



Concord Trails Master Plan

Final Draft

prepared for
the City of Concord

by



Wilbur Smith Associates

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and
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Chapter 1

SETTING

BACKGROUND

Concord's first and current Trails Master Plan was completed in 1972, although the history of trails, as with any community, dates back to the days of the horse and wagon, and before this to the trails and footpaths used by Native Americans. The existing City trails were constructed mostly within parks, and regional trails were constructed by the East Bay Regional Park District (EBRPD) (see Figure 1). In 1999, the Concord City Council identified the need to update this plan and develop a comprehensive Trails Plan to meet the many needs of this diverse community.

The Concord Trails system connects to the existing regional trail network which consists of the Iron Horse Trail, the Contra Costa Canal Trail, the California Riding and Hiking Trail and the proposed Delta-De Anza Trail. There are also several historical routes that, while not possible to develop to full multiuse status such as the Iron Horse Trail, could be preserved through historical markers or other means. These include Lime Haul Road, Seal Bluff Road and old railroad rights-of-way. The Delta-De Anza Trail mentioned above is also an historic route that should be used as an educational tool.

PURPOSE OF THE TRAIL MASTER PLAN

The Trails Master Plan will provide the framework for the future planning of trails in the City of Concord for both recreation and as an alternative transportation mode. This includes trails for hiking, biking and equestrians. The Master Plan will identify the City's vision for how to use existing and potential easements, acquisitions and public rights-of-way. By identifying potential alignments in a Master Plan, corridors can be preserved for transportation and recreation use rather than being lost for public use. The Trails Master Plan is an implementation document that is consistent with the policies of the City's General Plan.

The Trails Master Plan is also an essential step to receive several sources of grant funding. Specifically the Bicycle Transportation Account (BTA), the Transportation Development Act (TDA) and the Transportation Funds for Clean Air (TFCA) all require that projects be included in a plan that indicates that the local agency has thought about a particular bicycle project in the context of the overall bikeway network. In addition, the Bicycle Transportation Account lists eleven specific elements that must be addressed in the plan if a project is to be funded through BTA. These elements and how this plan meets them are described in Appendix F.

TRAILS ADVISORY GROUP

The Concord Trails Advisory Group met numerous times throughout the study to advise and direct the course of the study. The Trails Advisory Group consists of representatives of trail user groups including the East Bay Bicycle Coalition, (representing road bicyclists) mountain bicyclists, the Commission on Aging, the Diablo Road Runners and the Friends of Parks, Recreation and Open Space. It also included representatives from neighborhoods in the three

Community Policing Districts to provide input to staff and the consultants in the development of this Trails Master Plan. A roster of the members of the committee is listed on the page after the title page of the report.

COORDINATION WITH OTHER PROJECTS AND ADJACENT COMMUNITIES

Redevelopment Area

The Redevelopment Agency of Concord recently prepared the Downtown Strategic Plan, which contains recommendations for Central Concord. The boundary of the redevelopment study area is depicted in Figure 3. The redevelopment area was divided into three districts, the transit town center on the east side, the In Town Mixed Use district and the Campus Business District located in between Highway 242 and I-680. Some of the proposals that have emanated from this plan dovetail with the Trails Master Plan. These include:

- Historic walking tour
- BART station access and redesign
- New bridges closing roadway gaps in the Campus Business District (Commerce Avenue and Galaxy Way)
- Pedestrian underpass under Highway 242 in the vicinity of Galaxy Way

Naval Weapons Station

This 13,000 acre military facility is being significantly downsized. Both the Army and the Navy will retain a limited presence however the exact size and nature of the exclusive military use has yet to be determined. Up to about 7,000 acres may be converted to civilian use or joint civilian/military use in the future. Numerous proposals have been considered as part of a joint-use study, and await the final selection process and the environmental studies. Proposals include trails, soccer fields and housing for the homeless. There are several opportunities for trails including along the ridge, along the rail right-of-way and along the creek.

Adjacent Cities

City staff from the adjacent cities of Pleasant Hill, Walnut Creek, Clayton and Martinez as well as the East Bay Regional Park District were contacted to learn of plans to expand their trails or bikeway systems. None of the cities were in the process of pro-actively expanding the bikeway or trail network. (See Figure 2) However, there were a few existing facilities that end at the Concord city limit and a few potential projects that pertain to bicycle and pedestrian circulation and safety, (see Figure 2). These are:

Pleasant Hill

- Potential overcrossing of I-680 at the Montgomery Wards site;
- Iron Horse gap closure project between the Pleasant Hill BART station and the existing terminus north of Pleasant Hill BART
- EBMUD aqueduct trail section exists from Oak Park Blvd to Walnut Creek city limits
- Potential link - Iron Horse trail to Aqueduct along east side of trail

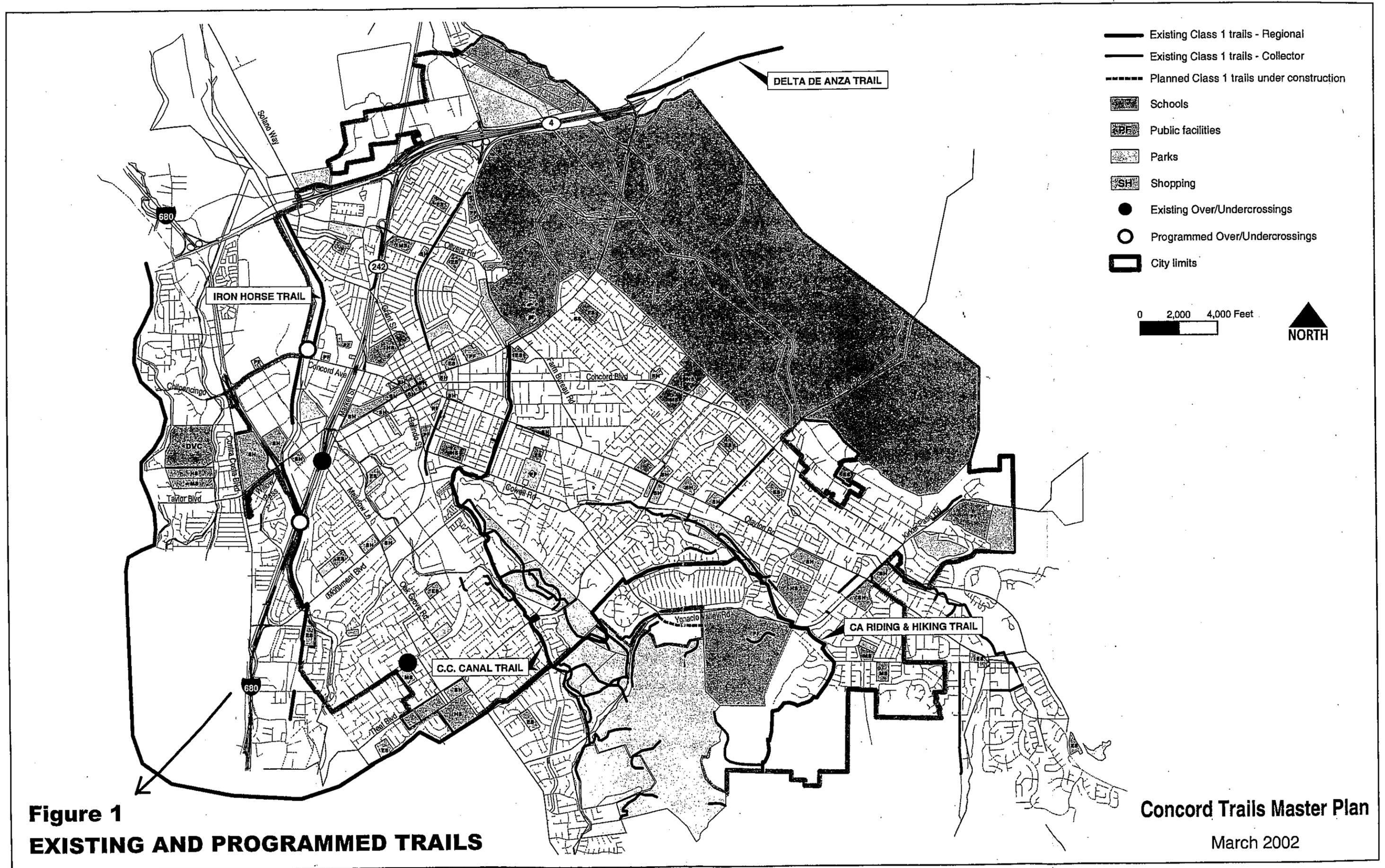
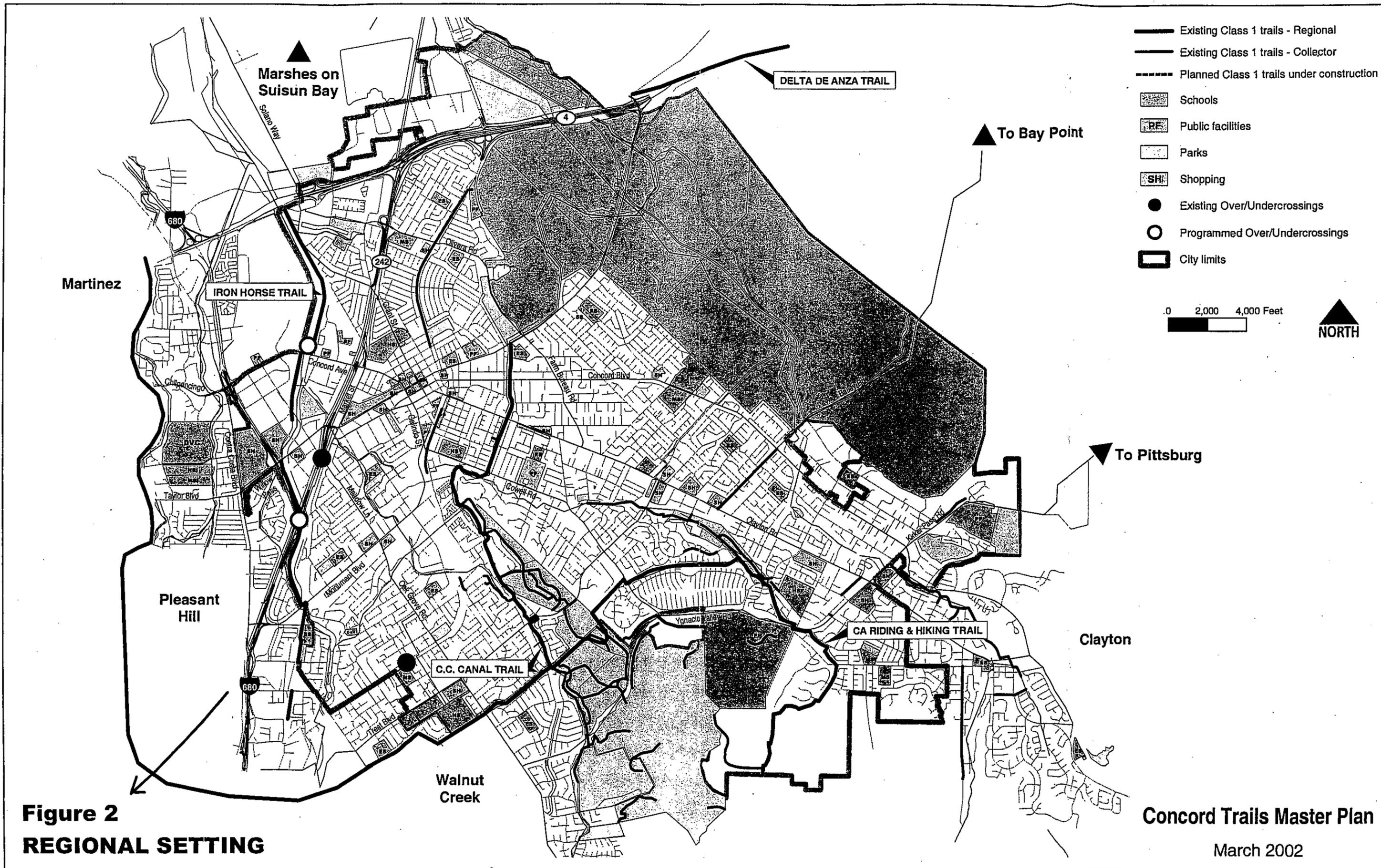


Figure 1
EXISTING AND PROGRAMMED TRAILS



**Figure 2
REGIONAL SETTING**

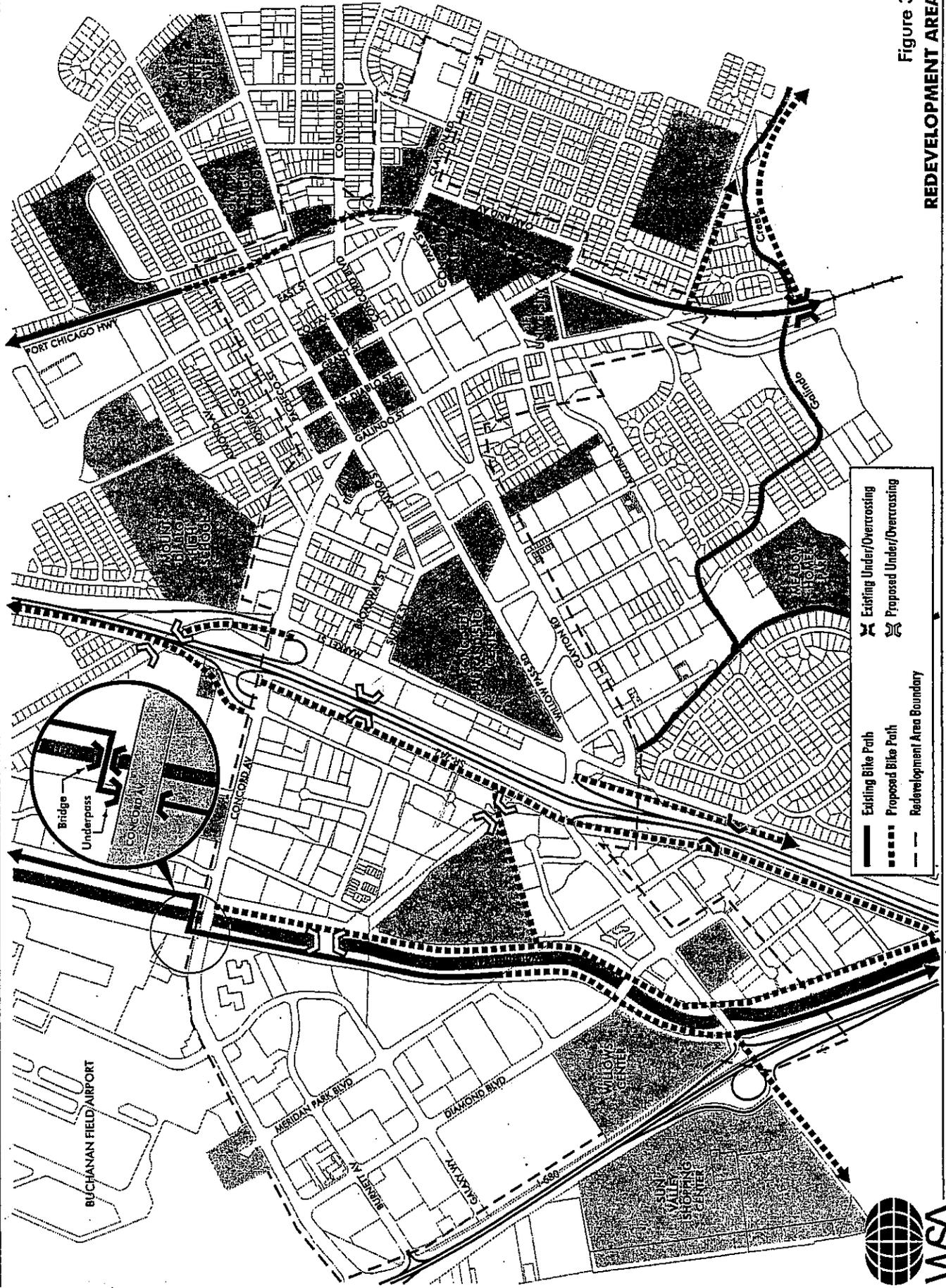


Figure 3
REDEVELOPMENT AREA

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- Existing Bike Path
- Proposed Bike Path
- Redevelopment Area Boundary
- Existing Under/Overcrossing
- Proposed Under/Overcrossing



Clayton

The City of Clayton has a Trail Master Plan. In addition, the following existing trails abut the Concord city limit line.

- An existing trail through Oakhurst subdivision (9th fairway of the country club); meets up to Concord open space through the Kirkwood subdivision by the Chronicle Pavilion on Camino Estrada
- George Cardinet Trail ends behind Safeway on Kirker Pass Road

Walnut Creek

- The Walnut Creek trail map depicts the existing bikeways in Walnut Creek.
- Bancroft Avenue has bike lanes which terminate at the Concord city limit
- Oak Grove Road has bike lanes which extend slightly into Concord

Martinez

- The Bay Trail
- Potential "Rail with Trail" from Pinole to Martinez

East Bay Regional Park District

The EBRPD developed and/or maintains four regional trails adjacent to and/or through Concord the Iron Horse Trail, the Contra Costa Canal Trail, the Delta de Anza Trail and the California Riding and Hiking Trail. While the City would not be the lead agency in pursuing the extension of or improvements to these trails, they are included in the Master Plan so that city connections can be made and future planning can take them into account.

POLICY SETTING

Trail and bikeway issues are addressed in the General Plan in two Elements: the Transportation/Circulation Element and the Parks, Open Space, and Conservation Element. Also, Figure 1 - *Trails Diagram* in the Parks, Open Space, and Conservation Element indicates, at a very coarse scale, the regional and collector trails in the City. Pedestrian issues are located in several elements throughout the General Plan, particularly in the Land Use element and the above two elements. The existing General Plan policies pertaining to trails and bicycles are included in Appendix B.

Recommendations and Strategies to complement these policies are presented in Appendix A.

Chapter 2

RECOMMENDED TRAIL AND BIKEWAY NETWORK

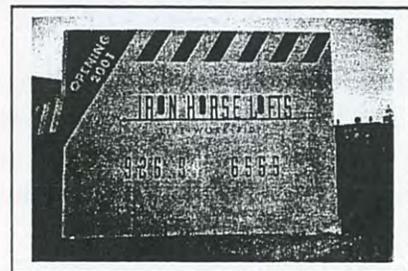
This chapter describes the existing and proposed trail network in the City of Concord. It first describes the role and function trails can have in a community. It then presents the methodology used to determine the need for new trails and potential to expand existing trails and implement new trails. Finally the proposed trail network is described.

TRAIL AND BIKEWAY CONSIDERATIONS

Trail Roles and Function

This plan focuses only on trails for non-motorized users. Such facilities are referred to as Class I Bike Path, (the term used in the Caltrans Highway Design Manual), greenways, offstreet bikeways or multiuse paths. Regardless of their name, trails have many functions within a community. The following list summarizes the major roles and functions that these trails provide to a community.

- **Outdoor Recreation:** Walking, of all physical activities, is consistently ranked highest in terms of participation. Bicycling, and in particular mountain bicycling, continues to increase in popularity. Horseback riding has been, and continues to be, a strongly supported heritage of Concord.
- **Transportation:** Trails provide an alternative to the automobile for commuters to get to work or school, to go shopping, or to get to any number of destination points including local and regional parks and open space preserves. Trails provide nonmotorized users an alternative to the private automobile, which is energy-efficient, reduces reliance on fossil-fuels and benefits air-quality.
- **Public Health and Physical Well-being:** Trail use supports exercise and fitness at all levels. Activities involving exercise increase individual health and reduce health care costs.
- **Education:** To many individuals trails are also a means to an end. This is especially true for outdoor science teachers representing all levels of our educational system. Trails provide access to and through nature's outdoor laboratories.
- **Social and Economic Well-being:** The positive benefits of well-managed trails on local economics and increased property values near trails in urban areas is well documented. (See Appendix E).
- **Alternative Emergency Access and Egress:** Trails can serve as emergency access/egress routes in and out of an area blocked by fire, landslide, flood or traffic.



Trail Users

In developing a trail network, the many and varied types of users must be considered. The target audience includes pedestrians, bicyclists and equestrians, but even among these three groups the users vary considerably.

- Pedestrians - Pedestrians range from those going for a leisurely stroll to fitness walkers and runners. Pedestrians also technically include skateboarders and roller bladers. Pedestrians may have other accoutrements like baby strollers or dogs on leashes which can influence the design of trails and the compatibility of the range of trail users.
- Bicyclists - There are many types of bicyclists with varying levels of skill and willingness to ride in traffic. These range from the experienced adult cyclist to the casual adult cyclist to the child cyclist to the tot on big wheels. Some are riding for casual recreation, some for fitness, and some to get to work or school.
- Equestrians – Equestrians are generally older teens and adults. Their reasons for riding are almost always for recreation or other purposes besides transportation.

In order to serve all types of trail users, the design guidelines presented in Chapter 5 are intended to be as inclusive as possible in terms of trail width, trail tread type and overall design.

Connections to Onstreet Bikeways

The proposed trail network, as extensive as it is, will not provide access to all parts of the City. The trail network needs to be supplemented with an onstreet bikeway system. There are two main categories of onstreet bikeways as defined by the Caltrans Highway Design Manual. These are:

Class II Bike Lane - a striped lane for one-way bike travel on a street or highway.

The Class II bike lane is for the exclusive use of bicycles with certain exceptions: for instance, right-turning vehicles must merge into the lane prior to turning, and pedestrians are allowed to use the bike lane when there is no adjacent sidewalk. Bike lanes should be used when traffic volumes exceed a certain threshold, e.g. 4,000 vehicles per day. Below this traffic volume, there are adequate gaps in oncoming traffic for motor vehicles to safely pass bicyclists.

In Concord, opportunities for new bike lanes are limited since frontages are almost all built out limiting the available right-of-way to widen the roads.

Class III Bike Route - provides for shared use with pedestrian or motor vehicle traffic.

The Class III Bike Route has traditionally been used to designate anything from low volume residential roads that have no need for bike lanes to arterials with heavy traffic volumes where widening to provide bike lanes would be infeasible. In this plan, Class III is used primarily on low volume residential streets.

Transportation versus Recreation

Many trails are initially conceived as either for transportation or recreation. However, many routes which at first appear to be primarily recreational are indeed used for commuting or other transportation purposes, and vice-versa. Although bicyclists often need to travel at a reduced

speed to avoid colliding with walkers, joggers, and roller-bladers, some still find that trails provide improved commuting access to places of employment. Many bicyclists find trails an enjoyable source of family-oriented recreational activity. Just as roadways are built and maintained for motorists without regard to trip purpose, all the recommended trails described in this plan should be considered important regardless of whether primarily used for transportation or recreation. It is acknowledged that some routes may be more often used for transportation than recreation or vice versa. It is also acknowledged that some funding sources are exclusively for transportation bicycle facilities.

METHODOLOGY

The first step in assessing the needs for more trails was to ascertain the extent and condition of the existing system. The available rights-of-way to provide more trails was also assessed. Toward that end, extensive field reviews of the City's existing trails and potential trail opportunities were conducted. Based on the knowledge of the Trails Advisory Group, City staff, past reports and studies, the WSA Team investigated numerous alignment options for new trails. A concept plan with alternatives was developed and presented to the Trails Advisory Group. Based on their input, the WSA Team revised the network, and then presented the revised network to the general public at three meetings. After analyzing the feedback from these meetings, a draft trails network was developed and is presented in the last section of this chapter.

NEEDS ASSESSMENT AND FIELD REVIEW

Existing trails were reviewed to identify needed improvements and to assess how to integrate them into the overall network. The potential to build new trails on undeveloped rights-of-way was investigated and several opportunities to build new trails were identified. Finally, roadways were reviewed to assess how bike routes and bike lanes could be used to close gaps in the trails system and to provide direct connections to major destinations. A summary of the major findings of this field review is presented below.

Existing Trails

Most existing trails have a north-south orientation. There may be opportunities to realign some trails and to improve at grade crossings of the trails with major roadways and collector streets. There also may be opportunities to expand some existing trails to have a parallel equestrian or pedestrian trail. The existing trails in Concord are listed in Table 2-1.

Trail Name	Status in Concord	Paving Type	Responsible Agency
1. Iron Horse	existing	paved	EBRPD
2. Contra Costa Canal	existing	paved	EBRPD
3. Mokelumne	partially existing	paved	Concord/EBMUD
4. BART	partially existing	paved	Concord
5. California Riding & Hiking Trail	existing	unpaved	EBRPD
6. Bailey Road Parkway	existing	unpaved	Concord

Considerations in Selecting New Trail Alignments

Due to Concord's central location, its trail network essentially serves as a feeder system to the many surrounding trails of other agencies including neighboring cities and EBRPD. The issues to consideration in selecting new and preferred alignments include but are not limited to:

Connectivity - Connectivity includes directly serving major destinations, as well as overall circulation and efficiency for trail users, non-circuitous routes. Existing and proposed routes should connect to:

- the City's onstreet bikeway system;
- regional trails;
- open space preserves;
- intermodal connections;
- future development areas;
- retail/commercial/entertainment areas;
- schools and colleges.

Consistency With Local Agencies' Plans - Chapter 1 identified adjacent agencies that are developing trail or bicycle facilities. This plan has considered these planned routes and facilities in developing the alternative trail concepts.

Safety - Safety encompasses both traffic safety and the ability to safely accommodate multiple users. Both of these issues were considered in the selection of alternative routes and are also addressed in the design guidelines.

Habitat And Other Environmental Issues - Environmental issues were qualitatively considered in the selection of the trail concepts. A separate document will be prepared to present additional information on environmental impacts which will assist the City in preparing future environmental assessments of the proposed projects in the plan.

New Trail Opportunities

Based the field review and consideration of these issues, several potential trails were identified. The trails that are the most promising are listed below. (The proposed trail master plan described later in this chapter presents the comprehensive list of all proposed trails.)

Potential North-South Trails

- Mokelumne Aqueduct
- Creek Spur along Pear Street
- Railroad ROW/Mt Diablo Creek
- Abandoned Canal along Denkinger Road
- Power lines- Kirker Pass Road
- Contra Costa Canal Extension

Potential East-West trails

- Edge of Naval Weapons Station along Open Space
- Galindo Creek (existing trail through parks)
- Mt. Diablo Creek (connection to Clayton)
- Ygnacio Valley High School Drainage Canal
- Lime Ridge

Potential historic/downtown trails

- Historic Walking Tour-Downtown

Trail Design

The trail design will vary depending on the location of the trail, the anticipated number of users and the available right-of-way. The field review revealed that the available right-of-way varied significantly from location to location. The available right-of-way falls into one of four general categories:

- There is an existing service road, easily convertible to a trail
- The ROW is wide (50 or more feet in width); there are several cross-section options
- The ROW is available but is limited in width or otherwise constrained
- The ROW is either in jeopardy or in use by private businesses

Onstreet Bikeways

The existing street network will round out the trail network to:

- Connect trails with each other
- Connect to existing tunnels and planned over/undercrossings
- Connect to downtown and other major attractions

The options include both bike lanes or shoulders on the major streets and bike routes on residential streets.

PUBLIC INPUT ON THE ALTERNATIVE TRAIL CONCEPTS

The trail options were mapped and presented at three public meetings, one in each of the City's three districts. The agenda for the three meetings was the same and is presented in Appendix C. The potential issues associated with the various alternative route alignments were presented. Input was solicited on other potential routes to consider and on the advantages and disadvantages of the options. A summary of public comments is also presented in Appendix D.

RECOMMENDED TRAIL NETWORK

After receiving staff and public input, the WSA Team developed a preliminary trails network that includes both extensions of existing trails, new trails, as well as onstreet bike lanes and bike routes. The historic trails are depicted in Figure 4 and the entire proposed Trail Network is presented in Figure 5.

Recommended Multiuse Trails

Four types of trails are proposed in the Master Plan:

Regional trails - These are trails that are constructed and maintained by the EBRPD and provide for intercity travel.

Connector trails - These are City trails that connect neighborhoods to major destinations or regional trails or traverse across the entire city. They align with the trail or planned route of an adjacent city where possible, but primarily serve the City of Concord.

Feeder trails - These trails are short and primarily serve one neighborhood to access a connector trail or roadway.

Historic Trails - These trails have historic significance and may be primarily walking trails rather than multiuse trails. They should include educational markers and plaques explaining the historic significance.

The recommended trails have been given names and numbers so that they can be more easily discussed for planning purposes. A list of the recommended trail projects that comprise the Trail Network is presented in Table 2-2 along with existing trails.

Reference Number	Name of Trail	Status
Regional Trails		
R1	Delta De Anza Trail	EBRPD –in planning
R2	Iron Horse Trail	Mostly constructed
R3	Contra Costa Canal Trail	Completed
R4	California Riding and Hiking Trail	Completed
North-South Connector Trails		
C1	Walnut Creek Channel Trail (east side of Channel)	Partially constructed
C2	Mokelumne Aqueduct Trail (EBMUD ROW)	Partially constructed
C3	Mayette Hanson Connector (Abandoned Southern Pacific ROW) from Willow Pass Road to Monument Boulevard	
C4	Downtown BART Trail	Partially constructed
C5	Southwest BART Trail	Proposed
C6	Panoramic Way Trail from Willow Pass Road to North Concord BART	Proposed

C7	Naval Weapons Station to Galindo Creek Trail (extension of Treat Boulevard alignment)	Proposed
C8	Bailey Road Trail extension to CNWS	Completed
C9	Newhall Greenway (Abandoned ROW of Baypoint and Clayton RR)	Proposed
C10	Pine Hollow to Chronicle Pavilion Trail (on Utility ROW)	Proposed
East-West Connector Trails		
C11	Ridge Trail	
C12	Naval Weapons Station Peripheral Trail	Proposed
C13	Willow Pass Road Trail	Proposed
C14	Contra Costa Canal to Oak Grove Trail	Proposed
C15	Galindo Creek Trail	Partially constructed
C16	Naval Weapons Station –Internal Trails	Proposed
C17	Mount Diablo Creek Trail	Proposed
C18	Mitchell Canyon to Crystyl Ranch Drive	Proposed
Feeder Trails		
F1	Delta DeAnza to Hilltop Road	Proposed
F2	Vintage Brook to Newhall Park Trail	Partially completed
F3	Contra Costa Canal Trail to BART Connector (R3 to C5)	Proposed
F4	Detroit Avenue to Oak Grove Road Connector	Proposed
F5	Crystyl Ranch Open Space Access Trail	Proposed
F6	Crystyl Ranch to Walnut Creek Open Space Trail	Proposed
Historic Trails (See Figure 4)		
H1	Historic Walking Tour	Proposed
H2	Lime Haul Road	Proposed
H3	Seal Bluff Road	Proposed
H4	Salvio-Galaxy Way /Downtown Concord to Diablo Valley College Trail	Proposed

Recommended Bike Routes

While this plan primarily focuses on trails, trails cannot serve all the transportation or even recreational needs of Concord's bicyclists. To improve the continuity of the bikeway network and to provide direct access to locations where trails do not go, many onstreet routes are needed.

Those streets that are primarily residential streets are referred to as Class 3A. These are generally parallel to major roadways that do not have bike lanes and therefore provide needed connectivity to major destinations in Concord and to the major trails. In addition to being designated as bike routes, supplementary signs indicating how to access the trails network, the distances (in tenths of miles) to major destinations and other useful information should be installed. Sample sign designs are included on Page 5-28 in Chapter 5- *Design Guidelines and Best Practices*.

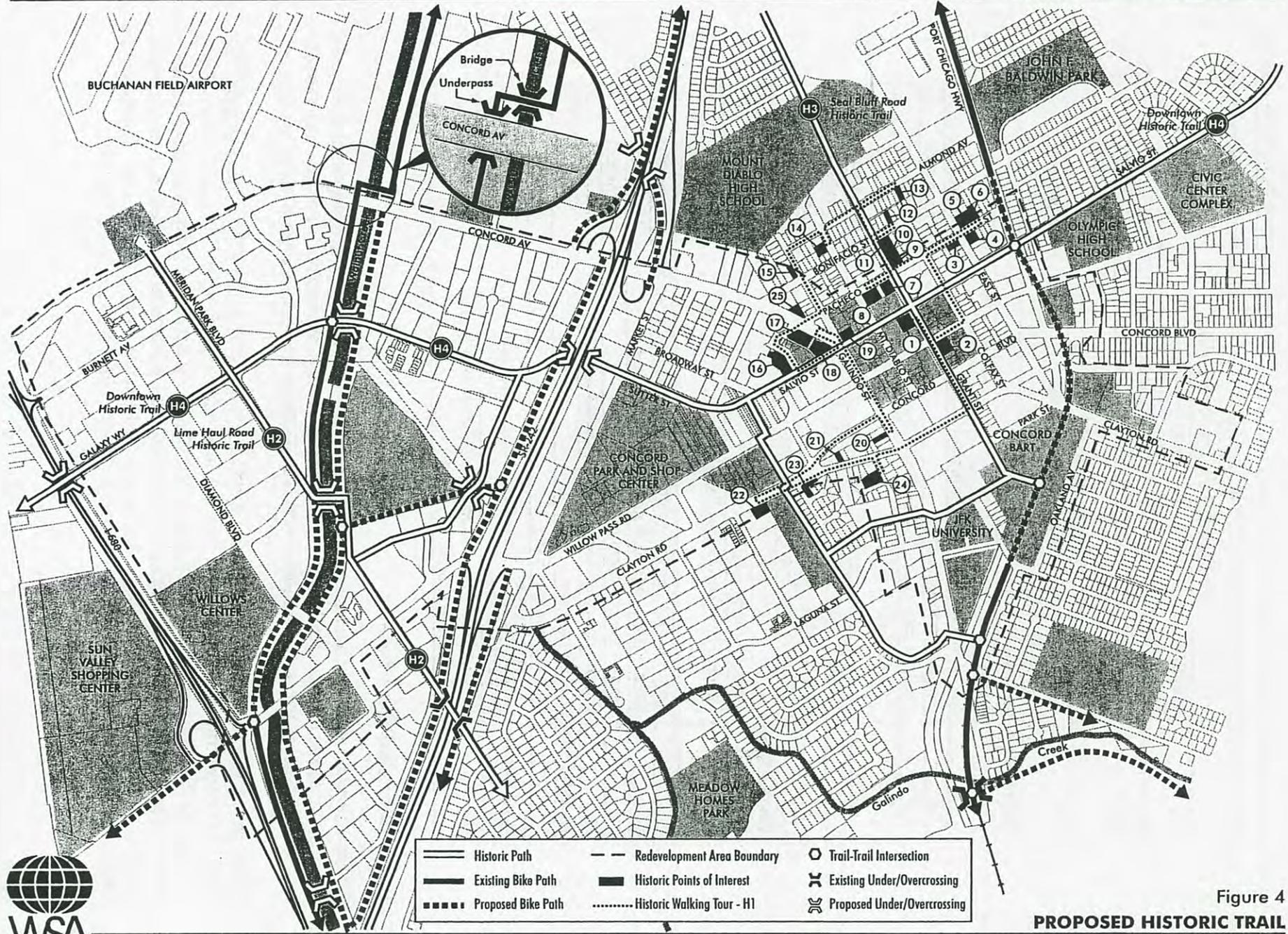
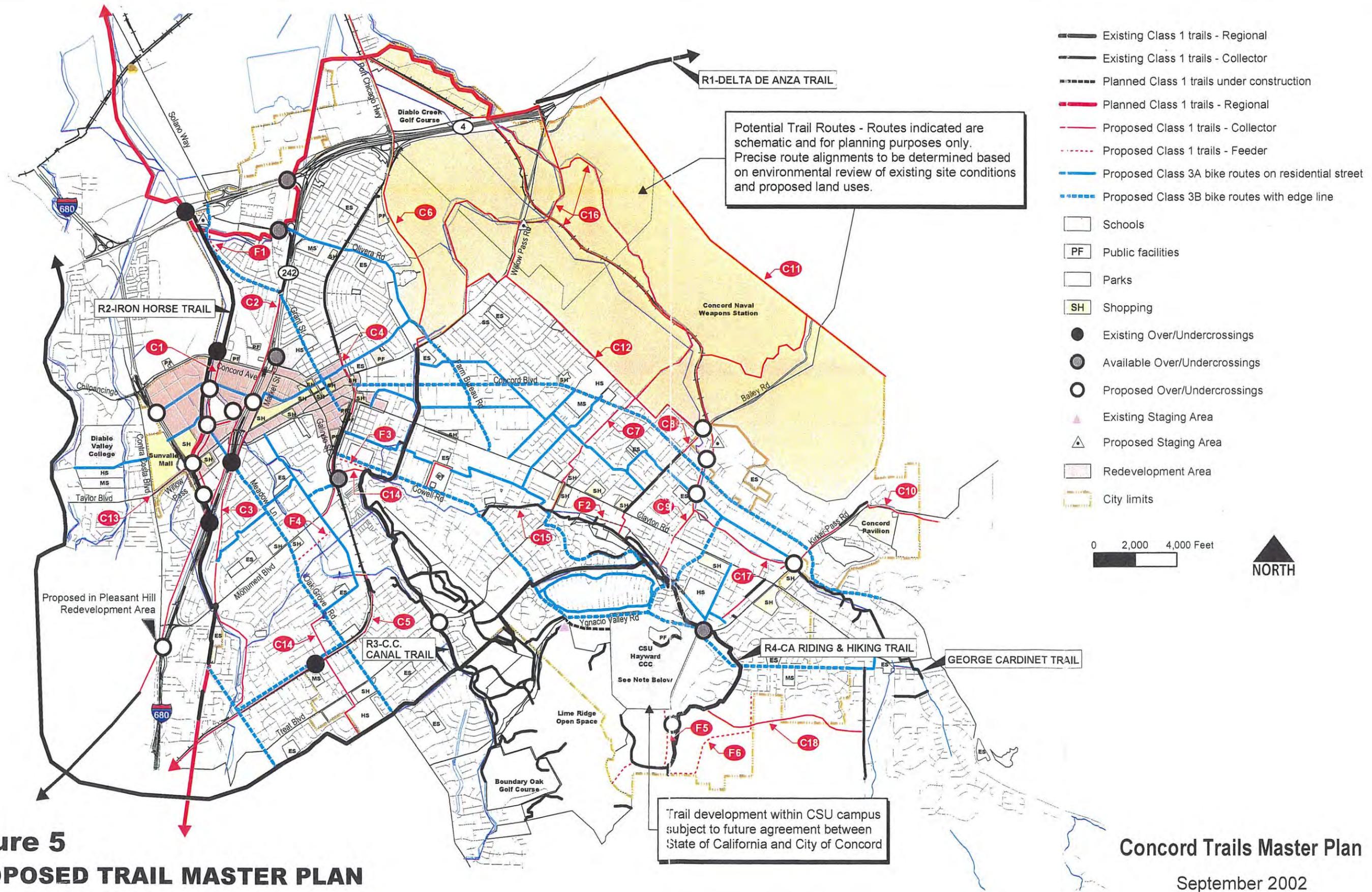


Figure 4
PROPOSED HISTORIC TRAIL
 352080\Historic Trail\4-25-02

List of Historical Sites	
Source: Concord Historical Society	
1. Todos Santos Plaza	13. Nunez House
2. County Fire House	14. Webb-Soto House
3. Maltby-McKinnon House	15. Kelly House
4. Barnett House	16. Salvio Pacheco House
5. Elworthy House	17. Old Fire House
6. Ginochio-Accinelli House	18. Perry House
7. Rosal Apartment	19. Foskett & Elworthy Building
8. Elworthy-Keller House	20. Masonic Hall
9. Bibber House	21. Ivey House
10. Neustaedter House	22. Keller House
11. Alves House	23. Eddy House
12. Bolla House	24. Francisco Galindo House

In addition, there are several streets that are collectors or arterials that ideally would have bike lanes but widening or otherwise providing bike lanes would have severe impacts on the adjacent land uses. However, shoulder stripes can be provided with the shoulder width averaging three to four feet. These streets are referred to as Class 3B to distinguish them from the residential streets where the traffic volumes are significantly less and no shoulder striping is proposed. All recommended bike routes are listed below in Table 2-3.

Table 2-3	
RECOMMENDED BIKEWAYS ON CITY STREETS	
CLASS 3A- Residential Streets	
1.	Olive/Greenbush Drives
2.	Wilson Lane/ Clayton/Wren
3.	West Street
4.	Rosal Ln/Mendocino Drive
5.	Orchard/Reed/Meridian/Joan/Canterbury/Cobblestone
6.	Mt. Diablo Street
7.	Olivera Road
8.	Galaxy Way
9.	Willow Way / Waterworld Parkway
10.	Detroit Avenue/Chalomar Drive
11.	Sunshine/Tilson/Rae Anne/ Victory
12.	Pine Hollow Road
13.	Walnut Avenue/The Alameda
14.	Alberta Way/Valmar Drive
15.	Salvio Street
CLASS 3B Collectors/Arterials with Shoulder Stripe	
1.	Meadow Lane/Oak Grove Road
2.	Bancroft Avenue
3.	Cowell Road
4.	Ygnacio Valley Road from Cowell Road to Alberta Way
5.	David Avenue
6.	Minert Road (until BART path is extended)
7.	Concord Boulevard
8.	Grant Street/Solano Way
9.	Farm Bureau Road
10.	Ayers Road
11.	Pine Hollow Road
12.	Walters Way
13.	Turtle Creek Road
14.	North and South Larwin Avenue



**Figure 5
PROPOSED TRAIL MASTER PLAN**

Needed Overcrossings and Bridges

Many bridges and overcrossings of major barriers such as freeways, BART and waterways are needed to fully implement the trail network. These are listed in Table 2-4. Some of these will be easier to implement than others due to the existing geometry of the structure to be crossed. For example there are several locations where there is existing adequate clearance to provide a trail under BART or a freeway and all that is needed is to pave a trail. This is indicated in Table 2-4 by "grade separation available". At several other locations however, a full overcrossing or tunnel would need to be constructed. This is also indicated. Table 2-4 below also indicates if the proposed over/undercrossing is part of any other plans.

Table 2-4 NEEDED OVERCROSSINGS AND BRIDGES	
Location	Status or Feasibility
Over/Under Freeways or BART	
1. I-680 overxing near SunValley Mall/ Galaxy Way	New grade separation necessary
2. SR 4 undercrossing at Mokelumne Trail	Grade separation available
3. SR 242 undercrossing at Sutter (Proposed in redevelopment plan)	New grade separation necessary
4. BART at/ near Cowell Road / Galindo Creek	Grade separation available
5. SR 242 at Concord Avenue Exit	Grade separation available
Bridge Over Creeks	
1. Walnut Creek Channel bridge at Waterworld Way	New bridge necessary
2. Pine Creek bridge at Commerce Avenue (Proposed in redevelopment plan)	New bridge necessary
3. Walnut Creek Channel bridge at Galaxy Way extension (Proposed in redevelopment plan)	New bridge necessary
4. Mt. Diablo Creek bridge at Olive Drive	New bridge necessary
5. Mt. Diablo Creek bridge at Bailey Rd Trail	New bridge necessary
6. Mt. Diablo Creek connecting to Rail Road ROW trail (Newhall Greenway)	New bridge necessary
7. Galindo Creek South of Cal State Property	New bridge necessary
Over/Under Major Roadways	
1. Olivera Road at Mokelumne Trail	Grade separation available
2. Kirker Pass Road at Mt. Diablo Creek	Investigate use of existing culvert
3. Ygnacio Valley Road at California Riding & Hiking Trail	Grade separation available
4. Treat Boulevard at Contra Costa Canal Trail	New bridge recommended to replace at-grade crossing

Chapter 3

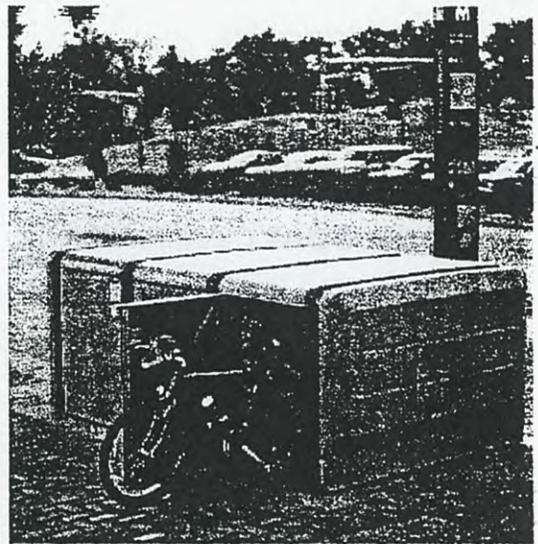
SUPPORT FACILITIES AND PROGRAMS

Bicycle support facilities include bicycle parking, showers and lockers, signage, bike sensitive traffic signal detectors, trail amenities, bikeway maps and even includes support programs such as promotion and education. This chapter focuses on bike parking, trail amenities, trail maintenance. Signage and signal detectors are addressed in Chapter 5 *Design Guidelines and Best Practices*.

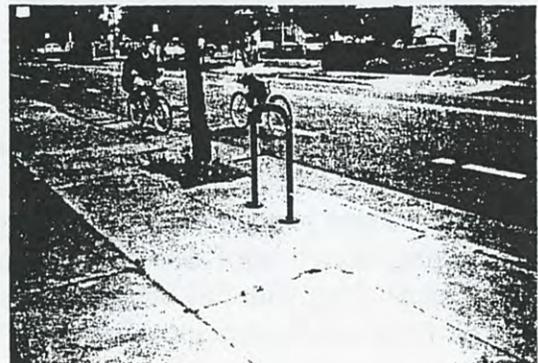
BIKE PARKING

Definitions

Class I - This is defined as protecting the entire bicycle and its components from theft, vandalism or inclement weather. It is appropriate for long-term bicycle parking such as at employment centers or transit stations. Examples are bike lockers, rooms with key access for regular bike commuters, guarded parking areas, and valet or check-in parking. A common variation of the latter examples is at schools where racks are placed within a fenced compound to provide more security to discourage thieves. The compound is either locked during the day or unofficially guarded by the activity within the school.



Class II - This is defined as a rack to which the frame and at least one wheel can be secured with a user-provided U-lock or padlock and cable. This type of parking is appropriate for short-term parking such as at shopping areas, libraries, and other places where the typical parking duration is less than two hours. Examples of racks popular with bicyclists are the wave or ribbon racks and the inverted U-rack, or horse rail rack. Increasingly popular are higher security Class II racks such as the Crank Case racks.



Bike Parking Recommendations

Concord's Municipal Code does not require new developments to provide bicycle parking. Some employers provide bicycle facilities as part of their transportation demand management programs. Some schools and shopping centers have bike racks but they are often the undesirable Class 3 racks to which only one wheel can be locked thus leaving the remainder of the bicycle

vulnerable theft. It is recommended that bike parking be required as part of new development approvals. Typical ordinances of other cities require bike parking between 5 and 20 percent of the quantity of required automobile parking depending on land use. Summaries of parking ordinances from other cities along with a sample ordinance that relates the amount of bike parking to land use type is presented in Appendix G.

While comprehensive recommendations regarding the location of new bicycle parking facilities are beyond the scope of this study, the following are locations where the need for Class II parking has been identified. Many cities throughout the Bay Area, including Berkeley, Los Altos and Oakland, also install bike racks on public sidewalks throughout the downtown area. Bike parking at transit stations is discussed in the next section under Intermodal Connections.

- Civic Buildings
- Grocery stores
- Schools and colleges
- Major Employment Centers including office buildings and hospitals
- Cafes, delis and restaurants
- Libraries
- Parks
- Shopping Centers, regional and neighborhood

INTERMODAL CONNECTIONS

There are two BART stations in Concord, the downtown station at Oak Street and the North Concord station just south of Highway 4 at Panoramic Drive. Bike parking at these two stations consists of bike racks and reserved lockers. In addition, Contra Costa County Connection provides fixed route bus service in Concord. Buses are equipped with bike racks which hold two bikes each. Also, the nearest rail station is in Martinez, and is serviced by the Capitol Corridor which runs between Sacramento and San Jose. Bus route 118 connects the Concord BART station to the Martinez train station and bus route 108 connects the North Concord BART to the Martinez train station. There is no ferry service to Concord.

SHOWERS, SIGNS AND MAPS

Showers

Showers and storage for clothing encourage bicycle commuting and, depending on the length of the commute, may make the difference as to whether biking to work is feasible. Showers and lockers also provide benefit to all employees as they can be used by those who run, walk or cycle during lunch breaks. Showers are increasingly common in new office buildings and employment centers along with full fitness centers as they can attract tenants and employees. Clothes storage facilities can be individual lockers or a closet shared by all employees.

Some employers have showers available for their employees due to the nature of their business such as hospitals and colleges/schools with locker rooms. In general, few shower facilities exist for employees in the City of Concord. No public showers are available for bicycle commuters.

It is recommended that the city consider the adoption of a shower ordinance that would require showers to be included in new buildings over a certain size determined by Council. (A sample shower ordinance is presented in Appendix G). As an alternative to an isolated shower

ordinance, developers or companies that provide showers should be eligible for a reduction in the parking requirement, an increase in the floor area, or some other incentive included in an overall Travel Demand Management Program. Small businesses should be exempt from the ordinance. However, they should be encouraged to share shower facilities with other businesses, or arrange for their employees to use other facilities. Retrofitting existing buildings is expensive and should not be mandated but should be encouraged.

Recommended Sign Program

A bicycle route signage program is critical to the successful implementation of a trails and bikeway network. The purpose is to enable a bicyclist to arrive at a particular destination by following the signs without consulting a map. Signs are also useful to inform and lead bicyclists to shortcuts and bridges that are only available to bicycles and pedestrians. Recommended signage to use on Trails, Bike Routes, and Bike Lanes and are presented in Chapter 5 *Design Guidelines and Best Practices*.

Bikeway Mapping

A publicly distributed bikeway map can serve as a promotion tool for the bikeway system as well as a bicycle safety education tool. Many such maps include the location of bike shops, bike parking, and other support facilities such as water fountains, public restrooms and picnic tables. Points of interest can be added to increase the usefulness of the map including the location of parks, grocery stores, restaurants, and wineries. A bikeway map should include a brief synopsis of safe bicycling practices and an explanation of the rules of the road as they pertain to bicycling. These maps can be distributed at bike shops, restaurants, schools and employment sites. They can also be posted on the City's website.

EXISTING PROGRAMS PERTAINING TO BICYCLE SAFETY EDUCATION

School Bicycle Safety Education

Bicycle safety education in the City of Concord is provided in several ways. The Concord Police Department disperses bicycle safety education tips to student and parents throughout the year. The primary method is through the school newsletters. Some schools request classroom presentations, mainly at the first through third grade levels.

Bicycle Rodeos

The Concord Police Department does not host bicycle rodeos. Bicycle rodeos are effective "hands-on" instruction that enable the children to proceed through a variety of stations to test their bike handling skills, learn the rules of the road and learn how to properly fit a helmet and their bicycle. Rodeos are sometimes ended with a written test followed by a hotdog bar-be-que and award ceremony. It is recommended that the City partner with the school district and the Police Department to implement several rodeos per year. Partnering with other local agencies can also be a way to reduce costs.

School District Programs

School districts often have a difficult time allocating class time for bicycle safety instruction. Formerly, when high schools provided tenth grade driver's education, there was an opportunity

to educate students as both bicyclists and motorists. This opportunity was lost when it was eliminated from the curriculum.

Cops on Bikes

While not explicitly an education program, instituting a program of officers on bike patrol is an excellent way to familiarize officers with first hand bicycle traffic safety issues and the perils of traffic riding from the cyclists' perspective. The Concord Police Department does have two bicycle-mounted officers, who patrol the downtown area.

Traffic Enforcement

The Concord Police Department (CPD) routinely patrols for traffic violations. It is difficult to determine, however, how many motorists are cited for unsafe behavior towards a bicyclist or for violating a bicyclist's right-of-way. The CPD occasionally performs increased enforcement near areas of high collisions and also periodic DUI checkpoints, which help to improve overall traffic safety.

EXISTING PROMOTION POLICIES AND PROGRAMS

"Bike to Work" week and "Walk to School" day are statewide and nationwide events that can help increase awareness of the role that bicycling and walking can play in meeting the city residents' transportation needs. In the past the City has supported and promoted bike to work day for its employees. While there has been no citywide bike to work day event, the CPD has attended many community events where bicycle safety literature has been handed out. They have relied on AAA and NHTSA materials. However, the CPD has a goal of developing their own literature that would be available in both English and Spanish. The City of Chicago in collaboration with the Chicagoland Bicycle federation has bicycle safety booklets that are available in several languages including Spanish that may prove useful to the CPD in this endeavor.

TRAIL AMENITIES

There are other design features which will enhance trails as recreation facilities and will assist their use as transportation facilities as well. These include:

- Bike lockers and other bike parking facilities are needed at schools and employment destinations, but also are needed at trail heads and other places where trail users may wish to stop and use or enjoy the amenities listed below.
- Restrooms should be provided at staging areas and other locations depending on anticipated user volumes. Where the trail passes within one half mile of a park or other location with such facilities, a sign should indicate the availability of facilities to trail users.
- Drinking water fountains, especially given Concord's average summer temperatures, should be provided at all staging areas and every five miles if possible.
- Benches are recommended at regular intervals and at locations with scenic vistas or other resting stops.
- Air for tires is an amenity that is extremely useful for both the beginning cyclist who may not have thought about air before embarking on their ride and also for the experienced

cyclist who may have gotten a flat and would appreciate a high pressure air source not possible with a hand pump.

- Bike rentals & bike repairs, and other services that enhance the commuting and recreational trips.
- Emergency telephones/call boxes, preferably solar powered, should be considered for isolated areas ideally at one-mile intervals.

TRAIL MONITORING AND MAINTENANCE

The maintenance and management of trails has several aspects:

- Day to day operations and routine maintenance
- Storm events
- Management
- Liability
- Enforcement

A level-of-service approach should be used to operate and maintain trails. Table 3-1 provides a general management framework for normal trail-related stewardship activities.

The guidelines below address the day-to-day operations and routine maintenance of trails within Concord. The City should establish a method for inventorying all city trails on a regular basis. This inventory would include: drainage, vegetation clearing, erosion problems, removal of any encroachments, signage and any necessary repairs of pavement or structures such as gates, fences and barriers. The City should also work with other agencies to establish a schedule to conduct routine maintenance such as sweeping, trimming and spraying.

It is acknowledged that some trails are built on service roads and therefore need to be accessible by vehicles during high maintenance periods such as storm events. Storms also increase trail maintenance needs in terms of clearing of vegetation, ponding and flooding. The cleanup procedures after storms and flooding need to be coordinated between EBRPD, and the City. High potential flooding areas should be identified.

Annual Maintenance: A yearly inventory of all trail maintenance, including drainage, vegetation clearing, signing, surfacing, need for graffiti removal, and repair of structures, gates, fences, and barriers shall be done in early spring, prior to the heavy summer use period. Based on maintenance reports, trails shall be subject to closure or repair as warranted.

Trail Closures: Short segments of trails may require permanent re-routing, due to landslides, washouts, or other problems. Temporary closure, and appropriate safety signs should be posted when such re-routing is determined to be necessary. If a new permanent route is constructed, the original route should be closed to use and reclaimed for natural vegetation.

Clearing the Trail: Vegetation growth should be cleared and obstacles should be removed where necessary on an as-needed basis. Good pruning practices along trails should be followed. Noxious plants (e.g. Yellow Star Thistle) should be controlled along the trail in a timely manner.

Clearing Inspections: Within the trail clearing limit, understory grasses and herbaceous annuals shall be inspected annually during the early summer months and prior to the fire season and, where appropriate, mowed.

Corrective Erosion Control: Corrective work for drainage or erosion problems shall be performed within a reasonable period of time. Where necessary, barriers to prevent further erosion shall be erected until problems are corrected. Missing or damaged signs shall be replaced as soon as possible. Damaged structures shall be repaired as soon as possible. Damaged gates, fences and barriers shall be replaced as soon as possible. Trails shall be closed if corrective work can not be accomplished within a reasonable time frame. If monitoring reveals that undesirable soil compaction is occurring in sensitive habitats adjacent to trails, erection of barriers or other appropriate measures will be employed as needed to discourage off-trail use.

Sweeping and Regrading: Paved trails should be swept periodically to keep them free of loose gravel, debris, broken glass and other litter. Damaged pavement should be replaced as soon as possible. Unpaved shared-use trails should be graded as necessary to maintain smooth surfaces.

Casual Trails: Casual trails and trail shortcuts that present ongoing unsafe conditions to the trail user or cause other management problems, such as affecting habitat areas, should be barricaded from access and, if appropriate, covered with natural materials to visually camouflage the path.

Monitoring Habitat Areas: Periodic monitoring of known sensitive habitats near trails will be conducted to determine if unacceptable soil compaction is occurring and remedial action should be initiated. Sensitive habitats include: Riparian; Wetlands; Alkali Sinks; and Oak Woodland.

Trail Reclamation: Should there be an event that necessitates the permanent closure of a trail, a management program to rehabilitate the trailway will be developed. Along arroyos and streams, a reclamation program shall include disking and replanting the former trail to a natural condition, and/or sufficiently blocking the trail with barriers to effectively prohibit use. Best management practices shall be used for all grading activities to keep silt from entering a stream channel.

Trail Patrol and Information: Existing sign information should be revised to show up-to-date trail information. Trail maps should include trail use rules, emergency information, trail accessibility, and other pertinent information.

- On trails which extend through more than one jurisdiction, cooperative agreements with appropriate agencies should be formed for trail supervision and maintenance activities.
- Where shared-use trails pass through multiple jurisdictions, trail-specific bicycle inspections by the participating agencies or by contract with the other agencies are encouraged.
- Along heavily-used trails, traffic counters should be installed to determine needed changes in inspections based on usage. Information gained from traffic counters should be shared with the Concord Police Department and other participating agencies.

Trail Supervision: A level-of-service approach should be used within Concord supervise trails. Table 3-1 provides a general management framework for normal trail-related oversight activities.

Minimum Presence: All Concord trails shall be inspected to assure that they are safe and usable. A level-of-service approach shall be used such that trails receive routine attention commensurate

with that provided to Concord area parks. Objectives of trail inspections shall be trail safety, adjacent private property security, code enforcement, visitor information and litter control, and minor maintenance. (See also: Table 3-1).

Use of Volunteers: To the extent feasible, certain aspects of trail supervision, such as trail safety, litter control, and information and education should be accomplished by volunteers. This could be accomplished in conjunction with a Trails Advisory Committee. In any event, local managing agency personnel shall inspect the trails as outlined above.

Staffing: Prior to developing and opening a trail to public use, a trail management plan that identifies the level of personnel needed to operate and maintain the trail relative to the above guidelines shall be prepared. Criteria to be included in the trail management plan include, but are not limited to:

- anticipated types and levels of use
- availability of police and fire protection
- trail patrols
- annual maintenance requirements
- emergency management allotments
- management agreements with other agencies
- anticipated use of volunteers or contract services

Prior to considering the development of a trail through public funding or private dedication, funding for a trail's maintenance in terms of staffing and equipment should be identified and obtained as part of the City's annual budget process and updating of the ten-year Financial Plan..

**TABLE 3-1:
GUIDELINE FOR ESTABLISHING LEVEL OF SERVICE FOR INSPECTIONS AND MAINTENANCE**

	OPTIMUM FREQUENCY OF INSPECTION ⁽¹⁾				
	Seasonally (2)		Quarterly	Regularly ⁽³⁾	Special Condition
<i>High Volume Use /</i>	Summer / Fall	Spring			
URBAN TRAIL					
GENERAL					
Inspection				•	
Empty trash; remove graffiti (within two days of discovery); collect litter; service restrooms; refill pet pooper-scooper dispensers				•	
Repair and clean lights; remove fallen trees, limbs, and debris on trail				•	as needed for hazard abatement
Repair trail furniture (benches, trail drinking fountains, telephones, etc.)			•		as needed for hazard abatement
Sweep trail		•		•	as needed for hazard abatement
Clean, repair culverts and drains	•			• ⁽⁴⁾	
Perform drainage and ditch work	•			• ⁽⁴⁾	
Perform major storm damage, washout, erosion repairs; and annual grading	•			• ⁽⁴⁾	as needed for hazard abatement
Clear / brush vegetation adjacent to trail to provide needed horizontal and vertical clearance and to improve sight lines		•			as needed for hazard abatement
Mow turf / vegetation adjacent to trail				•	
Weed control in trail tread		•			as needed for hazard abatement
Repair pavement (cracks and potholes)		•			as needed for hazard abatement
Repair /replace fences, gates, bollards			•		as needed for hazard abatement
Test / repair traffic signal controls; emergency call boxes			•	•	as needed for hazard abatement
Monitor habitat areas (riparian zones and Bay marshes) relative to user impacts / provide protective fencing if necessary	•	•			
Monitor unauthorized encroachments			•		

- 1) Indications are general guidelines regarding timing of inspection and maintenance activities; use of the word "optimum" means the best or most favorable condition for a particular trail situation from the perspective of responsible management.
Should any reports by trail users be made about unsafe conditions, these should be responded to immediately.
- 2) Typical dates for inspections are:
 - Seasonally - Summer / Fall: to be conducted during the dry season before October 15
 - Seasonally - Spring: to be conducted after seasonal rains have diminished
- 3) Regularly means on a routine basis as needed to provide a safe, clean environment similar to local public parks.
- 4) As needed during seasonal rain period

Chapter 4

IMPLEMENTATION, PRIORITIES AND NEXT STEPS

This chapter describes the steps necessary to proceed with the implementation of the Trails Master Plan. This master plan identifies the prioritization criteria and the five top priority projects. Conceptual cost estimates were developed for these projects and the intent is to schedule these projects in the Capital Improvement Program. The priorities will also help guide City staff in pursuing outside funding to implement the projects identified in this plan. Recommended projects and programs have also been divided into short-term and long-term phases.

PRIORITIZATION CRITERIA

Criteria used to prioritize bicycle and pedestrian projects typically relate to connectivity and safety. Other criteria are included to reflect the local desires such as trail significance and usefulness. The following list presents the proposed prioritization criteria that were presented to the Trails Advisory Group. These are also listed as Strategy 7.1 in Appendix A, which describes the policy recommendations that complement the City of Concord General Plan.

- trail significance (regional and local)
- opportunities for a large number of users
- trail usefulness
- connectivity to major destinations and regional trails
- safety considerations
- funding opportunities

Even though the trails will be prioritized, this does not mean that opportunities for right-of-way acquisition and development through purchase, dedication or other means should be ignored for trails that are not ranked as a high priority. Rather, all easements and rights-of-way should be preserved and/or acquired as opportunities arise, particularly if a once-in-a-lifetime opportunity arises. The high priority projects are those whose implementation will be accelerated through pro-active project development.

General Plan Priorities from the 1994 General Plan

One measure of local significance is whether trail routes have been identified in other documents that address planning, transportation, historical or cultural significance. The 1994 General Plan identified as priorities the following projects that relate to pedestrian or bicycle travel:

- H-4 Grant and Salvio Streets - Pedestrian Corridors- LU 7.5.1
- C 9 - Newhall Park access from Clayton Road near Bailey Road LU (10.2)
- C 8 - Linear park along Bailey Road from Newhall Park to north of Clayton Road (LU 10.2)

- C4 and C5 - BART Trail
- R2 - Monument - Iron Horse Trail (Objective 14.7 Land Use)
- C16 - Naval Weapons Station (LU 13.3)

Community Priorities

Based on input from the Trails Advisory Group and the Public Workshops, several trails appear to be priorities for the community. These are:

Downtown:

- C5/C6 - BART
- H 1 -Historic Walking Tour/Downtown

Outside Downtown:

- R 2 - Monument- Iron Horse Trail
- C 9 - Newhall Park- Clayton Road

IMPLEMENTATION PROCESS

The actual implementation of this plan will occur incrementally in a variety of ways. Many projects will be incorporated into the Capital Improvement Program (CIP) process and will be implemented as the CIP projects get funded. Others will happen as part of regular maintenance and operations practices and road resurfacing projects. Development and redevelopment in some areas of the City will present the opportunity to implement some of the recommendations of this plan. Finally, outside funding can be obtained to finance the design and construction of other projects, improvements and programs. The most likely funding sources are addressed in the last section of this chapter.

Trail Construction Costs

In order to assist the City in future planning to obtain the necessary funds for the bikeway network, cost estimates for the trails and bikeway network were prepared. The approximate construction costs for each bikeway type, based on cost data compiled from Bay Area cities, is indicated in Table 4-1. These estimated costs are the straight construction costs in Year 2002 dollars, and do not include any contingencies. For example, the EBRPD estimates trail bed construction at \$200,000 per mile, but the actual costs experienced by local agencies can be and have been much higher. This is because the cost to construct trails can vary significantly due to such factors as terrain and grading, landscaping, lighting, culvert crossings, drainage design, and amenities such as water fountains, and benches (not to mention right-of-way acquisition). We have assumed \$400,000 per mile for new trail construction. Where the trail bed seems to be more easily implementable due to an existing graded surface, we have assumed \$300,000 per mile. In addition, 15 percent is typically added for contingencies, and another 10 to 20 percent is added for design and administration (D/A). We have included an additional 30 percent to cover these costs. The entire trail network is estimated to cost about \$24 million. This is depicted in Table 4-2 summarized by trail.

**Table 4-1
Unit Construction Cost Assumptions
For Bikeway Improvements**

Capital Project	Unit	Cost
Class 1 - Construct new multi-use trails - grading and some cut and fill	Mile	\$400,000*
Class 1 - Construct multi-use trail on service road	Mile	\$300,000
Class 3A - Bike Route - local street	Mile	\$2,000
Class 3 B- Arterial /collector- bike route with shoulder stripe	Mile	\$200,000
New Traffic Signal	Each	\$120,000
Construct Major Ped/Bike overcrossing or undercrossing	Each	\$5,000,000
Construct Ped/Bike bridge over Creek	Each	\$300,000
Miscellaneous improvements	Total	\$1,000,000

Note: These costs are straight construction costs and do not include contingencies (20%), design costs (15%), inspection and administrative costs (10%), right-of-way acquisition, or inflation factors.

* Cost can vary tremendously depending on terrain, right-of-way and design of the facility.

Wilbur Smith Associates.

Onstreet Bikeway Construction Costs

Onstreet bikeways are considerably less expensive than trails if no roadway widening is involved. The estimated costs for the onroad improvements are also indicated in Table 4-1. Class 3A residential bike routes is primarily the cost of route and destination signing at about \$2,000 per mile (plus the cost of needed spot improvements as described on the next page). The cost per project is indicated in Table 4-3.

The minimum cost to implement Class 3B Bike Routes on arterials is the cost to stripe a 4 inch shoulder stripe plus signage. However since there are many other improvements that could be made to improve bicycle transportation, we have estimated more than the minimum shoulder stripe costs. These improvements will vary street by street but can include such issues as signal timing improvements, bicycle detection improvements, smoothing longitudinal joints, fixing potholes, or other repaving of sections with rough pavement. In order to help the City plan future budget needs for bikeway improvements we have estimated \$200,000 per mile to include these other improvements. The cost per project is indicated in Table 4-3. Total cost for the onstreet bikeways is estimated at about \$6 million. The cost will be significantly less if done in conjunction with regularly scheduled roadway rehabilitation projects.

Bridges, Overcrossings and Other Spot Improvements

In addition to the trails and onstreet bike routes, many types of improvements are possible at a single location or intersection which significantly improve the safety, convenience, travel time, ambiance and/or overall utility of a bicycle path or route. Since these are generally limited to a specific location or intersection, as opposed to a linear trail or bike route described previously, they are referred to as spot improvements. The following lists the types of spot improvements that are recommended. The cost will be significantly less if done in conjunction with regular scheduled roadway rehabilitation projects.

- Bridges/tunnels over and under freeways and BART

- Bridges/tunnels over and under freeways and BART
- Bridges over creeks
- Overcrossings over arterials
- Installing traffic signals to help bicyclists cross major arterials
- Other strategies to help cross arterials (median pedestrian refuges, flashing yellow beacons or roundabouts)
- Eliminating obstacles, such as repaving railroad tracks or replacement of unsafe drainage grates.

Due to the uncertainty of the costs involved in building an over or undercrossing of a freeway, it has been conservatively estimated that a freeway overcrossing or undercrossing would cost about \$5 million. Bridges over creeks are considerably less expensive and are estimated at approximately \$300,000. Traffic signals cost approximately \$120,000. An additional \$1,000,000 is included to account for incidentals and other traffic improvements such as removing obstacles and providing other assistance to cross roadways. These recommended spot improvements are listed in Table 4-4. The total cost to implement all of them would be about \$24 million.

SHORT-TERM RECOMMENDATIONS

Short-term recommendations are defined as those projects that should be started within the next 12 months. In many cases, the City's current budget for maintenance can begin some of these projects. City staff time must of course be allocated so that these programs and projects can begin.

- Install bike route signing on the new bike routes in the City
- Install/improve destination signing to all bike/pedestrian tunnels and bridges
- Stripe shoulders on all Class 3B Bike routes
- Fill out applications for grant funding
- Begin citywide bike parking program to identify parking deficiencies and install City-supplied bike racks
- Incorporate trail bed maintenance into City's PMS program
- Bicycle and Pedestrian Safety Educational Program -Initiate discussions between city staff, the Concord Police Department and the School Districts to improve school-based bicycle safety education.

MEDIUM-TERM RECOMMENDATIONS

The following seven top priority projects are recommended to be programmed into the City's CIP. Due to the cost, they may need to be phased and/or supplemented with grant funding. The numbers in parentheses refer to the trail numbers on Table 4-2 and Figure 5.

1. Mayette Connector Trail (C-3)

This trail utilizes the former railroad right-of-way to connect the Iron Horse Trail at Monument Boulevard to Market Street and the Franquette Avenue/SR242 pedestrian underpass.

2. Paving of the California Riding & Hiking Trail from Newhall Park to Cowell Road (R-4)

The existing dirt multi-use trail would be paved for a distance of about 1.3 miles to a width of ten feet, leaving an unpaved parallel portion for horses and runners. The paved portion would connect across Newhall Park to the parking lot at the end of Newhall Parkway.

3. Construct the Newhall Greenway from Clayton Road to Newhall Park (C-9)

This trail, which was formerly in the city's CIP, would parallel Newhall Parkway utilizing city-owned right-of-way. Associated landscaping would beautify an unsightly bare earth area that has been identified by local residents as needing improvement. It would connect with the California Riding & Hiking Trail in Newhall Park.

4. Construct a Class One Trail paralleling Willow Pass Road between Park & Shop Center and Contra Costa Boulevard. (C-13)

This project would provide a safe off-street way to travel east/west across Interstate 680. The need for this connection was mentioned in all of the Trail Master Plan workshops. The exact routing must still be determined, however utilizing the banks of Walnut Creek would be a strong possibility.

5. Construct the Mt. Diablo Creek Bridge at Olive Drive

Olive Drive will be a useful east/west Class 3 Bike Route, offering an alternative to Clayton Road and Concord Boulevard. A short bridge across Mt. Diablo Creek will connect the two sections of Olive Drive and offer a low volume network of street as a safe biking alternative. This route could be used as access to the Concord BART Station.

6. Improving and extending the trail along Kirker Pass Road to serve the Pavilion (C-10)

The existing paved trail would be widened to ten feet and extended to the north, crossing Kirker Pass Road at Clearbrook Drive into the city-owned open space north of the Pavilion, and serving the Pavilion in the process. It would be extended to the south to Concord Boulevard.

7. Construct a feeder trail from Crystyl Ranch Drive north to the Boatwright Playfields (F-4)

Improvement of the existing service road into the Cal State property would provide easy bicycle and pedestrian access to the large complex of athletic fields. About one third mile of surfacing would provide an alternative to driving up to two miles to reach the parking lot.

FUNDING OPPORTUNITIES AND STRATEGIES

Traditional Funding Sources

This section outlines the most probable funding sources to implement the recommended bikeway projects. While some funding sources are dedicated to the City, many are competitive. Also, the City of Concord receives funding for roadway projects which can be used to implement some bikeway projects in this Plan.

The most likely funding opportunities for bicycle improvement projects in Concord are:

- Transportation Development Act (TDA) Article 3 funds
- Bicycle Transportation Account (BTA)
- Bay Area Air Quality Management District funds - Transportation Fund for Clean Air (TFCA)
40 percent Program Manager Monies/60 percent Regional
- Surface Transportation Program of the Transportation Equity Act of the 21st Century
This is often used to fund projects with bicycle components. In fact, bicycle facilities enable the project to score higher.
- Office of Traffic Safety
This funding source is often used for bicycle and pedestrian safety projects. It can be used for traffic calming programs as well.
- Transportation Enhancements and Transportation for Livable Communities
- Safe Routes to School Program

**Table 4-2
PROPOSED TRAIL NETWORK**

Reference Number	Name of Trail	Length (miles)	Unit Cost (\$)	Construction Cost (\$)
R4	California Riding and Hiking Trail	1.3	\$300,000	\$390,000
North-South Connector Trails				
C1	Walnut Creek Channel Trail (east side of Channel)	1.6	\$300,000	\$491,000
C2	Mokelumne Aqueduct Trail from Grant Rd to Walnut Creek Channel (EBMUD ROW)	2.3	\$300,000	\$690,000
C3	Mayette Hanson Connector (Abandoned Southern Pacific ROW) from Willow Pass Road to Monument Blvd	1.8	\$300,000	\$545,000
C4	Downtown BART Trail	0.9	\$400,000	\$364,000
C5	Southwest BART Trail	2.7	\$400,000	\$1,091,000
C6	Panoramic Way Trail from Willow Pass Road to North Concord BART	2.4	\$400,000	\$945,000
C7	Naval Weapons Station to Galindo Creek Trail (extension of Treat Boulevard alignment)	1.5	\$400,000	\$618,000
C8	Bailey Road Trail extension to CNWS	0.5	\$300,000	\$150,000
C9	Newhall Greenway (Abandoned ROW of Baypoint & Clayton RR)	1.8	\$400,000	\$727,000
C10	Pine Hollow to Chronicle Pavilion Trail (on Utility ROW)	1.1	\$400,000	\$436,000
East-West Connector Trails				
C11	Ridge Trail	3.6	\$400,000	\$1,455,000
C12	Naval Weapons Station Peripheral Trail	3.6	\$400,000	\$1,455,000
C13	Willow Pass Road Trail	0.8	\$400,000	\$320,000
C14	Contra Costa Canal to Oak Grove Trail	0.6	\$400,000	\$255,000
C15	Galindo Creek Trail	0.1	\$400,000	\$40,000
C16	Naval Weapons Station -Internal Trails	15.0	\$400,000	\$6,000,000
C17	Mount Diablo Creek Trail	1.1	\$400,000	\$436,364
C18	Mitchell Canyon to Crystal Ranch Drive	1.1	\$400,000	\$440,000
Feeder Trails				
F1	Delta DeAnza to Hilltop Road	0.2	\$400,000	\$72,727
F2	Vintage Brook to Newhall Park Trail	0.4	funded	\$0
F3	CC Canal Trail to BART connector	0.5	\$400,000	\$200,000
F4	Detroit Ave to Oak Grove Rd connector	0.5	\$400,000	\$200,000
F5	Crystyl Ranch Open Space Access Trail	0.5	\$400,000	\$200,000
F6	Crystyl Ranch to Walnut Creek Open Space Trail	2.0	\$400,000	\$800,000
Historic Trails				
H1	Historic Walking Tour	2.0	\$5,000	\$10,000
H2	Lime Haul Road	2.0	\$5,000	\$10,000
H3	Seal Bluff Road	2.0	\$5,000	\$10,000
H4	Salvio-Galaxy Way /Downtown Concord to Diablo Valley College Trail	2.0	\$5,000	\$10,000
Construction Cost -Trails		56.1		\$18,361,000
Design Administration and Contingencies		30%		\$5,508,300
Total Cost				\$23,869,300

Table 4-3
RECOMMENDED BIKEWAYS ON CITY STREETS

CLASS 3A- Residential Streets	Length (miles)	Unit Cost (\$)	Construction Cost (\$)
1. Olive/Greenbush Drives	1.8	\$2,000	\$3,600
2. Wilson Lane/Clayton Way/Wren	2.7	\$2,000	\$5,500
3. West Street	0.9	\$2,000	\$1,800
4. Rosal Lane/Mendocino Drive	1.1	\$2,000	\$2,300
5. Orchard/Reed/Meridian/Joan/Canterbury/ Cobblestone	1.2	\$2,000	\$2,400
6. Mt. Diablo Street	1.1	\$2,000	\$2,200
7. Olivera Road	1.1	\$2,000	\$2,200
8. Galaxy Way	0.9	\$2,000	\$1,800
9. Willow Way/Waterworld Parkway	0.7	\$2,000	\$1,500
10. Detroit Avenue/Chalomar Drive	2.4	\$2,000	\$4,700
11. Sunshine/Tilson/Rae Anne/ Victory	1.4	\$2,000	\$2,700
12. Alberta Way/Valmar	0.6	\$2,000	\$1,300
13. Walnut Avenue/The Alameda	1.8	\$2,000	\$3,600
14. Salvio Street	2.0	\$2,000	\$4,000
Subtotal Cost -Class 3A			\$40,000
CLASS 3B Collectors/Arterials with Shoulder Stripe			
1. Meadow Lane/Oak Grove Road	2.0	\$200,000	\$400,000
2. Bancroft Avenue	1.2	\$200,000	\$236,000
3. Cowell Road	2.7	\$200,000	\$545,000
4. Ygnacio Valley Road from Cowell Road to Alberta Way	1.4	NA	funded
5. David Road	1.1	\$200,000	\$220,000
6. Minert Avenue (until BART path is extended)	1.0	\$200,000	\$200,000
7. Concord Boulevard	5.9	\$200,000	\$1,182,000
8. Grant Street/Solano Way	2.0	\$200,000	\$400,000
9. Farm Bureau Road	1.3	\$200,000	\$255,000
10. Ayers Road	1.3	\$200,000	\$255,000
11. Pine Hollow Road	1.0	\$200,000	\$200,000
12. Walters Way	0.5	\$200,000	\$100,000
13. Turtle Creek Road	1.1	\$200,000	\$220,000
14. North and South Larwin Avenue	2.5	\$200,000	\$500,000
Subtotal Cost -Class 3B			\$4,713,000
Construction Cost - Onstreet Bikeways		44.7	\$4,753,000
Design Administration and Contingencies		30%	\$1,426,000
Total Cost			\$6,179,000

**Table 4-4
NEEDED OVERCROSSINGS AND BRIDGES AND OTHER SPOT IMPROVEMENTS**

	Unit	Unit Cost (\$)	Construction Cost (\$)	Improvement
Over/Under Freeways or BART				
1. I-680 overxing near Sun Valley Mall/ Galaxy Way	1	\$5,000,000	\$5,000,000	New grade separation
2. SR 4 undercrossing at Mokelumne Trail	1	\$100,000	\$100,000	Grade separation available
3. SR 242 undercrossing at Sutter (Proposed in redevelopment plan.)	1	\$5,000,000	\$5,000,000	New grade separation
4. BART at/ near Cowell Road / Galindo Creek	1	\$100,000	\$100,000	Grade separation available
5. SR 242 at old Railroad ROW/old Richard Avenue	1	\$100,000	\$100,000	Grade separation available
Bridge Over Creeks				
1. Walnut Creek Channel bridge at Waterworld Way	1	\$300,000	\$300,000	New bridge necessary
2. Pine Creek bridge at Commerce Avenue (Proposed in redevelopment plan.)	1	\$300,000	\$300,000	New bridge necessary
3. Walnut Creek Channel bridge at Galaxy Way extension (Proposed in redevelopment plan.)	1	\$300,000	\$300,000	New bridge necessary
4. Mt. Diablo Creek bridge at Olive Drive	1	\$300,000	\$300,000	New bridge necessary
5. Mt. Diablo Creek bridge at Bailey Rd Trail	1	\$300,000	\$300,000	New bridge necessary
6. Mt. Diablo Creek bridge to RR ROW Trail	1	\$300,000	\$300,000	New bridge necessary
7. Galindo Creek bridge connecting F5 to R4-CA Riding and Hiking Trail	1	\$300,000	\$300,000	New bridge necessary
Over/Under Major Roadways				
1. Olivera Road at Mokelumne Trail	1	\$100,000	\$100,000	Grade separation available
2. Kirker Pass Road at Mt. Diablo Creek	1	\$1,000,000	\$1,000,000	Investigate use of existing culvert
3. Ygnacio Valley Road at California Riding & Hiking Trail	1	\$100,000	\$100,000	Grade separation available
4. Treat Boulevard at Contra Costa Canal Trail	1	\$5,000,000	\$5,000,000	New bridge recommended to replace at-grade crossing
Construction Cost-Bridges and Overcrossings			\$18,600,000	
Design, Administration and Contingencies		30%	\$5,580,000	
Total Cost			\$24,180,000	

Chapter 5

DESIGN GUIDELINES & BEST PRACTICES

Purpose of Citywide Trails Design Guidelines and Best Practices

This chapter presents design guidelines and best practices recommended for the City of Concord to use for trail and bikeway facilities and bicycle parking. The Caltrans Highway Design Manual (HDM), Chapter 1000, is the primary source for bikeway standards in California. The HDM identifies minimum acceptable dimensions for trails (Class 1 bikeways) and bike lanes (Class 2 bikeways) and it includes discussion on best practices as well as practices to avoid. The guidelines presented in this chapter are intended to supplement the HDM by providing guidance on when and how to exceed the minimum standards. They describe the ideal conditions which cannot always be provided. Since bikeways are implemented and maintained by several departments within the City, including Parks and Public Works, it is important to have a single reference guide so that all bikeways can be constructed and maintained with similar designs.

The following recommendations are based on guidelines published by others such as the HDM, the Manual of Uniform Traffic Control Devices (MUTCD) and the Guide for the Development of Bicycle Facilities by the American Association of State Highway and Transportation Officials (AASHTO) as well as existing practices used by other local agencies and on the consultant's knowledge of bicycle operations, traffic engineering and pedestrian safety.

Multi-Use Trail Design

Multi-use Trail Cross-sections

While the HDM specifies a minimum trail width of eight feet and AASHTO specifies a minimum trail width of ten feet, the width of the trail should increase with the volume of trail users. The more pedestrians or non-bicycle users projected, the wider the path should be. For paths with low pedestrian volumes, (approximately 50-100 per peak hour) the paved width is recommended to be ten feet. For moderate pedestrian volumes (approximately 100-400 per peak hour), the recommended cross section is a paved width of between twelve and fourteen feet. For heavy pedestrian volumes greater than approximately 400 per peak hour (not typical in Concord), two parallel facilities are recommended: one for faster traffic, such as bicycles and roller blades, and one for slower modes such as pedestrians, children on bicycles with training wheels, etc. Figure 1 illustrates the recommended widths for varying pedestrian volumes. These are also presented in Table 1.

	Pedestrian Volume	Recommended Paved Width*
Low	50 - 100 per peak hour	10 feet (3.0m)
Moderate	100 - 400 per peak hour	12 - 14 feet (3.6m - 4.2m)
Heavy	≥400 per peak hour	Two separate paths 10' min. for bicyclists (3.0m) 8' min. for pedestrians (2.4m)

* = Paved width only; path also needs 2-foot (0.6m) graded area on both sides.

The recommended trail design features including landscape treatments for trails in various alignments are presented on the following pages.

Trail Adjacent to Roadway - 20' Easement

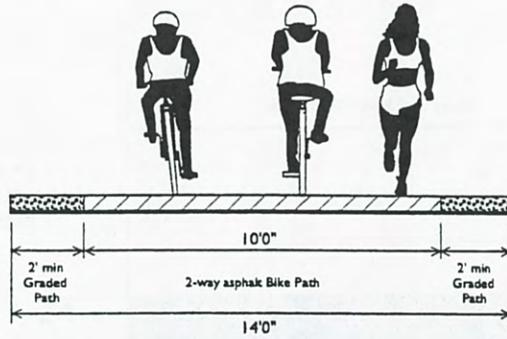
Trail in Wide Easement - Multi-use Trail with High Pedestrian Volume

Trail in Wide Easement - Separate Equestrian Trail

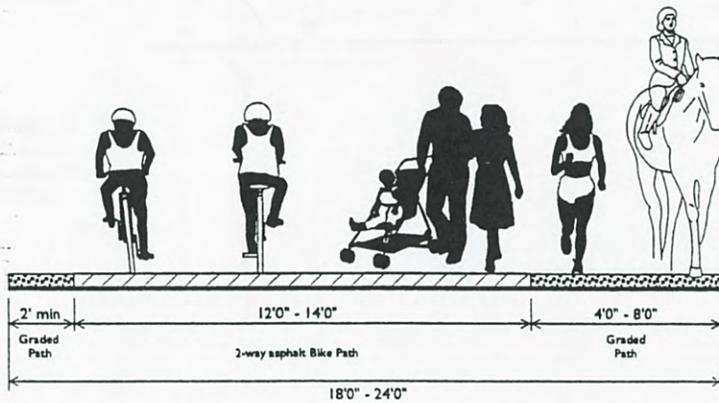
Trail Adjacent to Creek or Channel

Trail Sections Versus Pedestrian Volumes

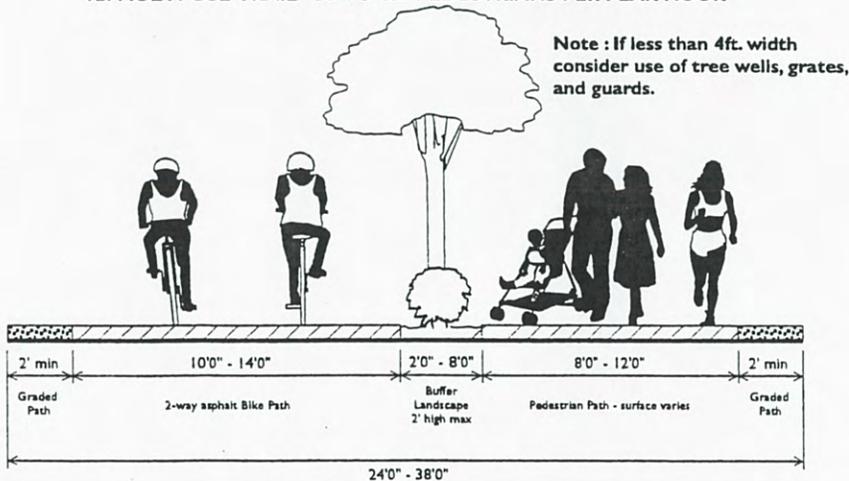
Landscaping improvement to be reviewed by department responsible for maintenance.



1a. BIKE PATH WITH PEDESTRIAN TRAFFIC OF LESS THAN 50 PER PEAK HOUR



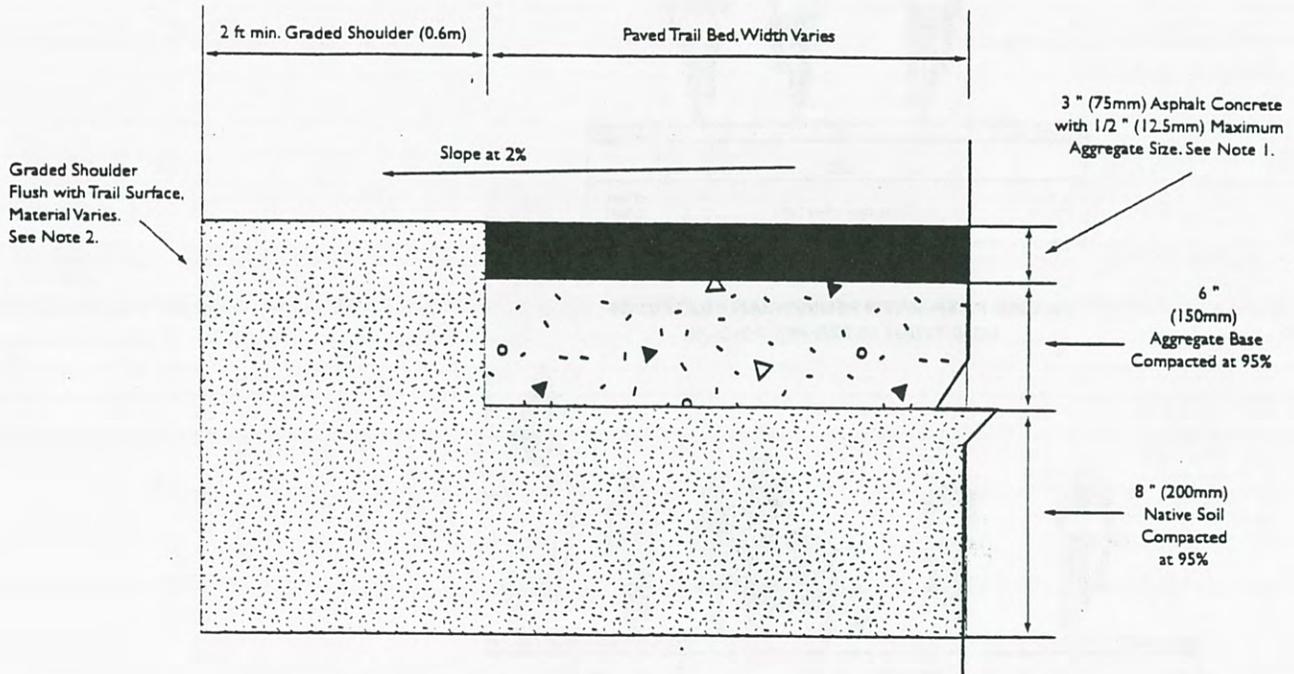
1b. MULTI-USE TRAIL - 50 TO 400 PEDESTRIANS PER PEAK HOUR



1c. SEPARATE PATHS FOR BIKES AND PEDESTRIANS MORE THAN 400 PEDESTRIANS PER PEAK HOUR

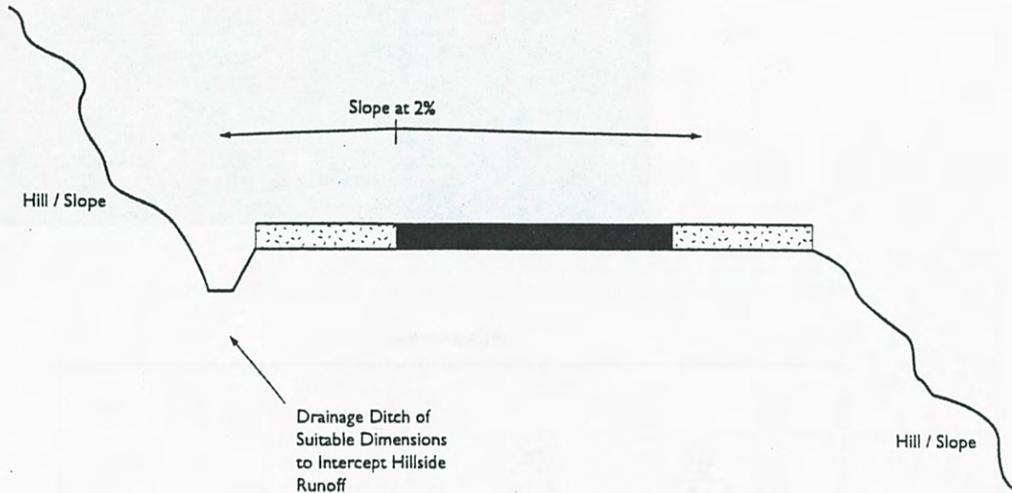
Trail Structural Section and Edge Details

The HDM provides guidance for the structural design of the trail bed. Some trails are almost exclusively non-motorized while others double as service roads for canals or creeks. Some trails may be designated on an official emergency vehicle route, to improve response time for emergency vehicles. Such differences will affect the structural cross section.



Trail Adjacent to Hillside

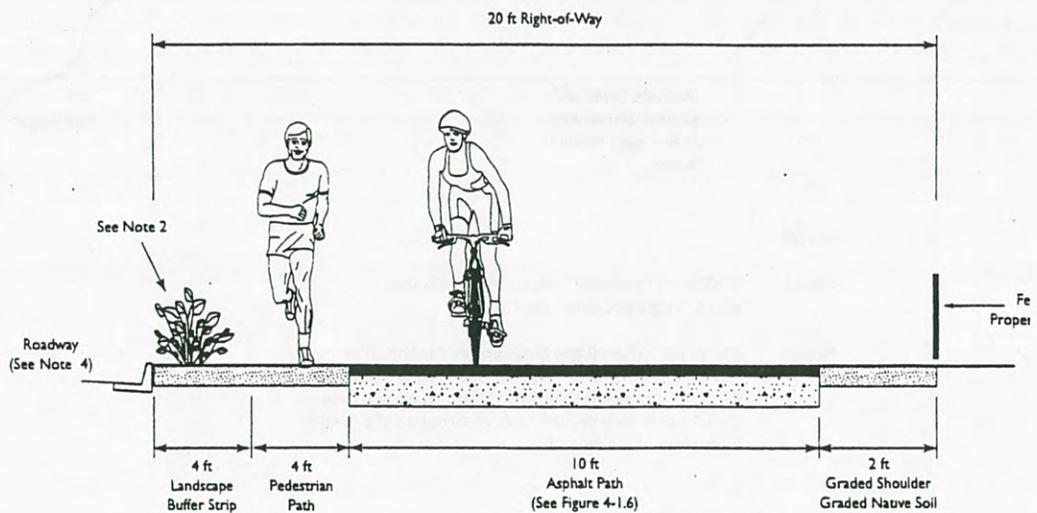
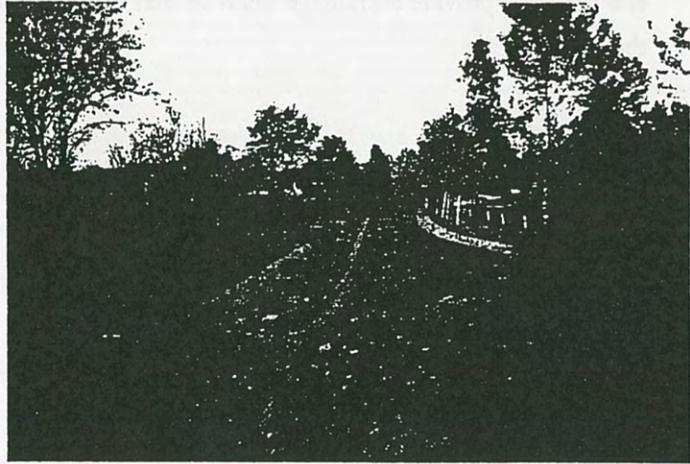
If a trail is immediately adjacent to a hillside, levee or embankment, it is a good idea to provide a drainage ditch so that the runoff does not submerge the trail.



NOTES:

- Note 1. 3" (75mm) Pavement Thickness Recommended with 6" Aggregate Base - see Page 4.
- Note 2. 2.0' to 3.0' (0.6 - 0.9m) Graded Shoulder Should Be Compacted Native Soil; Decomposed Granite Optional. 4.0' (1.2m) or Wider Path Should Have Surface Material of Decomposed Granite, Red Rock, or Groomed and Graded Native Soil, 95% Compaction.

Trail in 20' Easement Adjacent to Roadway Multiuse Trail



NOTES: 2. Drip or bubbler irrigation.

4. Avoid driveway crossings of trails where possible. Driveways that do cross trails should be treated as intersections and should be signed accordingly.

OTHER: A. Maximum Grade of 5% is desirable;
DESIGN 8.33% for short sections.

DETAILS

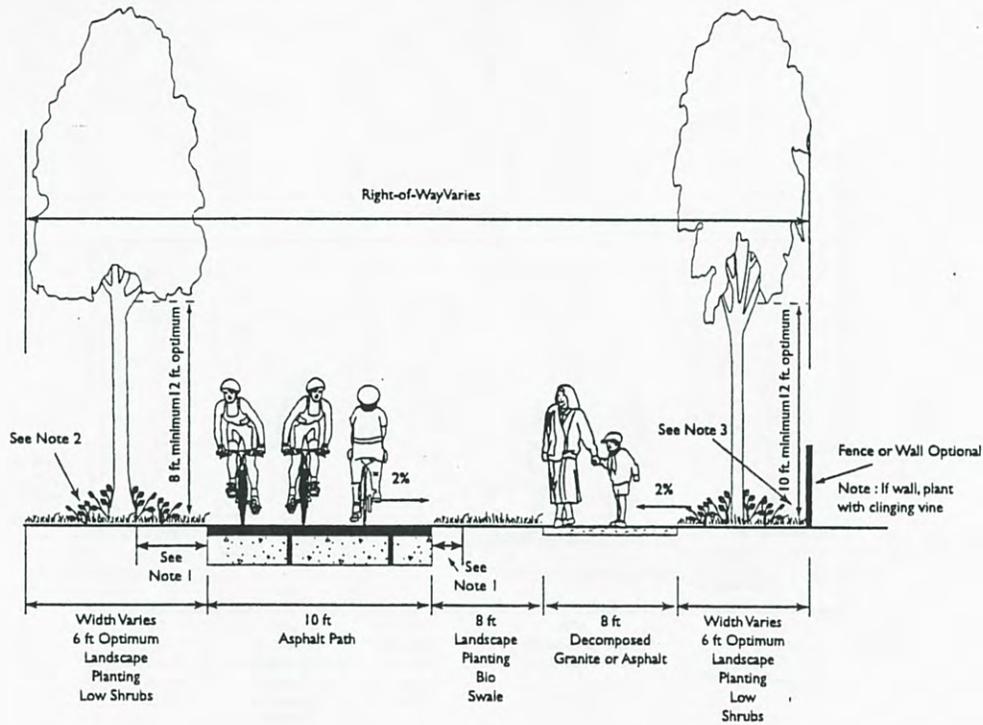
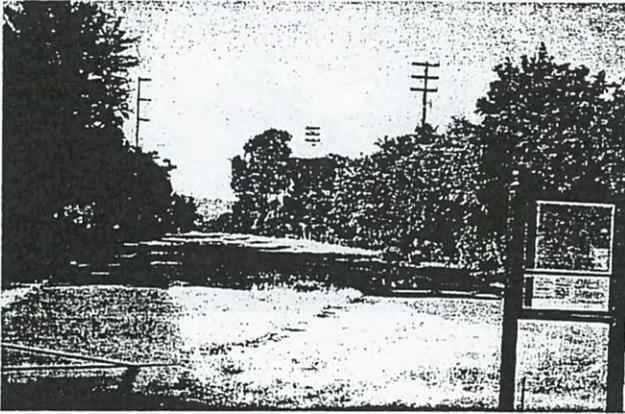
B. Solid centerline stripe should be used on curves greater than 100' (30.5m) long with restricted sight distances, and where the path is unlighted and nighttime riding is expected. Dashed lines should be used where there is heavy use and adequate sight distances.

C. Trail shoulders: 2' (0.6m) graded shoulder / 2' (0.6m) vegetation clearance; prune all brush over 12" (0.3m) in height and 1/2" (12mm) in diameter that extends into shoulder or trail.

D. Reference the Caltrans Highway Design Manual Section 1000.3 for more trail design details.

Trail in Wide Easement

Multiuse Trail with High Pedestrian Volumes

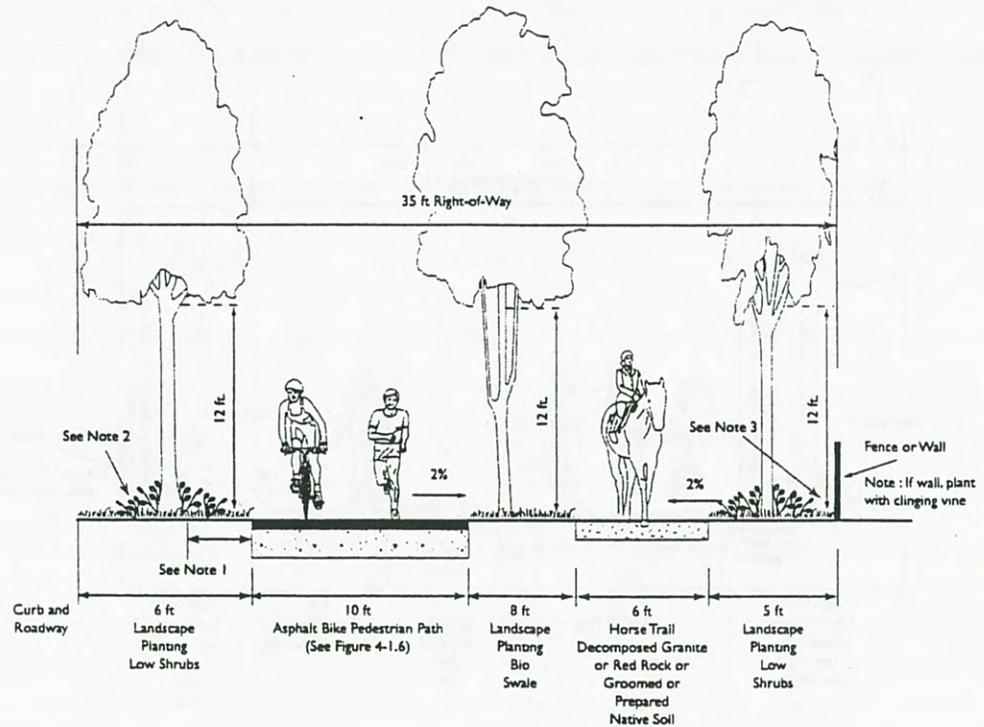
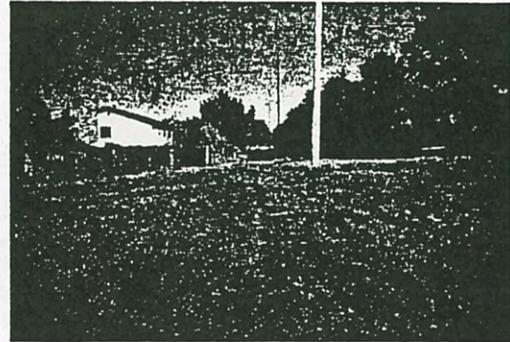


- NOTES:**
1. 3'6" (1.05m) Minimum to edge of tree, sign, or other obstruction.
 2. Drip or bubbler irrigation.
 3. Pop-up irrigation head positioned away from trail.

- OTHER: DESIGN DETAILS**
- A. Maximum Grade of 5% is desirable; 8.33% for short sections - refer to ADA requirements.
 - B. Solid centerline stripe should be used on curves greater than 100' (30.5m) long with restricted sight distances, and where the path is unlighted and nighttime riding is expected. Dashed lines should be used where there is heavy use and adequate sight distances.
 - C. Trail shoulders: 2' (0.6m) graded shoulder / 2' (0.6m) vegetation clearance; prune all brush over 12" (0.3m) in height and 1/2" (12mm) in diameter that extends into shoulder or trail.
 - D. Reference the Caltrans Highway Design Manual Section 1000.3 for more trail design details.

Trail in Wide Easement Multiuse Trail with Equestrian Trail

Typical Easement



- NOTES:**
1. 3'6" (1.05m) Minimum for tree, sign, or other obstruction.
 2. Drip or bubbler irrigation.
 3. Pop-up irrigation head positioned away from trail.

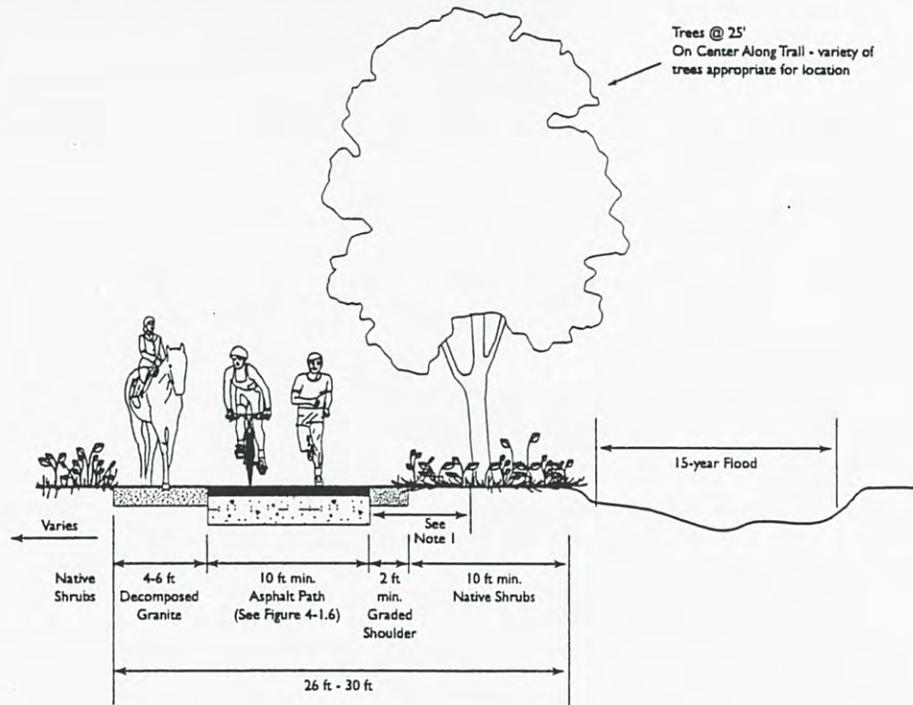
**OTHER:
DESIGN
DETAILS**

- A. Maximum Grade of 5% is desirable;
8.33% for short sections.
- B. Solid centerline stripe should be used on curves greater than 100' (30.5m) long with restricted sight distances, and where the path is unlighted and nighttime riding is expected. Dashed lines should be used where there is heavy use and adequate sight distances.
- C. Trail shoulders: 2' (0.6m) graded shoulder / 2' (0.6m) vegetation clearance; prune all brush over 12" (0.3m) in height and 1/2" (12mm) in diameter that extends into shoulder or trail.
- D. Reference the Caltrans Highway Design Manual Section 1000.3 for more trail design details.

Trail Adjacent to Creek or Channel (26' - 30' Easement)
Multiuse Trail



Typical Easement



NOTES: 1. 3'6" (1.05m) Minimum for tree, sign, or other obstruction.

OTHER: A. Maximum Grade of 5% is desirable:
DESIGN 8.33% for short sections.
DETAILS

B. Solid centerline stripe should be used on curves greater than 100' (30.5m) long with restricted sight distances, and where the path is unlighted and nighttime riding is expected. Dashed lines should be used where there is heavy use and adequate sight distances.

C. Trail shoulders: 2' (0.6m) graded shoulder / 2' (0.6m) vegetation clearance; prune all brush over 12" (0.3m) in height and 1/2" (12mm) in diameter that extends into shoulder or trail.

D. Reference the Caltrans Highway Design Manual Section 1000.3 for more trail design details.

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Trails at Intersections

When trails intersect roadways at-grade, the junction should be designed as any other intersection would. Adequate sight distance is a key component of a safe trail intersection, as with any intersection.

Trail intersections should be designed to convey the following information:

Users of the trail need to know, among other things:

- a) that they may need to STOP or YIELD as appropriate
- b) the name of the cross street
- c) important destinations along that street

Users of the roadway need to know, among other things:

- a) that they are approaching a point at which to expect cross traffic
- b) that motor vehicles are not allowed to enter the trail
- c) the posted speed limit

In order to convey this and other important information, the main design elements that should be applied at intersections of roadways and trails are:

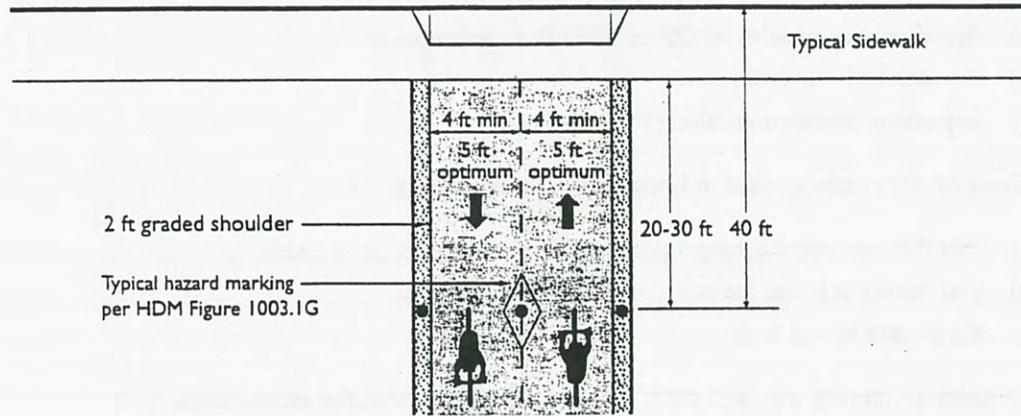
- Street lighting
- Trimmed vegetation within the sight distance triangle
- Crosswalk
- Street name and trail name signs
- Trail warning signs on cross streets (depending on traffic control device)
- Guidance signs for bicyclists on the trail and on the roadway
- Pavement markings
- Properly designed bollards (if used)
- Properly designed ramps
- Appropriate right-of-way assignment

Traffic Calming Options

Traffic calming on the intersecting roadway is recommended to slow traffic, enabling cars to stop more easily if needed. The traffic calming devices can also be designed into the intersection of the trail with the roadway such as a raised speed table as the crosswalk or bulbouts or median refuges.

Bollards

TYPICAL BOLLARD LAYOUT



NOTES

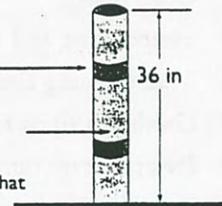
Not To Scale

1. Bollards should only be used where there has been a documented problem of abuse by motor vehicles. Bollards increase emergency response time and may become an obstruction to trail users.
2. If bollards are used then:
 - One bollard in the center of the path is usually sufficient to discourage motor vehicles. If more than one bollard is used, a minimum paved width of 5 feet should be provided to allow trailers and bicycle with panniers to pass.
 - Two gaps shall be provided between the bollards so that two directions of bike traffic can pass safely.
 - Bollards shall be reflective on their entire circumference and preferably along their entire length.

OPTIMUM BOLLARD DESIGN

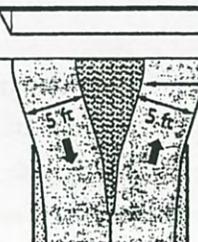
3 inch reflective stripe

Use galvanized steel or aesthetically appealing light-colored materials that do not fade or wear prematurely



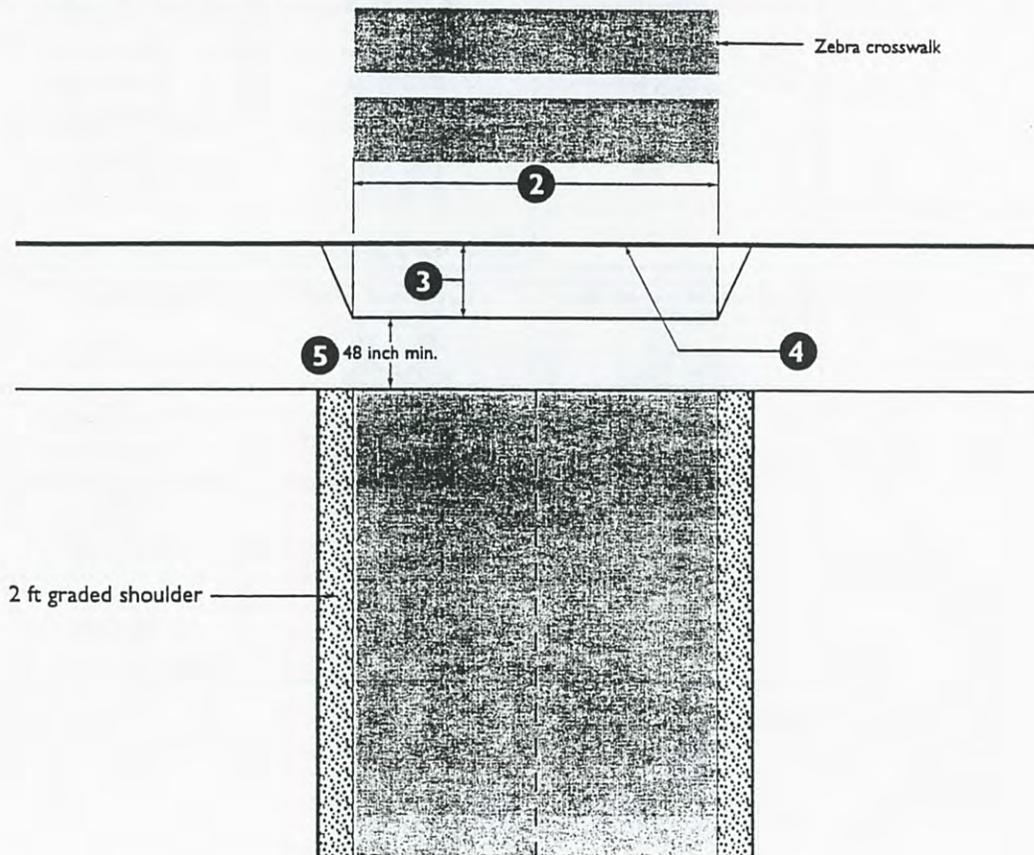
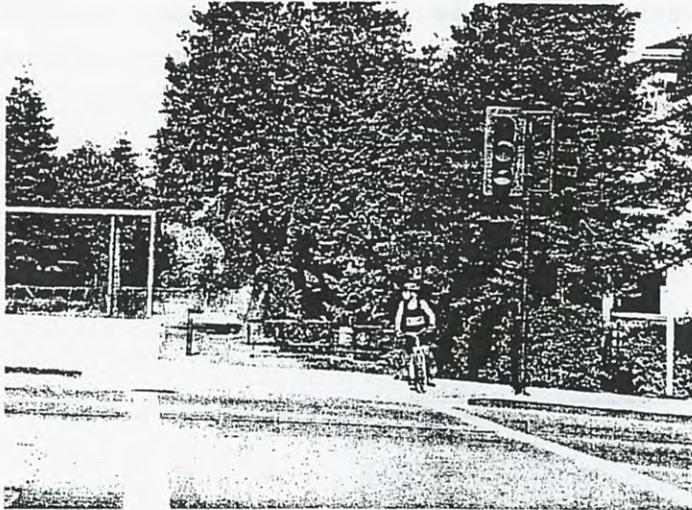
ALTERNATIVE TO BOLLARDS

As an alternative to bollards where there is adequate right-of-way, divide the trail into two short one-way segments at the intersection approach.



Median should be designed with a low lip hardscape.

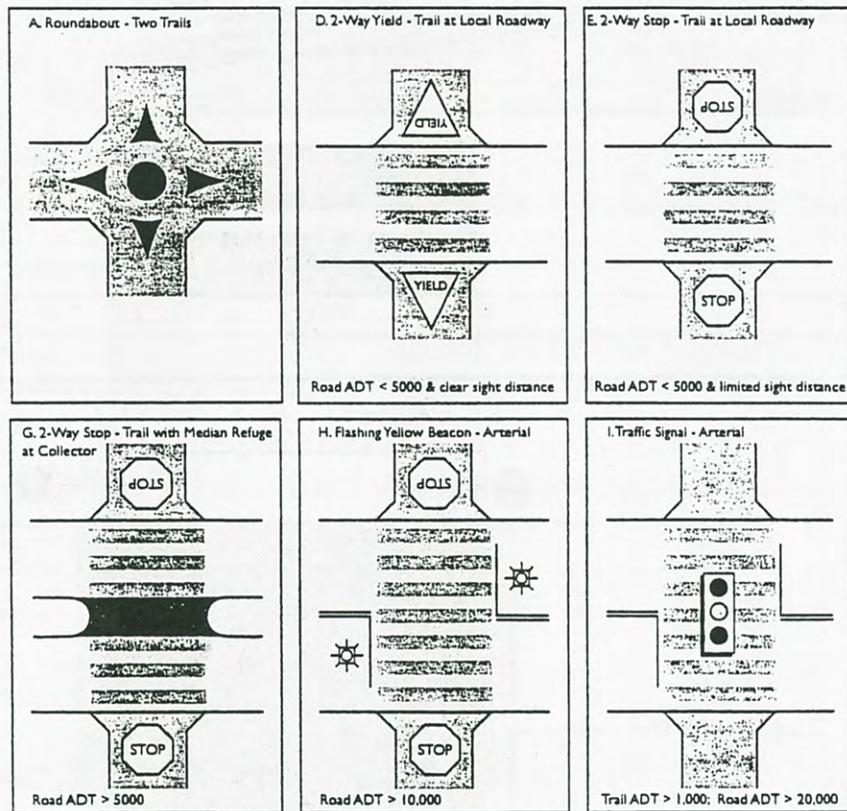
Ramps



1. Ramp should align with trail and crosswalk.
2. Ramp width should be same as trail width.
3. Ramp slope shall meet ADA requirement and should be as flat as site conditions permit.
4. Ramp lip should be flush with pavement (vertical difference of 0.25 inch maximum).
5. All applicable ADA or Title 24 guidelines should be met such as maintaining 48 inch at the top of ramp zone in accordance with ADA guidelines.

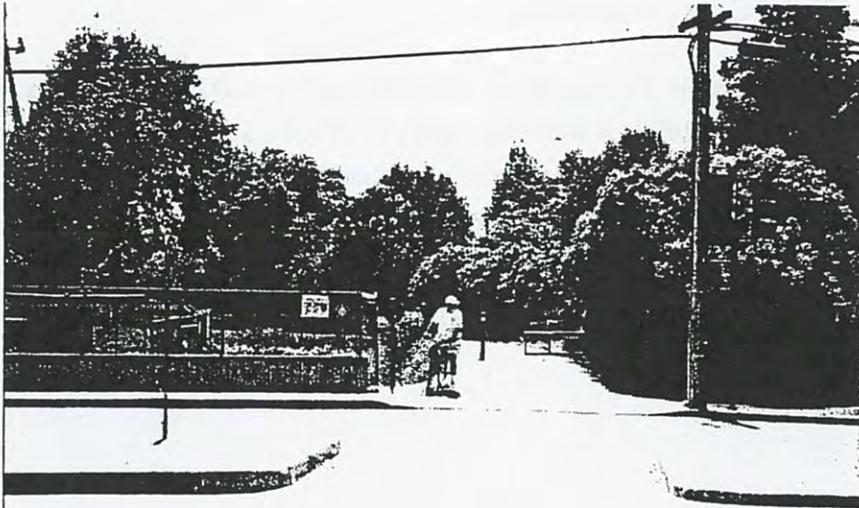
Traffic Control For Assigning Right-of-Way

General guidelines for appropriate intersection traffic control at trail intersections are presented below. The appropriate device depends on the roadway classification, the motor vehicle traffic volumes, the trail user volumes (bicycles, pedestrians, roller bladers etc,) and sight distance. The guidelines on the following pages illustrate two typical conditions of traffic control: a signalized intersection and right-of-way assigned to the roadway. The associated design signs and pavement markings are also illustrated.

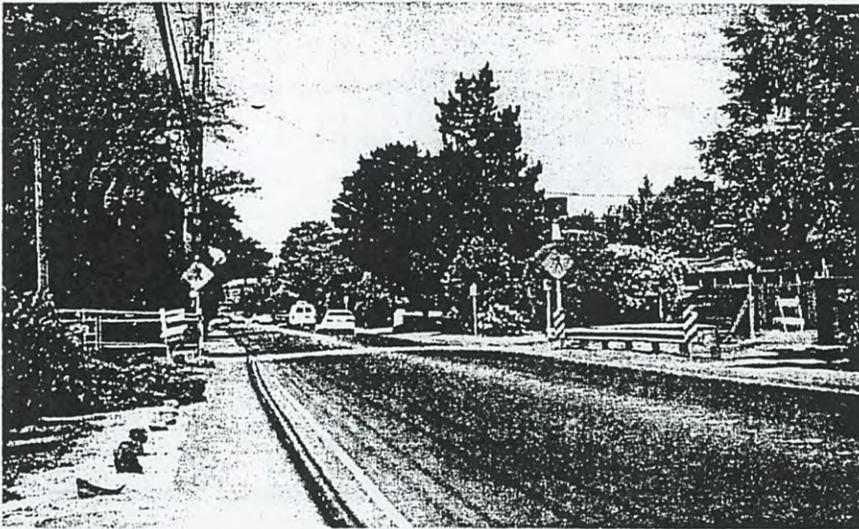


Road ADT = Roadway Average Daily Traffic Volumes
Trail ADT = Trail Average Daily Traffic Volumes

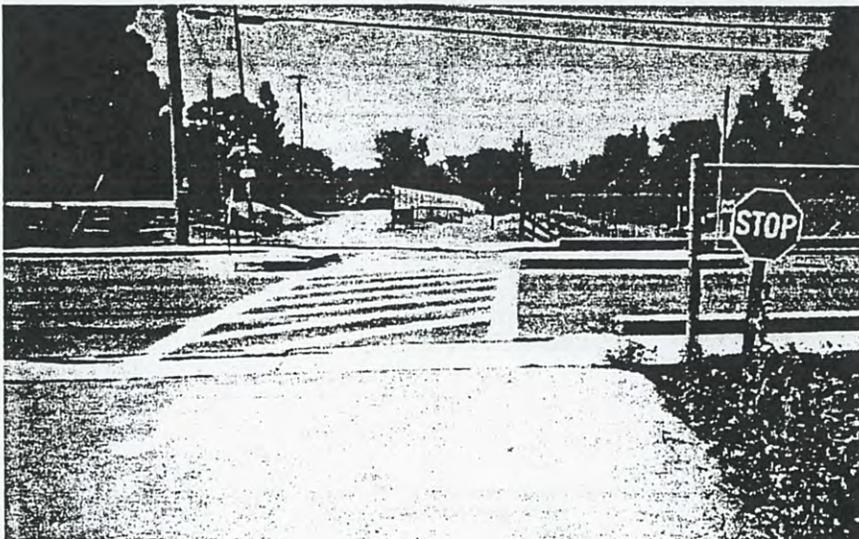




Traffic Signal
Contra Costa Canal Trail at
Bancroft Avenue.



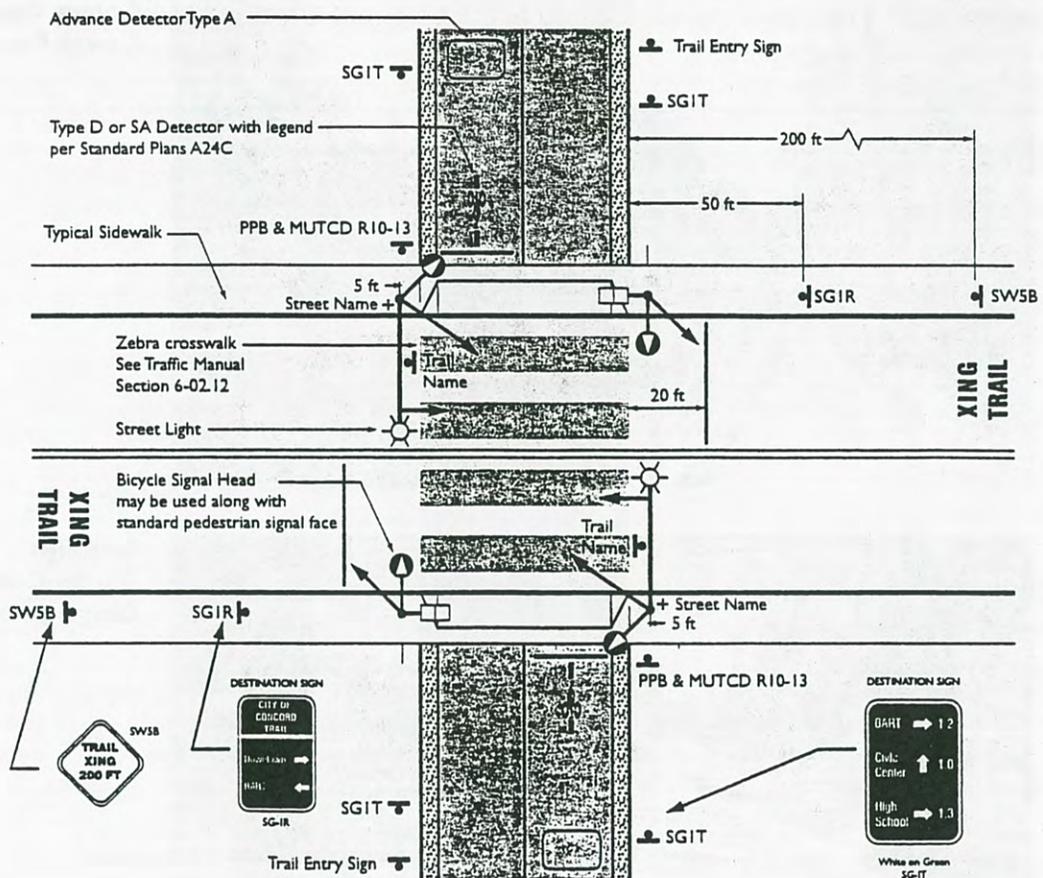
Flashing Yellow Beacons
Contra Costa Canal Trail at
Cowell Road.



Stop Sign
Contra Costa Canal Trail at
Gregory Road.

Signal Control-Intersection

Signals should be considered when the roadway ADT > 20,000 and the trail ADT > 1000 (or trail peak hour > 100 vph). Signalized intersections have many unique design issues such as signal timing, pedestrian and bicycle detection, and the use of pedestrian faces or bicycle signal heads. A typical signalized intersection is illustrated below, depicting detector type and location.



Note: Actual conditions of the specific intersection will determine the design details.

Recommendations for Bicycle Detection

Loop Detectors - When the signal detectors do not sense the presence of the bicycle, bicyclists must dismount and push the pedestrian button if there is one, or proceed against a red light. Bike sensitive detection should be provided at all new construction and roadway reconstruction. At existing locations, priority should be given to trail crossings, designated bikeways and intersection approaches that do not have automatic recall.

The following type of loop detectors are recommended:

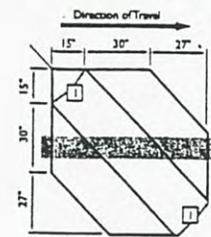
- a) Through lanes shared with bikes: Type D - modified quadropole loops
- b) Left-turn lanes/minor side streets: State Type 5DA loop
- c) Advance detectors that are not expected to be shared by bicycles can be Type A
- d) Bike lanes: Type Q - quadropole loops

Loop Detectors signage and pavement markings - The location of the sensitive portion of the loop detector should be indicated by use of the standard pavement marking - Standard Plan A24C. This marking should be placed in all left-turn lanes and in the right-most through lane. The MUTCD R10-15 may be used to inform bicyclists as to the meaning of the pavement marking.

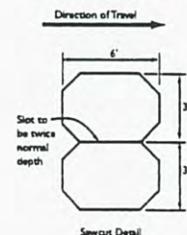
Microwave detection technologies - The City of Concord uses microwave detection on the Contra Costa Canal Trail to activate flashing yellow beacons at Concord Boulevard, Cowell Road and Clayton Road. Microwave detection technology has advantages over loop detectors since it does not depend on metal, and even bicycles with little metal can be detected. Microwave detection also appears to be easier to maintain since the adjustment to avoid false calls is less sensitive. The area of detection on a roadway, however, needs to include the area where bicyclists typically wait as well as motor vehicles. There may still be a need for pavement markings to tell bicyclists where to wait to be detected.

Video detection technologies - Video detection also does not depend on the detection of metal so all bicycles can be detected. Video technology also may be easier to maintain. As with microwave and loop detectors, the area of detection, however, needs to include the area where bicyclists typically wait.

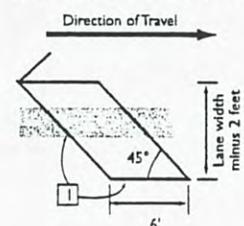
Type D
Loop Detector Configuration



Type Q
Loop Detector Configuration

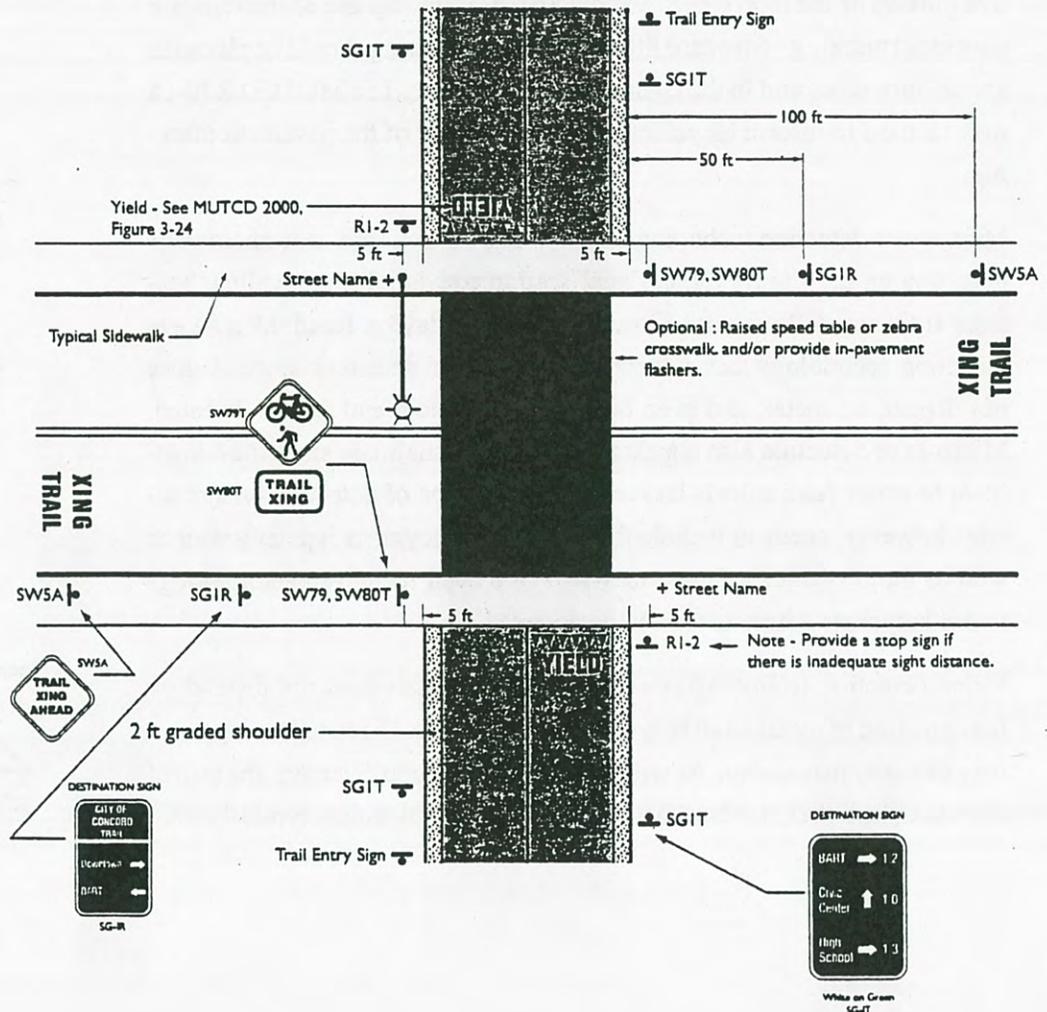


Type SA
Loop Detector Configuration



Trail YIELD or STOP

The figure below presents a typical intersection of a trail with a roadway whose ADT > 2000 vpd. In this case, the trail yields to cross traffic. If sight distance is inadequate, the trail should be controlled by a STOP sign rather than a YIELD sign. Note: the actual conditions of the specific intersection will affect the design details.



Recommendations for Flashing Lights

The 2000 MUTCD contains detailed guidance for the use of in-roadway flashing lights. These are lights that display a flashing yellow signal indication when actuated. The flash rate for In-Roadway Warning Lights at crosswalks is between 50 and 60 flash periods per minute. The lights may only be used at marked crosswalks where there are no YIELD or STOP signs or traffic signals.

In roadway flashing lights should be considered if two or more of the following conditions are met:

- Midblock crosswalk or trail crossing
- Pedestrian/bicycle volumes greater than 100 per peak hour
- School children under age 12 volumes > 40 during the am or pm school commute period
- 85th percentile speeds > 30 mph

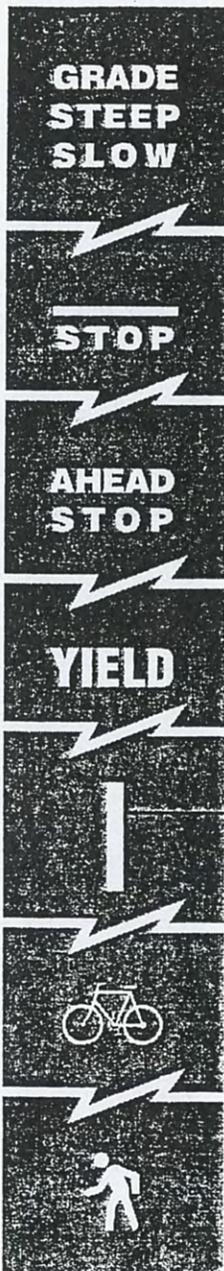
The lights initiate operation based on either pedestrian actuation or passive detection. They cease flashing a predetermined time after the pedestrian actuation pedestrian detectors may be used to determine the duration of the operation

The duration should be sufficient to allow a pedestrian crossing in the crosswalk to leave the curb or shoulder and travel at a normal walking speed of 1.2 m (4 ft) per second to at least the far side of the traveled way or to a median of sufficient width for pedestrians to wait. Where pedestrians who walk more slowly than normal, or pedestrians who use wheelchairs, routinely use the crosswalk, a walking speed of less than 1.2 m (4 ft) per second should be considered in determining the period of operation. Where the period of operation is sufficient only for crossing from a curb or shoulder to a median of sufficient width for pedestrians to wait, additional measures should be considered, such as median-mounted pedestrian actuators. (MUTCD 2000)

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Trail Pavement Legends

Pavement markings on trails follow the same uniform standards set forth in Chapter 6 of the Traffic Manual. Two issues that are particular to trails are size of the pavement marking and the pavement marking material. Typical letter height is four feet (1.2 m) when markings are used on multiuse trails. Pavement marking materials can be slippery when wet. Therefore Type I tape is the preferred material. However, it is costly and generally only used when a trail (or roadway) is constructed or reconstructed. Other times, thermoplastic modified with crushed glass can increase the coefficient of friction. Typical markings used on trails are presented below:



Consider where trail grade $\geq 5\%$ or where trail grade is 3% within 200 feet of stop sign.

Install with every R1 stop sign.

Install 100 feet in advance of stop sign.

Install with every R1-2 yield sign, use Caltrans standard "YIELD" pavement marking.

4-inch yellow centerline stripe.

Generally recommended for 50 feet approaching each intersection and throughout horizontal curve. A centerline throughout entire trail would facilitate night trail use by improving visibility of trail.

Generally installed at entrance to trail where bikes and pedestrians use separate paths. Place approximately every 500 feet along bike path and pedestrian path respectively, if needed to improve compliance.

Graded Shoulders

Properly designed shoulders are essential to the structural integrity of the trail bed. The design features that should be addressed are:

Width

- Minimum Width: 2 feet (0.6 m)
- Optimum Width: 3 feet (0.9 m)

Slope

- Maximum Slope: 1:6
- Minimum slope: 1:50

Surface material

- Granular stone or natural surface

Distance to obstructions

- Distance to sharp drop-off: 5 feet (1.5 m)

Sprinkler Heads

- Sprinkler heads, if used to maintain landscaping in the trail corridor, should be located at the outside edge of the shoulder and should be designed so that the water does not land on the trail or shoulder.

Shoulders can also double as a parallel secondary trail for pedestrians who prefer a softer surface or who are advised by their doctor to avoid asphalt and concrete. To optimize the use of the graded shoulder by runners, pedestrians and equestrians, the following design guidelines are recommended:

- Optimum Width: 5 feet (1.5 m)
- Optimum Slope: 1:20
- Material: decomposed granite
- Sprinkler heads (if used) located at edge of shoulder

Tunnels and Bridges

Tunnels and bridges are essential features of some trails to maintain continuity at natural barriers such as creeks or to cross manmade barriers such as freeways, high volume arterials and BART tracks. The design elements that are most important are:

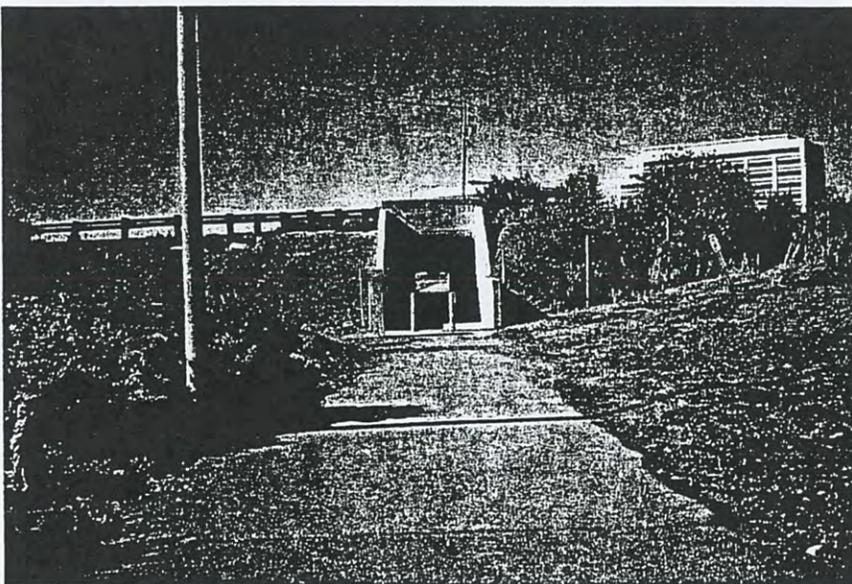
Width - for new structures, the width should be the same as the width of the approaching path plus two foot wide clearance on both sides.

Surface Material - The surface material of bridge decks tends to vary more than for pathways. Eco Tile is a new material that works well in addition to more standard asphalt and concrete. In any case the material must not become slippery when wet e.g. a material that tends to grow moss or otherwise lose its coefficient of friction. In addition, bicycle-safe expansion joints are to be used.

Bridge Rail Height - A minimum of 42 inches (AASHTO) or 54 inches (Caltrans HDM) is required.

Vertical Clearance - The minimum height of tunnels should be eight feet. The vertical clearance of bridges over a roadway will depend on the classification of roadway that it is spanning.

Lighting in Tunnels - Tunnels over a certain length must be lit during the day as well as night to ensure that bicyclists can see into them to avoid collisions.



Trail and Roadway Signage

The recommended signs for use on or near bikeways are discussed on the following pages. Some of these are standard signs from the *Caltrans Traffic Manual* or the *Manual of Uniform Traffic Control Devices (MUTCD)*. Others are signs that have been developed by other agencies for use on bikeways for situations that are not addressed by current signs in these manuals. While some agencies are hesitant to use signs that are not contained in the Traffic Manual, others feel that the existing language in the Manual gives them the leeway to create signs for their specific situation. The most common signs developed by local agencies are “Share the Road” and other warning signs. Destination signing is specified within the existing guidelines of the Traffic Manual; the variations recommended here expand on the options presented therein.

The signs are presented based on the intended function:

- Regulatory Signs - black letters on a white background
- Warning Signs - black letters on yellow or fluorescent yellow-green background
- Guide Signs - white letters on a green background
- Construction Signs - black letters on an orange background

Other signs are used as needed by the trail operator such as the ones depicted below on the Contra Costa Canal Trail, managed by the East Bay Regional Park District.

Regulatory Signs (Black on White) for Use on Multiuse Trails

To Request Green Wait on "Symbol" MUTCD R10-15

This sign, recently approved for inclusion in the MUTCD, is intended to be used in conjunction with the loop detector pavement marking symbol from Standard Plans A24C that indicates the sensitive portion of the loop detector where bicyclists should wait in order to be detected. It may also be used with microwave or video detection to indicate the appropriate place to wait.



Push Button for Walk Symbol MUTCD R10-4b

This sign is used when it is necessary to inform pedestrians that they must push the pedestrian push button to receive the pedestrian green phase.



Bikes left and peds right SR9-1T

This sign is used where there are two separate paths for bikes and pedestrians to indicate which path is for which mode.



BIKES Pass on Left When Clear SR9-2T

This sign is used to inform the faster traffic of the "rules of the trail" that all passing should be done to the left of the slower user.



KEEP LEFT AND RIGHT MUTCD R9-7

On trails that have many pedestrians and bicyclists this sign should be used in lieu of SR9-2T sign to inform the trail users that faster users should keep to the left and slower users should keep to the right.



BIKES YIELD to PEDS MUTCD R9-6

This sign is used to inform bicyclists at those locations where they must yield to pedestrians.



YIELD Bikes to Peds to Horses EBRPD SR2

This sign is used by the East Bay Regional Park District to establish the hierarchy of who yields to whom on a multiuse trail.

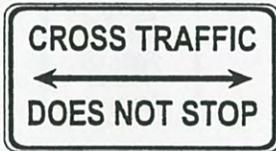


Warning Signs (Black on Yellow) for Use on Multiuse Trails



Skewed Railroad Crossing (Caltrans SW27-1)

Skewed Railroad Crossing should be used to warn bicyclists in advance of an at-grade rail crossing that is skewed 30 degrees or less from the roadway centerline.



Cross-Traffic Does Not Stop (Caltrans SW1)

These signs may be used to supplement standard markings at a trail intersection to notify trail users, if not readily apparent, that the cross traffic does not stop.



Steep Grade (MUTCD W7-5)

Steep grade sign should be used in advance of a downgrade where the percent grade, length or horizontal curvature may not be readily apparent to cyclists or where accident experience and field observations indicate a need.



Blind Curve (SW2T)

The SW2T Blind Curve sign should be used when there is an obstruction at a curve that cannot be removed that limits sight distance to less than 50 feet



Curve Warning signs -Caltrans W3 and W5

The W3 Curve warning sign should be used in advance of turns where the advisory speed is less than twenty miles per hour. The advisory speed plate W5 (X mph) should be used below this sign.

Warning Signs (Black on Yellow) for Use on Roadways Near or at the Intersection of a Multiuse Trail or Other Bikeway

Trail XING AHEAD and Trail XING 200 FT (SW3T and SW4T)

Advance trail warning sign-To alert motorists of a trail crossing the roadway at-grade. These signs are used in advance of a midblock trail crossing in the same manner as a W45, W54A, W63 or a W64 would be used. The former is used on low speed roadways and the latter on higher speed roadways (35+mph).



Trail XING symbol and words (SW79T with SW80T)

These signs are used at the location of the trail intersection in the same manner as a W45/W80, W54/W80, W66/W66A or a W79/W80 installation would be used.



TRAIL XING -LOOK LEFT AND RIGHT (SW-4)

This sign is used where a trail with two-way non-motorized traffic passes through one or more legs of an intersection where motor vehicle traffic would not be expecting bike, pedestrian and/or equestrian traffic in both directions.



Bicycle Crossing (Caltrans W79 with W80)

Where bicycles cross a road at an unexpected location, (i.e. not at a typical intersection), the W79 (bicycle symbol) and W80 (XING) may be posted to alert motorists of the presence of bicycles. To alert motorists of the presence of bicycles on the roadway travelling in the same direction, see, as appropriate, SG-45 Bike Route, R81 Bike Lane, or SW-6/ MUTCD W16-1 described below.



Share the Road (SW-6 with MUTCD W16-1)

Share the Road signs may be posted on arterial streets where there is not enough room to provide bike lanes.



Guide Signs (White on Green) for Use on or Near Multiuse Trails and Bikeways



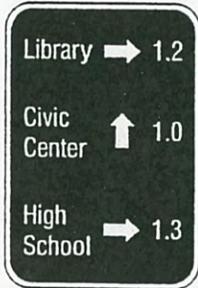
Welcome to Concord We Share the Road (SG-2)

Signs may be posted at the City limits to as a general promotional awareness measure as well as to inform motorists to expect bicyclists throughout the city.



Route signing (Caltrans SG-45)

Route signing could be used to identify the Concord city trails and bikeways. A distinctive logo for the City would be depicted on this sign. Various colors could also be used to further identify the numbered routes (e.g. 15 is blue, 16 is green, etc.).



Destination Signing (SG1T)

Where needed, supplementary placards or stand alone signs such as SG1T should be installed indicating the main destination arrived at if one remained on the trail, e.g. "Downtown," "Ygnacio Valley High School" or "Diablo Valley College."



Schematic Route Map (SG3)

This sign illustrates the bikeways and trails within a certain radius of the current location so that bikeway users can get oriented and find their way to other destinations. It should be posted at major intersections.

Recommended Construction Warning Signs (Black on Orange)

See also Caltrans "Manual of Traffic Controls for Construction and Maintenance Work Zones" and Work Area Traffic Control Handbook.

Advance Notice Sign (SC-1)

A sign giving advance notice of a bikeway closure should be posted one week minimum in advance of the closure of the facility. Note: the exact text on this sign will vary depending on the specific circumstances. Consider providing the phone number of the responsible agency.



Detour Sign (SC-2)

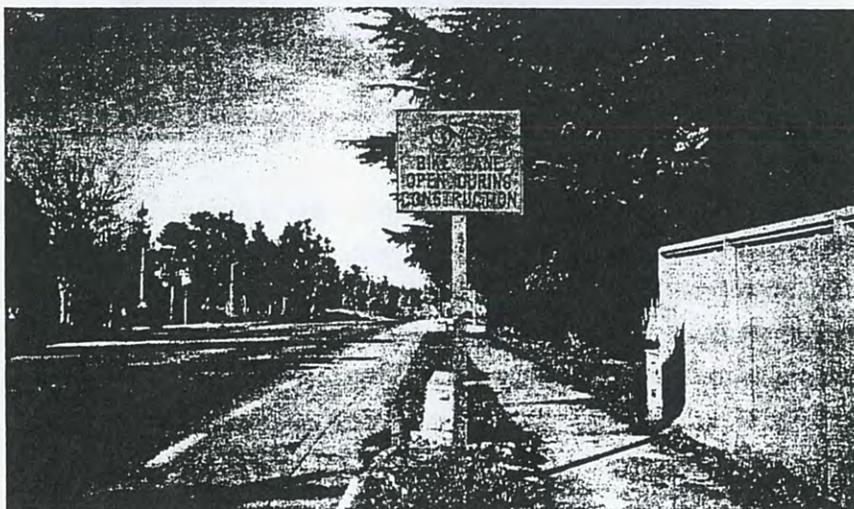
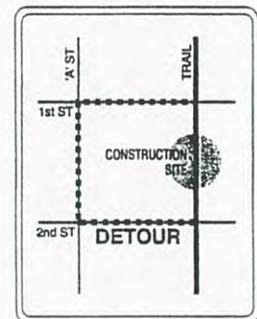
The Bicycle/Pedestrian Detour sign should be installed to inform bicyclists how to follow the detour route to the point where the detour conforms to the original route. Separate detours for bicycles and pedestrian may be needed. Separate detours signs should be posted for bicycles and pedestrians if different routes are provided and the SC-2 sign should be modified accordingly.



Detour Route (SC-3)

A schematic of the detour route should be posted if the detour route is complex.

Note: Providing a detour may not be practical or alternatively there may be several candidate detours. Trail operator should work with the City Public Works Department to decide on an appropriate detour.

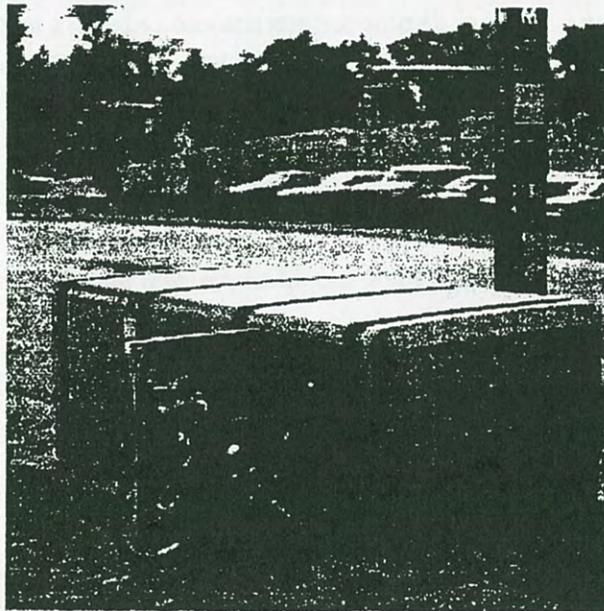


Bicycle Parking

Definitions

Class I

This is defined as protecting the entire bicycle and its components from theft, vandalism or inclement weather. It is appropriate for long-term bicycle parking such as at employment centers or transit stations. Examples are bike lockers, rooms with key access for regular bike commuters, guarded parking areas, and valet or check-in parking. A common variation of the latter examples is at schools where racks are placed within a fenced compound to provide more security to discourage thieves. The compound is either locked during the day or unofficially guarded by the activity within the school.



Class II

This is defined as a rack to which the frame and at least one wheel can be secured with a user-provided U-lock or padlock and cable. This type of parking is appropriate for short-term parking such as at shopping areas, libraries, and other places where the typical parking duration is less than two hours. Examples of racks popular with bicyclists are the wave or ribbon racks and the inverted U-rack, or horse rail rack. Increasingly popular are higher security Class II racks such as the Crank Case™ racks.

Typical Bike Rack Design

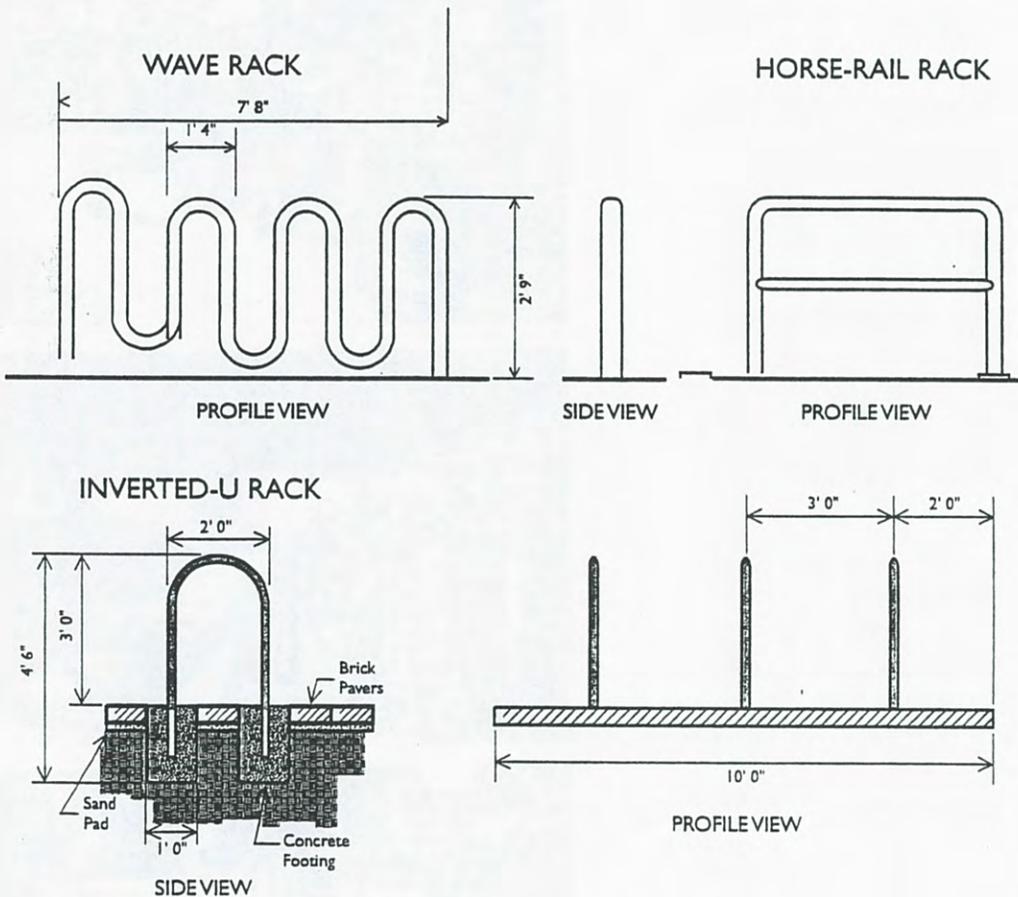
Bike racks that meet the above definition of Class II are illustrated below. These should not be construed as the only acceptable bike rack designs.

Bike Rack Placement

The placement of bike racks is very important for several reasons:

1. To ensure that they are safe from vandalism;
2. To ensure that they are easily accessible to bicyclists;
3. To avoid adversely impacting pedestrian circulation; and
4. To ensure that they can be used to their maximum design capacity.

Recommended placement dimension and clear space requirements for selected Class I and II are illustrated on the following pages.

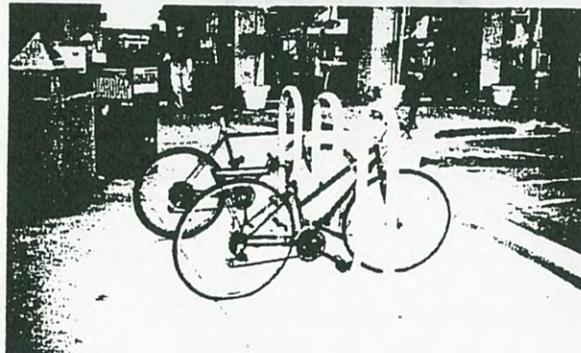
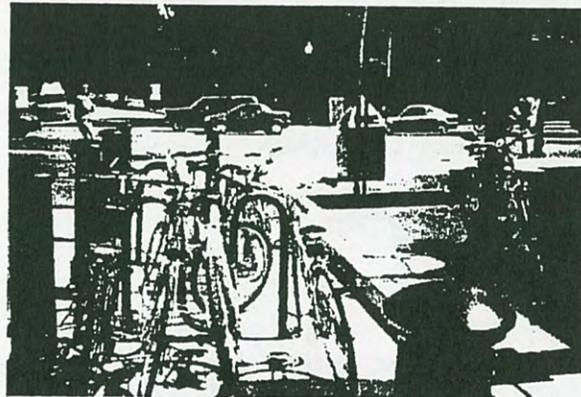
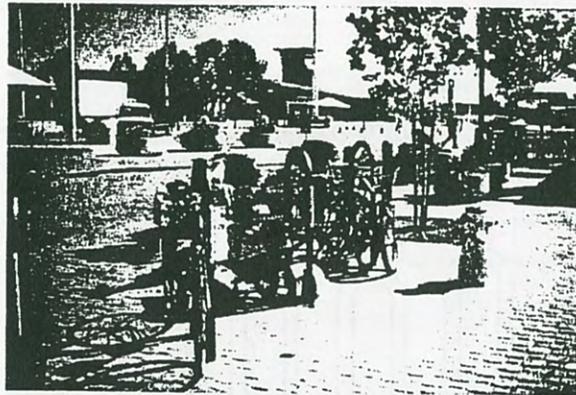


Recommended Bicycle Parking Supply for New Development

The current bike parking ordinance does not require bicycle parking. The Concord Planning and Zoning code states the following regarding bicycle parking:

Concord Municipal Code Section 10826. Bicycle and Motorcycle Parking Facilities. The approving body may require bicycle and/or motorcycle facilities where it is deemed appropriate. Ord. 1169.

It is recommended that bicycle parking supply be provided depending on land use size. The following table presents the recommendations of the League of American Bicyclists for this method.



Bicycle Parking Recommendations for New Development

Use	Number of Bicycle Spaces ⁽¹⁾⁽²⁾
Residential (e.g., apartments & townhouses) <ul style="list-style-type: none"> - General, multi-dwelling - Primarily for students & low-income families, multi-dwelling - Primarily for residents 62 and older, multi-dwelling 	1 Class I/3 units + 1 Class II/15 units. 1 Class I/2 units + 1 Class II/15 units 1 Class I/30 units + 1 Class II/30 units
Schools <ul style="list-style-type: none"> - Elementary, middle & high schools - Colleges - Student residences - Academic buildings and other university facilities 	1 Class I/30 employees ⁽³⁾ + 1 spot/12 students (50% Class I and 50% Class II) 1 Class I/4.5 beds + 1 Class I/30 employees 1 Class I/30 employees + 1 spot/9 student seats (25% Class I and 75% Class II)
Park-and-Ride Lots/Parking Garages	7% of auto parking (75% Class I & 25% Class II)
Transit Centers	5% of daily boardings (75% Class I and 25% Class II)
Cultural/Recreational (includes libraries, theaters, museums, & religious institutions)	1 Class I/30 employees + (1 Class II 1500 sq. ft. or 1 Class II/60 seats (whichever is greater))
Parks/Recreational Fields	1 Class I/30 employees + 1 Class II/9 users during peak daylight times of peak season
Retail Sales/Shopping Center/ Financial Institutions/Supermarkets	1 Class I/30 employees + 1 Class II/6000 sq. ft.
Office Buildings/Offices	1/6000 sq. ft. (75% Class I & 25% Class II)
Hotels/Motels/Bed-&Breakfasts	1 Class I/30 rooms + 1 Class I/30 employees
Hospitals	1 Class I/30 employees + 1 Class II/45 beds
Restaurants	1 Class I/30 employees + 1 Class II/3000 sq. ft.
Industrial	1 Class I/30 employees or 1 Class II/15,000 sq. ft. (whichever is greater) + 1 Class II/15,000 sq. ft.
Day Care Facilities	1 Class I/30 employees + 1 Class II/75 children
Auto-Oriented Services	1 Class I/30 employees
Other Uses	Same as most similar use listed
Notes <ul style="list-style-type: none"> (1) For cities with less than 2% bicycle commuter rate. Pro-rate for cities with higher commute rates. (2) The minimum number of required Class II Bicycle parking spaces is 4, except when the code would require 1 or less, in which case 2 bicycle spaces must be provided. (3) Employees = maximum number of employees on duty at any one time. <i>Source: League of American Bicyclists, 1994.</i>	

APPENDICES

Appendix A

TRAILS MASTER PLAN OUTCOMES, STRATEGIES, AND ACTIONS

TRANSPORTATION

A major goal of the transportation strategies and policies is to encourage the use of transportation alternatives to the single-occupant vehicle, through public transit, ridesharing, bicycling, and walking—for both work and non-work trips. If implemented, these strategies and policies will reduce traffic congestion and enhance the overall accessibility of goods, services, and employment. They will furthermore ensure equality of access to transportation for all members of the community, including children, youths, seniors and others, regardless of physical, psychological or economic abilities.

OUTCOME #1: Provide alternative modes of transportation to reduce dependence on automobiles.

Strategy Area #1: Bicycle Circulation - Provide facilities that promote safe bicycling as a mode of transportation.

Strategy 1.1 An integrated and easily-accessible system of bicycle routes and multi-purpose trails throughout the City shall be established and maintained to link commercial and other employment areas, major public facilities including schools, residential areas, and recreational areas, and to facilitate bicycling as a viable transportation alternative. (See Concord Trail Master Plan Map).

Action 1.1.1 Maintain and update every five years a Trails Master Plan Map that identifies designated on-street bicycle routes and off-street, multi-purpose trails.

Action 1.1.2 Identify and maintain a list of priority projects for implementation.

Action 1.1.3 Pursue all available funding options for bicycle facility improvements associated with priority projects.

Strategy 1.2 The City shall strive to accommodate bicycle transportation when designing new streets or modifying existing streets through a mix of providing curb lanes designed to be wide enough for motorized vehicles and bicycles and encouraging use of lower traffic volume streets by bicyclists.

Action 1.2.1 Maintain design standards for bicycle lanes, on-street bicycle routes, and street intersection designs.

Action 1.2.2 Encourage development projects adjacent to a designated bicycle route provide adequate right-of-way and construct necessary improvements to implement the planned bicycle route system.

Action 1.2.3 Identify opportunities to calibrate traffic light sensors to work for safe crossings by bicyclists and pedestrians.

Strategy 1.3 Linkages between bicycle use and other modes of transportation shall be facilitated.

Action 1.3.1 Encourage the installation of bicycle locking racks and bicycle parking facilities at BART stations and other transit facilities.

Strategy 1.4 Wherever possible, safe linkages shall be designed between bicycle routes and the City's multi-purpose trail system.

Action 1.4.1 Maintain design standards for intersections where off-street multi-purpose trails cross streets.

Strategy 1.5 Encourage increased bicycle usage by providing safe, secure, and usable facilities to make bicycle travel more direct, convenient and pleasant for commuting and other trips to activity centers.

Action 1.5.1 Develop standard signs and markings such as designated by the State of California Highway Design Manual, Chapter 1000 - Bikeway Planning and Design or as contained in the 2002 Concord Trails Master Plan.

Action 1.5.2 Provide adequate width for each travel direction to implement bike lanes for designated Class II bicycle routes. Provide adequate easement width and improvements to implement separate multi-purpose trails as indicated on the Trails Master Plan Map.

Action 1.5.3 Provide regular sweeping and other necessary maintenance to clear bicycle routes of dirt, glass, gravel, and other debris.

Action 1.5.4 Develop a program to install safe drainage grates along Class II and III B bicycle routes.

Action 1.5.5 Provide adequate route lighting, where appropriate for safety purposes, such as at street undercrossings, multi-purpose trail access points, and areas with related nighttime activity.

Action 1.5.6 Encourage major traffic-generating uses (major shopping centers, office complexes, public service facilities, etc.) to provide on-site parking, circulation areas, and other bicycle amenities to facilitate bicycle travel.

Action 1.5.7 Encourage businesses to provide secure bicycle storage facilities, showers and other amenities that support bicycle commuting by employees.

Action 1.5.8 Require the installation of bicycle locking racks and bicycle parking facilities at newly developed public buildings, transit facilities, public and private parking facilities, and recreational facilities.

Strategy 1.6 Promote traffic safety awareness by both bicyclists and motorists.

Action 1.6.1 Publish update every five years maps and guides to existing bicycle routes and trails to increase awareness about laws and regulations governing bicycle and other trail use.

PARKS AND RECREATION

OUTCOME #2: Provide recreation opportunities and leisure facilities, including parks, trails, and cultural facilities, for the benefit of the community.

Strategy Area #2: Trails - Provide a safe, functional, cost-effective system of multi-purpose trails both for recreation and as an alternate transportation mode linked to regional and state trail systems and parks, the two BART stations, the Chronicle Pavilion, the central area, and the State University. The system should also link residential areas with activity centers such as parks and recreational facilities, educational institutions, employment centers, cultural sites, and other focal points of the city environment. (See Concord Trail Master Plan Map following the Parks, Open Space, and Conservation Element text.)

Strategy 2.1 Three types of multi-purpose trails shall be designated that comprise the City's off-street, multi-purpose trail system: regional trails, collector trails, and feeder trails.

Action 2.1. Maintain and update every five years a Concord Trail Master Plan Map that identifies designated on-street bicycle routes and off-street, multi-purpose trails.

Strategy 2.2 The City shall consider facilities such as staging areas, safety lighting, benches, restrooms, and drinking fountains where appropriate along regional trails. All multi-purpose trails will be accessible to all members of the community, including young children, the physically impaired and the elderly.

Action 2.2 Designate and design trails adopted City guidelines that gives consideration to all trail users and that provides for appropriate widths, surfacing, drainage, design speed, barriers, fences, signage, visibility, intersections, bridges, and street cleaning.

Strategy Area #3: Multi-Purpose Trails - Provide multi-purpose trail routes by employing appropriate linear rights-of-way along existing features such as creeks and riparian corridors, drainage and irrigation easements, utility easements, abandoned railroad rights-of-way, and major street corridors.

Strategy 3.1 Use of motorized vehicles on trails shall be prohibited, except for wheelchairs, maintenance, and emergency vehicles.

Action 3.1 Initiate efforts (in cooperation with the Contra Costa Water District, railroads, and other owners of easements and rights-of-way) to identify and implement measures to prevent inappropriate vehicular access to these easements and rights-of-way.

Strategy 3.2 Where designated multi-purpose trail routes are contiguous to designated bike lanes, flexibility in trail design shall be allowed so that bike lanes may be substituted for multi-purpose bike paths where it is safe and appropriate to do so.

Strategy 3.3 Additional right-of-way along major streets shall be required where necessary to implement the multi-purpose trail route system.

Action 3.3.1 Design public improvement projects that may impact existing or proposed trails, such as road widenings, bridge construction, and flood control projects, to facilitate provision of shared use.

Action 3.3.2 Pursue the implementation of the multi-purpose trail route system as a requirement of property development, where appropriate, by requiring the dedication of right-of-way and/or easements that will provide safe and direct access to community and regional trails.

Action 3.3.3 Monitor proposed development, including General Plan amendments and zoning changes, and/or subdivision of properties with proposed trail routes, and work with property owners and/or their representatives to preserve the integrity of the proposed trail route in their project designs.

Strategy Area #4: Equestrian Trails - Where appropriate, establish a network of equestrian trails that cross the City and link regional trail routes and recreational areas.

Strategy 4.1 Provide for an equestrian trail system free from conflict with bicycles and vehicular traffic, and ensure that equestrian trails are compatible with pedestrian rights-of-way.

Action 4.1.1 Identify equestrian trail routes on the Concord Trails Master Plan Map.

Action 4.1.2 Locate equestrian trails in the vicinity of riding stables and other equestrian facilities, and provide appropriate staging areas to access these trails.

Strategy Area #5: Interpretive Resources - Identify and interpret Concord's natural and historical resources as an integral component of the multi-purpose trail system.

Strategy 5.1 Create and develop a historic trail route that provides linkage to Concord's history.

Action 5.1 An interpretive self-guiding walking tour that focuses on historic homes and buildings, parks, and other features of the Central Area shall be developed and updated as needed.

Strategy 5.2 Where appropriate, access shall be provided to recreational amenities, environmental amenities and historic locations adjacent to trail corridors, and those resources shall be interpreted to the public.

Action 5.2 Appropriate markers should be established along historically significant trail routes.

Strategy Area #6: Trail Safety and Security - Trails should be planned and designed to provide the safety and security of both the trail user and the adjacent property owner.

Strategy 6.1 Establish trail measures that provide a safe environment for the trail user and provide adequate police, fire, and paramedic services to the public and surrounding properties within the trail system.

Action 6.1.1 Provide points of emergency vehicle access within the trail corridors, via parking areas, service roads, emergency access gates in fencing, and firebreaks. Service roads shall be interconnected where possible to permit through travel by emergency vehicles only.

Action 6.1.2 Limit driveway crossings of multi-purpose trails to not more than two per block (a typical block length is 660 feet), except where it is determined that there is no better feasible alternative.

Strategy 6.2 The City shall provide such facilities and information as necessary and to the extent feasible to assure responsible trail use.

Action 6.2.1 Utilize landscaping with appropriate and adequate physical and visual barriers (e.g. decorative masonry walls, wrought-iron fencing, or square-tube fencing) to

screen trails from sensitive private property and to separate trails from dangerous sites and attractive nuisances.

Action 6.2.2 Clearly sign all trails. Signed information should be provided to encourage responsible trail use and deter trail users from leaving the trail and encountering unsafe conditions.

Strategy 6.3 Maps and trail guides shall be made available to the public.

Action 6.3.1 Publish and periodically update maps and guides to existing bicycle routes and trails and to increase awareness about laws and regulations governing bicycle and other trail use. Include information that informs trail users about security conditions and property rights in order to minimize public/private use conflicts and trespassing.

Strategy Area #7: Trail Priorities - Prioritize trails for acquisition and development in a manner that provides the maximum public benefit given the available public and private resources.

Strategy 7.1 Criteria used to prioritize trail routes shall include: trail significance (regional and local); opportunities for a large number of users; trail usefulness; connectivity; safety considerations; and funding opportunities.

Action 7.1.1 The Parks, Recreation, and Open Space Commission should take a lead role in applying criteria and establishing trail priorities and programs.

Strategy 7.2 Trail routes shown on the Concord Trails Master Plan Map shall be prioritized.

Action 7.2.1 Maintain a list of priorities for trail acquisition and development through purchase, dedication or other means.

Strategy Area #8: Coordinated Trails Planning - Encourage communication among a variety of agencies and interest groups to assist Action of the multi-use trail system.

Strategy 8.1 Trail planning, acquisition, development, and management of trail routes shown on the Concord Trails Master Plan Map should be coordinated among the various local, regional, state and federal agencies that provide trails or funding for trails.

Action 8.1.1 Organize periodic meetings with adjacent cities and the East Bay Regional Park District to coordinate the completion and management of regional trails which extend beyond City boundaries in a manner that is compatible with each participating jurisdiction's needs. Among other duties, the cooperating agencies should consider the following: 1) establishment of consistent trail designs that benefit the user; 2) coordination of specific trail routes' siting and design; 3) recommendations to appropriate agencies for creation of joint powers agreements for the acquisition, development and

maintenance of specific trail routes; 4) development of Action and management plans for inter-jurisdictional trail routes; and 5) prioritization of trail routes for funding purposes.

Action 8.1.2 Designate the Parks, Recreation, and Open Space Commission as the City Bicycle and Trails Advisory Group. Encourage participation by representative bicycle and trail interest groups for the purpose of coordinating the Action of the City's policies.

Strategy 8.2 The City shall ensure that plans for the reuse of the Concord Naval Weapons Station include bicycle routes and multi-purpose trails that complement those found on the Concord Trails Master Plan Map.

Action 8.2.1 Identify the Concord Naval Weapons Station on the Trails Master Plan Map, indicating logical points of connection along the boundaries of the Station with other bicycle routes and trails, and potential trail routes within the Station.

Action 8.2.2 Clearly label any trail routes indicated within the Concord Naval Weapons Station on the Trails Master Plan Map as follows:

Potential Trail Routes – Routes indicated are schematic and for planning purposes only.

Precise route alignments to be determined based on environmental review of existing site conditions and proposed land uses.

Appendix B
EXISTING GENERAL PLAN POLICIES



Existing General Plan Policies

TRANSPORTATION/CIRCULATION ELEMENT

GOAL 2 ALTERNATIVE MODES OF TRANSPORTATION

Reduce dependence on automobiles.

Objective 2.3 Bicycle Circulation

Provide facilities that promote safe bicycling as a mode of transportation.

Policy 2.3.1 Strive to accommodate bicycle transportation when designing new streets or modifying existing streets through a mix of curb lanes designed to be wide enough for motorized vehicles and bicycles, encouraging use of lower traffic volume streets by bicyclists, and off-street bicycle routes or trails.

Policy 2.3.2 The City shall develop bicycle routes to link commercial, residential, and employment areas.



Concord
Trails Master Plan

Existing General Plan Policies

PARKS, OPEN SPACE, AND CONSERVATION ELEMENT

GOAL 1 PARKS AND RECREATION

Provide recreation opportunities and leisure facilities, including parks, trails, and cultural facilities, for the benefit of the community

Objective 1.2 Trails

Provide a safe, functional, cost-effective system of multi-purpose trails both for recreation and as an alternate transportation mode linked to regional and state trail systems and parks, the two BART stations, the Concord Pavilion, the central area, and the State University. (See Fig. 1 following the Parks, Open Space, and Conservation Element text.)

Policy 1.2.1 The City's trail system shall be comprised of three types of trails: regional trails, collector trails, and feeder trails:

Policy 1.2.2 While regional trails are generally the City's highest priority, followed by collector trails, funding availability shall be a strong determinant of actual trail prioritization.

Policy 1.2.3 Provide safe street crossings for trail users.

Policy 1.2.4 Coordinate with the East Bay Regional Park District, Contra Costa County, and TRANSPAC to establish connector trails to link the Delta De Anza Trail, the Walnut Creek Channel Trail, and the Contra Costa Canal Trail. The Contra Costa Canal Trail will be extended to the Delta De Anza Trail by a route along Willow Pass Road where it passes through the Naval Weapons Station.

Policy 1.2.5 A pedestrian connection shall be established and enhanced with landscaping on Monument Boulevard near Mohr Lane where the Walnut Creek Channel Trail and the Southern Pacific Railroad right-of-way intersect.



Existing General Plan Policies

PARKS, OPEN SPACE, AND CONSERVATION ELEMENT (continued)

Policy 1.2.6 Inner Lime Ridge and other open space areas in the southern part of Concord shall be connected to the Walnut Creek open space system and state and regional park systems via trails.

Policy 1.2.7 A connection of the State Riding and Hiking Trail to Mount Diablo State Park shall be provided through the Crystyl Ranch area.

Policy 1.2.8 An open space corridor shall be provided through Crystyl Ranch linking Galindo Creek to the Lime Ridge Open Space, allowing passage from the Lime Ridge Open Space to the State Riding and Hiking Trail extension which will become a regional trail link.

Policy 1.2.9 Increase access and maximize recreational opportunities along the Walnut Creek Channel Trail linking Concord to the marshlands on Suisun Bay.

Policy 1.2.10 Provide improved visual access and, where degradation of habitat can be avoided or mitigated, trails to the bay shore and wetlands in north Concord via the Delta De Anza Trail and Walnut Creek Channel Trail.

Policy 1.2.11 The Parks and Recreation Commission shall take a lead role in establishing priorities and programs for trail implementation.

Policy 1.2.12 Update as needed the interpretive self-guiding walking tour which focuses on historic homes and buildings, parks, and other features of the Central Area.

Objective 1.3 Public Access

Improve public access to parks and recreation facilities to optimize park utilization.

Policy 1.3.1 Public transit and bike trails should be available to link parks with schools and allow for improved public access.



Concord
Trails Master Plan

Existing General Plan Policies

PARKS, OPEN SPACE, AND CONSERVATION ELEMENT (continued)

Objective 1.4 Funding

Additional sources of funding for parks and recreation shall be pursued including development mitigation fees, state and federal grants, bonds, user fees, and private sources.

Policy 1.4.1 The City shall pursue grants, redevelopment funding, or other funding sources, for construction of trails along abandoned railroad rights-of-way and creeks, and to acquire historical or archaeologically significant buildings or sites.

Objective 2.1 Open Space System

Include existing city-owned open space, existing trails, utility easements, flood control easements, and other publicly owned open space land into a comprehensive open space system, and establish connections to neighboring open space.

Policy 2.1.2 Create connections via trails and open space designation or acquisition to local, state and federal open spaces surrounding Concord.

Policy 2.2.4 Encourage clustering (but not increases in density) of residential units and dedication of permanent open space and trail easements adjacent to publicly owned open space areas as needed to protect and conserve the public value of the open space.

Objective 3.2 Wetlands

Protect naturally occurring wetlands, including riparian areas and marshlands from impacts related to development, extraction of natural resources, or other human activities to preserve their water purification values

Policy 3.2.4 The Walnut Creek Channel and Delta De Anza regional trails will provide visual, and where practical, physical access to wetland areas in north Concord in a manner consistent with protection of fragile ecological systems.

Appendix C

PUBLIC WORKSHOPS/ AGENDAS

February 8, 2001- Centre Concord, Diablo Room

February 17, 2001 – Oak Grove Middle School

February 20, 2001 – Senior Citizens' Center



Concord
Trails Master Plan

Public Workshops

February 8, 2001- Centre Concord, Diablo Room

February 17, 2001 – Oak Grove Middle School

February 20, 2001 – Senior Citizens' Center

The Trail Master Plan will provide the framework for the future planning of trails in the City of Concord for both recreation and as an alternative transportation mode. This includes trails for hiking, biking and equestrians. The Master Plan will identify the City's vision for how to use existing easements and public rights-of-way. By identifying potential alignments in a Master Plan, corridors can be preserved for transportation and recreation use rather than being lost for public use.

Concord's first Trails Master Plan was completed in 1972, although the history of trails, as with any community, dates back to the days of the horse and wagon, and before this to the trails and footpaths used by Native Americans. In 1999, the Concord City Council identified the need to update this plan and develop a comprehensive Trails Plan to meet the many needs of this diverse community.

The Trail Master Plan will be an element of the General Plan. The Concord Trails system connects to the existing regional trail network consisting of the existing Iron Horse Trail, Contra Costa Canal trail and the California Riding and Hiking Trail and the proposed Delta-De Anza Trail. There are also several historical routes that, while not possible to develop to full multiuse trails such as the Iron Horse, could be preserved through historical markers or other means. These include the Delta-De Anza Trail mentioned above, Lime Haul Road, Seal Bluff Road and old railroad rights-of-way.

The existing trails system has many gaps as can be seen in the attached figure. The Master Plan will attempt to close these gaps so that there can be seamless non-motorized travel throughout the city for both transportation and recreation. This plan will include short term and long term needs as well as links to other agencies' long-range planning efforts. It will also include recommendations for specific key projects that can be considered for inclusion in the City's 10-Year Capital Improvement Program.



PUBLIC WORKSHOP AGENDA

PART 1
PRESENTATION
(30 minutes)

- Welcome, Introductions, Roles, Responsibilities
- Workshop Format and Ground Rules (?)
- Background and Purpose: Why a Trail Master Plan
- Components of a Trail Master Plan
- Existing Trail Routes and Conditions
- Trail Route Options to be Evaluated
- Questions about the Workshop Process

PART 2
BREAK
(10 minutes)

- Slide / Power Point Show

PART 3
IDEAS
(60 minutes)

- Break Out Groups (if more than 20 people in attendance)
- Questions / Comments / Vision
Note – Discussions directed towards the following questions:
 - Missing trail / bicycle routes that should be considered?
 - Trail / bicycle routes that should be eliminated from consideration and why?
 - What trail / bicycle routes should be emphasized / high priority?
 - Site-specific trail / bicycle route challenges?

PART 4
SUMMARY
(20 minutes)

- Summary
- Next Steps: where we go from here

Appendix D

PUBLIC COMMENTS AT PUBLIC WORKSHOPS

PUBLIC MEETING 2-8-01

The meeting opened by having all present introduce themselves. Two people have attended previous Technical Advisory Group meetings; one of whom is a member of that group. The rest of the audience comprised several who work for the City of Concord, and a few from the general public.

Consultants presented an overview of where the planning process is now, and the reason for this meeting.

The Trails Plan (the Plan) is meant to embody a vision for the future and improve the quality of life for Concord residents. Public input about proposed trail routes is important, and one of the purposes of this meeting.

The East Bay Regional Park District's system was used as a model for definitions of the several types of trails included in the Plan.

Four questions in particular were asked of the audience:

- Are there missing links that should be considered?
- Are there routes proposed that are not workable?
- What bike routes or trails should be of highest priority – or one that needs to be upgraded?
- Are there site-specific challenges?

Other comments are also welcomed. The public is also encourage you to make written comments and submit them.

For the Iron Horse Trail, two bridges are already planned.

Trails indicated on the map by the thickest lines are regional e.g. Iron Horse, Contra Costa Riding and Hiking, De Anza. It's important to recognize that it won't be possible to have trails connect all the gaps; another layer will be an on-street network.

Q What is the Delta-De Anza Trail?

A: The De Anza Trail is a national historic trail that starts in Arizona and goes to San Francisco Bay, and is shown on the East Bay Regional Park District's master plan. The Delta Trail serves two purposes – *near bay and ????*

C – see logic but – when trail options don't seem to have much for true bike commuters. Seems mostly recreational use....doesn't see indications that those routes used for commuting will be upgraded – for safety, etc. knows lots of people who commute by bike. Very difficult to get from concord going west. Crossing under 680 is extremely dangerous. Don't see anything on map that would eliminate these safety hazards. Mentioned in text, but not reflected in maps. Bike plan needs to be part of city's circulation plan. Needs to be integration w/ circulation w/ whole. Want to get from concord to downtown w.c. – iron horse
From concord to pleasant hill - ???

C – from anyone who live here ?? to downtown concord – its clayton rd.
Discussion of something involving Olive Drive. Look at mdr and ptm notes.

Something about old RR ROW. Mdr thought it was on map.

C – concord has been giving priority to bike routes for years – have you been going back to minutes of meetings like from 1998 – where they have been asking for money and putting forth priority. (he's saying there's lots of stuff already documented). Look at previous requests for \$\$.

C – were 2 indian villages – one in hillcrest park w/ big shellmound. Was another at naval weapons station @ corner Willow Pass and Farm Bureau Road. Was former wetlands – shellmound was bulldozed when wetlands were filled. But are still artifacts.....so may be problematic if public is walking thru. Very sensitive archaeologically and wetlands-wise. Also, would be tremendous opposition by neighbors. Narrow channel. Also burglars have used for access and egress to backyards. Floods in winter; put trail there, would have to account for floods. Something else that is problematic – physical constraints that may prevent trail there. Look instead at Huron Drive – very close, and tree-lined street.

C – interface between Concord and Pleasant Hill – bicycle planning study by Pleasant Hill should be interfaced with this one.

PTM – what would be your top 3 priorities??

safety enhancements on some of critical corridors. Many people rely on using bikes to get around.

Agrees w/ that point. For this project, can build constituency for this plan. Once they get some, will want more trails. Politically, good move! Commute option is imp!

W.c. has established route just N of ygancio, is twisty-turny, but hard to find if don't know (not sure what's she's getting at). Directional signage very helpful (like sounds would have on major streets...)

PTM – Q about shoulder widths....

C – something about how w.c. says use sidewalk in some instances.

C – but as a ped. Not too crazy about having to share

John ____ - head of some bicycle committee. Need to integrate class 2 and class 3 w/ traffic. Even w/ bike lanes, takes eternal vigilance to make sure they stay there. Just 3 nites ago, lafayette wanted to take out bike lanes in favor of parking....! City engineers should keep non motorized in mind.

Agreed – for system to be anything more than just recreational - need to think of on street too.

C – keep clean!

C – been bugging city for bike routes in concord. At least should make one available – not just existing, but any future possibilities. Public info is important.

C – would like to see a trail go all way up bailey rd to ridge point.

C – naval station / what's status??

A – use of naval weapons station is under discussion w/ concord, EBRPD, county. Some obstacles being worked on; timetable was developed that is being delayed cause navy hasn't done some stuff on schedule. Joint use is on hold for now – military hasn't really left yet; need to do CEQA/NEPA stuff; no one has money now.

C – was a trail identified along diablo creek...but public doesn't know about env. Problems. Naval station became refuge for endangered spp. Putting a trail along diablo creek – could be problematic. Not saying it can't be done, but have to be really careful. Doesn't know what EBRPD really thinks about this.

C – look at intersections w/out signals – some at rush hr, just can't get across. Look at non-activated ones.

C – ADA issues – quadracycle – someone trying to ride on sidewalk- was told to ride on street. Maybe a little extra width to accommodate?? Please keep in mind a little extra width.

Ptm – will be coming up w/ guidelines for these types of design issues.

Ptm – from policy perspective, one suggestion from TAG is to include those policies – somethings about serious bike parking, showers,...e.g – 2 parking spaces could be instead 10 bike spaces!

C – funding – bicycle routes – safe routes to school has own funding, source.

Mdr – good point! Is possibility for future.

C – good bike and walking routes to and from school have come up repeatedly in brainstorming sessions for school parents.

C – wherever poss, keep bikes and peds separate.

Discussion re: where this makes sense and is possible, and where not.

C- a bit more signage would help....so everyone understands that is multi-use trail. Make people more aware!

PTM – summarize – have been taking notes; will take seriously what we've heard...
Next 2 meetings will be same subjects as this at 2 more locations.....

Where we go from here – will take all ideas suggested, and id a system that is realistic (maybe ambitious, but realistic)...will then go out and evaluate all these potential routes.

Request to give broader announcements for TAG meetings

PUBLIC MEETING 2-17-01

Three or four members of general public present – one rep from EBRPD

Ptm – gave overview of where we are and why we're here.

Ptm – 4 Q's

Are there missing links we should be looking at?

Are there routes that you see that you think are not workable?

What bike routes or trails should be highest priority – or one that needs to be upgraded?

Are there site-specific challenges?

MDR – gave her presentation

Public Comments:

Art – what about naval weapons station – if plan early, can make things happen later!!

MDR – do show some routes along,,,,,and along canal – are there other opps?

Art – to south going into newhall park – do something more about it....why not part of EBRPD master plan?

Terry – don't know

Mdr – could include

Art – should be part of policies – to get our trails into others' master plans

Ginger – could be part of something to collectively fund

Unknown – have sen developers tarils goin that are concrete – a little conc is ok, but softer surfaces are nicer for many trail users, esp runners.

If something is to be part of GP – use “shall” and “will” – get wiggle words out!!! Use definite words.

Ptm – that's one reason there will be guidelines – for how to build (re: surfacing).

Terry – our std is 2-ft gravel shoulder to accommodate as many types of users as poss.

Dave – concern re burglars using trails to get access

Ptm – maybe should have a policy addressing that. Other jurisdictions – have usu had policy to work w/ neighbors @ detailed design phase. Gave example of lafayette trail – people ended up

putting in gates! Santa clara county has policy that if neighbors want private access to trail – have to get permit.

Talked also about poss. Idemnification....have to talk to city about that. Most city and county attorneys have said – can idem....but doesn't make any diff anyway – will still be defending.

Art – what's going on in adjacent jurisdictions?

Mdr – one of things we're working on...will be contacting them all. For now – iron horse trail

John m – pleasant hill bart station - some discussion about trail across creek and into bart station.

Art – does wc or ph have group like concord?? MDR – not that I know of.

Young guy – something about wc (?) having bike committee???? Bike advisory comms are pretty common.

Terry – re: security...exp is that trails are typically as safe or safer than neighs they go thru. Also prop values increas – trails usu used by locals....sense of ownership. If is prob – agency gets notified, and a little presence will usu make go away. Generally not a problem IF one didn't already exist.

Young guy – have you worked w/ police? Some places where fences are only 4 feet hi....

Ptm – usu people don't use bikes to steal tvs....

Mdr – Curfews? Lighting?

Y.G. – one is where have thru city parks – cause many of those close down. After dark – city trails are officially closed, where EBRPD aren't ---- specifically CA Riding and Hiking trailsomething to work out w/ cities. Know would have to bring in police and cities....but need to work out re: curfews.

Art – what's line thru griswold??? Park – goes to contra costa canal??? Mdr answered.

Along Galindo Creek – a challenge!!

(Got to the point where they were standing around map and pointing – can't really take notes on that!!)

Y.G. do think parallel trails are imp.

Art – get lines on the map early....

John – to art – how you you feel about trail along ridge above naval weapons? Art – nice for hikers (he's a biker). Sierra club guy – have been up there; is very nice; feeling of being out in nature.

Unknown (not sierra club) –where's the east-west trail?

John m – we're aware of the need; is a tough nut to crack.

Ptm – pointed out that these days – not out of the Q to build overcrossings over freeways these days!!!

Thank you very much!!!

PUBLIC MEETING 2-20-01

Ptm – gave short intro; everyone introduced themselves....several have lived here for quite some time!

Seem to have walkers, hikers, bikers and even some equestrians!

This is 3rd of three meetings just like this.

Handed over to MDR – who made presentation - -mapped out trail options.

Ptm asked audience to think about 4 questions on o-head

- Are we missing any trail opps?
- Are any that show not feasible for any reason?
- Are there priorities?
- Are there specific challenges that you think are notable?

Open to Public Comment:

Q – attended mtng about concord naval weapons station – was an offer of using property of areas adjacent to your map? Has parks pursued anything?

Ptm – have been planning studies done by EBRPD – have also been suggestions for some trails...show on this map trail along canal/RR – one suggestion that this being a master plan, makes sense to suggest thruout naval weapons station some ideas for trail. Maybe a ridge route; maybe along the stream - but ought to show logical network, taking into account listed spp etc.

what about Diablo Creek golf course? Is supposed to be a connection between??? In discussions long ago – an actual road....was an extension of _____ road. Hgwy 4 is not a fun place to ride!!

bike path along Bailey Road....also somehow getting from Cowell and Ygnacio Valley over to clayton...

can further connect to clayton to _____??? To mt diablo – critical link.

- bike path between concord community park and Cowell- somehow get to downtown concord.
- existing on-road paths – if and when concord naval weapons station comes up.....comment petered out.....

naval weapons station – wants that road so can go to Port Chicago!! Like we used to have! As long as people have access to that road....have been put on Hiway 4, then onto funky trail....not ADA....

access points to off-road....crystal ranch; cal state hayward. Just a place to get onto open space – just an opening – just get thru legally to get to trail.

Ptm – taking some of these comments to mean – should be clear direction – come and use trails!

Q – looking at plans from berkeley and nyc – michelle explained the diff betw classes of bike lanes/paths/etc.

Discussion of different way to deal w/ on-street bike systems....among ptm, mdr, audience member.

On street routes – don't do what Martinez and ____?? Have done – counting curbs as part of bike lanes! And gutter pan as well!

Like to see class 2 on Monument – also Bancroft Rd. feels that concord isn't too safe for pedestrians – so as far as prioritizing – feeling is that need hi priority on class 2.

Have you observed bicyclists in Concord? Need education! Many ride against traffic. Signs don't seem to help. Many non-english speaking populations.

- left-turn pocket to turn onto Franquette....

Riding and hiking trail coming from east ends at Ygnacio valley – but used to go underneath. Last time talked to park district – thinks they were going to abandon that trail – now under consideration – development of some sort – so where does trail go? Is ambiguous; poorly aligned – is an area that should be addressed. What to do w/ that piece north of Ygnacio and ____???

Mark Jonas comments – see written handed in. need a countywide policy to re-calibrate traffic lite sensors to work w/ bike.

Crossing Willow Pass at Parkside – “stuff in the middle”.

Equestrian – doesn't ride thru concord – main concern is naval weapons station. Forest Servcie is offering “bait” of getting trails in sierra (?). something about mokelomne group/trail. Concord is too developed to enjoy riding; clayton is different. Still goes to mt. Diablo.

Ptm – Q from EBRPD and how much effort & \$\$ to put into just an eques. Trail – vs. just accommodating w/ a wider shoulder. Loves EBRPD standards – accommodates everyone!!

Q re: multi-use trails? Something about just dry grass.

Some comments about bells and bikes...????

Comments about dogs off leash – in spite of signs he has gotten ginger (??) to put up!!!

Mark jonas – iterated standardizing bike crossing (his comment #3)***...also adequate water/toilets (#4)

*** many agreed...

discussion re: safety issues w/ toilets – homeless, etc.

would like emergency solar phones

something about example of bollards being so close that had to pull elbows in to get thru! Ptm pointed out that would exclude wheelchairs....

What are you doing to coordinate concord trails w/ adjacent jurisdictions? Ptm - next step; but can't dictate what other cities can do. Guy said – just mean to take advantage of what exists.

Another problem spot – getting from concord to pleas hill...

Comment – city has in the past turned RR areas into storage – where could be used for trails. Think have to think about trails for transportation instead of just recreation. Have to think about using these areas for other than just storage.

East-west corridor – look at city redevelopment plan – cause have proposed some east-west corridors.

Make sure bicycles and peds can get safely across (unlike walnut creek).

On options map – on concord ave and 680 –what is that? Mdr explained is currently out to bid.

New concord library – part of planning is something about bicycle trails

Signalized intersections – park dist has put stop signs even where are signals. Assuming stop signs are CYA – but don't know anyone who actually stops?? Needs to be some coordination. Tag member – according to steve fiala – they will put in whatever is requested, except for intersections where is city's responsibility.

1974 state law – re: bicycles and peds - wants to reference it. Also have learned from internet – designing something re: sidewalks and ??? said has prepared a package for consultants. Are in western region of dept of hiway safety ?? – they have staff of consultants who can assist. Also need to have way to change this plan ??? also need to have way to involve local subcommittees (of police?). disappointed that not more involvement from schools??

Same guy – wants the draft plan available for review before goes to park and rec. also need cooperation between BART and city for bike storage. Need more balance for bike storage (vs. cars??)

Anytime a new development goes in; set aside some space for bicycles. Also – what happens to something that will get covered up when EBRPD does something – EBMUD???

How will get across concord ave at some point they're talking about on map? General agreement seems to be it will go under.

Iron horse trail – don't do it anymore because trying to get across diamond – just not possible. Will do illegal stuff – an unusable part of iron horse trail!

Parking issue – racks alone won't do it! Would like to see cages at supermarkets, etc.

Shopping areas in concord – most of them have “no” signs that include bicycles! Needs to be changed! Would like to see that sign disappear from policy standpoint.

How about “yield” signs instead of “stop” signs....so many wouldn't be breaking the law that way. Also – someone should be assessing how long it takes and how long the lite is on – could have 2 buttons – one that is faster response and shorter duration for bikes; another for peds and wheelchairs, etc.

There are a lot of roads that need bike lanes – how will approach? Mdr – pls use comment forms. Or could draw on map.

Concord (Ave??) is most direct route to town....would be nice to have trees??? Ginger – just happens to be that city is going to be planting????

In favor of trails, but if can't get there from where you live – are useless. Can be a real problem when cars parks along road, are up on sidewalk and peds can't even get by. City council says “tough”.

John m – to summarize – say there are issues about parking on sidewalks....obstructions.

Mdr - maybe a policy should address this?!

COMMENTS FROM COMMITTEE/PUBLIC RECORDED ON NEWSPRINT PADS:

- Need trail connections to Walnut Creek & downtown (Sun Valley Mall)
- Coordinate (see PTM graphic)
- What is the status of the Iron Horse Trail @ Willow Pass?
- Don't see serious bicycle commute (???) from Concord Blvd., Clayton Rd., Galindo to job centers
- It's difficult to travel west!
- Should be put in circulation plan (??)
- Integrate bicycle routes w/ trails
- Look at Clayton Road
- Olive Drive to Greentree to Wilson Drive
- Consider old RR right-of-way
- Review past County bike requests – 5 to 10 years past – do the research.
- Hillcrest Park – Shellmound
- Northwest corner @ Willow Pass Road & Farm Bureau Road
- Control access to archaeological sites
- Port Chicago undercrossing ??
- Look at Huron Drive
- Channel to 242
- Priorities – Commute / Safety (Clayton Rd.)
- Multi-use
- Signs – route & directional – multi-use
- Need bike map/trail map
- Bike lanes need vigilance
- On-street Class II & III
- Street sweep!
- Bailey Road to Bay Point
- Short-term/low-cost – Canal Trail
- ADA issues – Quadra cycle...extra width
- Bicycle route to school – funding
- Safe routes to school – funding
- School routes
- Willow Pass @ Iron Horse / Willow to Sun Valley flyover Nav
- Naval Weapons Station
- Get ideas early so it may happen
- Make part of policy goals
- Developers need to provide soft surfaces for runners
- Look at use of “shall/will” language in General Plan
- Security / Access / Liability (fence)
- Adjacent trails – connect to BART
- Process – coordinate w/ Bicycle Advisory Committee
- Connectors through City parks – have sun-up to sun-down rules (may be a conflict)
- Bicycle concept: major loops
- Galindo Creek: a challenge
- Creek trail through northwest corner – get line on map....PG&E trail too!
- East – West ---- NEED
- Class 2 route – Monument Corridor
- Concord N.W.S. – Port Chicago Road
- Diablo Creek Golf Course – to be a trail between Highway 4 and Evora Rd. extension

- Bike path – Bailey Rd. to Dsta?????
- Connect to Clayton
- Access points – opening legal....Crystal Ranch/Cal State
- Policy about signs & information
- (see sheet – redo of a graphic showing dimensions...)
- Class 2 on Bancroft
- Priority – Class 2 routes
- Education: wrong-way bikes on street – use decals??
- (see sheet – re: “left-turn refuge”)
- Riding & hiking trail – corner Ignacio / Alberta
- Recalibrate in-road sensors
- Willow Pass @ Parkside
- (see sheet for bells/ ring!!)
- Same design for crossings (??)
- Need safety policy
- Need toilets/water/phones
- Bollard spacing needs to be addressed
- Trails as transportation – preserve UNEAR?? Routes
- Park district uses STOP signs even when signals present
- State law (1974) – summarize *****
- “Best Practices” – ADA
- FHWA bicycle guidelines / standards
- Bicycle safety committees / police / city planning / users
- Bicycle Advisory Committee to update plan
- Middle schools should be consulted – review working draft
- Need bicycle storage (BART / new parking)
- Continuity!!!
- Parking/storage areas are needed
- Shopping centers – (see sheet)]
- Yield vs. Stop
- Two buttons
- Trees @ Concord Blvd.
- Obstructions to sidewalks

Appendix E

REFERENCES ON THE BENEFITS OF TRAILS AND BIKEWAYS

Numerous reports and studies have been written documenting the benefits that trails and bikeways bring to a community. The following is a list of the most significant studies that addressed the economic benefits, including property values, as well as the overall benefit to a community's health and quality of life. The first three reports are summarized on the following pages.

- *Evaluation of the Burke-Gilman Trail's Effect on Property Values and Crime*, Seattle Engineering Department, Office for Planning, May, 1987. For copies, contact: City of Seattle Engineering Department, Bicycle Program; telephone (206) 625-5177.
- *The Impacts of Rail-Trails: A Study of the Users and Property Owners from Three Trails*, by Rivers, Trails and Conservation Assistance Program, National Park Service, Washington, D.C., in cooperation with Pennsylvania State University; authors Roger L. Moore et. al.; February, 1992. For copies contact: Tom Iurino at (202) 343-2709. The three trails studied were: The Heritage Trail, a 26-mile trail through rural farmland eastern Iowa; the St. Marks Trail, a 16-mile paved trail through small communities in Florida and the Lafayette/Moraga Trail, a 7.6-mile paved trail which travels almost exclusively through developed suburban areas. At the time of the study, the Heritage Trail was eight years old, the St. Marks Trail was two years old and the Lafayette/Moraga Trail was 14 years old.
- *Economic Impacts of Protecting Rivers, Trails and Greenway Corridors: A Resource Book*, by Rivers, Trails and Conservation Assistance Program, National Park Service, Washington, D.C., Third Edition, 1992. For copies contact Recreation Resources Assistance Division, P.O. Box 37127, Washington, D.C. 20013; (202) 343-3780.
- *Converted Railroad Trails: The Impact on Adjacent Property*. A Masters Thesis, Manhattan, KS, Kansas State University, Department of Landscape Architecture, 1988.
- Loomis, John, *Estimating the Economic Activity and Value from Public Parks and Outdoor Recreation Areas in California*, *Journal of Park and Recreation Administration*, Summer, 1989.
- Schwecke, Tim, Dave Sprehn, Sue Hamilton and Jack Gray. *A Look at Visitors on Wisconsin's Elroy-Sparta Bike Trail*. University of Wisconsin-Extension, Recreation Research Center, Madison, Wisconsin, January, 1989.
- *Rails-to-Trails Conservancy Trails for the 21st Century: Planning, Design and Management Manual for Multi-Use Trails*, 1993.
- Philip Landon, *A Better Place to Live: Reshaping the American Suburb*, University of Massachusetts Press, 1994, 270 pp.
- David Engwicht *Reclaiming our Cities and Towns: Better Living with Less Traffic*, New Society Publishers, Philadelphia, 1993
- James Howard Kunstler, *The Geography of Nowhere*, Simon & Schuster, 1993, 304 pp.

Appendix F

COMPLIANCE WITH BICYCLE TRANSPORTATION ACCOUNT REQUIREMENTS

This Appendix describes how this plan meets the requirements of the California Bicycle Transportation Act. Some of the information is presented in the body of this report and the remainder is presented here.

(a) The estimated number of existing bicycle commuters in the plan area and the estimated increase in the number of bicycle commuters resulting from implementation of the plan.

Citywide, 0.7 percent of residents bike to work. This is slightly more than the county average of 0.5 but less than the Bay Area average of 1.1. The mean commute distance of workers who reside in the Concord/Martinez area is 11.8 miles whereas the mean distance of a bicycle trip is 3.9 miles /6/. The percent of Concord residents who live within 9 minutes of their work place is 14 percent and another 65 percent live within 10 to 30 minutes. So the City of Concord has a relatively large pool of residents who live within biking distance of their jobs. (In comparison, only 9 percent of El Cerrito residents live with 9 minutes and fifty percent live with 10 to 30 minutes). It is estimated that with the full implementation of this plan, the bicycle mode split could increase to over ten percent. This would be an increase in the number of bicycle commuters of over 1600 percent. This is based on statistics from bicycle-friendly communities where 25 % of workers who live close to work bike to work and a lower but still significant percent of workers who live further from work also bike to work. This calculation is presented below.

Column A	Column B	Column C	Column D	Column E	Column F
% Bike to Work /1/	% of workers who live within 9 minutes of their workplace /2/	Estimate of those workers who live close to work who are currently biking /3/	% of workers who live within 10-29 minutes of their workplace /2/	Potential % of Bicycle Commuters /4/	% Increase /5/
0.7	14.0	5	65.6	11.6	Over Ten times

/1/ 1990 US Census - "Means of Transportation to Work" Working Paper #5 Journey to Work Appendix Table C.1.3, MTC, April 1993
 /2/ 1990 US Census - "Travel Time to Work " Working Paper #2 - Bay Area Travel and Mobility Characteristics Table C-3, MTC, August 1992
 /3/ Column A/Column B = Column C
 /4/ (25% * Column B) + (7%* Column D) = Column E
 /5/ Column E/ Column A * 100 = Column F
 /6/ 1990 US Census - Working Paper # 7 Detailed Commute Characteristics in the SF Bay Area, MTC March 1994

- b) A map and description of existing and proposed land use and settlement patterns which shall include, but not be limited to, locations of residential neighborhoods, schools, shopping centers, public buildings and major employment centers. *See Figure 1 and Figure 5.*
- c) A map and description of existing and proposed bikeways by class number (I, II, III). *See Figure 5 and pages 2-6 through 2-8.*
- d) A map and description of existing and proposed end of trip bicycle parking facilities. These shall include, but not be limited to, parking at schools, shopping centers, public buildings, and major employment centers. *See Chapter 3 page 3-1 and 3-2.*
- e) A map and description of existing and proposed bicycle transport and parking facilities for connections with and use of other transportation modes. These shall 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 for transporting bicyclists and bicycles on transit or rail vehicles or ferry vessels. *See Chapter 3 page 3-2 (A map is not necessary since there are so few).*
- f) A map and description of existing and proposed facilities for changing and storing clothes and equipment. These shall include, but not be limited to, locker, restroom, and shower facilities near bicycle parking facilities. *See Chapter 3 page 3-2 and 3-3 (A map is not necessary since there are so few).*
- g) A description of bicycle safety and education 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 Vehicle Code pertaining to bicycle operation, and the resulting effect on accidents involving bicyclists. *See pages 3-3 and 3-4 (A map is not necessary since there are so few).*
- h) A description of the extent of citizen and community involvement in development of the plan, including, but not limited to, letters of support. *See pages 1-1 and 2-5.*
- i) A description of how the bicycle transportation plan has been coordinated and is consistent with other local or regional transportation, air quality, or energy conservation plans, including, but not limited to, programs that provide incentives for bicycle commuting. *See pages 1-2 and 1-3.*
- j) A description of the projects proposed in the plan and a listing of their priorities for implementation. *See pages 2-7 through 2-11 and pages 4-4 and 4-5.*
- k) A description of past expenditures for bicycle facilities and future financial needs for projects that improve safety and convenience for bicycle commuters in the plan area.

See Chapter 4 for future financial needs.

Past expenditures are listed below:

- *Iron Horse Trail Gap Closure (class I) \$1,100,000 construction begins June 2002*
- *Bailey Road Parkway (includes a bike/ped path on DG) \$450,000 completed July 2001*
- *Vintage Brook Trail Connector (6-foot wide A/C path) \$60,000 under construction*
- *Clayton Road Trail Crossing Signal \$130,000 construction begins Fall 2002*

Appendix G

SAMPLE ORDINANCES

Sample Dedication Ordinance

As a condition of approval of a final map or parcel map, the subdivider shall dedicate or make an irrevocable offer of dedication of all parcels of land within the subdivision that are needed for streets and alleys, including access rights and abutters' rights; drainage; public utility easements; bicycle paths, transit facilities, solar access easements, park land, fire stations, libraries, access to public resources and other public easements as required.

Sample Bicycle Parking Ordinance

In addition to the following language for a bicycle parking ordinance, the quantity of bicycle parking required is generally specified in a table and varies by land use. Table G-1 presents the recommendations of the League of American Bicyclists. The following Table G-2 presents the requirements of sample cities across the United States.

Bicycle Parking. Bicycle parking shall be provided in multi-family residential developments and in commercial districts. In commercial districts, bicycle parking shall be conveniently located and adjacent to on-site bicycle circulation pedestrian routes. The bicycle parking facilities shall be one of the following three classification types:

1. Class I Facilities. These facilities are intended for long-term parking and are intended to protect the entire bicycle or its individual components and accessories from theft. The facility also protects the cycle from inclement weather, including wind driven rain. The three design alternatives for Class I facilities are as follows:

a. Bicycle Locker. A fully enclosed space accessible only by the owner or operator of the bicycle. Bicycle lockers must be fitted with key locking mechanisms.

b. Restricted Access. Class II bicycle parking facilities located within a locked room or locked enclosure accessible only to the owners and operators of the bicycle. The maximum capacity of each restricted room shall be ten bicycles. In multiple family residential developments, a common locked garage area with Class II parking facilities shall be deemed restricted access provided the garage is accessible only to the residents of the units for whom the garage is provided.

c. Enclosed Cages. A fully enclosed chain link enclosure for individual bicycles, where contents are visible from the outside, which can be locked by a user provided lock. This facility may only be used for multiple family residential uses.

2. Class II Facilities. Intended for short term parking. A stationary object which the user can lock the frame and one wheel with a user provided lock. A Class II facility must accept U-shaped locks and cables with padlocks. Class II facilities must be within constant visual range of persons within the adjacent building or located at street floor level.

3. Class III Facilities. Intended for short-term parking. A stationary object that supports a bicycle without a kickstand and to which the user may lock at least one wheel or the frame with a user provided cable or chain and lock. For use in Enclosed cages or valet parking only.

Spacing of the bicycle units shall be figured on a handlebar width of three feet, distance from bottom of wheel to top of handlebar of three feet and six inches and a maximum wheel-to-wheel distance of six feet.

Sample Shower Ordinance

Showers and changing room standards. Two employee shower and changing room facilities, one each for male and female employees, shall be provided for any new structure constructed or for any addition to or enlargement of, any existing structure over ___ Square feet of gross floor area. This requirement is applicable to industrial, research and development, corporate office and similar high employment businesses. The floor area used for shower and changing rooms shall be not be included in the calculations for floor area ratio limits or parking requirements.

**Table G-1
Bicycle Parking Requirement Recommendations
of the League of American Bicyclists**

Use	Number of Bicycle Spaces ⁽¹⁾⁽²⁾
Residential (such as apartments & townhouses)	
<ul style="list-style-type: none"> ● General, multi-dwelling 	1 Class I/3 units + 1 Class II/15 units.
<ul style="list-style-type: none"> ● Primarily for students & low-income families, multi-dwelling 	1 Class I/2 units + 1 Class II/15 units
<ul style="list-style-type: none"> ● Primarily for residents 62 and older, multi-dwelling 	1 Class I/30 units + 1 Class II/30 units
Schools	
<ul style="list-style-type: none"> ● Elementary, middle & high schools 	1 Class I/30 employees ⁽³⁾ + 1 spot/12 students (50% Class I and 50% Class II)
<ul style="list-style-type: none"> ● Colleges - Student residences 	1 Class I/4.5 beds + 1 Class I/30 employees
<ul style="list-style-type: none"> ● Academic buildings and other university facilities 	1 Class I/30 employees + 1 spot/9 student seats (25% Class I and 75% Class II)
Park-and-Ride Lots/Parking Garages	7% of auto parking (75% Class I & 25% Class II)
Transit Centers	5% of daily boardings (75% Class I and 25% Class II)
Cultural/Recreational (includes libraries, theaters, museums, & religious institutions)	1 Class I/30 employees + (1 Class II 1500 sq. ft. or 1 Class II/60 seats (whichever is greater)
Parks/Recreational Fields	1 Class I/30 employees + 1 Class II/9 users during peak daylight times of peak season
Retail Sales/Shopping Center/ Financial Institutions/Supermarkets	1 Class I/30 employees + 1 Class II/6000 sq. ft.
Office Buildings/Offices	1/6000 sq. ft. (75% Class I & 25% Class II)
Hotels/Motels/Bed-&-Breakfasts	1 Class I/30 rooms + 1 Class I/30 employees
Hospitals	1 Class I/30 employees + 1 Class II/45 beds
Restaurants	1 Class I/30 employees + 1 Class II/3000 sq. ft.
Industrial	1 Class I/30 employees or 1 Class I/15,000 sq. ft. (whichever is greater) + 1 Class II/15,000 sq. ft.
Day Care Facilities	1 Class I/30 employees + 1 Class II/75 children
Auto-Oriented Services	1 Class I/30 employees
Other Uses	Same as most similar use listed
<p>Notes</p> <p>(1) For cities with less than 2% bicycle commuter rate. Pro-rate for cities with higher commute rates.</p> <p>(2) The minimum number of required Class II Bicycle parking spaces is 4, except when the code would require 1 or less in which case 2 bicycle spaces must be provided.</p> <p>(3) Employees = maximum number of employees on duty at any one time.</p> <p>Source: <i>League of American Bicyclists, 1994.</i></p>	

Table G-2

Municipal Bike Parking Requirements

*Compiled January 1988 by Arthur Ross, Madison Department of Transportation,
PO Box 2986, Madison, WI 53701-2986, (608)266-6225*

Land Use	Madison, WI	Palo Alto, CA	Boulder, CO	Eugene, OR	Portland, OR	Austin, TX	Gainesville, FL	Seattle, WA	Davis, CA
Multi-family	1 per unit	1 per unit	10% of auto	1 to 2 per unit	High density only: 1 per 5 to 10 units	none	10% to 25% of auto	Generally, 10% of auto for uses requiring more than 20 auto spaces Downtown, 5% of auto for all major new developments	2 per unit
Hotels/Motels	1 per 3 rooms	10% of auto	10% of auto	10% of auto	1 per 20 auto, minimum 5	1% of auto	10% of auto		Not specified, determined during the design review process
Schools	K-6: 1 per 10 employees plus students; 7-college: 1 per 4 employees plus students	K-8: 1 per 3 students; 9-12: 1 per 2 students	10% of auto	10% of auto	K-12: 1 per 10 students; college: 1 per 10 autos	5% of auto	K-6: 300% of auto; 7-9: 200% of auto; 10-12: 100% of auto; other: 10%-20% of auto		
Commercial	1 per 10 autos (=1 per 20 employees)	10% of auto	10% of auto	10% of auto	1 per 20 auto, minimum 5; Limited & neighborhood, minimum 3	5% of auto	5% of auto		
Retail	1 per 10 autos (=1 per 3000 sq.ft.)	10% of auto	10% of auto	10% of auto	1 per 20 auto, minimum 5	5% of auto	10% of auto		
Manufacturing	1 per 10 autos (=1 per 20 employees)	10% of auto	10% of auto	10% of auto	1 per 20 auto, minimum 5; some uses, minimum 2	5% of auto	5% of auto		
Recreation	1 per 40-100 seats; 1% of person capacity (10% of auto)	30% of auto	10% of auto	10% of auto	1 per 20 auto, minimum 10	5% of auto	varies, 5-25% of auto		
Exemptions		Single and 2-family residential, warehousing & distribution, mortuaries, auto services, day care centers, drive-up windows		Drive-in theaters, horticulture, mineral resources mining & recovery	Cemeteries, billboards	agricultural uses, pet services, auto services, camp grounds, resource extraction, airports, equipment sales & service, funeral, cemetery	Auto wrecking, junkyards & salvage yards; part of central city district		

Land Use	Madison, WI	Palo Alto, CA	Boulder, CO	Eugene, OR	Portland, OR	Austin, TX	Gainesville, FL	Seattle, WA	Davis, CA
Notes	Minimum of 2 spaces. Total reduced to half of listed after first 50 spaces are provided. Allows deferral of up to half of requirement.	Allows deferral of up to half of requirement.	Minimum of 3 spaces. Total reduced to 5% after first 50 spaces are provided.	Covered parking often required	If 10 or more spaces required, half must be covered		10% of auto for all uses in shopping center districts & non-exempt sections of central city district. 15% of auto for all uses in neighborhood shopping districts.		
Bike Rack Specifications	Structures that require a user-supplied locking device shall be designed to accommodate U-shaped locking devices	Varies, using a Type I, II, III system. Type I includes lockers, check-in systems, monitored and restricted access parking. Type II allows both wheels and frame to be secured with a user-supplied lock (without a cable or chain) and the lock is shielded from vandalism. Type III is a stationary object to which a bicycle can be secured with the user supplying both lock and cable or chain. Types are specified for each use. For example: multifamily residential-type I; retail-type II, covered; schools-type III, enclosed.	Lockers or medium security racks in which both the bicycle frame and wheels may be locked by the user	Locking shall be provided for all required spaces (Type III)	Bicycle racks shall accommodate (i) Locking the frame and both wheels to the rack with a high-security U-shaped shackle lock, if the bicyclist removes the front wheel; (ii) Locking the frame and one wheel to the rack with a high-security U-shaped shackle lock, if the bicyclist leaves both wheels on the bicycle; and (iii) Locking the frame and both wheels to the rack with a chain or cable not longer than 6 feet without the removal of the front wheel.	Type I, II, III system, with type specified for each use. For example: transportation terminals, half at least type II with remaining half at least type I; general retail services, at least type II; consumer convenience services, half at least type II, with remaining half at least type III.	All required bicycle parking facilities shall be from an approved list of bicycle parking devices maintained by the Department of Community Development. Other bicycle parking devices may be used if it can be established to the satisfaction of the Building Official that they are equivalent to any devices on the approved list in function, quality, and construction.		

Last updated January 10, 1996 by Doug Mink dmink@cfa.harvard.edu

Appendix H

EDUCATION AND PROMOTION PROGRAMS

PROPOSED PROGRAMS AND RECOMMENDATIONS

Education

Bicycle safety education programs can be disseminated in numerous formats. The two basic categories are *informational*, such as posters, brochures, videos, and classroom presentations, or *hands-on*, such as off-street practice and escorted on-street training rides. Informational programs are intended to develop awareness and provide knowledge. Hands-on programs are designed to change behavior and/or develop skills. *Comprehensive* programs employ both presentation and practice.

In addition, specific programs to reach middle school children and 15 year olds - those on the brink of becoming drivers - are recommended:

- **Youth "Earn A Bike" and bike repair programs** - Many organizations around the country have created programs which offer disadvantaged youths the opportunity to "earn a bike" by learning repair skills and using them to fix up donated or abandoned bicycles. These programs help give kids an alternative to gang activity and petty crime, and an opportunity to learn useful work skills. They do not typically include bicycle driver education instruction, but are a potential channel for it. Related options include after-school and drop-in bike repair clinics. The Youth Bicycle Education Network (YBEN) is a national resource group for such operations. Examples of "Earn-a-Bike" programs in Alameda County include Oakland-based Cycles Of Change, and the Oakland Parks Department program managed by Jose Ortiz.
- **Classroom instruction in conjunction with Drivers' Education classes.** The curriculum of private Drivers' Education classes should be reviewed to determine ways to increase content regarding bicycle safety issues.

Adult Bicyclists are difficult to reach but nevertheless are an important segment of the bicycle-riding population, as evidenced by the collision data. Adults still need to learn the responsibilities of bicycle riding, how to safely share the road with motor vehicle traffic. The following strategies are some ways to reach adults:

1. Prepare a Citywide map to distribute showing the designate bikeways and safety tips. See also discussion below.
Encourage large employers to print and distribute brochures with recommended routes to work and safe riding tips.

Motorists are also a difficult segment of the population to reach, but recommended strategies are:

1. Early education when first learning to drive for 15 year olds.
2. Pamphlets at DMVs and with vehicle registration renewals.

3. Additional questions on the Drivers license exam.
4. Brochures inserted into utility or water bills.

Accessible Information

The citywide bicycle map should be developed depicting existing and funded projects. The map should indicate the locations of bike lanes and bike paths and also the general characteristics of the roadway so that new and existing bicyclists can use it to plan their trip. This map should be available both on the internet as well as published in the phone book.:

Promotion and Media Coverage

1. **Bike to Work/School Week** in May can be the premier bicycle event of the City, the mayor, city council members, school principals can all participate to provide the city's sanction of the event. The month of May is National Bike Month, during which Americans are encouraged to ride a bike at least once. The third week is typically when cities and other jurisdictions hold Bike To Work Day promotions, often on Tuesday. In recent years this promotion has been expanded to Bike To School Day as well. California's statewide Bike To Work Day promotion is coordinated by the California Bicycle Coalition (CBC), based in Sacramento (www.calbike.org). Bay Area Bike To Work Week events are coordinated by RIDES For Bay Area Commuters (RIDES, Inc) (www.rides.org).
2. **Walk Our Children To School Day** in October can also be a community event to cycling to school, and October is just after the start of the school year, unlike May's Bike To School Day. This growing movement to restore and improve pedestrian safety and "walkability" in neighborhoods and cities has spawned a worldwide event devoted to encouraging parents to walk with their children to school. International Walk To School Day occurred on October 4th in 2000. Although the initial purpose is to encourage the mobility of children, parents can also be involved by walking or biking with their children all or part of the way and then continue on their way to work.
3. **Brochures** describing tips on the benefits and methods of bicycle commuting can help first-time commuters. Raffles with prizes such as panniers, head lights, books such as *Tips and Tricks for the Urban commuter* can help the winners continue commuting after bike to work week.
4. **"Charity" Rides** - Many charity campaigns have organized walking and cycling events to raise funds through pledges. These events are opportunities for cycling education if pamphlets or other materials were supplied to the organizers.
5. **Start a Trails and Bikeways Column** in the citywide newsletter and distribute for publication in other local newspapers. Rotate the responsibility of writing the bicycle column between the City Police Department, Traffic Engineering Department and possibly a local bicycle club. The changing perspective will be useful to potential bicyclists as well as will foster communication between the various stakeholders in bicycle transportation.

Enforcement

The bicycle diversion program described above addresses infractions by children under 18 including not wearing a helmet. Additional programs to consider are a bicycle diversion program for adult violators, traffic school for motorists who violate bicycle rights, and a lower fine schedule for bicycle infractions. Enforcement against adults on bicycles should focus on actions that could cause harm to others such as riding fast on the sidewalks or running STOP signs when pedestrians are present. To reduce the incidence of stop sign running and to allocate enforcement resource efficiently, the City should use yield sign signs where yield is appropriate rather than stop signs.

Theft Protection

All new bicycles have imprinted serial identification numbers and the current California law Enforcement Tracking System (CLETS) program can be used to track these bicycle ID numbers. It is recommended that the Police Department use CLETS system and the bicycle serial number to track and recover stolen bicycles.

Appendix I

Potential Future Trails

There are a few potential trails or trail extensions in Concord that would complement the proposed network but that have implementation issues due to right-of-way availability and/or environmental constraints. These trails would close significant gaps in the network and serve multiple users. They are included here so that they might not be forgotten in the event circumstances change and a trail can be provided whether it be a full 14-foot wide multiuse trail or a simple four-foot pedestrian pathway.

- Galindo Creek Trail west of Markham Nature Park

An existing series of trails and city-owned rights-of-way provide public access along Galindo Creek from Ygnacio Valley Road downstream approximately 2.7 miles to Cowell Road at Markham Nature Park. It was thought that public access could be continued along the creek to point near San Miguel Road, thereby connecting with the Contra Costa Canal Trail and improving access to the Concord BART Station. Construction of a trail along this portion of Galindo Creek would not be feasible at this time. However, if creek improvements to alleviate local flooding are ever implemented, a trail should be included at that time.

- Walnut Creek Channel to Oak Grove Road

This trail would utilize a mostly dry drainageway that many years ago was probably a small creek but now, after development of the surrounding land, no longer receives much drainage water. It could be developed into a scenic trail through an area without any other potential for class one trail development. This trail would connect with a trail in the current General Plan that passes through the Costco property and leads to the Concord BART station.

Since most of the ROW required for this trail is privately owned, and the current neighborhood residents have stated at public meetings that they are not interested in park type development nearby, the subcommittee feels it is best to delete this trail from the current Trail Master Plan. In the future, this trail should be re-evaluated in the event that local sentiment has changed.