Bicycle Network

To be eligible for grant funds under Caltrans’ Bicycle Transportation Account, a city or county must have adopted a bicycle plan that includes certain components outlined in Section 891.2 of the Streets and Highways Code. This chapter addresses the components required under Sections 891.2 (a), (b), (c), (d–forthcoming), (e–forthcoming) and (f–forthcoming).

Introduction

The Bicycle Master Plan sets forth a blueprint for completing a system of bikeways and support facilities within the City of Richmond. The bicycle element of the Plan builds upon existing on-street and off-street bicycle facilities throughout the City, focusing on access to major destinations in Richmond, including employment areas, retail areas, schools, parks, trails and open space areas. This Plan also includes criteria for defining different types of bicycle facilities, a project list, design standards, and education and safety programs.

Bicycle Ridership

Means of Transportation

Knowing how many people bicycle, and for what purposes, can help the City of Richmond plan projects and programs to better serve current and potential cyclists. The table below shows the breakdown in the means of transportation used by workers 16 years and older in Richmond to commute from home to work, according to the latest U.S. Census (2000). For context and purposes of comparison, the table also shows this information for Contra Costa County, the nine-county Bay Area, California and the United States. As the table shows, bicycling accounts for 0.6 of commute trips among Richmond workers; this is a higher share than for the county and U.S. but lower than for the Bay Area and California. Drive-alone is the predominant means of commuting in Richmond but commands a significantly lower share than at the county, regional, state and national levels. Conversely, carpooling and public transportation are more common ways to commute in Richmond than elsewhere.
Table 1  | Home-to-work means of transportation (%; 2000 U.S. Census)

<table>
<thead>
<tr>
<th></th>
<th>Richmond</th>
<th>Contra Costa</th>
<th>Richmond</th>
<th>California</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive-alone</td>
<td>59.3</td>
<td>70.2</td>
<td>68.0</td>
<td>71.8</td>
<td>75.7</td>
</tr>
<tr>
<td>Carpool</td>
<td>19.6</td>
<td>13.5</td>
<td>12.9</td>
<td>14.5</td>
<td>12.2</td>
</tr>
<tr>
<td>Public transportation</td>
<td>14.5</td>
<td>9.0</td>
<td>9.7</td>
<td>5.1</td>
<td>4.7</td>
</tr>
<tr>
<td>Bicycle</td>
<td>0.6</td>
<td>0.5</td>
<td>1.1</td>
<td>0.8</td>
<td>0.4</td>
</tr>
<tr>
<td>Walk</td>
<td>1.9</td>
<td>1.5</td>
<td>3.2</td>
<td>2.9</td>
<td>2.9</td>
</tr>
<tr>
<td>Other(^1)</td>
<td>4.3</td>
<td>5.4</td>
<td>5.1</td>
<td>4.8</td>
<td>4.1</td>
</tr>
</tbody>
</table>

\(^1\) Includes work-at-home, motorcycle and taxicab

Bicycle Commuting in Richmond

The 2000 census counted 41,745 workers in Richmond. Accordingly, the number of people who bicycled to work in Richmond at the time was 239, or 0.6 percent of the total. (Since this information is 10 years old, it is possible that the percentage of bicycle commuters to work has changed. The American Community Survey [ACS], a project of the Census Bureau, collects information every year instead of every 10 years but does not break out bicycling as a separate commute mode.) Bicycle commuters also include people who bike to school and those who bike to transit before continuing to work. Below are estimates of bicycle ridership among these groups, followed by a table summarizing the estimated daily number of bicycle commuters in Richmond.

- **Students biking to school**: According to the 2008 ACS, there were 28,026 enrolled students from Grade 1 to graduate school in Richmond. Assuming that five percent of them bicycle to school—a figure supported by some surveys—means an additional 1,401 bicyclists.

- **Workers biking to transit**: The 2008 ACS counted 7,160 Richmond workers who commuted to work by transit. Assuming that two percent of them bike to transit before continuing on their way to work—percentages cited at various times by BART and AC Transit for—means another 143 bicycle commuters.

Table 2  | Daily bicycle commuters in Richmond

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>239</td>
</tr>
<tr>
<td>Students</td>
<td>1,401</td>
</tr>
<tr>
<td>Bike-to-transit riders</td>
<td>143</td>
</tr>
<tr>
<td>Total</td>
<td>1,783</td>
</tr>
</tbody>
</table>
Non-commute bicycle ridership

Commute trips represent a minority of bicycle trips. To get a fuller sense of bicycling in a community, it is essential to account for the other reasons, apart from commuting, that people use bicycles. The National Bicycling & Walking Study, published by the Federal Highway Administration in 1995, estimated that for every commute trip made by bicycle there were 1.74 trips made for shopping, social and other utilitarian purposes. We can estimate the number of these other bicycle trips in Richmond as follows:

- **Number of daily bicycle commuters**: 1,783 (per Table 2)
- **Number of daily trips per commuter**: 2 (assumed; one trip from home to work and one trip back)
- **Number of daily bicycle commute trips**: 3,566 (1,783 x 2)
- **Daily bicycle trips for non-commute purposes**: 6,205 (3,566 x 1.74)

Lastly, many people ride bicycles primarily for recreation. While the Richmond Bicycle Master Plan focuses on bicycling for transportation, it is important to keep recreational riders in mind in the formulation of projects and programs: with enough encouragement, including supportive infrastructure, many recreational riders can be expected to make the transition to bicycle commuters. While we do not have reliable figures, Richmond likely has a substantial number of recreational cyclists. The City is blessed with mild weather; generally flat terrain; large expanses of open space and park lands; the longest shoreline of any city in the Bay Area; and attractive off-street cycling facilities, including the Richmond Greenway, the Wildcat Creek Trail and, of course, some of the longest and most scenic stretches of the San Francisco Bay Trail.

Projected Bicycle Ridership

If other communities are any indication, implementation of this plan will result in a dramatic increase—at least in relative terms—in the number of local bicyclists and trips made by bike. Not surprisingly, bicycling studies from around the country have found a correlation between bikeway miles per capita in a given community and its number of bicyclists. In a case study of three cities—Portland, San Francisco and Seattle—that implemented bicycle improvements on particular corridors, “after” bicycle ridership on those corridors was between double and triple the “before” numbers. (This is consistent with an observation in the National Bicycling & Walking Study that “There are ... three times more commuter cyclists in cities with higher proportions of bike lanes.”) Fuller implementation of a bicycle plan would likely have an even more pronounced effect; a successful plan would result in an interconnected network of facilities rather than a system of improved, but not necessarily linked, corridors.

Assuming a tripling in the number of bicyclists, implementation of the Bicycle Master Plan would result in approximately 5,349 daily bicycle commuters throughout the city (1,783 [from Table 2] multiplied by 3). Similarly, daily bicycle trips for shopping, social and other utilitarian purposes would increase to 18,615 (6,205 [from Table 2] multiplied by 3). These are order-of-magnitude estimates based on limited data and theoretical support. Nevertheless, it is reasonable to expect that implementation of the Bicycle Master Plan would yield the handsome environmental and quality-of-life dividends associated with more bicycling and less driving.
Land Use and Settlement Patterns

The city of Richmond is located on the western edge of Contra Costa County (See Figure 1 for Richmond Land Uses). It was incorporated in 1905 and has a population of approximately 104,000 and a land area of 30.4 square miles, making it the second largest city in Contra Costa on both counts. Like much of the rest of the Bay Area, Richmond has a Mediterranean climate, mild and generally dry throughout the year.

The city’s land area is essentially divided into three sections (see land use map below). The southern and northern portions are separated by the city of San Pablo and a relatively large pocket of unincorporated Contra Costa County. A third portion is located to the east and is separated from the rest of the city by the city of El Cerrito and the unincorporated community of El Sobrante. The eastern portion is mostly hilly while the other two portions are generally flat, with the exception of the Point San Pablo peninsula, Point Richmond and Miller-Knox Regional Shoreline areas (southern portion) and the Hilltop district (northern portion). San Pablo and San Francisco bays surround Richmond along the northwest, west and south, giving it the longest shoreline of any city in the Bay Area. Also to the south is the city of Albany while the city of Pinole is to the northeast and to the east are additional unincorporated lands.

Richmond encompasses approximately 18,800 acres. The largest component by land use is parks and open space, which make up 5,900 acres, or 31 percent of the total. This is followed by residential neighborhoods (4,600 acres; 24 percent), industrial and port activities (4,100 acres; 22 percent), commercial uses (900 acres; 5 percent) and a variety of other uses. The open space and park lands are primarily found on the city’s periphery; these include the Point Pinole, Point San Pablo, Point Molate, Miller-Knox and Point Isabel shorelines; the Rosie the Riveter/World War II Home Front National Historical Park, also on the shoreline; and, along the city’s eastern edge, Wildcat Canyon and Sobrante Ridge. Smaller, urban parks are scattered throughout the city.

The residential areas are concentrated in the city’s southern portion—especially east of Garrard Boulevard and north/east of I-580—with smaller clusters surrounding the Hilltop district and in El Sobrante Valley. Owing to Richmond’s history as a seaport, industrial activities are clustered along the waterfront, especially west of Garrard and south of I-580. The main commercial areas are the city’s Downtown, Hilltop district and a “big box” district near Point Isabel; smaller, local-serving retail districts are scattered throughout. Major employment centers include the Downtown, the port area, the Hilltop district and Chevron’s Point Molate facility (Chevron is by far the city’s largest employer).

There is a concentration of public buildings in the Downtown’s civic center, including City Hall, Memorial Auditorium, Convention Center, main branch of the Richmond Public Library, and Richmond Art Center. There are 36 schools scattered throughout the city, including 16 elementary schools, seven elementary/middle schools, three middle schools, seven high schools (of which two are charters) and three adult education schools.

In terms of development patterns, Richmond can be categorized into pre- and post-World War II areas. The city’s southern portion was mostly developed in the late 19th and first half of the 20th centuries. This section of the city tends to feature the urban forms and patterns of that era: short blocks set on a grid, narrower streets, frequent intersections, mixture of land uses, higher development densities, smaller-footprint buildings and sidewalks on nearly every block—all factors that contribute to bicycling (and walking). Following World War II, development spread to the city’s northern and eastern parts.
Development in the decades following the 1940s is marked by an orientation toward automobiles and characteristics that discourage bicycling, walking and transit use. Development forms and patterns found in these more recently developed areas include wider, non-linear streets, long blocks, infrequent intersections and crossing points, generally segregated land uses, lower development densities and a lack of sidewalks.

**Unique Opportunities for Bicycling in Richmond (This section is under construction)**

Richmond is a very unique city. It faces challenges with respect to being divided by freeways, railroads and major industrial sites (especially Chevron) as well as high crime rates and a large amount of blight. However, these challenges, along with a host of incredible opportunities, make Richmond a place that could experience dramatic change when these obstacles are overcome. Furthermore, there is considerable reason to believe that Richmond is ripe for change.

- **Funding eligibility** – list multiple sources appropriate for Richmond, and a new Federal focus on healthy communities. Key constraint is project management and delivery

- **Underused rights of way** – History of Richmond as a huge employer (shipyards), introduction of I-80, I-580 and the Richmond Parkway (resultant of redundant overly wide arterials – Cutting, Harbour Bay Parkway, Barrett Street, Carlson Boulevard, McBryde Street, etc.)

- **Good walking and bicycling bones** – the City was developed around the streetcar (featuring a uniform grid of small blocks, a good mix of uses (diverse commercial streets well distributed about the City), and continues to be a transit rich environment (Richmond BART/AMTRAK, San Pablo Avenue, etc.)

- As noted, Richmond has the longest and most scenic section of the Bay Trail and is blessed with more open space/parks than most cities (the City has the potential to be a magnet for people seeking healthy lifestyles.)
FIGURE 1. RICHMOND LAND USES

General Plan Land Use
- City of Richmond
- Commercial, City Center
- Commercial, Other
- Port
- Industrial
- Multiple Uses
- Public and Institutional
- Residential, High Density
- Residential, Medium Density
- Residential, Low Density
- Open Space
Types of Bikeway Facilities

Bikeway planning and design in California typically relies on the guidelines and design standards established by Caltrans as documented in “Chapter 1000: Bikeway Planning and Design” of the Highway Design Manual (5th Edition, California Department of Transportation, January 2001). Chapter 1000 follows standards developed by the American Association of State Highway and Transportation Officials (AASHTO) and the Federal Highway Administration (FHWA), and identifies specific design standards for various conditions and bikeway-to-roadway relationships. Caltrans standards provide for three distinct types of bikeway facilities, as generally described below and shown in the Design Guidelines.

**Class I: Bike Path/Shared Use Path**

These facilities provide a completely separate right-of-way and are designated for the exclusive use of bicycles and pedestrians with vehicles cross-flow minimized.

**Class II: Bike Lane**

Bike lanes provide a restricted right-of-way and are designated for the use of bicycles with a striped lane on a street or highway. Bicycle lanes are generally five feet wide. Vehicle parking and vehicle/pedestrian cross-flow are permitted.

**Class III: Bike Route**

Bike routes provide a right-of-way designated by signs or pavement markings for shared use with pedestrians or motor vehicles. While a basic Class III route may simply have signs and markings, a Bicycle Boulevard is a special type of shared route that optimizes bicycle travel. Bike boulevards can have a variety of traffic calming elements to improve safety and comfort for bicyclists.

**SHARROWS**

A Shared-Use Arrow (or “Sharrow”) can be marked in the outside lane on a Class III route to show the suggested path of travel for bicyclists. This is often done when the route has on-street parking, in order to encourage cyclists to ride a safe distance away from the parked vehicles’ “door zone.” The Sharrow can also be used at intersections with multiple turn lanes to show bicyclists the recommended lane for through travel.
FIGURE 2. BIKEWAY FACILITY TYPES

**CLASS I BIKEWAY (Bike Path)**
Provides a completely separated right-of-way for the exclusive use of bicycles and pedestrians with crossflow minimized.

**CLASS II BIKEWAY (Bike Lane)**
Provides a striped lane for one-way bike travel on a street or highway.

**CLASS III BIKEWAY (Bike Route)**
Provides for shared use with pedestrian or motor vehicle traffic.
Existing Conditions

The southern area of Richmond (bordered by El Cerrito to the east and San Pablo to the north) has a grid-based network of streets that provides excellent opportunities to develop a bikeway system. Currently, the City’s Class I Bay Trail and Richmond Greenway are the most well developed sections of the bikeway network, while most on-street facilities have been identified but not yet built.

The outlying areas of the City, including Point Pinole, Hilltop, Parchester Village, and communities in the East Bay hills are physically disconnected from the central City and bicyclists may cross other jurisdictions to access these areas. Interjurisdictional coordination is needed to provide regional connectivity along the bikeway network.

Fehr & Peers conducted an inventory of existing multi-use paths, and on-street bikeway facilities in Richmond based on the City’s and County’s GIS data files, project documents provided by City staff, information from the Richmond Bicycle and Pedestrian Advisory Committee and general public, and extensive field visits. The City currently has approximately 10 miles of on-street bikeway facilities and 21 miles of multi-use paths, consisting of approximately:

- 21 miles of Class I multi-use paths
- 6.5 miles of Class II bike lanes
- 3.75 miles of Class III bike routes

The Existing Bikeway Network map (Figure 3) shows locations for all existing bikeways.

Multi-use Path Facilities (Off-Street)

Richmond’s trails and greenways provide important bicycle and pedestrian connections between several neighborhoods, key destinations and the waterfront.

San Francisco Bay Trail: When completed, the San Francisco Bay Trail will provide a 400-mile separate right-of-way for bicycles and pedestrians around the San Francisco and San Pablo bays, connecting through Richmond. In 2009, more than 26 miles of Bay Trail had been built, with an additional 15 miles planned. Segments of the Bay Trail are currently located on portions of the Richmond Parkway, Atlas Road, around the West County landfill, Cutting Boulevard, Marina Way, Regatta Boulevard, and in southern Richmond near the Miller-Knox Regional Shoreline across to Central Avenue. Most segments of the Richmond Bay Trail are Class I facilities, though several on-street segments are Class II bike lanes and Class III bike routes. The Bay Trail links many of the City and regional parks in Richmond as well as the Richmond Greenway and the Wildcat Regional Trail. Te City of Richmond and east bay Regional Parks District, as well some private development projects have been responsible for the construction and maintenance of the
Bay Trail.

**Richmond Greenway:** Located on an old railroad right-of-way, two major sections of the Richmond Greenway have recently been completed. The western portion provided a path connection from 2nd Street to 23rd Street, and the eastern portion provides a connection from Carlson Boulevard to San Pablo Avenue. When completed, the Greenway will provide a seamless Class I east-west connection between the Ohlone Greenway (El Cerrito) and Bay Trail. Currently, three major gaps along the Greenway include access across San Pablo Avenue; a connection across 23rd Street, the at-grade railroad tracks and Carlson Boulevard; and a connection between 2nd Street and Gerrard Avenue.

![Looking west towards Mt Tamalpais on the Richmond Greenway](image1)

![A safe bicycle and pedestrian connection is essential to connect the Richmond greenway across 23rd Street, the railroad tracks and Carlson Boulevard in central Richmond](image2)

**Wildcat Creek Trail:** Once completed, this creekside path connects users from Wildcat Canyon Regional Park, through San Pablo, to the Richmond shoreline. Several sections on the west end of the path have been completed by the East Bay Regional Parks District.

![A completed section of Wildcat Creek Trail](image3)
Table 3 | Existing Class I Multi-Use Paths

<table>
<thead>
<tr>
<th>Path</th>
<th>From</th>
<th>To</th>
<th>Class</th>
<th>Length (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bay Trail</td>
<td>Point Isabel Regional Shoreline</td>
<td>Point Pinole Regional Shoreline</td>
<td>I</td>
<td>18.57</td>
</tr>
<tr>
<td>Richmond Greenway</td>
<td>2nd Street</td>
<td>San Pablo Avenue</td>
<td>I</td>
<td>2.42</td>
</tr>
<tr>
<td>Wildcat Creek Trail</td>
<td>Richmond Parkway</td>
<td>Shoreline</td>
<td>I</td>
<td>0.18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>21.16</strong></td>
</tr>
</tbody>
</table>

Bike Lanes and Routes (On-street)

The majority of Richmond’s on-street bicycle facilities have been installed in the industrial areas around Point Richmond and Marina Bay on the south side of I-580. Bicycle facilities have also been installed along sections of 23rd Street and in east Richmond along the east side of I-80. Tables 2 and 3 provide a list of existing on-street bike facilities.

Table 4 | Existing Class II Bike Lanes

<table>
<thead>
<tr>
<th>Street</th>
<th>From</th>
<th>To</th>
<th>Class</th>
<th>Length (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>23rd Street</td>
<td>Ohio Avenue</td>
<td>Bissell Avenue</td>
<td>II</td>
<td>0.15</td>
</tr>
<tr>
<td>22nd Street</td>
<td>Ohio Avenue</td>
<td>Nevin Avenue</td>
<td>II</td>
<td>0.43</td>
</tr>
<tr>
<td>Amador Street</td>
<td>Clinton Avenue</td>
<td>McBryde Avenue</td>
<td>II</td>
<td>0.51</td>
</tr>
<tr>
<td>Cutting Boulevard*</td>
<td>Chesson Street</td>
<td>3rd Street</td>
<td>II</td>
<td>0.22</td>
</tr>
<tr>
<td>Hall Avenue*</td>
<td>Harbour Way</td>
<td>Marina Boulevard</td>
<td>II</td>
<td>0.51</td>
</tr>
<tr>
<td>South Gerard Avenue*</td>
<td>Ohio Avenue</td>
<td>Cutting Boulevard</td>
<td>II</td>
<td>0.46</td>
</tr>
<tr>
<td>Cutting Boulevard*</td>
<td>Canal Boulevard</td>
<td>Hoffman Boulevard</td>
<td>II</td>
<td>0.77</td>
</tr>
<tr>
<td>Canal Boulevard*</td>
<td>Seacliff Drive</td>
<td>Cutting Boulevard</td>
<td>II</td>
<td>0.65</td>
</tr>
<tr>
<td>Hoffman Boulevard*</td>
<td>Cutting Boulevard</td>
<td>Harbor Way</td>
<td>II</td>
<td>0.31</td>
</tr>
<tr>
<td>Wright Avenue*</td>
<td>Harbor Way</td>
<td>Marina Way</td>
<td>II</td>
<td>0.23</td>
</tr>
<tr>
<td>Key Boulevard</td>
<td>Humboldt Street</td>
<td>Amador Street</td>
<td>II</td>
<td>0.85</td>
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<tr>
<td>Lucas Avenue*</td>
<td>Ortho Way</td>
<td>Calspray Street</td>
<td>II</td>
<td>0.17</td>
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<tr>
<td>Ohio Avenue</td>
<td>Garrard Avenue</td>
<td>2nd Street</td>
<td>II</td>
<td>0.59</td>
</tr>
<tr>
<td>Harbour Way**</td>
<td>Wright Avenue</td>
<td>Hall Avenue</td>
<td>II</td>
<td>0.60</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>6.45</strong></td>
</tr>
</tbody>
</table>

*Part of Bay Trail
**Class II northbound only

Table 5 | Existing Class III Bike Routes

<table>
<thead>
<tr>
<th>Street</th>
<th>From</th>
<th>To</th>
<th>Class</th>
<th>Length (miles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinton Avenue</td>
<td>Amador Street</td>
<td>Sonoma Street</td>
<td>III</td>
<td>0.23</td>
</tr>
<tr>
<td>Regatta Boulevard*</td>
<td>Marina Boulevard</td>
<td>Marina Bay Parkway</td>
<td>III</td>
<td>0.73</td>
</tr>
<tr>
<td>Harbour Way**</td>
<td>Wright</td>
<td>Hall</td>
<td>III</td>
<td>0.60</td>
</tr>
<tr>
<td>Marina Bay Parkway/23rd Street*</td>
<td>Ohio Avenue</td>
<td>Harbor View Drive</td>
<td>III</td>
<td>1.69</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>3.76</strong></td>
</tr>
</tbody>
</table>

*Part of Bay Trail
** Class III southbound only
Bikeway Improvements Currently Under Design

[Section Under Construction: We will be confirming forthcoming projects with City staff]
FIGURE 3: EXISTING BICYCLE NETWORK
Key Issues and Opportunities of the Bikeway Network

Several challenges and opportunities with the bicycle network have been identified through the development of the Bicycle Master Plan. The following section discusses the key issues to be addressed in the Proposed Facilities section and Design Guidelines.

Large Arterial Streets and Intersections

- **Road Diets:** Much of Richmond’s roadway system was developed to facilitate and support industrial production during World War II. Since that time, the City’s industries have changed dramatically and major freeways have been built to facilitate vehicle travel. As such, the street network has many wide arterials that no longer have the vehicle volumes that they once did. Many of Richmond’s arterial streets have fast moving traffic, which reduces the safety and comfort for bicyclists and pedestrians and stifles opportunities for economic development. There are multiple opportunities to consider road diets, which reduce the width and/or number of vehicle travel lanes and provide extra space for bike lanes and other bicycle and pedestrian friendly facilities. In several cases, such as on 7th Street (in photo above, right), road diets could result in the dedication of excess right-of-way back to adjacent parcels, which could be an important economic development tool.

- **Bicycle Boulevards:** Most of Richmond is on a grid-based system of streets, which provides excellent opportunities for bicycle access. The City’s residential streets are well connected and generally narrow, with slower paced traffic. These areas are ideal for less experienced bicyclists and bicyclists who do not feel as comfortable riding on higher speed roads with heavier traffic. There are multiple opportunities for bicycle boulevards and other facilities that give priority to bicyclists and pedestrians in these areas.

- **Intersections:** Several loop detectors for actuating signal changes do not register the presence of bicyclists at intersections. Oftentimes bicyclists must wait through lengthy signal cycles or risk proceeding through the intersection against the light. Bicycle-specific detectors should be considered at major intersections along the bike network and stencils should be used to inform bicyclists where to position their bikes in order to actuate the signal.

A Bicycle Boulevard is a special type of shared route that optimizes bicycle travel. Bike boulevards can have a variety of traffic calming elements to improve safety and comfort for bicyclists.
Specifications are provided in the Design Guidelines section.

**Physical Barriers**

- Richmond has multiple at-grade railroad tracks and railyards throughout the City, some of which are still active. Bicycle and pedestrian connections within the Iron Triangle neighborhood are heavily constrained by railroad tracks. The Richmond BART Station is also a terminus for two BART lines. Railroad tracks are a significant barrier to bicycling and walking in Richmond, and bicycle access is limited in several areas. Most significantly, the newly built Richmond Greenway has a critical gap at 23rd Street and Carlson Avenue, where the railroad and BART tracks pass through.

- Large industrial sites also present an obstacle to bicycle connectivity. Specifically, Chevron occupies a large area of the Richmond waterfront by Point Molate and Point San Pablo. Completing the Bay Trail connection through this area to Wildcat Creek and the West County Landfill remains a significant challenge.

**Freeway Interchanges**

- Richmond’s proximity to I-580 and I-80 necessitates multiple arterial-freeway interchanges on the south and east sides of the City. Characterized by fast moving vehicular traffic, wide travel lanes and multiple turning lanes, these interchanges could be improved to provide a safer passage for bicyclists.
Access to Transit

- Richmond’s intermodal transit station provides access to BART, AC Transit and Amtrak. Providing safe and comfortable bicycle and pedestrian access to the station area will facilitate multi-modal trips and help to reduce auto trips. Way-finding signage, secure bicycle parking and connectivity to the Richmond bicycle network should be prioritized.

Access to the Bay Trail, Richmond Greenway and Ohlone Greenway

- The Bay Trail, Richmond Greenway and Ohlone Greenway provide some of the most scenic, well connected and protected bicycle facilities in the area. However, several barriers to these multi-use paths remains a challenge:
  - Freeway interchanges
  - Railroad crossings
  - San Pablo Avenue
  - Richmond Parkway
  - 23rd Street/Carlson Boulevard/ Broadway

Regional Connections

- As noted above, outlying areas of the City, including Point Pinole, Hilltop, Parchester Village, and communities in the East Bay hills are physically disconnected from the central City and bicyclists may cross other jurisdictions to access these areas. Interjurisdictional coordination is needed to provide regional connectivity along the bikeway network.

- Bike access on the Richmond-San Rafael Bridge continues to be a high priority for bicyclists. The Richmond Bicycle Plan should support efforts to provide bridge access. [This section is under construction: A short history of efforts to get bike lanes on the Richmond-San Rafael Bridge will be added.]

Pavement Quality

- Several important bicycle routes have very poor pavement conditions. Roadway surfaces are often rough, crumbling and pot-holed, and the roadway and gutter seam where bicyclists are often positioned is frequently uneven. The City should prioritize repaving streets on the bicycle network first.
Secure Bicycle Parking

- Both short-term and long-term bicycle parking are needed in key commercial areas, at large employment areas, transit hubs, schools, parks and other community destinations. Security is a significant concern to residents and visitors, and bike parking facilities should provide a high level of security to protect from theft. The addition of secure bicycle parking will be a critical component of encouraging people to bicycle in Richmond and should be prioritized.

Signage and Wayfinding

- Richmond’s bikeway routes have basic signage indicating where bike lanes and routes are present, begin and end. In several areas signs are missing or obscured by trees and other barriers. Access to the Bay Trail and Richmond Greenway from the roadway is often difficult to identify and once found, there is little to no wayfinding signage directing path users to near-by destinations. The City of Richmond does not currently have a signed route system that would indicate destinations, distances and directions.

- The wayfinding and signage system should be enhanced to help make the bicycle network more visible and easy to navigate. In particular wayfinding improvements are needed to better connect the on-street and off-street bike network. On-street signage and pavement markings would help to create better connections to the off-street network. From the Bay Trail and Richmond Greenway, additional signage would enhance connections back to the on-street network. Please refer to the Design Guidelines specifications on signage.
Multi-Modal Connections

Richmond has a major intermodal transit hub in the center of the City, which is served by AC Transit, Bay Area Rapid Transit (BART), and Amtrak. The intermodal transit hub is a critical connection point for passengers traveling throughout the Bay Area, California, and destinations throughout the U.S. It is the only station that provides direct transfer between Amtrak and BART. In addition, AC Transit bus stops are located on corridors throughout the City.

AC Transit operates nine local routes in Richmond. These include the following lines: 7, 70, 71, 72, 72M, 72R, 74, 76, and 376-night. The buses typically operate with 30 to 60-minute headways and connect to key destinations within and near Richmond including the Richmond Parkway Transit Center at Richmond Parkway and Blume Drive, the Richmond BART Station, the El Cerrito Del Norte BART Station, Downtown Richmond, Marina Bay, Contra Costa College and Hilltop Mall. In addition to local routes, three AC Transit Transbay routes operate from Richmond to the San Francisco Bay Terminal in the a.m. peak hours and from the San Francisco Bay Terminal to Richmond in the p.m. peak hours.

AC Transit has several ways bicyclists can store their bikes when travelling on a bus. All buses are equipped with front-mounted racks that hold up to two bicycles. On Transbay busses, two additional bikes can be stored in the cargo bays when the front rack is full. Folded or collapsed bicycles may be carried on board anytime, as long as they do not block seats or aisles. In the event where all the bicycle storage on the bus is full, the patron will either have to store their bike at the bus stop or wait for the next bus. Bicycles are allowed on the last bus of the night at the driver’s discretion. On night owl service (midnight to 5:30am), riders may carry bikes inside the bus only if the rack is full and space is available.

Other bus transit providers serving Richmond include Golden Gate Transit, which operates two routes (40/42) to the San Rafael Transit Center from Richmond, and WestCAT, which provides a commute express bus route from the Richmond Parkway Transit Center to the El Cerrito Del Norte BART Station. WestCAT also provides express bus service between the El Cerrito Del Norte BART Station and Hercules Transit Center with stops alternating between Richmond Parkway Transit Center and Hilltop Shopping Center. The recently completed Richmond Intermodal Transit Station, located near the Richmond BART station, provides links between BART, Amtrak, AC Transit and WestCAT.

BART, the regional commuter rail transit system, provides service at the intermodal Richmond Station on the Richmond-Daly City-Millbrae and Richmond-Fremont lines. Bicycles are allowed on all Richmond-Fremont trains, and all other BART trains during non-commute hours (4 AM to 6:30 AM, 8:30 AM...
to 3:30 PM, and 6:30 PM - Closing) and all day on weekends and holidays. During AM peak periods (6:30 AM to 8:30 AM), westbound bicycles are not allowed in stations between Richmond and Powell Street and eastbound bicycles are not permitted between the San Francisco Airport station and Montgomery Street station. In the PM peak period (3:30 PM to 6:30 PM), westbound bicycles are not allowed in the stations between Embarcadero and Daly City and eastbound bicycles are not allowed in stations between Civic Center and San Leandro.

BART’s Bicycle Access and Parking Plan\(^1\) contains recommendations for access and parking improvements for both existing and future stations, as well as promotions, incentives, support and education for existing and potential bicyclists. According to the plan, the Richmond BART Station has a high priority for bicycle parking improvements. BART has recently developed wayfinding signage for bicyclists both in station areas and on surrounding bikeways and other roads. These signs help direct bicyclists to the station, as well as to bicycle parking, stairs, and elevators. Currently, the Richmond BART Station has 21 Bike racks and two bike lockers.

Amtrak’s Capitol Corridor and San Joaquin trains stop at the intermodal Richmond Station. The westbound route connects with Berkeley, Emeryville, San Francisco and Oakland. Eastbound, the Capitol Corridor extends to Davis, Sacramento and Auburn in California, and Reno and Sparks via bus in Nevada. In each direction, 16 trains stop at the Richmond Amtrak Station on the Capitol Corridor route. In total, 40 passenger trains per weekday make stops at the Richmond Station. Bicycles are permitted on all Capital Corridor trains.

Bicycle Parking & Support Facilities (This section is Under Construction : will be included in next deliverable)

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\(^1\) BART, August 2002