Bicycle Network

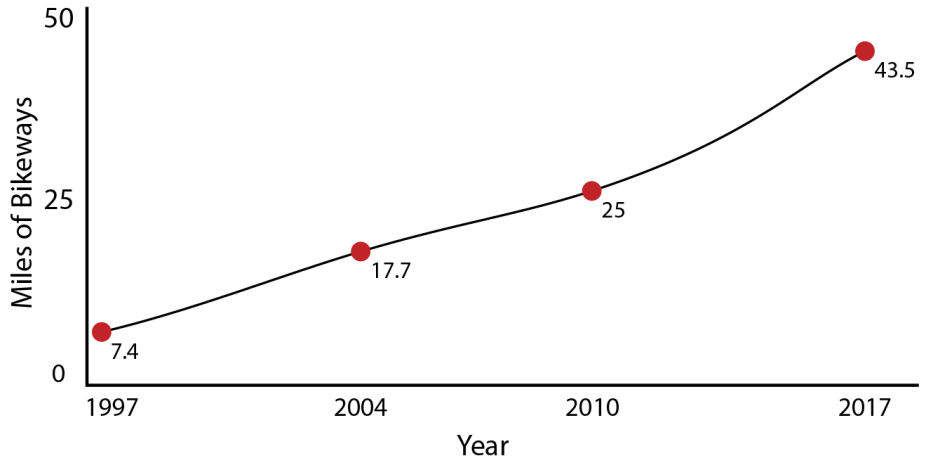
Chapter 3

Bikeway Network

San Leandro Bicycle Network History

The Bicycle and Pedestrian Master Plan sets forth a blueprint for completing a system of bikeways and support facilities within the City of San Leandro. When the Bicycle Master Plan was first adopted in 1997, the City had just 7.4 miles of bicycle lanes on City streets. Currently, San Leandro has an existing bike network that consists of: 5.2 miles of Class I Shared-use Paths, 23.3 miles of Class II Bicycle Lanes, 1.3 miles of Class II Buffered Bicycle Lanes, and 13.7 miles of Class III Bicycle Routes. The combined network consists of 43.4 miles of bicycle facilities; almost double the 25 miles of facilities that existed in 2010. This update builds on the existing bicycle facilities and proposed networks outlined in previous plans, with a focus on accommodating bicycle travel throughout the City and providing access to key employment, school, recreation, shopping and transit destinations.

The following pages provide maps and brief descriptions of how San Leandro has grown and improved its bicycle network in the last several years.



San Leandro has achieved steady growth in their bikeway network since their first Bike Plan in 1997.

A segment of bike lane along San Leandro Boulevard.

2010 Bicycle Network

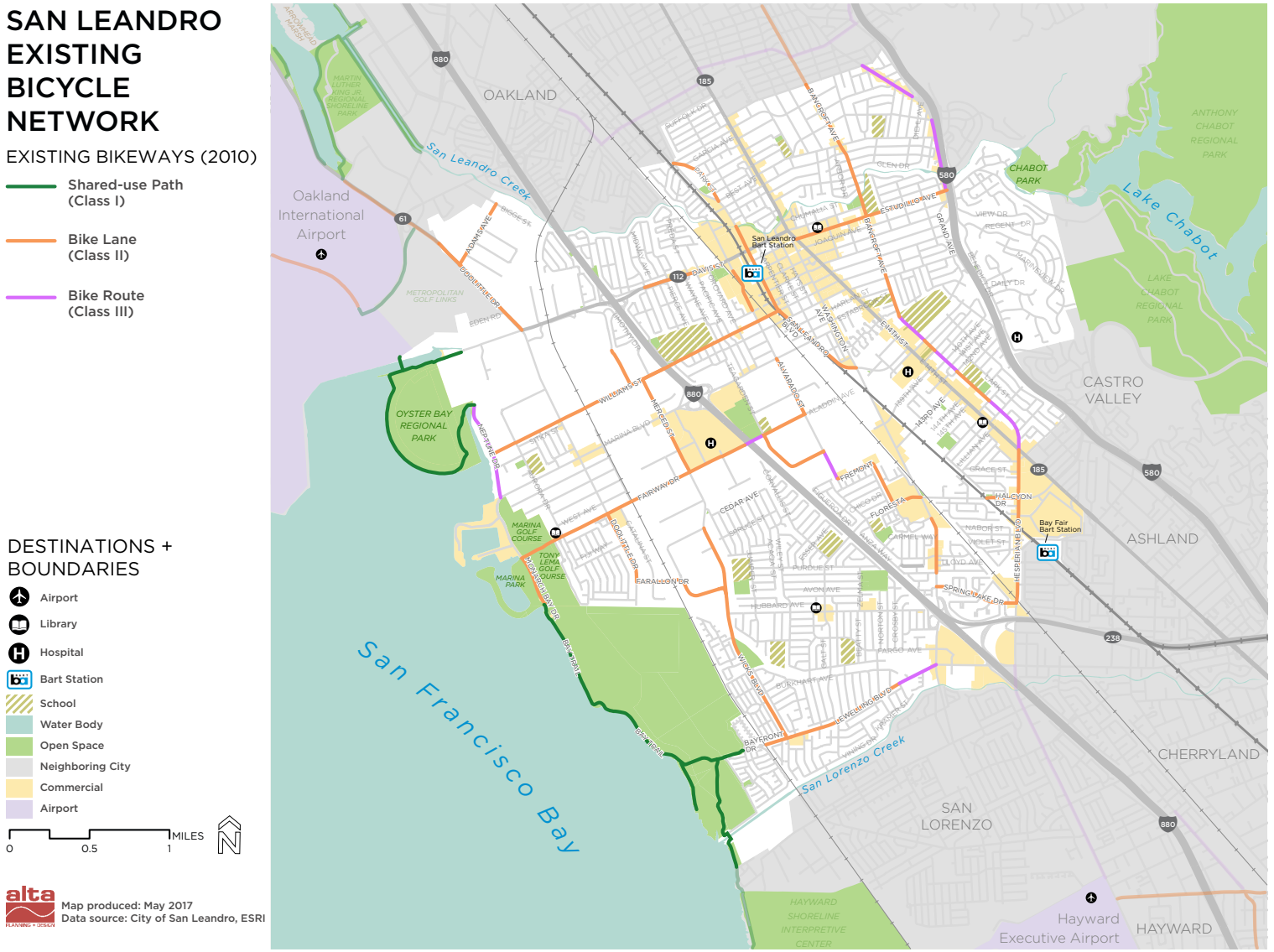
In 2010, San Leandro had a bicycle network that consisted of 25 miles of bikeways. At this time, the bike network predominantly focused on bikeways on larger streets such as Estudillo Avenue, Williams Street, Wicks Boulevard, and San Leandro Boulevard. The Class I facilities were trails that were a part of the Bay Trail network.

A Class I shared-use path in the San Leandro Marina Park.

Table 4 - 2010 Bicycle Network

Bikeway Classification	Miles
Class I Bike Path	4.2
Class II Bike Lane	17.7
Class III Bike Route	3.1

Figure 11: 2010 Bikeway Network



Existing 2018 Bicycle Network

Between 2010 and 2018, San Leandro's bicycle network experienced a 74% increase, in large part a result of the Bike Network East Project. Consolidating funding from a variety of local, state, and federal sources, San Leandro was able to build an additional 18 miles of bikeways in this seven year period. This expansion was focused in the northeastern part of the City near downtown and the San Leandro BART Station. Many new miles of Class III facilities were added in addition to the City's first segments of buffered bike lanes.

A Class II bike lane on Merced Boulevard in front of Kaiser Medical Center.

Table 5 - 2018 Existing Bicycle Network

Bikeway Classification	Miles
Class I Bike Path	5.20
Class II Bike Lane	23.20
Class II Buffered Bike Lane	1.30
Class III Bike Route	13.70

Figure 12: 2018 Bicycle Network

Bicycle Facilities

Bicycle facilities include bikeway treatments, bicycle parking, self-repair stations, and signage. These elements are described below with additional design detail included in the Bicycle and Pedestrian Design Guidelines. This discussion includes what is currently in use in San Leandro and other options that may be utilized during implementation of the Plan.

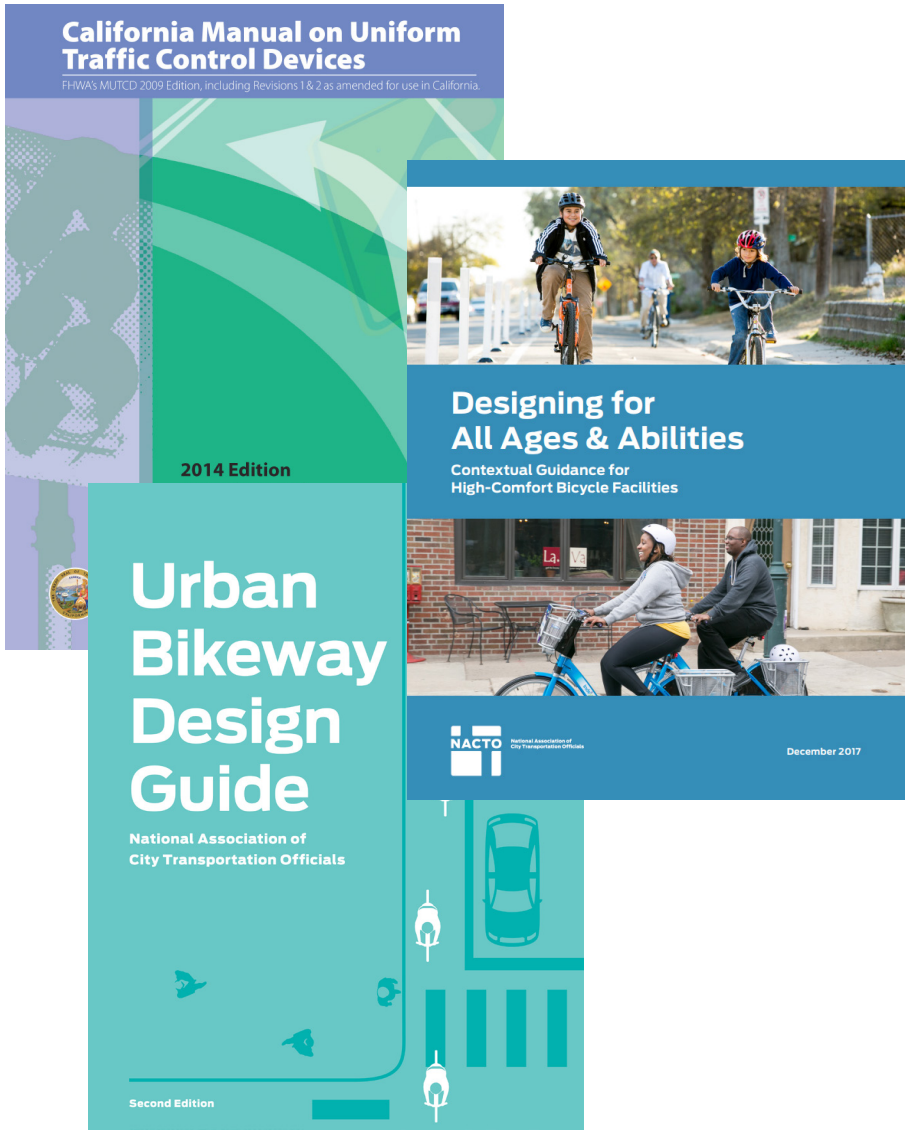
Bikeway Treatments

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 (2016) and Part 9 of the Manual of Uniform Control Devices (CA MUTCD 2014). In 2015, Caltrans published Design Information Bulletin Number 89 (DIB 89). DIB 89 provides official guidance for Class IV Separated Bikeways. These documents follow standards developed by the American Association of State Highway and Transportation Officials (AASHTO), National Association of City Transportation Officials (NACTO), and the Federal Highway Administration (FHWA), and identify specific design standards for various conditions and bikeway-to-roadway relationships.

NACTO recently released "Designing for All Ages and Abilities," a guide that outlines bikeway treatments that would be considered for riders of all ages and abilities. As San Leandro strives to create an "All Ages and Abilities Network," referencing this guide as it designs future bikeways will help ensure that these facilities serve an array of bicyclists.

This 2018 Plan update did not include an update to San Leandro's Bicycle and Pedestrian Design Guidelines. The Alameda County Transportation Commission's Design Guidelines for Central Alameda County provides more up-to-date guidelines and best practices that San Leandro should reference.

Bicycle facilities in San Leandro fall into the following four types which are illustrated on the following pages.



Class I Shared-Use Paths (Trails)

Class I bikeways, also known as trails or shared-use paths, are off-street facilities dedicated exclusively to use by bicyclists and pedestrians. San Leandro currently has 5.2 miles of Class I bikeways.

A Class I shared-use path in the San Leandro Marina Park - part of the Bay Trail.

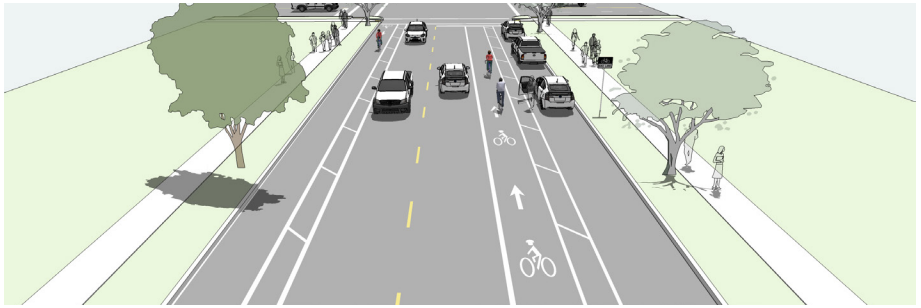
A conceptual rendering of a Class I shared-use path.

Class II Bicycle Lanes and Buffered Bicycle Lanes

Class II facilities are on-street bike lanes. These can be a standard size (minimum 5-feet wide), but can also be enhanced with a painted buffer added to the side of the lane for a higher perception of safety or with green paint for higher visibility. The figures below show a standard Class II bike lane as well as a buffered bike lane. There are currently 23.2 miles of Class II bicycle lanes and 1.3 miles of Class II buffered bicycle lanes in San Leandro.

A buffered bicycle lane on Floresta Boulevard.

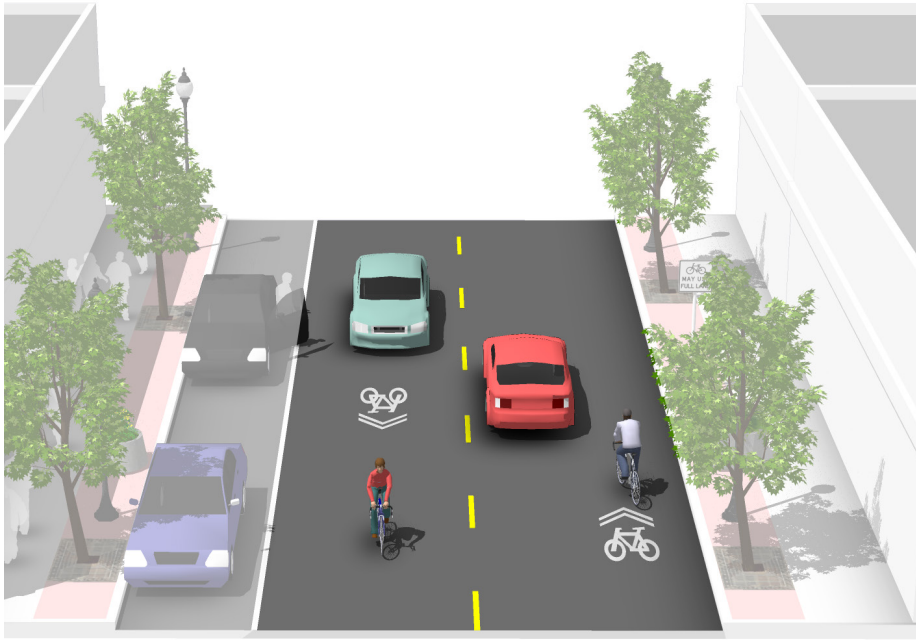
Standard Class II bicycle lanes.



Class II bicycle lanes with a buffer. The buffer can be installed in various configurations.

Class III Bicycle Routes

Class III bike routes are streets where the travel lane is shared by drivers and bicyclists. Class III routes are typically designated on roadways with low levels of motor vehicle traffic and speeds. Class III routes in California require a "Bike Route" sign and can include additional posted signage that say "Bikes May Use Full Lane" or on-pavement "shared lane" markings, or "sharrows." There are currently 13.7 miles of bicycle routes in San Leandro.

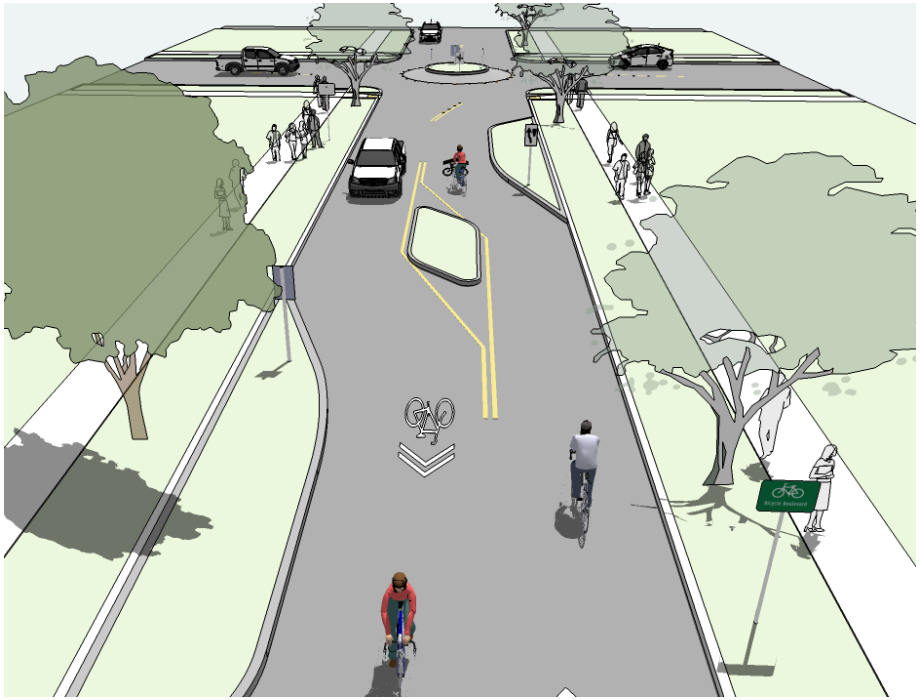


Sharrows on a segment of Bancroft Avenue near San Leandro High School.

Class III Bicycle Boulevards

Bicycle Boulevards are generally defined as low-volume, low-speed streets that have been optimized for bicycle travel using treatments such as traffic calming and traffic reduction, way finding and pavement markings, and intersection crossing treatments. Further guidance on bicycle boulevards can be found within guidance from NACTO and U.S. Traffic Calming Manual.

A bicycle boulevard in Berkeley with signage, roadway markings, and a partial street closure.

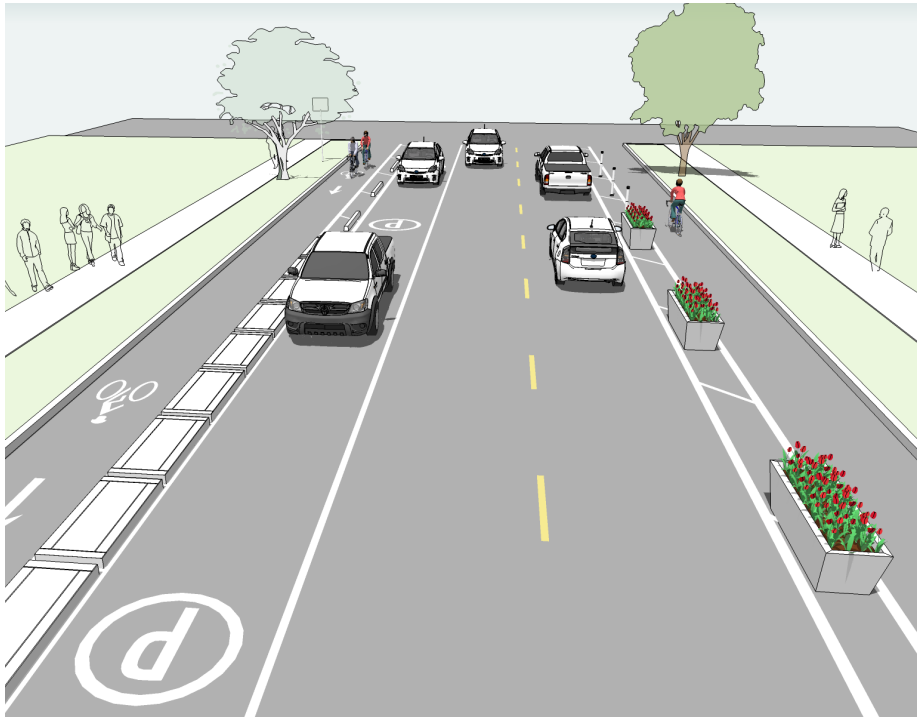


This Class III illustration shows many potential road diet techniques including sharrows, median islands, chicanes, and mini-roundabouts; this illustration is not inclusive of all treatments. Specific treatments should be determined on a street-by-street basis.

Class IV Separated Bikeways

Class IV Separated Bikeways are typically on-street bike facilities that are separated from vehicle traffic by some sort of physical separation such as curbing, plant boxes, bollards, or parked cars. They can provide one-way or two-way travel on either side of the roadway.

A Class IV separated bikeway in Oakland on Telegraph Avenue. This bikeway is separated using both parked cars and bicycle parking.



This Class IV illustration shows various types of separation devices including curbs, automobile parking, flexible posts, and planter boxes.

Other Bikeway Facilities

COLORED BIKE LANES

Colored bike lanes are considered a way to both guide bicyclists through complex intersections as well as to make motorists aware that they are crossing a bike lane. Colored bike lanes are being used by many jurisdictions. (In April of 2011 the FHWA issued an interim approval for the use of green colored pavement in bike lanes.) Green bike lanes tend to be more intensive in terms of materials and maintenance because of the additional paint or thermoplastic needed to establish and maintain the color. Current best practices state the green color should be used for conflict zones, turn pockets, intersection approaches, and other areas where bicyclists and vehicles mix or perform difficult maneuvers.

A small segment of green bike lane on San Leandro Boulevard.

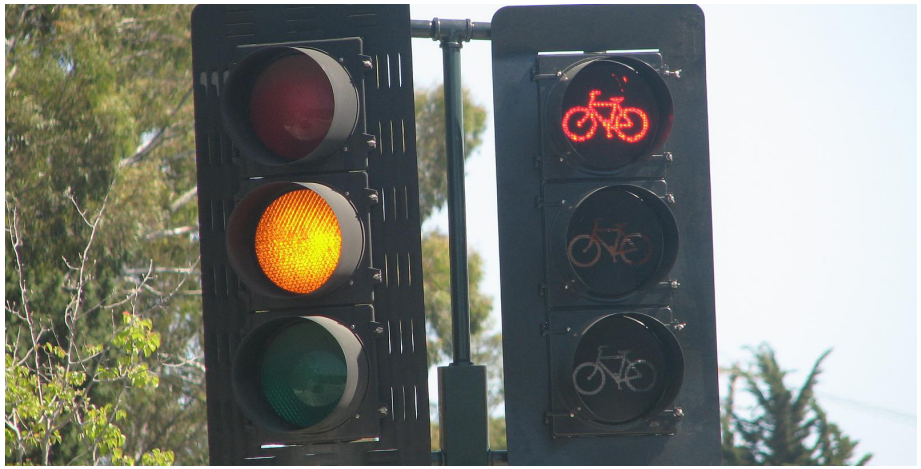
TWO-STAGE TURN BOXES (BICYCLE BOXES)

In July 2017, FHWA granted two-stage turn boxes interim approval; the California MUTCD adopted this interim approval in August of 2017. Bicycle boxes are intended to aid bicyclists in making left turns, by eliminating the need to cross lanes of vehicular traffic to get into the vehicle turn lane. These can also be useful, because it allows bicycles to place themselves in front of stopped traffic, increasing their visibility for drivers. The bikes then reposition themselves to face the correct direction and then proceed through the intersection on the right side of the road. For example, in the picture to the right, for on-coming cyclists that wish to turn left at this intersection, the bicyclist would stay on the right side, cross the intersection and stop in the box. Then following the arrow, the bicyclist would reposition him/herself and would cross the intersection with through traffic when the signal changes.

A bike box at the intersection of Grand Avenue and Telegraph Avenue in Oakland.

PROTECTED INTERSECTIONS & BICYCLE SIGNALS

Protected intersections may be physically protected and/or protected using signal timing. A fully separated bikeway can extend in/through the intersection or can be established with channelized bikeway treatments. These intersections typically require the use of bicycle signals to isolate bicycle movements from conflicting vehicle movements. There are various design options for protected intersections; some are more construction/material intensive than others. Additional guidance on protected intersections can be found in Caltrans DIB 89 and NACTO guides.



A bike signal mounted next to a standard signal in San Luis Obispo.

INTERSECTION APPROACHES

Ideally, bike lanes should extend to intersections and continue on the other side. However, in certain situations due to limited available roadway width, bike lanes may stop before intersection approaches and may not immediately continue on the other side. In circumstances where existing lanes stop short, the appropriate traffic or intersection study should be completed to determine if lane removal/consolidation can be completed to accommodate the extension of the bike lane. New bike lanes should strive to reach the intersection in its initial design. Detailed intersection guidance can be found in NACTO design guidelines.

CONFLICT MARKINGS

Conflict markings are used to indicate conflict points between bicycles and vehicles. Conflict markings indicated using colored boxes or dashed lines and are typically installed at intersection approaches, driveways, and other locations where roadway conditions change. These markings are intended to increase awareness among all road users where conflicts between the modes are likely to occur.

Conflict markings indicate areas where traffic mixes with bike lanes.

Bicycle Parking

Secure bike parking is a necessity for promoting bicycle use, especially for utilitarian trips. People will not cycle to shop, work, or school without a safe place to store their bicycle. Bicycle parking, in the form of bicycle racks, is available at public schools, parks and many other trip attractions. The type of bicycle parking provided at a destination should reflect the type of parking demand expected at the location, i.e. whether facilities are needed for short-term or long-term parking. For example, a shopping mall will need short-term parking for shoppers as well as long-term parking for employees. Bicycle parking categories are defined below.

Bike lockers outside of the San Leandro BART Station.

Long-Term Bicycle Parking

This is parking that protects the entire bicycle and its components from theft, vandalism and the weather. Long-term parking is suitable for a few hours of use up to a full day and is usually found at employment or transit centers. Some long-term installations can also be appropriate for overnight parking, if needed. Examples include bike lockers, bike cages or rooms (locked areas with access for regular users), guarded parking areas (such as bike racks near a parking garage attendant), and valet parking (a bike station). Long-term parking is found at the downtown San Leandro and Bay Fair BART stations. Long-term parking requires more space and is more expensive than short-term parking, but provides greater security from theft.

Bicycle parking located inside the Berkeley Bike Station near the Downtown Berkeley BART Station.

Short-Term Bicycle Parking

Short-term bicycle parking is defined as a bicycle rack to which the frame and at least one wheel can be secured with a user-provided lock. 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 about two hours. Short-term bicycle parking is usually implemented using inverted U-racks or bicycle corrals. Short-term racks should provide two points of contact for the bike, be adequately spaced apart from neighboring racks, and should be sufficiently setback from walls and other street furniture/utilities. In addition, bicycle racks (and the bicycles parked at the racks) should be located outside the typical pedestrian travel path and not conflict with parked cars or passengers entering/exiting parked vehicles. Bike racks should be placed in a highly visible and illuminated location, and should be within close proximity to the intended destination.

Inverted U-racks are the standard device used to provided short-term parking.

A decorative circular bike rack in San Francisco.

An on-street bicycle corral in Berkeley.

Bicycle Signage & Wayfinding

A good bicycling and walking environment includes both supportive facilities and an easily navigable network. Wayfinding signs and information assist residents, tourists, and visitors find local destinations. Signs may also include "distance to" information, which displays mileage to community destinations.

San Leandro is in close proximity to trails, recreational, and commercial/ retail opportunities, such as Bay Trail and Downtown San Leandro. A city-wide wayfinding system and map can raise awareness and improve access for residents and visitors to community assets.

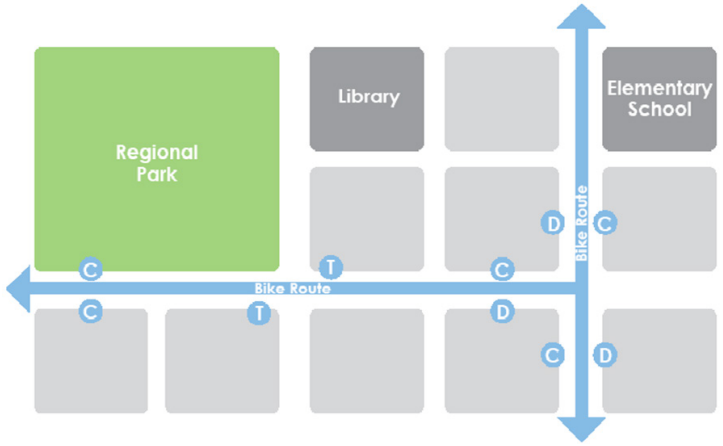


Figure 13: Example wayfinding sign placement. Letters correspond to sign type.

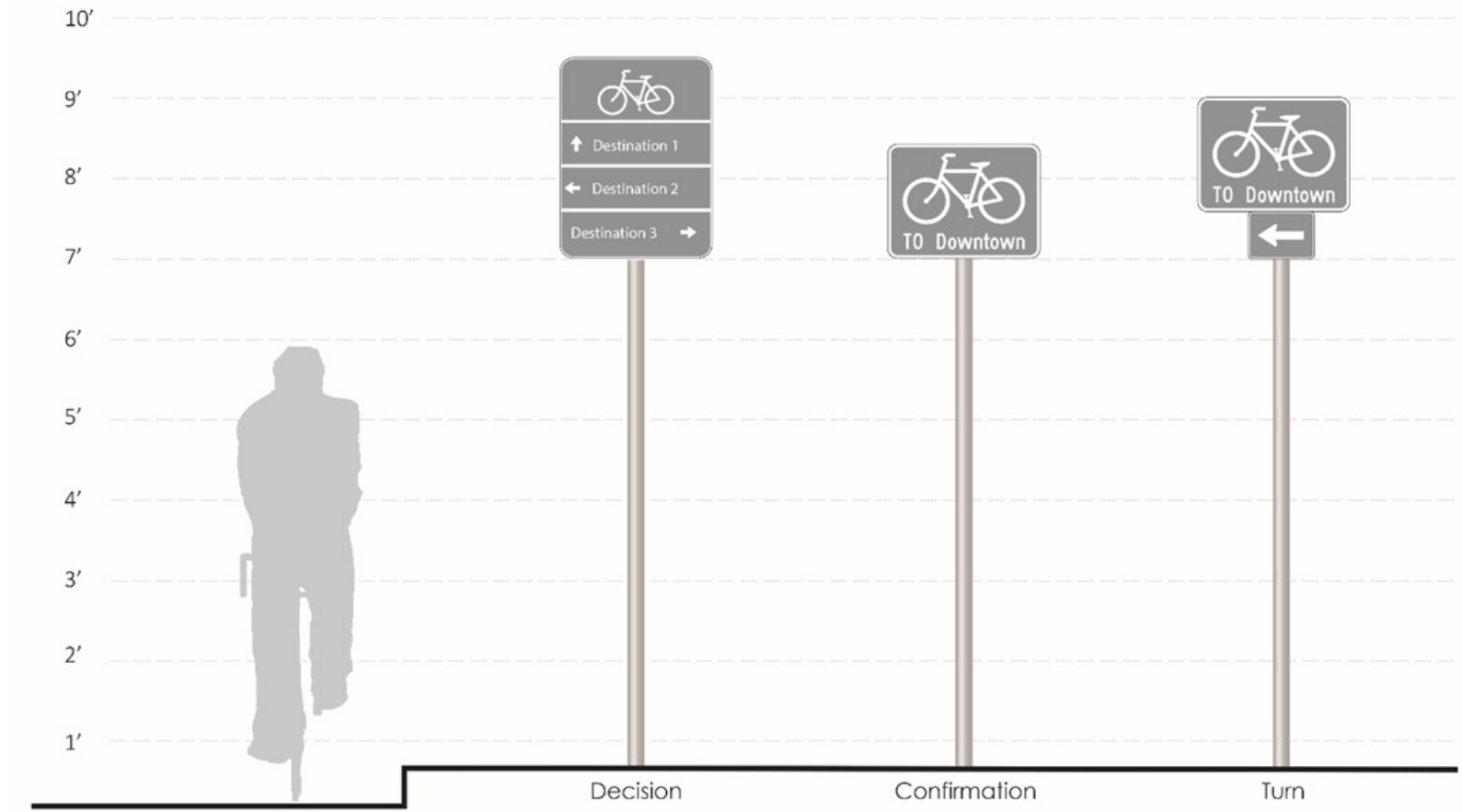


Figure 14 Examples of three types of wayfinding signs: Decision Signs, Confirmation Signs, and Turn Signs.

Existing Conditions

Existing and Future Bicycle Commuter Population

Based on journey to work data from the 2015 American Community Survey: 5-Year Data (2011-2015) (Table 6), it is estimated that 1 percent of San Leandro resident commuters use a bicycle as their primary means of transportation to work. This represents an estimated 370 work based daily bicycle trips. It should be noted that this data does not account for commuters with multiple modes of travel to and from work, such as commuters that ride a bicycle to a BART station before transferring to transit for the remainder of their trip. In these surveys, such trips would be counted as a transit trip. In addition, the census data fails to capture people who commute by bicycle only one or two days per week. Consequently, it is understood that the number of actual commuter bicycle trips is higher than what is represented here.

This sample of the commuter population represents only a percentage of the total cyclists within the City. Cycle trips made for school, shopping, and recreational purposes often represent a large percentage of total bicycle trips, but are not captured within census based surveys.

The future bicycle commuter population will depend on a number of factors such as the availability of well-connected facilities (bikeway and bicycle parking), population density, and type of future land development. With the current emphasis in San Leandro on transit-oriented development and use of alternative transportation modes for environmental and personal health reasons, it would be expected that the popularity of bicycling would increase at an even greater rate than what has occurred historically. For these reasons, it is estimated that with implementation of the recommended bicycle network, the commuter mode split would reach an estimated 3 percent of the mode share representing approximately 1,200 work-based daily bicycle trips. This should also grow non-work bicycle trips as well.

Commuters stopping by the Energizer Station at San Leandro BART on Bike to Work Day were greeted by City Staff and two Councilmembers.

Bikes parked outside of the San Leandro BART station.

Table 6 - Journey to Work Mode Share for the City of San Leandro

Mode (home-based work trips)	1990	2000	2006-2008	2010-2015
Drive Alone	73.8%	70.3%	70.6%	70.4%
Carpool	11.8%	13.1%	9.8%	9.9%
Public Transit	9.2%	10.2%	12.2%	12.4%
Bicycle	0.5%	0.6%	0.8%	0.9%
Walk	2.4%	1.9%	2.2%	1.9%
Other	1.4%	1.1%	0.9%	1.5%
Work at Home	0.8%	2.4%	3.5%	3.1%
Source 1990 and 200 U.S. Census; American Community Survey 2006-2008; 2010-2015				

Connections to Regional Bikeways & Adjacent Jurisdictions

While bicycle connectivity within San Leandro is the main focus of this plan, connections to the regional bicycle networks and adjacent communities are also important; bicycle trips do not always end at the city limits.

REGIONAL BIKEWAYS IN SAN LEANDRO

There are several routes in the San Leandro bikeway network designated as routes of county or regional significance. When considering improvements and additions to San Leandro's bicycle network, ensuring connectivity with neighboring jurisdictions is an important consideration. Both Alameda County and the City of Oakland are currently in the process of updating their respective bicycle plans. Working with neighboring jurisdictions is important to help ensure that bike facilities do not stop at city limits and continue into the neighboring area. Improving these inter-city connections can benefit both commute, recreational, and utilitarian trips.

The following list provides projects that were listed in countywide or regional plans. Some projects were listed in multiple plans.

- **Alameda County Bike Plan** (2012)
  - East Bay Greenway
  - Bike facilities on the Bancroft-Hesperian-Fairmont Corridor
  - Bike facilities on the Doolittle-Farallon-Wicks Corridor
  - Bike facilities on the Lake Chabot Road-Estudillo corridor
  - Hesperian Boulevard
  - San Leandro Boulevard
- Alameda County Transportation Commission Central County Complete Streets Design Guidelines (2016)
  - Bike facilities on the Bancroft-Hesperian-Fairmont corridor

- Alameda County Transportation Commission Multimodal Arterial Plan (2016)
  - Bike facilities on the Bancroft-Hesperian-Fairmont corridor
  - Hesperian Boulevard
  - San Leandro Boulevard

SAN FRANCISCO BAY TRAIL IN SAN LEANDRO

San Leandro contains segments of the San Francisco Bay Trail along the San Leandro waterfront between Oakland to the north and San Lorenzo to the south. The Bay Trail facilities are also included on the Alameda Countywide and Regional Bikeway networks. Most of the Bay Trail consists of Class I bike paths with the exception of a short segment of Class III bike route on Neptune Drive between the Oyster Bay Regional Shoreline and Marina Boulevard. Included in the Bay Trail network are path loops around Oyster Bay Regional Shoreline, Mulford Point, and the Small Boat Lagoon in Marina Park. Much of this alignment has paved or unimproved pathways but most do not meet the standards for Class I shared-use paths. The San Leandro Bay Trail Slough Bridge provides a needed connection for the Bay Trail between San Leandro and Oakland.

SAN LEANDRO CREEK

The San Leandro Creek runs from Lake Chabot westward through the Cities of San Leandro and Oakland into San Leandro Bay. Through a collaborative effort between the two cities and partner agencies such as Caltrans and Friends of the San Leandro Creek, a creek master plan was produced to provide bicycle facilities along and parallel to the creek. The creek was divided into eight segments; Segments 5-8 are located within San Leandro. In San Leandro, the creek master plan primarily proposes on-street bikeway facility improvements, with one segment of Class I facilities along the creek.

A popular segment of the San Francisco Bay Trail in the San Leandro Marina Park.

CONNECTIONS TO ADJACENT JURISDICTIONS

The San Leandro bikeway network was designed, in part, to provide connection to facilities in adjacent communities.

To the north, from west to east, connections include:

- From the bicycle/pedestrian bridge across Oyster Bay, the San Francisco Bay Trail extends north to Oakland on an existing Class I bike path to Airport Drive.
- The existing Class II bike lanes on Doolittle Drive connect to existing Class II bike lanes in Oakland.
- The proposed Class I bike path on the East Bay Greenway will connect to the proposed Class I bike path in Oakland.
- The existing Class II bike lanes on San Leandro Boulevard will connect with proposed Class II bike lanes in Oakland. This segment also connects to a proposed Oakland bicycle boulevard on Apricot Street.
- The existing Class III bike route on East 14th Street will connect with proposed Class II bike lanes on International Boulevard in Oakland.
- The existing Class II bike lanes on Bancroft Avenue connect with existing Class II bike lanes in Oakland.
- The existing Class III bike route (proposed Class II bike lanes) on MacArthur Boulevard connects to proposed Class II bike lanes in Oakland.
- The proposed Class II bike lanes on Foothill Boulevard will connect with proposed Class II bike lanes in Oakland.

To the south and east of San Leandro, Alameda County has jurisdiction in San Lorenzo, Castro Valley, and other unincorporated areas. Bicycle planning for these areas is set forth in the Alameda County Bicycle Master Plan for Unincorporated Areas. Although Hayward is not discussed in this section because it does not share a common border with San Leandro, some primary bicycle routes, such as the Bay Trail and Hesperian Boulevard, continue south through San Lorenzo into Hayward. Specific connections from San Leandro going west to east include:

- Existing segments of the Bay Trail continue south along the shoreline through San Lorenzo.
- The proposed Class IV bikeway on Washington Avenue will connect with existing Class II bike lanes in San Lorenzo.
- The Hesperian Boulevard Study Corridor will connect to the existing Class III bike route in San Lorenzo. This route is also included on the Alameda Countywide bicycle network.
- The Lewelling Boulevard Study Corridor will connect to the east with existing Class II bike lanes. This route is also part of the Regional and Alameda Countywide bicycle networks.
- The proposed East Bay Greenway (Class I bike path) will continue southeast from San Leandro to connect with the proposed facility through Ashland. This facility is designated on the Alameda Countywide bicycle network.
- The East 14th Street Study Corridor will connect with existing Class III bike route in Ashland.
- The proposed Class IV facility on Fairmont Drive will connect to an existing Class II bike lane in Castro Valley.
- The proposed Class III Bicycle Boulevard on Estudillo Avenue (east of I-580) will provide a connection into Lake Chabot Park.

EAST BAY GREENWAY

The East Bay Greenway is a proposed 16-mile regional trail facility that will connect Oakland, San Leandro, unincorporated Alameda County, and Hayward. The trail will link the Lake Merritt BART Station with the South Hayward BART Station and the five BART Stations in between. The project route will follow BART's rail alignment. 12 miles of the project corridor is shared with the Union Pacific Oakland Subdivision, a freight rail line. Two route options (rail-to-trail and rail-with-trail) are being considered. The project is intended to be built as a Class I Shared Use Path facility, wherever right-of-way and conditions allow. The Cities of Oakland, San Leandro, and Hayward, Alameda County, BART, the East Bay Regional Park District, Caltrans and the Alameda County Transportation Commissions are participating stakeholders.

Part of the potential East Bay Greenway alignment shared with Union Pacific. Photo taken between Bay Fair and San Leandro BART Stations, near Washington Avenue.

End of Trip Facilities

Bicycle travel requires a network of supporting amenities in order to be convenient and appealing as an everyday means of transport. Safe and convenient bicycle parking is the most critical end of trip facility. Bicycle self-repair stations provide riders with free and easy access to air pumps and basic tools to perform basic repairs and adjustments. Showers, lockers, and/or changing rooms are practical for long commute rides or changing between cycling and work clothing. These amenities are not just amenities, but can remove barriers (both physical and perceived) for existing and potential bicycle commuters. By giving people options to change/store clothes and clean up, some people may be more inclined to commute by bike. However, much like bicycle parking, these facilities need to be located close to bicycle riders' destinations.

BIKE STATIONS/HUBS

Bike stations/hubs are a beginning/end of trip facility that at minimum provides secure bicycle parking; but can also provide other services such as showers and changing rooms/lockers, bike repair services, bike rentals, valet parking, and part and accessory sales. Bike Stations have been implemented in a variety of ways across the country and around the world. They can be built-in unattended (no employees), partially attended (staffed 3-4 hours per day), and fully attended (staffed during business hours) formats. Downtown San Leandro, near the BART station should be considered for a bike station. The bike station would bring several bicycle amenities to the Downtown area, which could entice additional bicycle riders, both to work and to BART.

BICYCLE SHOPS

Bicycle shops dispersed throughout the community also play an integral role in all aspects of cycling from fixing a quick flat to keeping one's bicycle in proper riding condition.

Inside the Berkeley Bike Station near Downtown Berkeley BART.

PUBLIC SHOWER FACILITIES

While there are no "public" shower facilities for bicyclists in San Leandro, one option that some bicycle commuters do have is to shower at a gym near their destination (these locations are indicated in Figure 15). While this will require the purchase of a gym membership, which can be cost prohibitive for some users, gyms can provide bicyclists with shower and locker facilities where they can change and store clothes. Some municipalities have built public shower facilities or partner with bike stations or gyms that already provide these services to increase their access. The location of new facilities should occur near transit centers and dense commercial/office areas like downtown San Leandro.

BICYCLE PARKING FACILITIES

While discussed in more detail above, parking is one of the most important considerations bicyclists make when planning their journeys. Additional parking facilities are proposed throughout San Leandro. Bicycle parking facilities are proposed at activity generators around the city including commercial centers, parks, and downtown. On-street bike corrals may also be appropriate in areas with high concentrations of bicycle traffic. Some San Leandro schools report needing additional or improved bicycle parking facilities; recommendations for these schools have also been included. These parking recommendations include both short-term parking racks and bike lockers.

Bicycle racks are the main type of bicycle parking available for public use in San Leandro. Although not shown on the map, bicycle racks are provided at each of the public schools. Racks are also located at the major retail centers, libraries, government buildings, and recreational destinations. The two BART stations have both bicycle racks and bicycle lockers.

San Leandro has adopted a bicycle rack program which regulates bicycle rack installation in the public right of way and offers free bike racks in business districts.

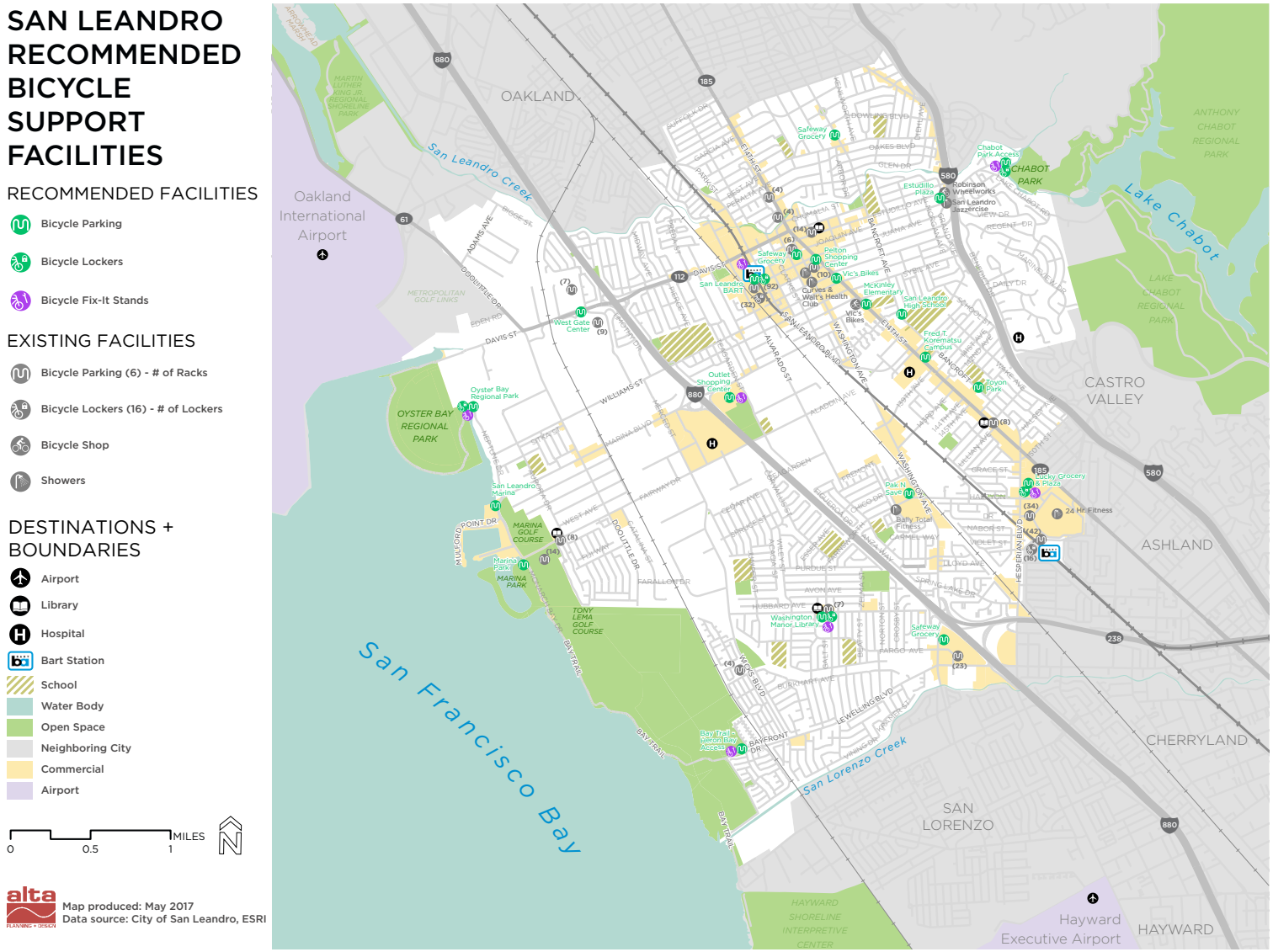
SELF-REPAIR/FIX-IT STATIONS

San Leandro currently does not have any bike self-repair stations. These stations allow riders to perform basic repairs and maintenance such as changing a tire, adjusting a seat, and using an air pump using secured communal tools. Self-repair stations can be both outside on the sidewalk or in a park and located inside. This plan proposes seven self-repair stations: downtown San Leandro, Lake Chabot Park, Oyster Bay Regional Park, Washington Manor Library, Bayfair Center, and Lincoln High/Burrell Fields/Marina Square.

Existing and proposed end of trip facilities can be seen in Figure 15.

An outside self-repair station and air pump located near a trail.

Figure 15: Existing and Proposed Support/End of Trip Facilities



Needs Analysis

San Leandro has many qualities favorable to bicycle riding, including a temperate climate, flat terrain, and scenic recreational resources along the Bay and in the hills. Based upon field review and input from the public, City staff and the BPAC, several issues were identified that currently deter bicycling in San Leandro by residents and visitors. These include:

Heavy Traffic: Major east-west connectors such as Davis Street, Marina Boulevard, Lewelling Boulevard, and Estudillo Avenue; and north-south connectors such as Bancroft Avenue, Doolittle Drive, San Leandro Boulevard, East 14th Street, Hesperian Boulevard, and Washington Avenue all contain many major intersections and carry high traffic volumes, including significant truck traffic, which are not conducive to a comfortable bicycling environment.

Narrow Streets: While many of the major arterials are wide enough for multiple travel lanes, some streets do not have enough width to accommodate the heavy traffic and parking demands while also providing separate lanes for bicycle travel. In addition, many of the collector streets, such as Manor Boulevard and Teagarden Street that would be considered as good bicycling alternatives to the busy arterials, are very narrow for the high volumes of traffic that they already carry.

Barriers: San Leandro has many barriers that disrupt the typical grid system. Because of these barriers (three railroad corridors, Interstates 238, 580 and 880), there are limited continuous crossings east-west across the city. Bicyclists are forced to share these access routes with heavy volumes of automobile and truck traffic. While lower volume collectors or residential collectors would be more favorable for bicycle traffic, these streets often do not provide the needed connections across the rail and freeway barriers. Crossings over or under the highways and railroad corridors are generally narrow; many of the freeway interchanges pose additional hazards for bicyclists when navigating traffic at freeway on and off-ramps.

Hesperian Boulevard approaching Thornally Drive near Bay Fair BART.

Pavement Condition: Maintenance of streets designated for bicycle facilities is particularly important as bicyclists are especially susceptible to potholes and road debris. While some of the roadways in San Leandro are in good shape, poor pavement condition was noted on a large number of streets.

Right Turn Lanes: There are many free right and right turn only lanes at intersections in San Leandro. While these lanes may be needed to accommodate traffic volumes at the intersection, they pose a hazard to through cyclists on these roadways. The recommended treatment for a bike lane through an intersection with a right turn only lane would be to provide a through bike lane to the left of the right turn only lane. This configuration has been done at many locations in the City (for example, Williams Street at Doolittle Drive, Westgate Parkway, and Merced Street). Sometimes, a green bike lane is also provided to enhance the bicycle safety at the intersection.

Facilities for All Types of Bicyclists: There are many types of bicyclists in San Leandro. They vary in skill and in their willingness to ride in traffic, ranging from experienced adult cyclists who will ride on any street, to casual adult or novice cyclists who are intimidated by high traffic volumes and speeds, to child cyclists who often do not have the skills and experience to safely navigate busier streets. The proposed network should consider the needs of all types of bicyclists, providing a combination of arterial routes, bike lanes, local streets, and bike paths; creating an all ages and abilities network by utilizing various types of bikeway facilities including Class IV Separated Bikeways and Class III Bicycle Boulevards.

Connectivity to Destinations and Surrounding Facilities: In order to serve all attractions, a fairly fine-grained bikeway network is needed. It must geographically cover the entire city and provide routes that serve all types of bicyclists. Recognizing that some cyclists prefer the most direct route, accommodation is needed on the major arterials and collectors in addition to providing facilities on residential streets that may be more attractive to other bicyclists. A complete network that serves all types of bicyclists should make connections to employment, shopping, recreation, and school destinations in addition to making links to facilities in adjacent communities.

Bicycle Parking and Other End of Trip Facilities: Secure and convenient bicycle parking is imperative to encourage cycling trips. Some bicycle parking, primarily short-term bicycle racks, is available in San Leandro at schools, parks, government offices, and some retail establishments. More short-term bicycle racks for utilitarian trips and long-term parking for employees are needed throughout the City. The City should look to add other facilities like self-repair stations and incorporate bike stations and other shower/changing facilities with appropriate future developments.

With high volumes of freight traffic, this Class II lane along Merced Street, would not be comfortable or low-stress for many types of bicyclists.

Proposed Bikeway Improvements

Improvements to the bicycle environment as presented in this Plan fall into the following categories:

- Bikeway network
- Spot improvements
- Bicycle parking/end of trip facilities

These are discussed below. Support programs, such as education, promotion and enforcement are discussed in Chapter 5.

The Bikeway Network

The recommended bikeway network is a backbone of primary routes; it is not meant to accommodate every bicycle trip in the City. Once completed, this network would furnish safer and more direct routes for the majority of those bicycling within San Leandro. It considers the range of age, comfort, and skill level of those that chose to travel by bicycle.

The bikeway network is a tool that allows the City to focus and prioritize implementation efforts where they will provide the greatest community benefit. Streets or corridors selected for inclusion in the network should be targeted for specific improvements, such as the installation of bicycle lanes or traffic calming, and should receive regular maintenance, such as sweeping and pavement repair, to keep these roadways in good bicycling condition.

However, it is important to recognize that, by law, bicyclists are allowed on all streets and roads regardless of whether or not they are a part of the bikeway network. Consequently, all streets should be improved for safer bicycle travel when opportunities arise following the guidelines provided in the San Leandro Bicycle and Pedestrian Design Guidelines, MTC's Complete Streets Checklist, and best practices for bicycle accommodation.

Two happy bicyclists on their way to work.

BIKEWAY SELECTION CRITERIA

The proposed system was developed according to the following planning criteria:

Coverage: The system should provide equitable, safe and direct access from all residential neighborhoods to both commute and recreation routes. In essence, the system should provide a bicycle facility within one-half mile of any residential street.

System Rationale: Each link in the system should serve one or a combination of these purposes: recreation, connection, and commuting. Bikeway links should

be continuous with a minimal number of arterial crossings and uncontrolled intersections. Each update to the network should strive to limit and close gaps wherever feasible.

Connection of Employment Centers: Downtown, business parks, major retail, and other employment centers should be accessible from all neighborhoods by a reasonably direct system.

Connection of Schools, Libraries, Parks, commercial/retail areas, and transit centers: Schools, libraries, and parks should be connected to surrounding residential neighborhoods by bikeways. While not serving every residential street, the bikeway system should serve as feeder routes where special safety features can be provided at busy intersections. Additionally, the bicycle network should provide connections to other activity generators including commercial/retail areas, and transit centers such as the City's two BART stations.

Connection to Regional Bikeways: The bikeway system should allow continuous access to potential regional bikeway routes and routes in adjacent communities, such as the Bay Trail and East Bay Greenway.

Suitability of Bikeway Type: The characteristics of a roadway determine whether that roadway is suitable for inclusion in the network and, if so, what type of facility should be prescribed. Roadway width is a key factor in determining what bicycling improvements can be made. Roadways should also be assessed by traffic speed, volume of car and truck traffic, and roadway hazards. The ages, comfort level, and skill levels of expected bicyclists should be considered. Recommended bikeway cross-sections are illustrated in the San Leandro Bicycle and Pedestrian Design Guidelines.

PROPOSED NETWORK

The proposed bikeway network is illustrated on Figures 16-21. The proposed system includes a total of 37 miles of new bikeway facilities in addition to the 43.4 miles currently in place. Specific improvements will be defined during the design phase for each project following the standards set forth in the San Leandro Bicycle and Pedestrian Design Guidelines. Table 6 shows the number of existing and proposed miles for each bikeway classification. In addition to the bicycle network, spot location improvements and bicycle parking improvements are recommended and discussed below.

Each bikeway was further divided into segments, as needed, to describe the different roadway characteristics and recommended improvements. The proposed improvements by segment are presented in Tables 7-13.

Table 7 - Existing & Proposed Bikeway Length by Class

Length (miles) of System by Bikeway Classification			
Bikeway Classification	**Existing**	**Proposed****	**Total****
Class I	5.20	6.15	11.35
Class II	23.20	3.65	26.85
Class II Buffer	1.30	4.30	5.60
Class III	13.70	4.64	18.30
Class III Bicycle Boulevard	0	14.31	14.31
Class IV	0	8.10	8.10
Study Corridor*	-	*14.60*	-
Total	43.4	41.20	84.6

** Not included in total. Study Corridors are streets that require additional study (parking occupancy, traffic, intersection, etc.) and public input before bikeway decisions can be made.*

*** Totals include the lengths of existing bikeways proposed to be upgraded.*

Class I Shared Used Paths (Trails)

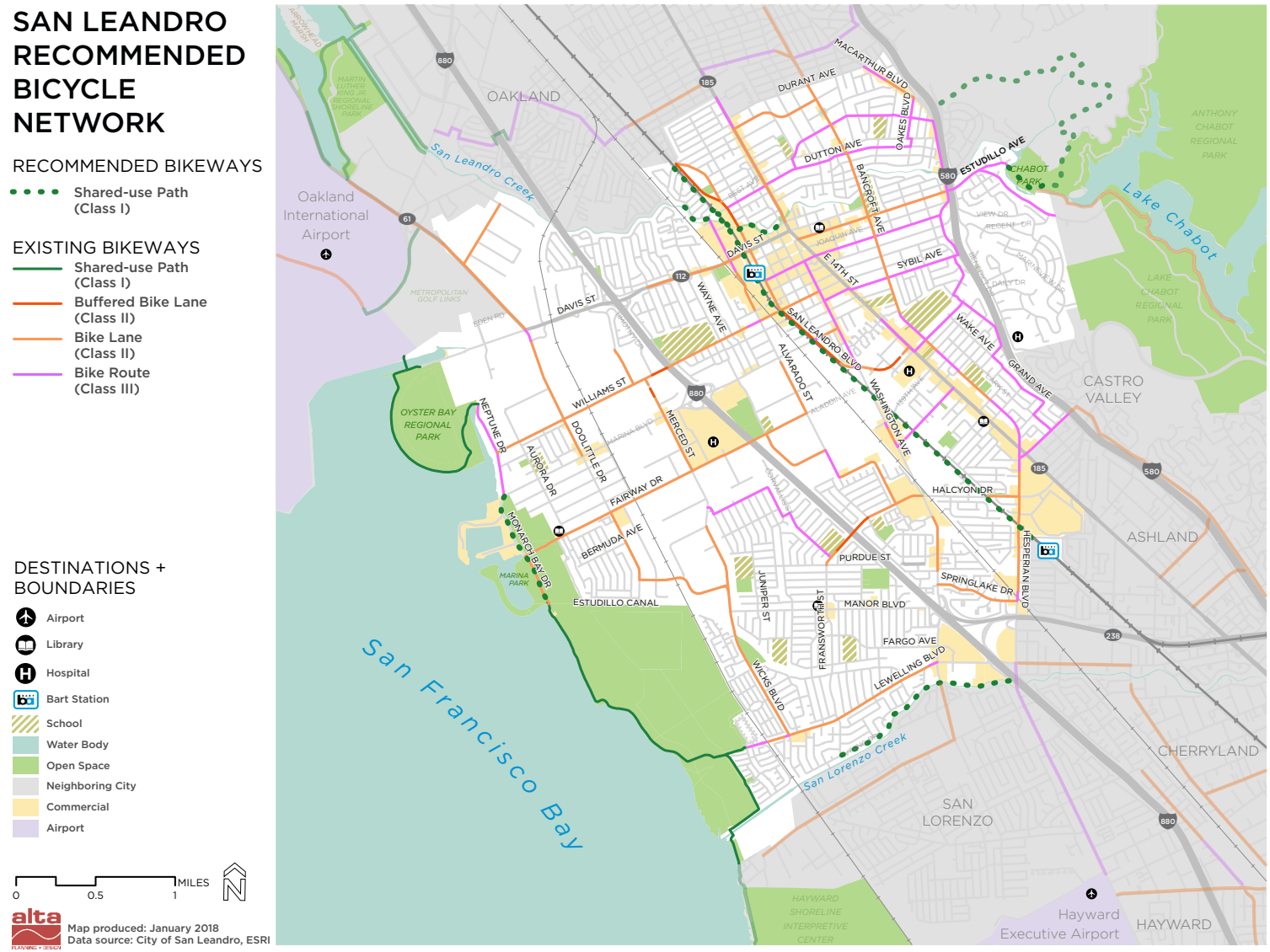
Class I bikeways, also known as trails or shared-use paths, are off-street facilities dedicated exclusively to use by bicyclists and pedestrians. Figure 16 shows the Class I facility recommendations. There are **6.15 miles** of proposed Class I facilities.

Table 8 - Recommended Class I Bikeways

Recommended Class I Shared-Use Paths			
Street Name	*Start*	*End*	*Length (mi)*
East Bay Greenway	Thornally Drive	W. Broadmoor Boulevard	3.30
Monarch Bay Drive	Flood Control Channel	Neptune Drive	0.75
San Leandro Creek	UPRR Niles Subdivision	East 14th Street	0.80
San Lorenzo Creek	Hesperian Boulevard	Farnsworth Street	1.30

Part of the potential alignment of the East Bay Greenway, which would be a Class I shared-use path.

Figure 16: Recommended Class I Bikeways



Class II Bicycle Lanes

Class II facilities are on-street bike lanes. These can be a standard size (minimum 5-feet), but can also be enhanced with a painted buffer added to the side of the lane for a higher perception of safety or with green paint for higher visibility. The inclusion of gutter seams when determining the width of bike lanes can be detrimental to bicyclists when bike lanes are less than 6 feet wide, as gutter seams can present additional concerns to bicyclists like additional road debris and uneven surfaces.

There are **3.65 miles** of proposed Class II facilities and **4.30 miles** of Class II Buffered facilities.

Table 9 - Recommended Class II Buffered Bikeways

Recommended Class II Buffered Bike Lanes			
Street Name	*Start*	*End*	*Length (mi)*
Alvarado Street	Fremont Avenue	Davis Street	1.53
Fairway Drive*	Monarch Bay Drive	Alvarado Street	1.98
Halcyon Drive	Hesperian Boulevard	BART Tracks	0.22
Springlake Drive	Hesperian Boulevard	Washington Avenue	0.52

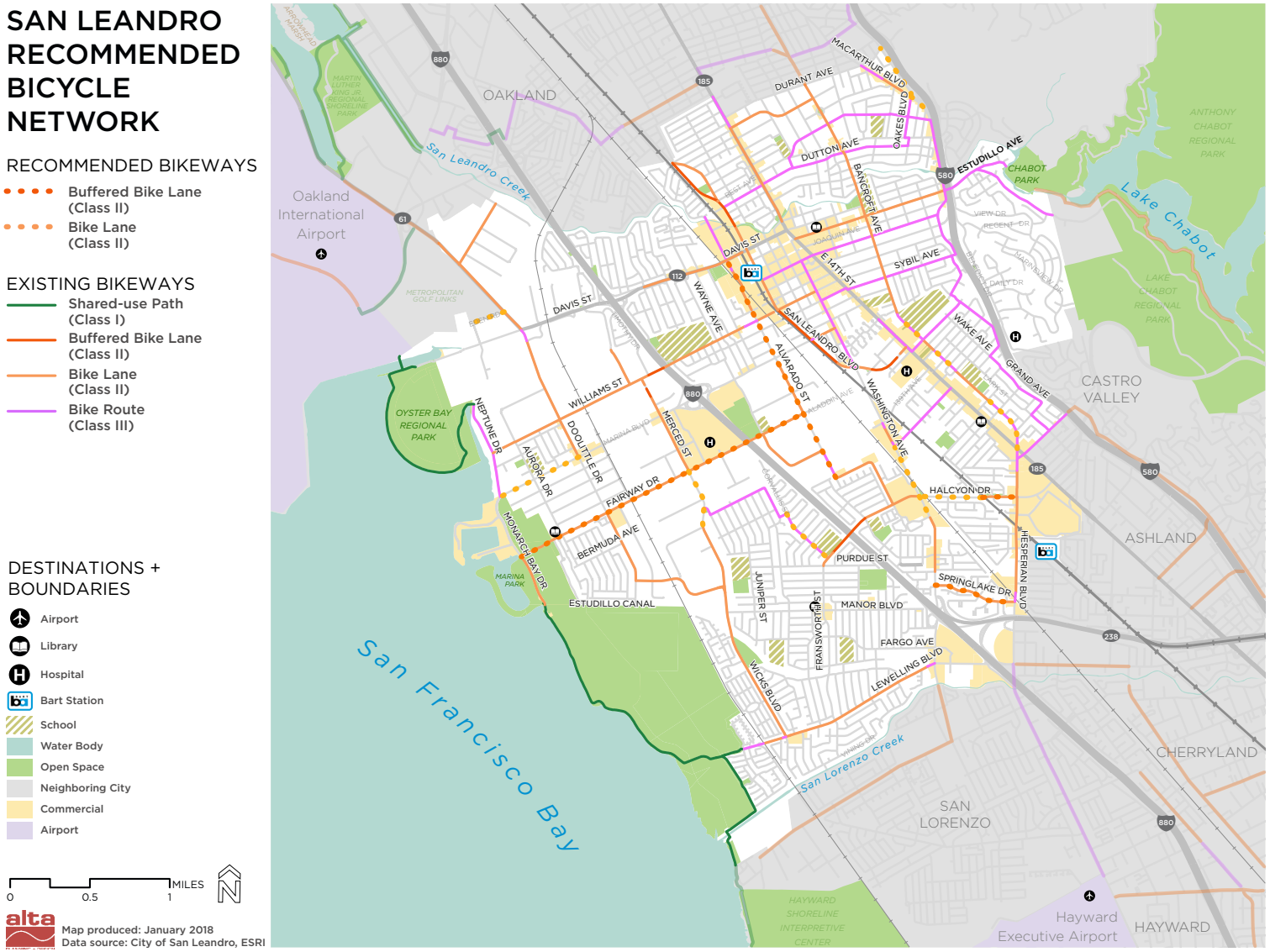
*No buffer can be provided on the current I-880 overcrossing due to width constraints.

Table 10 - Recommended Class II Bikeways

Recommended Class II Bike Lanes			
Street Name	*Start*	*End*	*Length (mi)*
Bancroft Avenue*	East 14th Street	200 ft. S of Blossom Way	0.79
Corvallis Street	Ottawa Avenue	Farnsworth Street	0.39
East 14th Street	Chumalia Street	Estudillo Avenue	0.14
Eden Road	End of Street	Doolittle Drive	0.20
Halcyon Drive	BART Tracks	Washington Avenue	0.39
MacArthur Boulevard	Superior Avenue	Fortuna Avenue	0.13
Marina Boulevard	Neptune Drive	Doolittle Drive	0.55
Merced Street/Wicks Boulevard	Fairway Drive	Burroughs Avenue	0.38
San Leandro Boulevard	Creekside Plaza	Park Street	0.19
Washington Avenue	Caliente Drive	143rd Avenue	0.49

*Bike lanes are recommended for three segments: East 14th Street-146th Avenue, 142nd Avenue-138th Avenue, and 136th Avenue-200 ft. S of Blossom Way.

Figure 17: Recommended Class II Bikeways



Class III Bikeways

Bicycle Routes

Class III bike routes are routes where the travel lane is shared by drivers and bicyclists. Class III routes are typically designated on roadways with low levels of motor vehicle traffic and speeds. Class III routes in California require a "Bike Route" sign and can include additional posted signage that say "Bikes May Use Full Lane" or on-pavement "shared lane" markings, or "sharrows." There are **4.64 miles** of proposed Class III facilities.

An example of sharrows with angled arrows directing riders where the bicycle route continues.

Table 11 - Recommended Class III Bicycle Routes

Recommended Class III Bicycle Routes			
Street Name	*Start*	*End*	*Length (mi)*
Andover Street	Burkhart Avenue	Lewelling Boulevard	0.19
Bermuda Avenue	Aurora Drive	Doolittle Drive	0.35
Burkhart Avenue	Wicks Boulevard	Norton Street	0.76
Dolores Avenue	Grand Avenue	East 14th Street	0.78
Monterey Boulevard	Alvarado Street	Washington Avenue	0.93
Norton Street	Washington Manor Park	Burkhart Avenue	0.49
Oyster Bay Regional Park	Existing trail	Existing trail	0.32
Peralta Avenue	San Leandro Boulevard	End of cul-de-sac	0.14
Timothy Drive	Williams Street	Davis Street	0.68

Bicycle Boulevards

Bicycle Boulevards are generally deemed as low-volume, low-speed streets that have been optimized for comfortable bicycle travel using treatments such as traffic calming and traffic reduction, way finding and pavement markings, and intersection crossing treatments. Bicycle boulevards can be used as an alternative to arterials. Additional guidance on bicycle boulevards can be found from NACTO and the U.S. Traffic Calming Manual. This plan recommends **14.31 miles** of Bicycle Boulevards.

A bicycle boulevard in Berkeley that has been designed with pavement markings and a striped chicane.

Table 12 - Recommended Class III Bicycle Boulevards

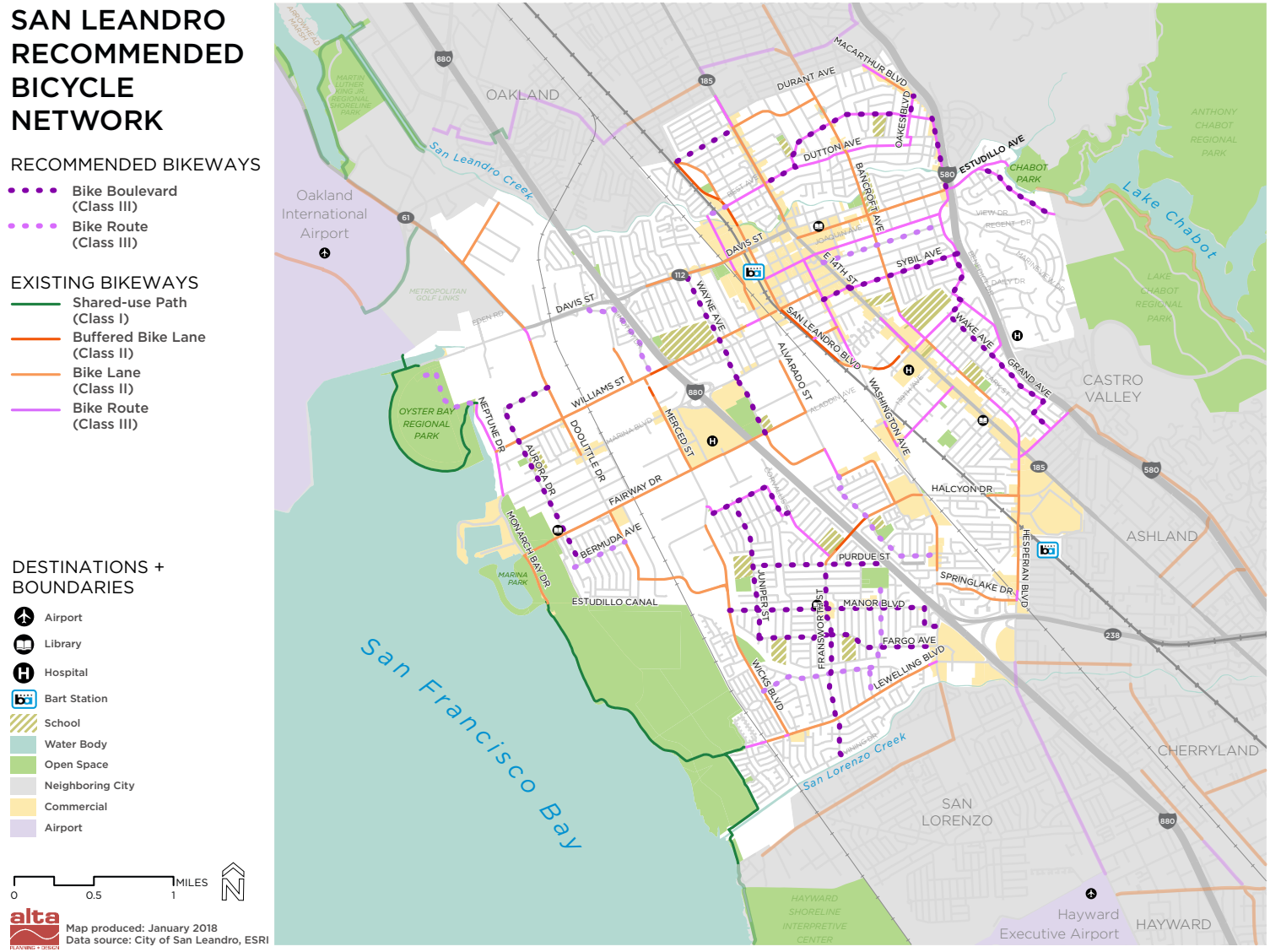
Recommended Class III Bicycle Boulevards			
Street Name	*Start*	*End*	*Length (mi)*
Aurora Drive	Polvorosa Avenue	Bermuda Avenue	1.40
Castro Street	East 14th Street	Washington Avenue	0.18
Cedar Avenue	Merced Street	Corvallis Street	0.68
Dayton Avenue	Farnsworth Street	Juniper Street	0.48
Fargo Avenue	Farnsworth Street	Washington Avenue	0.69
Farnsworth Street	Vining Drive	Purdue Street	1.22
Grand Avenue - Evergreen Avenue - School Street - Wake Avenue - Halsey Avenue - Lark Street	Sybil Avenue	Fairmont Drive	1.80
Juniper Street	Dayton Avenue	Cedar Avenue	0.88
Lake Chabot Road	Estudillo Avenue	City Limits	0.56
MacArthur Boulevard	Superior Avenue	Estudillo Avenue	0.65
Manor Boulevard	Wicks Boulevard	Washington Avenue	1.43
Oakes Boulevard	East 14th Street	MacArthur Boulevard	1.27
Purdue Street	Crosby Street	Juniper Street	0.79
Sybil Avenue	Grand Avenue	East 14th Street	0.71
Teagarden Street	Fairway Drive	Marina Boulevard	0.39
W Broadmoor Boulevard	San Leandro Boulevard	East 14th Street	0.42
Wayne Avenue	Marina Boulevard	Davis Street	0.76

A bicycle boulevard in Berkeley that has a partial street diverter which allows free access and egress for active modes, but limits access by motor vehicles.

In Berkeley, bicycle boulevards have modified street signs (standard on bottom, bicycle boulevard on top) that indicates its status as a bicycle boulevard to all road users.

Wayfinding signs can be specifically designed to serve users of bicycle boulevards and direct them to important local destinations.

Figure 18: Recommended Class III Bikeways



Class IV Separated Bikeways

Class IV Separated Bikeways are typically on-street bike facilities that are separated from vehicle traffic by some sort of physical separation such as curbs, plant boxes, bollards, grade separation, or parked cars. They can provide one-way or two-way travel on either side of the roadway. This Plan recommends **8.1 miles** of Class IV bikeways.

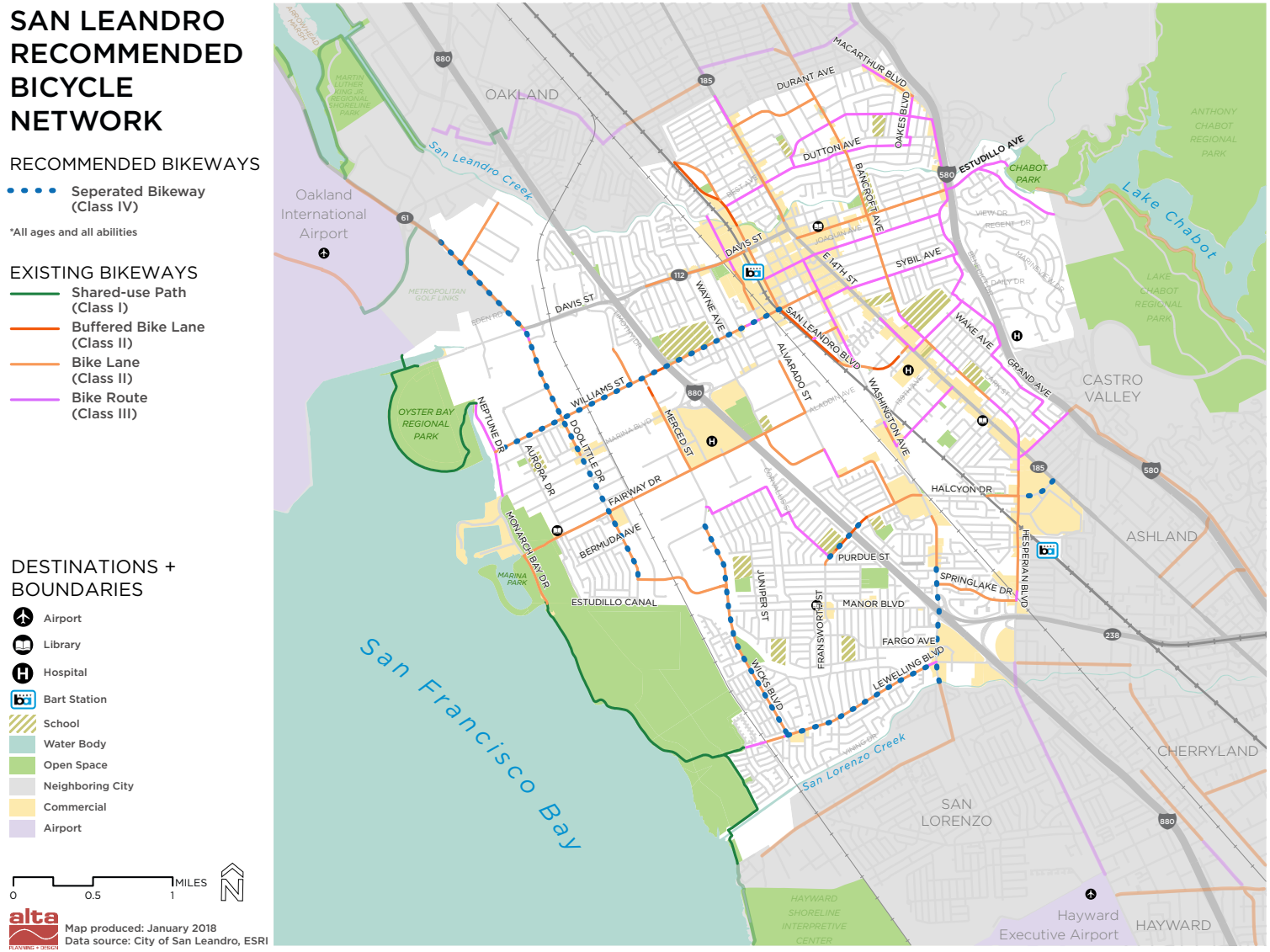
This Plan recommends Wicks Boulevard be redesigned with Class IV bikeways. On Wicks Boulevard, this design would require minimal to no removal of parking, has few driveway conflicts, provides connections to parks and community centers, and would provide a traffic calming element to a wide street, which would benefit all road users.

Table 13 - Recommended Class IV Bikeways

Recommended Class IV Separated Bikeways			
Street Name	*Start*	*End*	*Length (mi)*
Doolittle Drive	Oakland City Limit	Farallon Drive	2.30
Fairmont Drive	East 14th Street	Hesperian Boulevard	0.26
Farnsworth Street	Corvallis Street	Monterey Boulevard	0.34
Lewelling Boulevard	Wicks Boulevard	Washington Avenue	1.04
Washington Avenue*	Lloyd Avenue	San Lorenzo Creek	0.72
Wicks Boulevard	Burroughs Avenue	Lewelling Boulevard	1.43
Williams Street	San Leandro Boulevard	Neptune Drive	2.00

*This is highly complex area of Washington Avenue. Close coordination with Caltrans will be required the next time the interchange is reconstructed.

Figure 19: Recommended Class IV Bikeways



Study Corridors

The Master Plan Update also includes several study corridors. These are streets that can be very beneficial to San Leandro's bicycle network (improving access and connectivity), but due to various physical constraints, require additional study before bikeway improvement recommendations can be made. There are **14.6 miles** of study corridors.

Typically due to limitations with available roadway width, studies are necessary to determine whether reductions in street parking, travel lanes, and/or turning lanes that will be necessary to accommodate bicycle infrastructure, will have significant effects to intersection and corridor operations. It is important for both the City and the public to understand the trade-offs that occur when significant changes in roadway configuration occur. These changes may or may not be acceptable to various parties, and thus having an open and public process when considering these changes will be important for successful coordination and implementation of changes to these roadways.

These corridor studies should also take pedestrian considerations into account, studying existing intersections and crossing conditions, and incorporating those enhancements into future corridor designs. Each study corridor has been proposed with a recommended bikeway facility class.

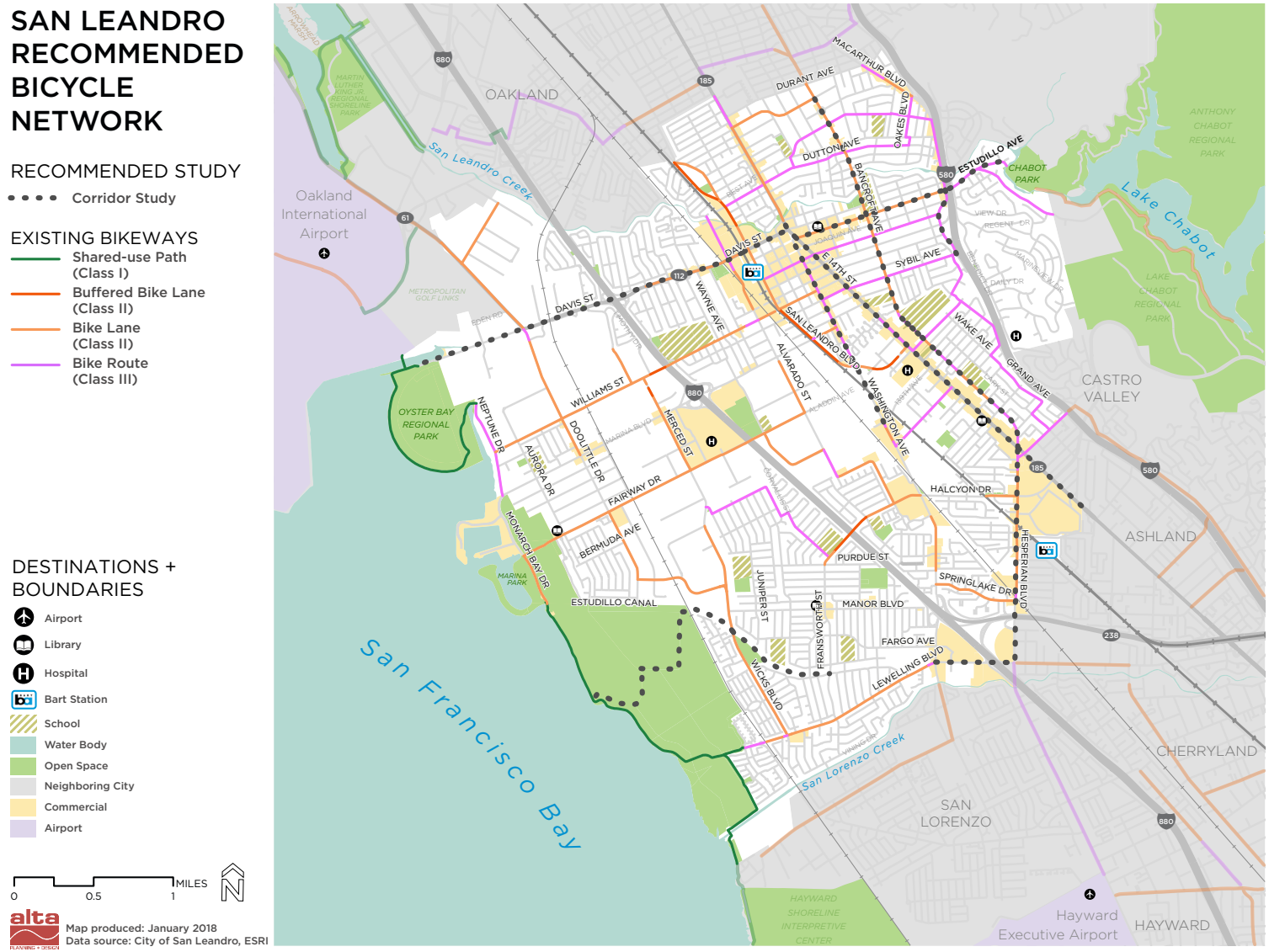
The following eight corridors are listed as study corridors:

- Bancroft Avenue
- Davis Street
- Lewelling Boulevard
- Hesperian Boulevard
- Estudillo Avenue
- Washington Avenue
- Estudillo Canal
- East 14th Street

Table 14 - Recommended Study Corridors

Recommended Study Corridors				
Street Name	*Start*	*End*	*Length (mi)*	*Bikeway Class*
Bancroft Avenue	Durant Avenue	East 14th Street	2.7	IV
Davis Street	East 14th Street	Oyster Bay Park	2.2	IV
Lewelling Boulevard	Washington Avenue	Hesperian Boulevard	0.5	IV
Hesperian Boulevard	Lewelling Boulevard	East 14th Street	1.3	IV
Estudillo Avenue	East 14th Street	Lake Chabot Park	1.4	IV
Washington Avenue	139th Avenue	West Estudillo Avenue	1.3	IV
Grand Avenue	Estudillo Avenue	Sybil Avenue	0.5	IV
Estudillo Canal	Bay Trail	Farnsworth Street	2.2	I
East 14th Street	San Leandro Creek	City Limits (with Ashland)	2.5	Complete Street

Figure 20: Recommended Study Corridors



Bancroft Avenue Class IV Study

Bancroft Avenue is a very special 2.7 mile-long cross-town street in San Leandro. Uses along Bancroft are primarily residential, with pockets of commercial. Additionally, four schools (Bancroft Middle, San Leandro High, Jefferson Elementary, and McKinley Elementary) all have frontage along Bancroft Avenue. Bancroft can also serve as a pedestrian and bicycle-focused corridor; this is especially important as East 14th Street increasingly focuses on transit.

From an infrastructure standpoint, though, Bancroft is a complex street that changes widths 12 times (including twice at intersection approaches) to eight different sizes, ranging from a little as 36-feet wide to as large as 62-feet wide (curb-to-curb width).

There is a strong desire from the public, members of the BPAC, and the San Leandro City Council for Bancroft Avenue to provide continuous safe bicycle facilities. A study will be needed to fully understand the impacts and trade-offs that installing Class IV facilities throughout the corridor would have. This Plan recognizes both the strong public desire and the benefits that these facilities can bring to San Leandro residents, especially students at these four and other nearby schools. Below is a diagram that breaks down Bancroft Avenue by its various street widths and adjacent land uses.

To illustrate one of the many possible designs for Bancroft, this Plan provides one potential cross section. The design is based on a two-way, parking protected Class IV separated bikeway. There are many possible Class IV configurations, including both two-way cycletracks and bi-directional separated bikeways. These facilities can be designed with an array of separation techniques, intersection configurations and other design options. Roadway width constraints mean an improvement to bicycle facilities will require trade-offs. Intersection treatments and crossings will need to be designed with great care to ensure safe access into and out of the facility. Careful consideration will also need to be given to how this facility interacts with school drop-off locations. It is important to have an open and robust public engagement process when considering design alternatives. One existing and one potential cross section can be found on the following page.

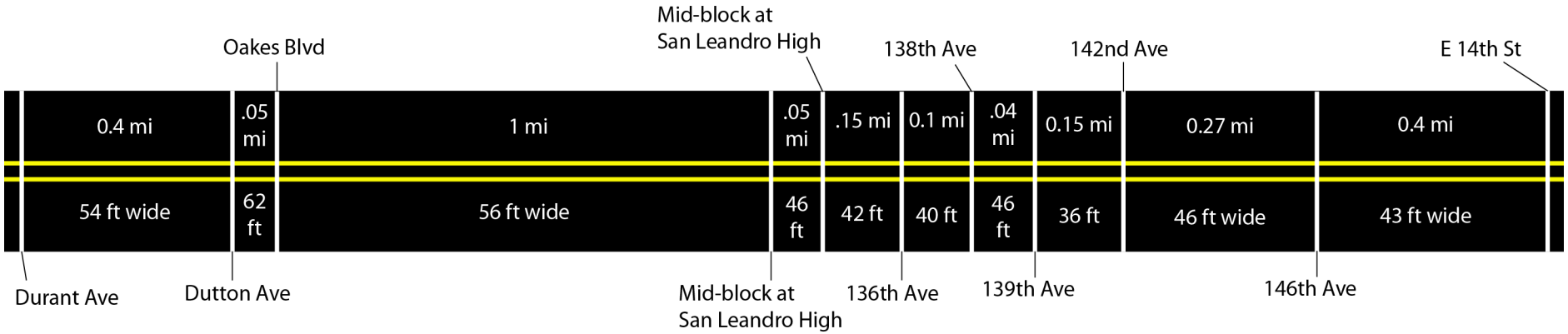
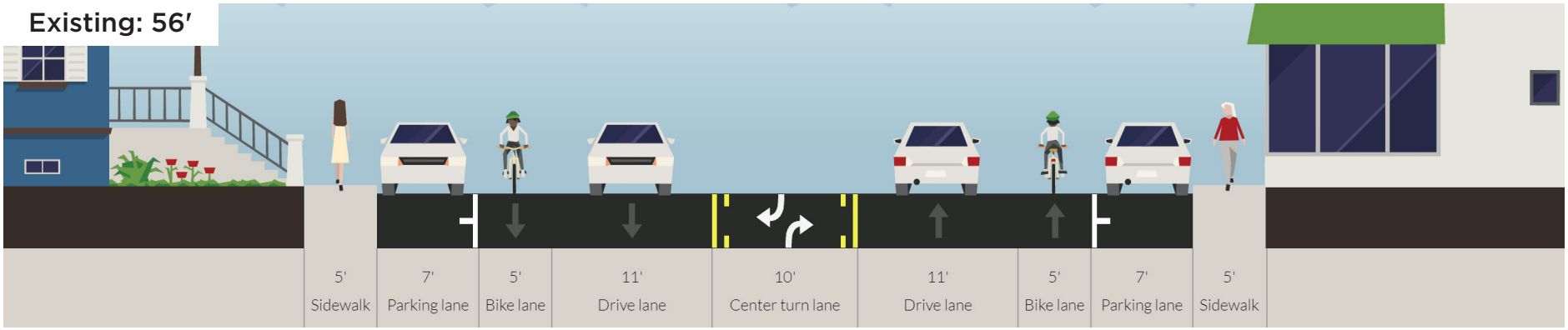


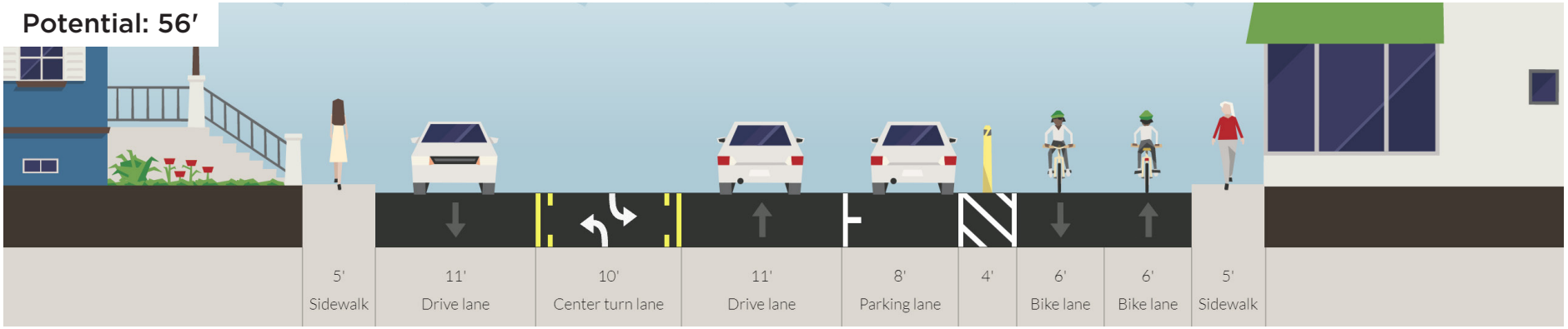
Diagram not drawn to scale. Diagram does not reflect changes in street width at the intersection approaches to Dutton Avenue and 136th Avenue.

Bancroft Cross Sections

The longest segment of Bancroft Avenue without a width change is between Oakes Boulevard and San Leandro High School. This segment is 56 feet wide, curb-to-curb. This segment includes both Bancroft Middle School, McKinley Elementary School, and part of the San Leandro High campus. The below cross section illustrates the existing conditions on Bancroft Avenue in this segment; it currently consists of parking/loading zones on both sides of the street, one travel lane in each direction, bi-directional Class II bike lanes and left turn/middle turn lanes.



The below cross section shows one potential redesign of the same 56 feet wide segment with a two-way Class IV cycletrack on the east side. As mentioned on the previous page, there are many possible design considerations for this potential Class IV facility.



DAVIS STREET CLASS IV STUDY

Davis Street, State Route 112, is a key east-west connector at the northern edge of San Leandro. Davis Street also has a heavily used I-880 interchange that has a heavy volume of truck/freight traffic. This study corridor runs between Oyster Bay Park and East 14th Street.

One segment of Davis, between the BART tracks and East 14th Street, could be a continuation of existing bike lanes that stop around the area the Union Pacific and BART tracks. This segment of Davis Street could provide an additional connection from San Leandro BART into downtown San Leandro. The current roadway configuration changes as Davis Street approaches San Leandro Boulevard, as the eastbound travel lane changes from two through lanes and an intermittent turning lane to two through lanes and two left and one right turning lanes. To accommodate bicycle lanes in this segment of Davis Street, a reduction in travel/turning lanes or parking lanes may need to occur.

Another constrained segment of Davis Street is between the BART tracks and Doolittle Drive which provides a connection to the Westgate Shopping Center and improves access to Oyster Bay Regional Shoreline (riders can use Davis, Doolittle, Williams, and Neptune to reach the park). Between west of the BART tracks and east of I-880 interchange, Davis Street has Class II bike lanes. There is potential and good reason to study enhancements to these bicycle facilities to buffered bike lanes or Class IV facilities. This segment of Davis Street can be especially dangerous for bicyclists because of the I-880 interchange and high volume of truck traffic. Highway on and off ramps also pose serious safety and speed concerns for all active transportation users; it is critical that safety, access, and connectivity for these users be considered in the design of these areas.

Davis Street and I-880 interchange from the Westgate Center.

LEWELLING BOULEVARD CLASS IV STUDY

Currently, Lewelling Boulevard has bike lanes west of Wicks Boulevard to Washington Avenue, providing east-west connectivity and access to the Bay Trail for residents in the Manor neighborhood. However, the bike lanes stop at Washington Ave, as Lewelling approaches a series of interchanges for I-880 and I-238. As Lewelling Boulevard crosses Washington Avenue, the street loses over 10 feet of width, and drops the bikes lanes. Extending the bike facilities to the city limits at the Lewelling/Hesperian intersection can provide connectivity to the commercial uses around the intersection and to neighboring San Lorenzo. Because there is no street parking in this area, in order to accommodate bicycle facilities, a travel/turning lane or center turn lane would have to be removed. Because of the highway ramps, extra care should be given to the design of this segment of the street to provide additional safety for active transportation users.

HESPERIAN BOULEVARD CLASS IV STUDY

Connecting to the aforementioned Lewelling Boulevard Study Corridor is the Hesperian Boulevard Study Corridor. There are no bicycle facilities on Hesperian between Lewelling and railroad tracks north of the I-238 underpass. This segment of Hesperian can provide a connection to Bayfair Center and Bay Fair BART Station; linking commercial areas and improving connectivity from San Lorenzo to the Bay Fair area. Hesperian does narrow to get through the underpass, which poses width constraints. This segment of Hesperian between Lewelling and the I-238 underpass is also about 10 feet narrower than north of the underpass; adding bicycle facilities in this segment will require removal of a travel lane.

Future improvements on Hesperian should be coordinated with the currently in-progress Bay Fair TOD Plan. Furthermore, coordination with the South Alameda County Major Corridors Travel Time Improvement Project (AC Transit Line 97), which is scheduled to be implemented between 2018-2019, is equally important.

Hesperian Boulevard, north of the railroad crossing.

ESTUDILLO AVENUE CLASS IV STUDY

Estudillo Avenue is a critical east-west street, connecting the eastern parts of San Leandro to downtown. Estudillo Avenue is primarily fronted by low-density residential uses with pockets of commercial. Bancroft Middle School and one of San Leandro's libraries also has frontage along the corridor. For San Leandro residents, Estudillo Avenue is also the primary access route for entry to Lake Chabot Park. There are currently Class II bicycle lanes along Estudillo Avenue.

In the San Leandro Creek Master Plan, Estudillo Avenue was recommended to be enhanced with Class IV separated bikeways. With limited available roadway width, further study is necessary to understand the trade-offs that would have to be made to accommodate these separated bikeways.

The Washington Avenue tunnel and adjacent area. The at-grade Union Pacific tracks are in the background under the above-grade BART tracks.

WASHINGTON AVENUE CLASS IV STUDY

Another important cross-town connector is Washington Avenue. This segment (between 139th and West Estudillo) of Washington Avenue is constrained for multiple reasons. North of 139th Avenue, Washington Avenue tunnels under Union Pacific railroad tracks (the same tracks that would be part of the East Bay Greenway). This tunnel does not have any bicycle or pedestrian facilities. Additionally, pedestrian and bicyclists are forbidden from using the tunnel in San Leandro's Municipal Code (Section 6-5-215); the only such ban in the Code. Providing a safe and efficient route for pedestrians and bicyclists to bypass the tunnel should be studied to improve connections within the area. Given the uncertainty with a timeline for the completion of East Bay Greenway, finding an interim solution for pedestrians and bicyclists to cross the area would close an important gap with both the pedestrian and bicycle network.

North of the tunnel, Washington Avenue is primarily a two-lane roadway with one travel lane and parking lane in each direction and is Class III bicycle route with sharrows. While this segment of Washington may be too narrow to be enhanced with bicycle lanes, there is potential for additional Class III improvements; possibly creating a bicycle boulevard.

After Washington Avenue Crosses West Juana Avenue, Washington runs through and terminates in the shopping center parking lot. Bicycle enhancements in this segment of Washington can be very useful for improving bicycle access to and through the shopping center and Downtown San Leandro.

GRAND AVENUE CLASS IV STUDY

The section of Grand Avenue has the potential to become a critical north-south segment of San Leandro's bicycle network. The Study Corridor covers the segment of Grand Avenue between Estudillo Avenue and Sybil Avenue. Running parallel to I-580, Grand Avenue can become a connector street to various east-west bicycle routes and bicycle boulevards; improving linkages between residential areas, schools (public and private), Lake Chabot Park, San Leandro BART Station, and downtown San Leandro. This part of Grand Avenue would also provide a connection to the proposed bicycle boulevards (Wake Avenue-via 136th Avenue-and Sybil Avenue, for example).

This segment of Grand Avenue is complex as it has on and off ramps for I-580 at three locations in this study corridor. The highway interchange generates a large volume of faster-moving automobile traffic. Further complicating this corridor, is the curb-to-curb width shrinks from about 60 feet to about 30 feet after the EB I-580 on ramps (near Maud Avenue).

Grand Avenue near the Juana Avenue intersection looking southward.

ESTUDILLO CANAL CLASS I STUDY

The Estudillo Canal is a flood control channel that generally runs east-west in the southern part of San Leandro. There is potential to create a Class I shared use path along the banks of the canal from Farnsworth Street to the Bay Trail. In addition to providing a low-stress east-west connector through the Manor neighborhood, it provides connectivity to commercial areas, residential areas, and the Bay Trail. Creating a shared use path along the canal will require close coordination with multiple public agencies and a detailed engineering study to study feasibility. Class I facilities would have to be carefully designed for both user safety and to ensure the continued functionality of the canal. Additional complications include that west of Inverness Street the canal changes form: west of Inverness it returns to a natural canal and loses the concrete lining, and the trail would also have to navigate an elevated railroad crossing. It should also be studied whether it is feasible and safe to open existing bridges across the canal to further increase access and connectivity. This project could be built in phases as different segments of the canal have different constraints and feasibility concerns.

An unchannelized segment of the Estudillo Canal in the Manor Neighborhood.

EAST 14TH STREET COMPLETE STREET STUDY

One of the items that this Master Plan Update puts emphasis on is connections to neighboring jurisdictions. East 14th Street (State Route 185) has great potential to be a crosstown connector. However, it is a very complex street as it changes width/lane configurations multiple times throughout San Leandro. This makes it very difficult to establish continuous bicycle facilities. AC Transit's East Bay Bus Rapid Transit is currently being constructed and will run along East 14th Street from the Oakland border to Davis Street where it will continue to San Leandro BART. As a part of the San Leandro Creek Master Plan, the segment of East 14th Street between the San Leandro Creek and Estudillo Avenue is proposed to include Class II bicycle facilities.

The remainder of East 14th Street from Estudillo Avenue to the city border with Ashland will need to be studied to determine the feasibility of bicycle facilities. With the street changing widths multiple times, detailed parking, traffic, and intersection studies will be needed to determine the impacts of roadway configuration changes. Additionally, there is potential for the extension of the East Bay BRT corridor, which can further constrain East 14th Street; however, that also creates the potential to create a true multimodal complete street, with transit and active transportation being priority modes. As one of the few continuous streets that runs from border to border across San Leandro, East 14th Street has lots of potential to be a key crosstown street, linking multiple commercial centers, civic buildings, transit, schools, and residential neighborhoods together.

Improvements along East 14th Street in the segments near the Bay Fair Center should be coordinated with the in-progress Bay Fair TOD Plan.

Another study segment of East 14th Street is between Chumalia Street and Estudillo Avenue. This segment was called out in the San Leandro Creek Master Plan as being a Class IV facility. Further study is necessary to determine feasibility and necessary trade-offs.

East 14th Street in front of McKinley Elementary School. This is a narrow segment of East 14th Street and it sees relatively high volumes of pedestrian and bicycle traffic; some of which is driven by nearby schools.

East 14th Street in front of San Leandro City Hall and the Carlton Senior Living facility. (This segment of East 14th Street was recently reconfigured as a part of the East Bay BRT project).

Figure 21: Recommended Bikeway Improvements

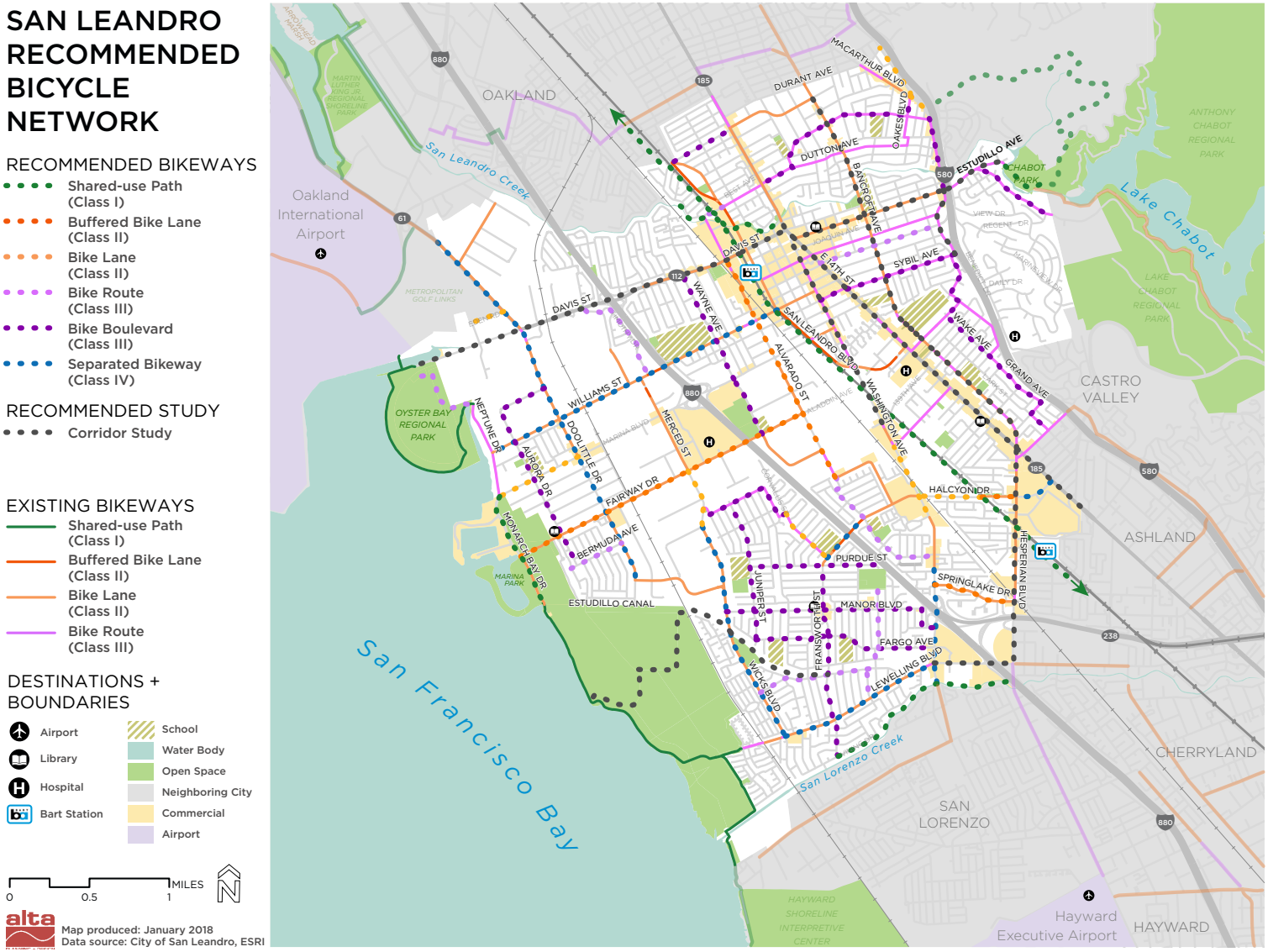


Table 15 - Recommended Bikeways

Recommended Bikeways				
Street Name	*Start*	*End*	*Classification*	*Length (mi)*
Alvarado Street	Fremont Avenue	Davis Street	II Buffered	1.53
Andover Street	Burkhart Avenue	Lewelling Boulevard	III	0.19
Aurora Drive	Polvorosa Avenue	Bermuda Avenue	III Blvd	1.40
Bancroft Avenue*	142nd Avenue	200 ft S of Blossom Way	II	0.79
Bayfront Drive	Bay Trail	Lewelling Boulevard	III	0.15
Bermuda Avenue	Aurora Drive	Doolittle Drive	III	0.35
Burkhart Avenue	Wicks Boulevard	Norton Street	III	0.76
Castro Street	East 14th Street	Washington Avenue	III Blvd	0.18
Cedar Avenue (Cedar - Hemlock - Ottawa)	Merced Street	Corvallis Street	III Blvd	0.68
Corvallis Street	Ottawa Avenue	Farnsworth Street	II	0.39
Dayton Avenue (Dayton - Inverness - Fargo)	Farnsworth Street	Juniper Street	III Blvd	0.48
Dolores Avenue	Grand Avenue	East 14th Street	III	0.78
Doolittle Drive	Oakland City Limit	Farallon Drive	IV	2.30
East Bay Greenway	City Limits	City Limits	I	3.30
Eden Road	End of Road	Doolittle Drive	II	0.20
Fairmont Drive	East 14th Street	Hesperian Boulevard	IV	0.26
Fairway Drive	Monarch Bay Drive	Alvarado Street	II Buffered	1.98
Fargo Avenue	Farnsworth Street	Washington Avenue	III Blvd	0.69
Farnsworth Street (1)	Vining Drive	Purdue Street	III Blvd	1.22
Farnsworth Street (2)	Corvallis Street	Monterey Boulevard	IV	0.34

*Bike lanes are recommended for three segments: East 14th Street-146th Avenue, 142nd Avenue-138th Avenue, and 136th Avenue-200 ft. S of Blossom Way.

Recommended Bikeways				
Street Name	*Start*	*End*	*Classification*	*Length (mi)*
Grand Avenue - Evergreen Avenue - School Street - Wake Avenue - Halsey Avenue - Lark Street	Sybil Avenue	Fairmont Drive	III Blvd	1.99
Halcyon Drive (1)	BART Tracks	Washington Avenue	II	0.39
Halcyon Drive (2)	Hesperian Boulevard	BART Tracks	II Buffered	0.22
Juniper Street	Dayton Avenue	Cedar Avenue	III Blvd	0.88
Lake Chabot Road	Estudillo Avenue	City Limits	III Blvd	0.56
Lewelling Boulevard	Wicks Boulevard	Washington Avenue	IV	1.04
MacArthur Boulevard	Superior Avenue	Fortuna Avenue	II	0.13
Manor Boulevard (Manor - Kesterson - Beatrice)	Wicks Boulevard	Washington Avenue	III Blvd	1.43
Marina Boulevard	Neptune Drive	Doolittle Drive	II	0.55
Merced Street/Wicks Boulevard	Fairway Drive	Burroughs Avenue	II	0.38
Monarch Bay Drive	Flood Control Cannel	Neptune Drive	I	0.75
Monterey Boulevard	Alvarado Street	Washington Avenue	III	0.93
Norton Street	Washington Manor Park	Burkhart Avenue	III	0.49
Oakes Boulevard (Oakes - Maple - Dowling - Superior)	East 14th Street	MacArthur Boulevard	III Blvd	1.27
Oyster Bay Regional Park	Existing Trail	Existing Trail	III	0.32
Peralta Avenue	San Leandro Boulevard	End of cul-de-sac	III	0.14
Purdue Street	Crosby Street	Juniper Street	III Blvd	0.79
San Leandro Boulevard	Creekside Plaza	Park Street	II	0.19
San Leandro Creek	UPRR Niles Subdivision	East 14th Street	I	0.80

Recommended Bikeways				
Street Name	*Start*	*End*	*Classification*	*Length (mi)*
San Lorenzo Creek	Hesperian Boulevard	Farnsworth Street (extension)	I	1.30
Springlake Drive	Hesperian Boulevard	Washington Avenue	II Buffered	0.52
Sybil Avenue	Grand Avenue	East 14th Street	III Blvd	0.71
Teagarden Street	Fairway Drive	Marina Boulevard	III Blvd	0.39
Timothy Drive	Williams Street	Davis Street	III	0.68
W Broadmoor Boulevard	San Leandro Boulevard	East 14th Street	III Blvd	0.42
Washington Avenue (1)	Lloyd Avenue	San Lorenzo Creek	IV	0.72
Washington Avenue (2)	Caliente Drive	143rd Avenue	II	0.49
Wayne Avenue	Marina Boulevard	Davis Street	III Blvd	0.76
Wicks Boulevard	Burroughs Avenue	Lewelling Boulevard	IV	1.43
Williams Street	San Leandro Boulevard	Neptune Drive	IV	2.00

Spot Improvements

Several of the existing facilities in San Leandro would benefit from spot improvements to meet current best practices, better define the bikeway network and improve its effectiveness, accessibility, and safety. Spot improvements were divided into four general categories:

- Signage/Marking Improvements
- Intersection Configuration Changes
- Intersection Approach Change
- Design Changes

Each category is described in more detail below; each description is accompanied by a list of locations that require the relevant improvements. Some locations are listed in more than one category. Specific treatments should be considered on a spot-by-spot basis. These areas are based on input from the public, members of the BPAC, and City Staff. The following lists are not all inclusive. As the City reviews new projects and continues it's road maintenance program, it should utilize these examples as case studies as more intersections and street segments are found needing similar improvements.

Signage/Markings

Locations in this category are street segments that have existing facilities, but are missing certain design element. These design elements include, but are not limited to: pavement markings (sharrows/lane markings) and signs (Bike Route, Bikes May Use Full Lane, etc.). There are 8 locations in this category. Improving the signage and pavement markings can help increase driver awareness of bicyclists.

SIGNAGE/MARKINGS LOCATIONS

- **Striping/Pavement Markings**
  - Neptune Drive: Oyster Bay Regional Park to Marina Boulevard
  - Monarch Bay Drive: Fairway Drive to southern end of street
  - MacArthur Boulevard: Dowling Boulevard to Joaquin Avenue/Grand Avenue
  - Springlake Drive: Hesperian Boulevard to Loch Lane/Creekside Drive
  - Hesperian Boulevard: Grace Street to East 14th Street
  - Williams Street: Timothy Drive to Westgate Parkway
  - East 14th Street: Broadmoor Boulevard to City Limits
- **Signage**
  - Davis Street at Frederick Road/Gilmore Drive (eastbound)

Intersection Configuration

Locations in this category are areas where the design of the intersection poses accessibility and safety concerns for bicyclists. The majority of these locations have free right turn lanes that complicate the mixing zone area between cars and bicyclists approaching these intersections. Free right turn lanes increase the speed that automobiles can turn and their presence typically means that the bike lane does not continue all the way to the intersection. There are five intersections that should be studied to improve their accessibility and functionality for bicyclists. The City should analyze their roadway network for additional intersections that may need enhancements.

INTERSECTION CONFIGURATION LOCATIONS

- Neptune Drive/Monarch Bay Drive
- Lewelling Boulevard/Washington Avenue
- Alvarado Street/Fremont Avenue
- Wicks Boulevard/Farallon Drive
- Bancroft Avenue/Dowling Boulevard
- Merced Street/Wicks Boulevard

A free right turn lane at the intersection of Hesperian Boulevard and Lewelling Boulevard.

Intersection Approaches

This category of spot improvements addresses bicycle lane markings that do not continue all the way to or start immediately after an intersection or when there is a change in roadway configuration (width change, bus zone, etc.). In many cases, pavement markings (sharrows) can be installed to increase automobile driver awareness of potential changes in bicyclist roadway position and to guide bicycle traffic through the change in roadway conditions. There are 27 locations throughout San Leandro where intersection approaches can be improved for bicycle access and comfort.

INTERSECTION CONFIGURATION LOCATIONS

- Wicks Boulevard/Lewelling Boulevard
- Alvarado Street/Marina Boulevard
- Adams Avenue/Doolittle Drive
- Estudillo Avenue/East 14th Street
- Hesperian Boulevard/Fairmont Drive & Hesperian Boulevard/150th Avenue
- Springlake Drive/Sweetwater Drive & Hesperian Boulevard/Springlake Drive
- Lewelling Boulevard/Washington Avenue
- Estudillo Avenue/Bancroft Avenue
- Westgate Parkway/Williams Street
- Alvarado Street/Aladdin Avenue
- Alvarado Street/Marina Boulevard
- Estudillo Avenue/MacArthur Boulevard
- East 14th Street/Davis Street
- Davis Street/San Leandro Boulevard
- Davis Street/Orchard Avenue
- Williams Street/Washington Avenue
- San Leandro Boulevard/Washington Avenue
- San Leandro Boulevard/Williams Street
- Washington Avenue/139th Avenue to 143rd Avenue
- Marina Boulevard from San Leandro Boulevard to Washington Avenue
- San Leandro Boulevard/East 14th Street
- Wicks Boulevard/Farallon Drive
- Hesperian Boulevard/Halycon Drive/Fairmont Drive
- Floresta Boulevard/Fremont Avenue
- Floresta Boulevard/Washington Avenue
- Fairway Drive/Doolittle Drive
- Lewelling Boulevard/Wicks Boulevard
- Davis Street/ Doolittle Drive
- Williams Street/ Doolittle Drive

Design Change Locations

Locations in this category will typically involve implementing some sort of roadway design change to accommodate improved bicycle facilities or remove a gap in the bikeway network. Each of these four locations has a unique set of characteristics. Solutions should be determined on a site-by-site basis.

DESIGN CHANGE LOCATIONS

- MacArthur Boulevard, between Broadmoor Boulevard and Mitchell Avenue
  - There is a segment of bike lane between two sets of angled vehicular parking. The bike lane starts from and ends into a parking stall.
- Doolittle Drive, between Davis Street and Carden Street/railroad tracks
  - There are bike lanes on Doolittle Drive but they are not present in this segment. Given the complexities of the railroad tracks and bus zone, the design for the continuation of the bikeway will need extra attention.
- Estudillo Avenue (east of I-580)/Lake Chabot Road
  - Bicyclists (and pedestrians) accessing Lake Chabot Park via Estudillo Avenue, need to cross Lake Chabot Road. This crossing is immediately after a blind hilly curve, making the crossing very difficult. A solution for safer park access is needed.
- Foothill Boulevard, from MacArthur Boulevard to City Limits
  - Bike lanes are currently only present on one side of the street. A bike lane for the other direction of travel should be added.

Signals

One way that San Leandro can enhance the bicycling experience and improve network efficiency is by installing bicycle detection at signalized intersections that use actuation. Bicycle detection technology allows bicyclists to alert the signal controller to their presence and desire to travel through a specific intersection approach; providing a similar function to pedestrian beg buttons. There are various methods of detecting bicycles at intersections, but the most common methods are bicycle push buttons and bicycle loop detectors. Bicycle loop detectors work on the same basic principle as vehicle loop detectors and use magnetic waves to detect a bicycle.

As the City continues to upgrade and retrofit intersections with signals that use actuation to control signals, these improvements should include bicycle detection. The City should also consider installing bicycle detection at intersections that handle high volumes of bicycle traffic.

Bicycle loop detection is usually indicated with the above pavement marking.

Bicycle Parking

Bicycle parking is an integral part of any bikeway network. Without secure and convenient bicycle parking, many cyclists will not choose to use their bicycle for trips where stops are made. Currently, bicycle racks are provided by the City, other public agencies, and by private landowners. More bicycle parking is needed within the City, particularly at retail and employment centers, parks, transit stops, and other locations that attract bicycle trips. To meet this need, the following two programs are recommended.

CITY BICYCLE RACK PROGRAM

San Leandro's bicycle rack program provides the City with the means and procedures for installing bicycle racks where they are needed. With this program, the City installs a bicycle rack(s) within the public right-of-way at the request of a community member. This could be a landowner, business owner, resident, or employee. Once the request has been received, City staff visits the requested location to determine if a bike rack can fit, contact adjacent property owners to inform them of the intent to install a bicycle rack, and, finally, install the bicycle rack. The program also provides technical support for property owners wishing to install bicycle racks on private property as well as serve as a clearinghouse for bicycle parking information.

BICYCLE PARKING ORDINANCE

The current San Leandro zoning ordinance regarding bicycle parking specifies bicycle parking be provided at the rate of five percent of the requirement for automobile parking spaces with commercial uses. It is recommended that this requirement be revised as a stand-alone Bicycle Parking Ordinance and expanded to include other land uses (i.e. multi-family residential) and to provide more specific recommendation as to type of bicycle parking to be provided (i.e. short-term or long-term) by land use. The ordinance may also include a reduction in vehicle parking requirements with the installation of a certain number/type of bicycle parking. More detailed discussion of the specifics for a revised bicycle parking ordinance can be found in the San Leandro Bicycle and Pedestrian Design Guidelines including a sample bicycle parking ordinance.

A bike corral in the spot of a couple parking stalls in a Class IV parking separated bike lane: Telegraph Avenue - Oakland.

Bike Share

Bike share systems are a network of public bicycles that residents, workers, and visitors can rent for short periods of time. Bike share systems are put in place to achieve a number of goals and objectives which generally include:

- Help to close first-last miles gaps with transit stops and stations
- Provide access to bicycles for those who do not own them
- Make commuting by bicycle more convenient as system users do not have to worry about parking or storage
- Provide opportunities for healthy recreational activities
- Increase access to commercial and retail locations
- More generally provide residents, workers, and visitors with more relatively low-cost transportation options.

Bike share systems come in a variety of types and sizes and a system can be customized to fit San Leandro's needs. The three main types of bike share systems are:

- Smart dock systems
- Smart bike systems
- Hybrid systems

Smart dock systems are defined by having physical stations as the only places where bikes can be picked-up or dropped-off. These stations can either be in the parking lane of the roadway or on sidewalks/plazas where there is enough space. Smart bike systems are more flexible in that all of the technology related to the system is on the bikes themselves, which allows them to be picked-up and left anywhere within the system's service area. Most smart bike systems do have hubs, which mimic the stations of smart dock system, but these hubs require much less physical space and generally do not require utility access. Hybrid systems combine the flexibility of smart bikes with the more formal structure of smart dock systems. These systems generally incentivize users to return bikes to hubs by offering a slight discount or credit on that ride; this can help reduce rebalancing and system operating costs.

Many cities in the Bay Area have established bike share systems. San Francisco, Oakland, San Jose, and Berkeley are a part of Ford Go Bike, formally Bay Area Bike Share. Other cities like San Mateo and Alameda have or are considering launching their own independent systems.

To determine what type and how large of a system would best fit San Leandro's unique goals, built environment/land uses, and financial situation, the City should conduct a bike share feasibility study. This study will answer the aforementioned questions and can also help guide the system's design if the City chooses to proceed.

A Ford Go Bike station in downtown San Jose.