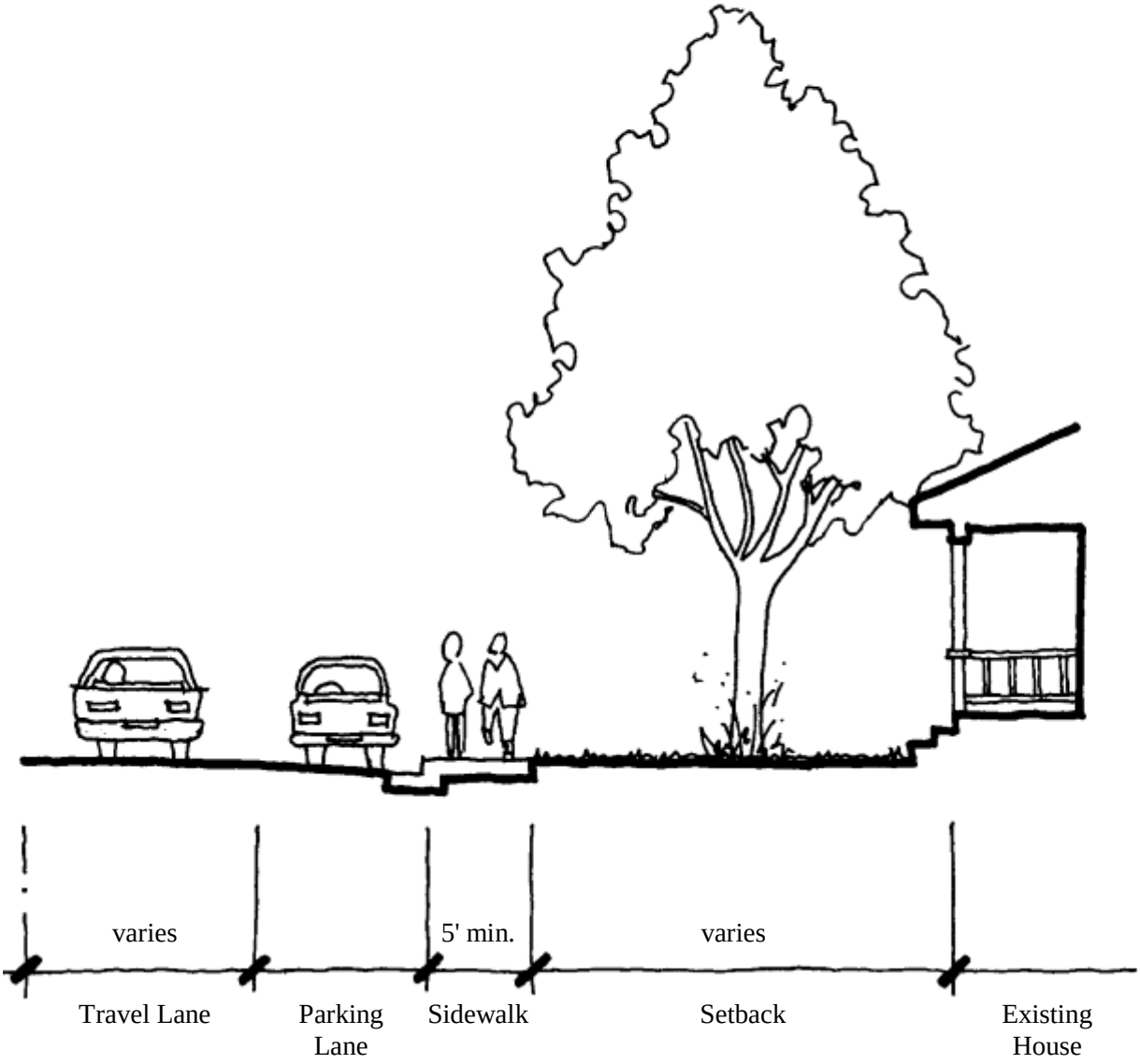
Figure C-2: Sidewalks on Narrow Streets



Sidewalks on Wider Streets

Figure C-3 demonstrates the preferred design where a lane of parking between the pedestrian way and the traffic lane. A parking lane is generally preferred for pedestrian safety since it separates pedestrians from moving cars. If the street is not wide enough to install this improvement, and the existing house or landscaping is set back far enough, the possibility of acquiring land to widen the right-of-way should be investigated.

Figure C-3: Sidewalks on Wider Streets

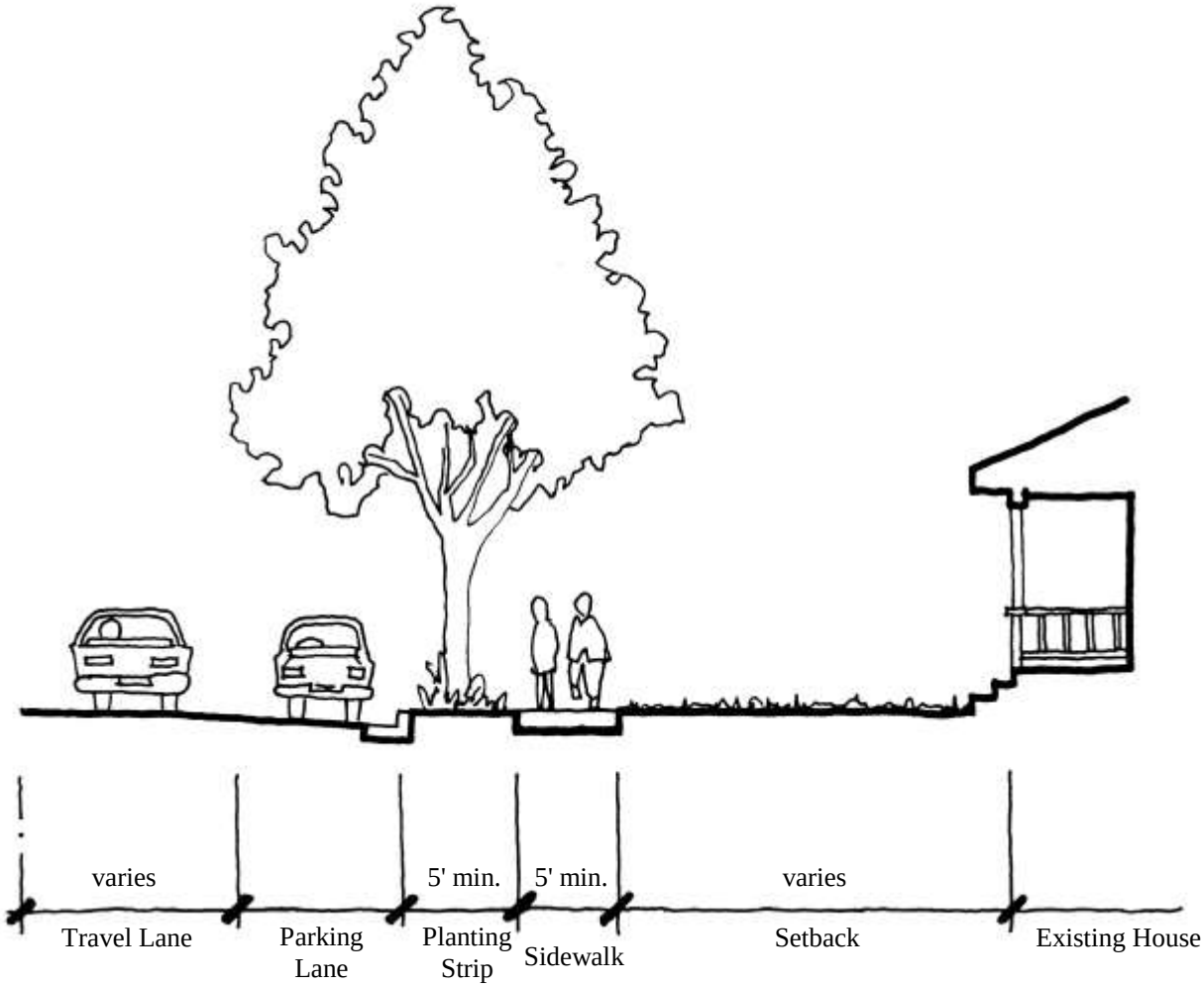


Sidewalk with Planting Strip

The most desirable condition, as illustrated here, is for the pedestrian to be buffered from vehicular traffic by both a parking lane and a planting strip. This is particularly important on streets with higher traffic volumes. Ideally, the planting strip should contain street trees at an interval of 20 to 50 feet on center. The trees help to create a more amenable pedestrian corridor and give better spatial definition to the street. This can make the street appear narrower, which helps to slow vehicular traffic.

If the street is not wide enough to install this improvement, and the existing house or landscaping is set back far enough, the possibility of acquiring land to widen the right-of-way should be investigated.

Figure C-4: Sidewalk with Planting Strip



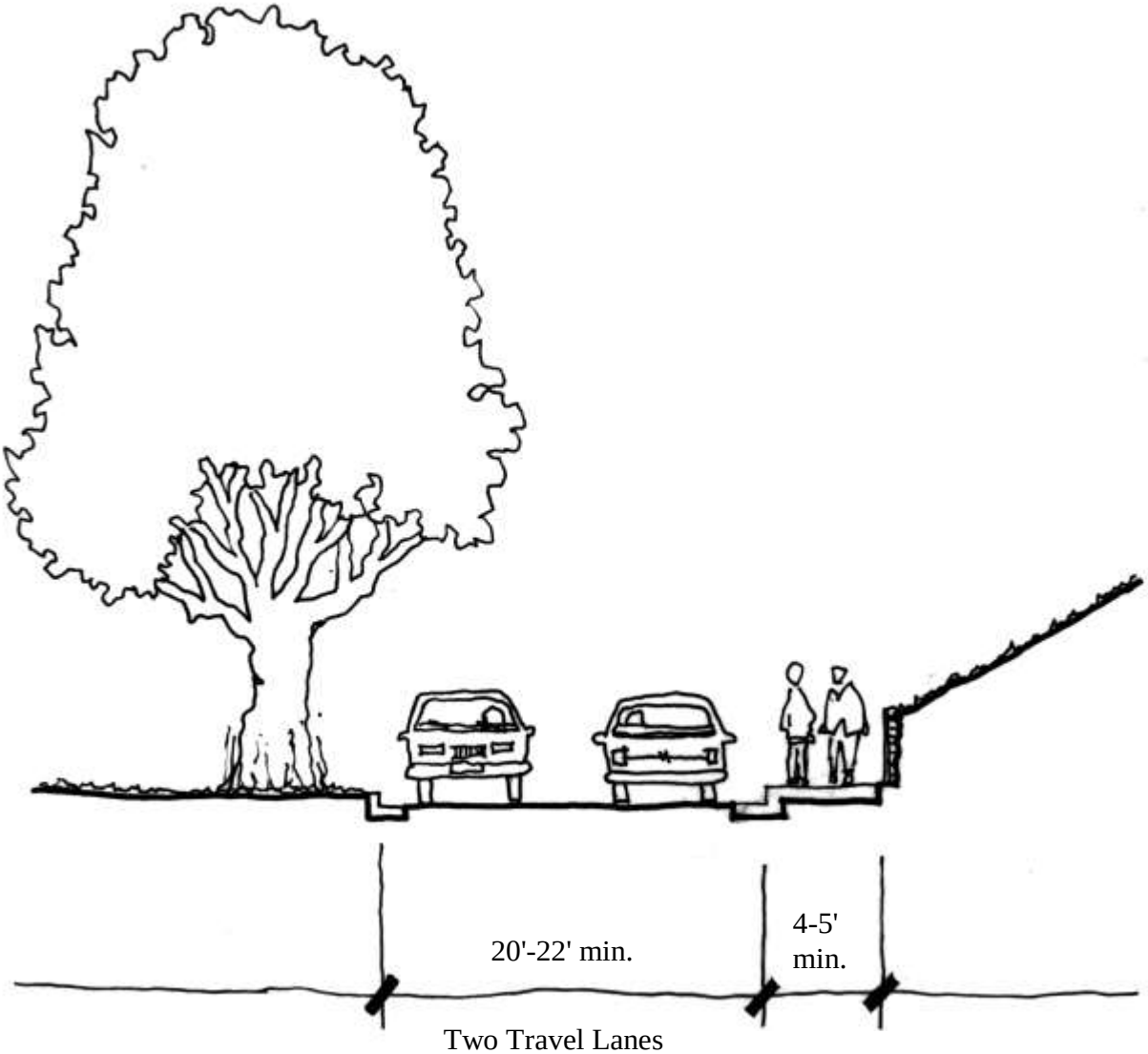
Pedestrian Facilities on Constrained Residential Streets

Some neighborhoods in Fairfax have severe constraints that prevent the installation of sidewalks. Such constraints would include the topography immediately adjacent to one or both sides of the street, significant trees or landscape features, small front yard setbacks and/or right-of-way limitations. This section shows various options for addressing pedestrian safety on these streets.

Sidewalk in Cut Slope Area

One option, as shown below, is to install a retaining wall along a hillside in order to provide preferably five feet, but minimally four feet for sidewalk access. Other topographical barriers could be overcome using similar soil retaining methods.

Figure C-5: Sidewalk in Cut Slope Area



Crosswalks

Definition

The California Vehicle Code Section 275 defines a crosswalk as either:

That portion of a roadway included within the prolongation or connection of the boundary lines of sidewalks at intersections where the intersecting roadways meet at approximately right angles, except the prolongation of such lines from an alley across a street.

Any portion of a roadway distinctly indicated for pedestrian crossing by lines or other markings on the surface.

Notwithstanding the foregoing provisions of this section, there shall not be a crosswalk where local authorities have placed signs indicating no crossing.

At intersections, a crosswalk is effectively a legal extension of the sidewalk across the roadway. Crosswalks are present at all intersections, whether marked or unmarked, unless the pedestrian crossing is specifically prohibited by the local jurisdiction. At mid-block locations, crosswalks only exist if they are marked.

According to the California MUTCD, crosswalk markings provide guidance for pedestrians who are crossing roadways by defining and delineating paths on approaches to and within signalized intersections, and on approaches to other intersections where traffic stops. Crosswalk markings also serve to alert road users of a pedestrian crossing point across roadways not controlled by highway traffic signals or STOP signs. At non-intersection locations, crosswalk markings legally establish the crosswalk.

As noted in the FHWA report "Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations," the California MUTCD does not provide specific guidance relative to the site condition (e.g., traffic volume, pedestrian volume, number of lanes, presence or type of median) where marked crosswalks should or should not be used at uncontrolled locations. Nor does the MUTCD give specific guidance on the application of crosswalk enhancement features such as high-visibility striping, advanced warning signage, or flashing beacons. While the California MUTCD allows the use of these devices, decisions on their specific applicability to a given location have historically been left to the judgment of the local traffic engineers. This section summarizes the various types of crosswalk-related markings, signage and enhancement treatments available for use in Fairfax, discusses policies and procedures already in use for implementation of some of these devices, and provides more specific guidance and recommendations to assist Town traffic engineers with future implementation.

Crosswalk Markings

Marked crosswalks serve to alert road users to expect crossing pedestrians and to direct pedestrians to desirable crossing locations. Fairfax utilizes two different marking styles for pedestrian crosswalks: the standard "transverse" style, consisting of two parallel lines; and the "ladder" style consisting of the two parallel lines with perpendicular ladder bars striped across the width of the crosswalk.

Crosswalks should extend across the full width of intersections, or to the edge of the intersecting crosswalk, to encourage pedestrians to cross perpendicular to the flow of traffic. Crosswalk markings can be can be applied with paint, thermoplastic, or reflective thermoplastic tape. At controlled crosswalk locations (STOP signs or traffic signals), crosswalk markings by themselves are considered sufficient treatment, given the presence of a traffic control to stop vehicles. At uncontrolled crosswalk locations (either uncontrolled intersections or mid-block locations), marked crosswalks can be enhanced with crosswalk signage, advance warning signage, in-pavement flashers, or flashing beacons -- these additional crosswalk enhancements are discussed in more detail below.

Table C-2: Crosswalk Markings

Style	Sample
Standard – Two solid white lines, 12 to 24 inches wide, spaced at least 6 feet apart (refer to CA MUTCD Sec. 3B.17). Also called "transverse."	
Ladder – Adds cross bar "rungs" to the standard crosswalk marking described above. Width of ladder lines should be 1 foot, with minimum spacing of ladder lines 1-5 feet.	
School Crosswalks. Crosswalks within the designated school zone must be painted yellow, per California MUTCD. Can be marked either standard or ladder. The school zone can be set a distance up to 500 feet from the school boundary.	

The decision on whether to install standard or ladder crosswalk markings depends upon a variety of factors such as the number of pedestrians crossing, traffic speeds/volumes, number of lanes to cross, presence of nearby schools or senior centers, and history of collisions. In general, 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.

High-visibility ladder markings are generally applied at uncontrolled or mid-block locations, especially on major streets with high pedestrian volumes, heavy traffic volumes and speeds, and more than one lane each direction.

Pedestrian Warning Signage for Signalized Intersections

As noted under the discussion of crosswalk signs and markings, crosswalk warning signs are not permitted at crosswalks controlled by a traffic signal, as the traffic control itself serves to regulate vehicles at the intersection. At signalized intersections, particularly where right turn on red is permitted, installing stop lines as described above may be one way of reducing encroachment of vehicles into the pedestrian crosswalk. Another solution to remind drivers who are making turns to yield to pedestrians is installation of a "TURNING TRAFFIC MUST YIELD TO PEDESTRIANS" (R10-15) sign.

In-Street Yield to Pedestrian Signs

In-Street Yield to Pedestrian Signs are flexible plastic signs installed in the median to enhance a crosswalk at uncontrolled crossing locations. These signs communicate variations of the basic message 'State Law: Yield to Pedestrians'. The signs can be supplemented with a "SCHOOL" plate at the top for use at school crosswalks. If used near schools, 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, which may reduce the chance that the sign will become less visible to motorists by being left out all the time. 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.

Flashing Beacons

Where the visibility of a crosswalk is poor, or where warranted by safety considerations, yellow flashing beacons can be installed to alert motorists to expect crossing pedestrians. Beacons can either be mounted on posts on the side of the roadway, or installed on mast arms over the roadway. Beacons can be installed in conjunction with any crosswalk warning sign, and can be set to operate at all times where the level of pedestrian activity along a corridor warrants. When installed at a specific crosswalk location, beacons can be set to be activated by pedestrians to only flash during the crossing time.

When used to make motorists aware of school zones, flashing beacons should be timed to flash only during the morning and afternoon school commute hours when children are present.

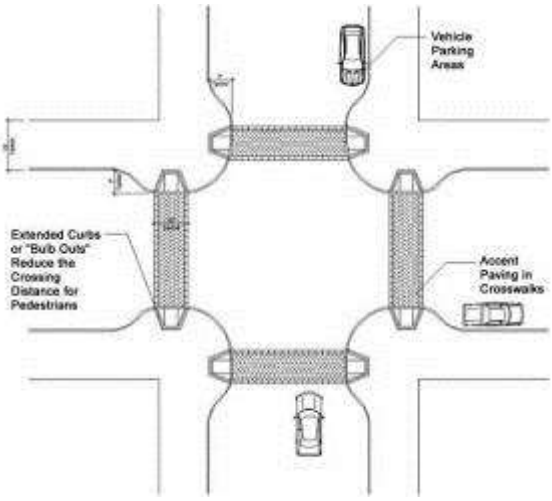
Special Crosswalk Pavement Treatments

For aesthetic reasons, crosswalks are sometimes constructed with distinctive paving materials such as colored pavement or special decorative pavers meant to look like brick. Brick should never be used in crosswalks, as it tends to wear down quickly, becoming uneven and slippery and causing difficulties for pedestrians, especially persons with disabilities. Any use of unique materials or colored pavement should use concrete pavers or asphalt, and textures should maintain a smooth travel surface and good traction. It is important to note that these decorative pavement treatments do not enhance the visibility

of the crosswalk location, in many cases make the crossing more difficult for persons with disabilities to navigate, make the crosswalk less visible to motorists at night, and for these reasons are not recommended. Regardless of any colored or unique pavement treatment used, marked crosswalk locations should always be marked with parallel transverse lines.

Engineering Treatments for Crosswalks

Curb Extensions



Curb extensions, also called "bulbouts" to describe their shape, are engineering improvements intended to reduce pedestrian crossing distance and increase visibility. Curb extensions can either be placed at corners or at mid-block crosswalk locations, and generally extend out about 6 feet to align with the edge of the parking lane. In addition to shortening the crosswalk distance, curb extensions serve to 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 drivers. At corners, curb extensions serve to reduce the turning radius, and provide space for perpendicularly-aligned curb ramps. Where bus stops are located, bulbouts can provide additional space for passenger queuing and loading.

Despite their advantages, curb extensions can require major re-engineering of the street and are not appropriate for all situations. Installing curb extensions where there are existing storm drain catch basins can require costly drainage modifications. Curb extensions may not be possible in some locations due to existing driveways or bus pull-out areas. Curb extensions need to be designed to avoid conflict with bicycle facilities, and should never extend into a bicycle lane.

Given their relatively high cost and challenges of implementation, curb extensions are not recommended as a tool for widespread implementation along every street in the Town. Each potential curb extension location much be evaluated on a case-by-case basis, taking into account factors such as crossing volumes, parking lane widths, infrastructure challenges such as drainage or driveways, and locations of bus stops.

Traffic Signal Enhancements

This section discusses specific pedestrian enhancements for use at signalized intersection locations.

Pedestrian Pushbutton Detectors

Pedestrian pushbutton detectors allow for actuation of pedestrian signals, and should be located at all intersection corners where pedestrian actuation is used. As required by the California MUTCD, pedestrian pushbutton detectors must be accompanied by signs explaining their use. Pedestrian pushbutton detectors should be easily accessible for those in wheelchairs and for the sight-impaired, located approximately 3.5 ft. off the ground on a level surface. 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.

Table C-3: Pedestrian Signal Actuation

Pedestrian Signal Actuation	
	There are several simple design considerations that greatly enhance the safety and comfort of pedestrians at signalized intersections: • In areas with high pedestrian use (over 100 persons per hour), incorporate a pedestrian phase into the signal sequence instead of an on-demand signal phase, • Alternatively, install countdown pedestrian signals instead of the traditional "flashing hand" signal. This communicates to the pedestrian exactly how much time they have to cross the road safely. • Place pedestrian push-buttons in locations that are easy to reach and ADA compliant, facing the sidewalk and clearly inline with the direction of travel (this will improve operations, as many pedestrians push all buttons to ensure that they hit the right one); • Place additional actuators prior to the intersection so that pedestrians may activate the signal before they reach the corner of the intersection, to decrease pedestrian waiting time; • Adjust the signal timing to accommodate the average walking speeds of intersection users (longer crossing times for intersections near schools and community centers, etc.), or to limit the time a pedestrian has to wait.
Accessible Pedestrian Signals – Verbal/Vibrotactile Tone	
	• When verbal messages are used to communicate the pedestrian interval, they shall provide a clear message that the walk interval is in effect, as well as to which crossing it applies. • The verbal message that is provided at regular intervals throughout the timing of the walk interval shall be the term "walk sign," which may be followed by the name of the street to be crossed. • A verbal message is not required at times when the walk interval is not timing, but, if provided: 1. It shall be the term "wait." 2. It need not be repeated for the entire time that the walk interval Accessible pedestrian signals that provide verbal messages may provide similar messages in languages other than English, if needed, except for the terms "walk sign" and "wait." A vibrotactile pedestrian device communicates information about pedestrian timing through a vibrating surface by touch. • Vibrotactile pedestrian devices, where used, shall indicate that the walk interval is in effect, and for which direction it applies, through the use of a vibrating directional arrow or some other means.

Traffic Calming

Traffic calming interventions slow traffic by modifying the physical environment of a street. A variety of traffic calming measures are available including speed humps, chokers, traffic circles and both full and partial street closures. In addition, speed limit reductions may be effective, with or without physical traffic calming improvements at reducing speeds.

Research into the efficacy of traffic calming devices to improve pedestrian safety has shown that traffic calming can reduce the number of automobile collisions. A Vancouver study published in 1997 showed an average collision reduction of 40 percent in four neighborhoods that used a combination of the traffic calming types described below.[2]

Table C-4: Traffic Calming Measures

Traffic Calming Measure	Description	Considerations for Use
Street Trees		
	In addition to their aesthetic value, street trees can slow traffic and improve safety for pedestrians. Trees add visual interest to streets and narrow the street's visual corridor, which may cause drivers to slow down.	- If the sidewalk corridor is not wide enough to accommodate street trees, adding tree plantings in the parking lane is possible, knowing that these trees have shortened life spans. - The placement of plantings should consider potential for conflict with street sweeping and drainage.
Raised Crosswalks		
	Raised crosswalks are similar to speed humps, but are installed at intersections to elevate crosswalks. Raised sidewalks eliminate grade changes from the pedestrian path and give pedestrians greater prominence as they cross the street.	- Use detectable warnings at the curb edges to alert vision-impaired pedestrians that they are entering the roadway. - May be designed so they do not have a slowing effect (for example, on emergency response routes).
Chicanes		

[2] Zein, S. R.; Geddes, E.; Hemsing, S.; Johnson, M., "Safety Benefits of Traffic Calming," Transportation Research Record **Vol:** #1578 **pp.** 3-10

Traffic Calming Measure	Description	Considerations for Use
	Chicanes are a series of curb extensions or narrowings that create an S-shaped route, causing traffic to slow down. An example of chicanes can be found on Milvia Street in North Berkeley, pictured at left.	With no major pedestrian issues, chicanes can provide additional landscaping and street buffer area. Care should be taken to ensure that chicanes do not affect bicycle mobility along streets proposed for chicanes.
Speed Humps		
	Speed humps are elevated, sloped sections of pavement that require drivers to slow down as they pass over. Speed humps are generally 12-22 feet long and 3-4 inches high. There are four speed hump shapes – sinusoidal, circular, parabolic and flat-topped – which differ in the shape of their slope. The sinusoidal shaped are much smoother to drive over at the intended speed, and are also friendlier to bicyclists. (Many older speed humps are of the parabolic shape, which provides a more pronounced bump when driving over them.)	- Not recommended for use on emergency response routes or transit corridors.
Traffic Calming Circles		
	Traffic calming circles are circular islands in the middle of an intersection. Traffic circles slow traffic by altering the route of vehicles and by reducing the distance a driver can see down the street, which also causes traffic to slow. Traffic circles can either be two-way or four-way stop or yield.	- Unlike full roundabouts, traffic circles maintain the crosswalks at the intersection corners. - However, in some cases it was necessary to move the crosswalks back to accommodate the turning radius of larger vehicles around the circle. In these cases the crosswalks are no longer aligned directly perpendicular with the corner, which could cause difficulty for persons with visual impairments Care should be taken to ensure that any landscaping in the circles uses low-growing shrubs that maintain visibility for pedestrians, particularly those in wheelchairs.

Appendix D: Plan Adoption