



CITY OF RICHMOND

# South Richmond Transportation Connectivity Plan (SRTCP)

**FINAL**

July 2015



in association with:  
**Wallace Roberts & Todd  
Fehr & Peers  
BKF**



This project is funded in part by a grant through the California Department of Transportation (Caltrans) Community-Based Transportation Planning program.



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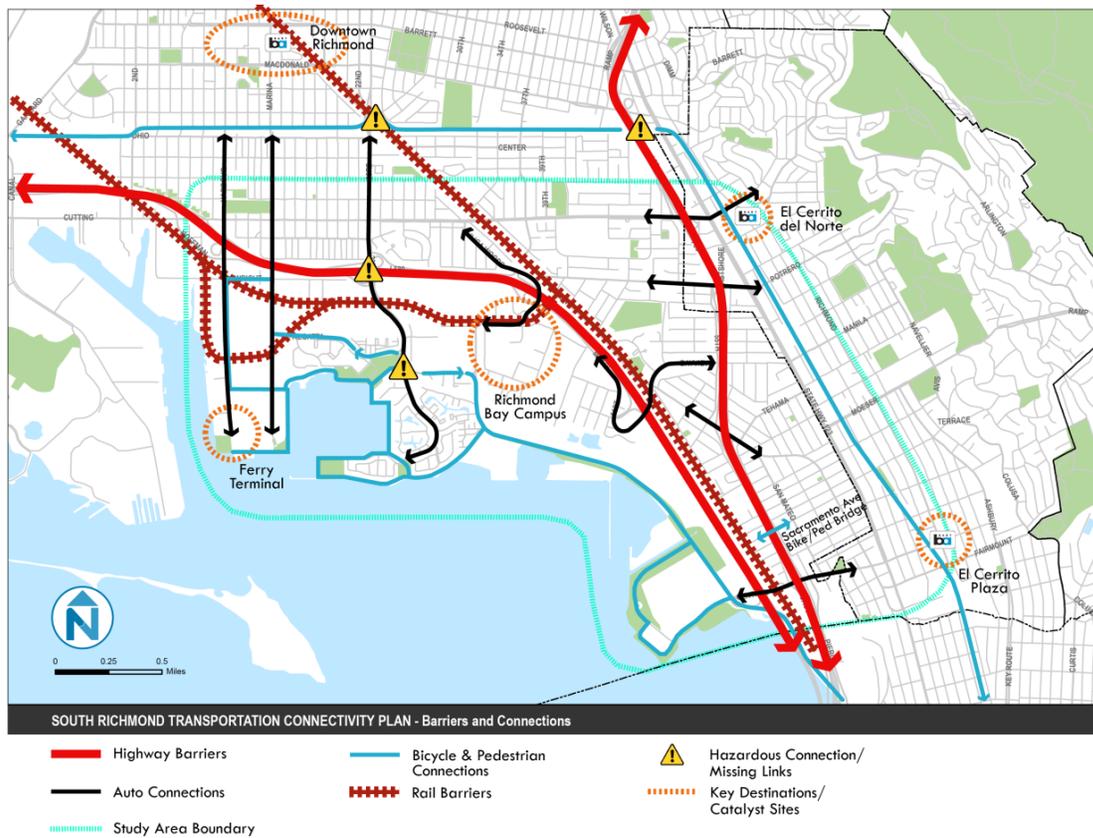
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# EXECUTIVE SUMMARY

South Richmond is poised for transformation. Starting with the re-opening of ferry service to San Francisco in 2018, and the planned development of the Berkeley Global Campus (BGC) at Richmond Bay, new transportation choices and development are planned for the area southwest of I-580. The Richmond South Shoreline Specific Plan anticipates additional mixed-use development with supportive infrastructure and services in the area.

From Richmond’s Inner Harbor on San Francisco Bay, the South Richmond Transportation Connectivity Plan (SRTCP) area extends across I-580 north to Maine Street, west to Harbor Channel and S. 6<sup>th</sup> Street, and east to San Pablo Avenue. Figure ES-1 shows these boundaries, and illustrates the many highway and railway barriers to connectivity to and within South Richmond.

Figure ES-1 South Richmond Transportation Connectivity Plan (SRTCP) Area



Source: City of Richmond, CA

This SRTC identifies deficiencies in existing transportation systems and provides specific recommendations to improve multimodal connectivity to and within the area. The principal goal of the SRTC is to overcome the barriers highlighted in Figure ES-1, to ensure that the benefits of growth and development are shared Citywide. Key SRTC objectives include:

1. **Connecting South Richmond neighborhoods**, such as Point Richmond, Santa Fe, Coronado, Cortez-Stege, Pullman, Laurel Park, Eastshore, Park View, and the Annex neighborhoods (Richmond Annex, Panhandle Annex and Southwest Annex) to the opportunities for employment, education, recreation and services existing and planned for the South Shoreline area, and
2. **Connecting key opportunity sites in South Richmond** (e.g. the planned BGC), with major regional transit hubs, including Richmond BART, El Cerrito Plaza BART, El Cerrito Del Norte BART, and the planned WETA Ferry Terminal.

Figure ES-2 Plan Objectives: Connecting Neighborhoods, Opportunity Sites, and Regional Transit



Source: WRT Design

## PLANNING APPROACH

SRTCP recommended changes to streets and transportation networks in South Richmond were developed according to the following key planning principles, as applied within selected corridors in South Richmond.

### Key principles

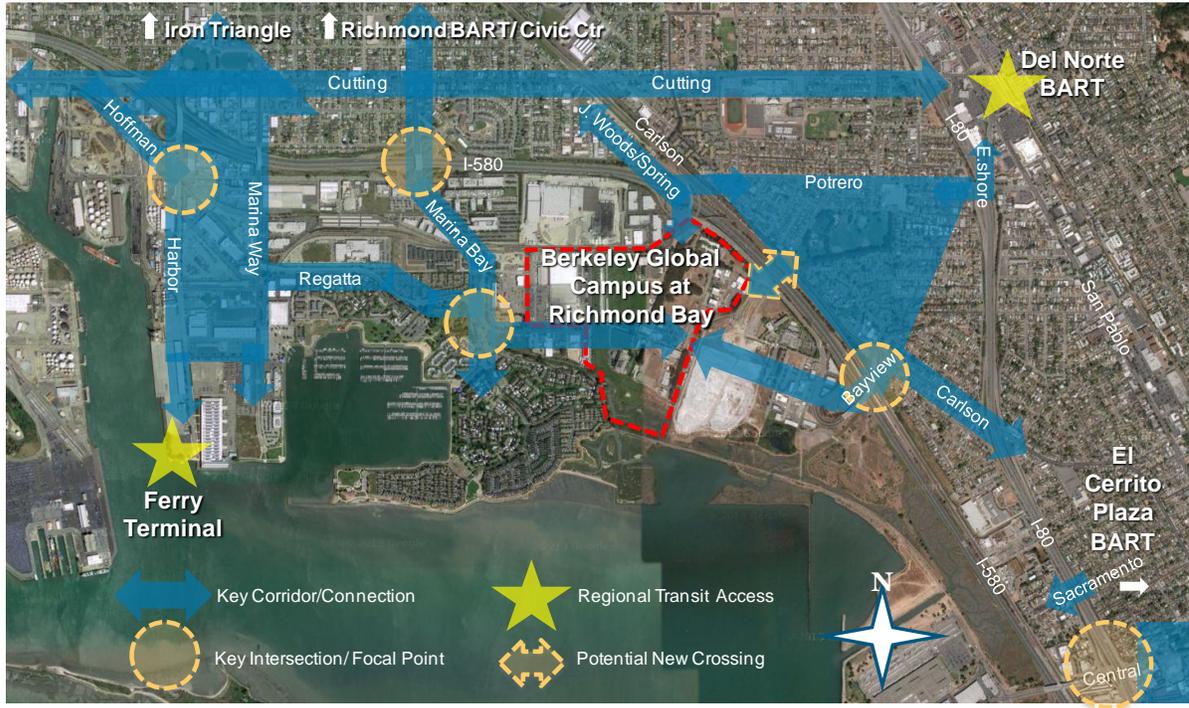
Transportation is not an *end* in itself. It is merely a *means* of achieving other individual and community objectives. The following are some of the key concepts and principles that define the City's approach to planning for projects and services that enhance connectivity, with a focus on achieving larger community goals and objectives:

- **Safety:** Reducing the number and severity of collisions between travelers of all modes, and enhancing public safety through crime prevention strategies
- **Accessibility:** Ability for people to access the people, places, goods, and services they want and need to reach
- **Mobility:** Freedom of movement of goods and people is the principal means of ensuring their accessibility
- **Proximity:** Accessibility may also be enhanced through land use and development strategies that bring people, goods, and services closer together
- **Connectivity:** Dense, connected networks of transportation facilities and services are a key condition for efficient mobility and in turn for providing accessibility
- **Multimodality:** Providing and maintaining a range of transportation choices
- **Sustainability:** Focus on long range impacts/benefits, sustaining and enhancing social, economic and environmental resources
- **Community Vitality:** Transportation affects and is a means of supporting community vitality, planned land uses, and economic/ community development objectives
- **Legibility:** Easily understandable wayfinding signage, maps, instructions, and universal accessibility, are keys to making the transportation system accessible to everyone

### Key Corridors

The SRTCP focuses on key travel corridors within and connecting to South Richmond to assess existing travel conditions, identify connectivity barriers and opportunities, evaluate tradeoffs in the current and potential future use of street rights-of-way, and to plan and prioritize multimodal connectivity improvements. Although some programmatic improvements are recommended for the entire study area, most of the specific multimodal connectivity projects and services recommended in this plan are located within one or more of the key corridors and nodes shown in Figure ES-3, below. These corridors were identified through review of existing conditions and adopted plans affecting the area, input from stakeholders and others at community meetings held in South Richmond in early 2014, and guidance from public agency partners on the Technical Advisory Committee (TAC).

FigureES-3 SRTCPC Key Corridors and Nodes



Source: Nelson\Nygaard

## EXISTING CONDITIONS

### Issues

- The SRTCPC is about more than overcoming or removing barriers. Missing links are prevalent in the transportation networks serving both sides of I-580/UPRR barrier.
- The well gridded street networks north of I-580, and within the Annex neighborhoods are interrupted by wide arterial streets with high speed traffic and few marked crossings.
- Local transit service is indirect and infrequent in many corridors.
- Shuttles bypass many neighborhoods in order to provide direct connections from BART and destinations in the South Shoreline area.
- Many streets in South Richmond lack bicycle facilities, ADA accessible curb ramps, or sufficient street lighting to provide users with a sense of safety and security.
- Industrial districts are particularly harsh environments for people while they are walking or bicycling, often with little or no buffering between the right of way and adjacent uses. In some areas, sidewalks and bike lanes are completely absent.

### Opportunities

- Wide rights-of-way and relatively low traffic volumes on many South Richmond streets offer opportunities for installation of pedestrian, bicycle, and transit facilities, as well as landscaping and green infrastructure.

- The City’s existing grid block pattern north and east of I-580 allows for good accessibility into surrounding neighborhoods and a high degree of route choice.
- BART is evaluating long-term options for increased service frequency in Richmond, and in the long-term, potential new passenger rail service on the Union Pacific Railway, presents an opportunity for new connections to South Richmond.
- Current land uses in much of South Richmond, are not dense or diverse enough to generate strong transit ridership. However, as the BGC opens and other development occurs, the market for transit service may greatly expand.
- The City and AC Transit have an opportunity to substantially improve transit service frequency, connectivity and reliability in the area through coordination with each other and other transit service providers in the area.
- The recent adoption of new ‘best practices’ in the design and operation of on-street bikeways, presents an opportunity to improve the safety and comfort of people on bicycles, above and beyond the improvements included in the Bicycle Master Plan.
- The potential redevelopment of large parcels within the SRTCP area presents the opportunity to extend and intensify the existing street network, improving connectivity.

## **RELATED PLANS**

The SRTCP addressed, or was informed by many previous and ongoing plans, including:

- Richmond South Shoreline Specific Plan (City, ongoing)
- Richmond General Plan 2030 (City, 2012)
- Richmond Bicycle Master Plan (City, 2013)
- Richmond Pedestrian Plan (City, 2011)
- Richmond Livable Corridors Initiative/Form-Based Code (City, 2015)
- Bay Campus Long Range Development Plan (UC/LBL, 2013)
- West Contra Costa Transit Enhancement and Wayfinding Plan (WCCTAC, 2011)
- BART Vision Plan (BART, ongoing)
- San Francisco Regional Rail Plan (MTC, 2007)
- AC Transit PLAN/ACT (AC Transit, ongoing)
- Plan Bay Area (MTC/ABAG, 2013)

## **COMMUNITY GUIDANCE**

The SRTCP was shaped by input and feedback provided by community members, stakeholders and the City’s public agency partners through an extensive public engagement process. This included three community meetings held at key junctures in the planning process, meetings of a technical advisory committee (TAC) formed by the City for this project, and a series of meetings with stakeholder groups and individuals. Some of the instrumental themes that emerged through this process included:

- Concern about risks to children who must walk, or bicycle cross wide arterials with fast-moving traffic, at unsignalized intersections to reach schools.

- Concern about the traffic impacts of development of the BGC at Richmond Bay and other major new development in the South Shoreline, including the potential for increased ‘cut-through’ traffic on local streets.
- Support for filling the missing links in the San Francisco Bay Trail, including building upon previous plans for completion of a shared use path, or separated bikeway and walkway along the east side of Harbour Way S. from Hoffman Boulevard to Fort Point.
- Personal safety and security are key concerns preventing some people from walking or riding transit in South Richmond. To address these concerns, community members suggested better street lighting and development that puts more “eyes on the street.”
- Long-time residents of the Eastshore/Parkview neighborhoods recalled the accessibility of San Francisco Bay prior to the construction of I-580 and favor reconnection to the South Shoreline area with a new bridge over Carlson Boulevard, I-580, and the UPRR.
- Representatives of the Sierra Club expressed opposition to permitting motor vehicle traffic or aligning public transit service through the BGC along Lark Drive, due to potential impacts to endangered species.
- In the interest of safety, bicycling advocates, as well as selected property owners and freight operators, advocated for greater physical separation between bicyclists, pedestrians and motor vehicle traffic – particularly along truck routes and other streets heavily used for goods movement.
- Community members and other stakeholders broadly supported expansion and integration of public transit and shuttle services.
- Interest in using public rights-of-way for high capacity fixed-rail transit service, or automated transit connections.

## RECOMMENDATIONS

Reflecting guidance from community stakeholders and the City’s public agency partners, the SRTCP provides both near-term (2015-2024) and long-term (2030+) recommendations for enhancing multimodal access and connectivity within each key corridor. This section describes the facilities and services that are recommended for each mode of transportation, and illustrates SRTCP travel networks for transit, bicyclists, and goods movement.

### Transit

The SRTCP proposes to expand transit speed, frequency, reliability, and connectivity in South Richmond through the following measures:

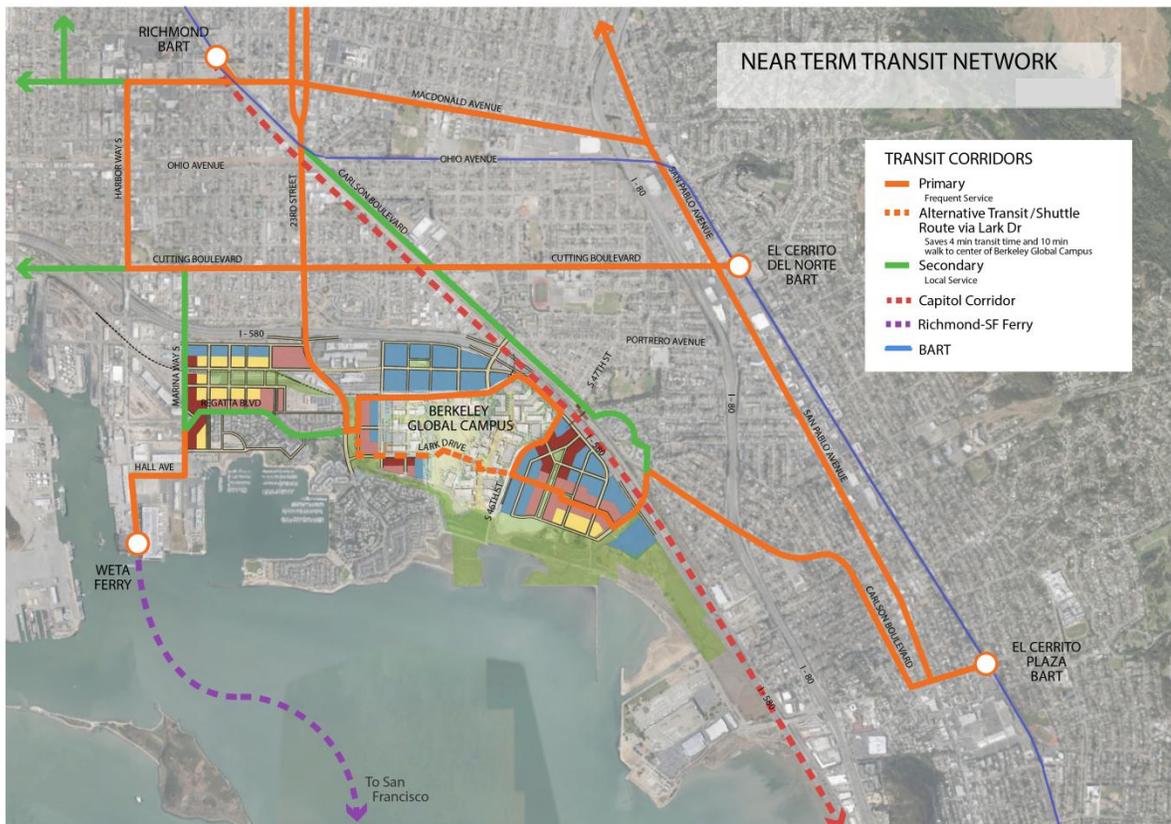
- Major investment in new public transit facilities and services, including initiation of ferry service from Richmond to San Francisco, more frequent service (with buses arriving at least every 15 minutes) on a network of Primary Transit Corridors traversing South Richmond, and better connections to BART stations in Richmond and El Cerrito.
- Collaboration between transit agencies, the University of California (UC), and the City of Richmond in funding, and operating transit service South Richmond.
- Continuation and limited expansion of existing UC Campus Shuttle service, including enhanced frequency of service on the inter-campus shuttle between UC Berkeley and the BGC at Richmond Bay, and a new circulator shuttle service at the BGC.

- Coordination with other regional transit agencies, including BART, the Capitol Corridor Joint Powers Authority, Golden Gate Transit, and agencies serving the I-80 corridor, to integrate fares and service to improve the regional accessibility of South Richmond.

The long-term vision also responds to long-range planning by BART and the Metropolitan Transportation Commission (MTC), which are considering options for additional regional rail service between Hercules and Oakland. These options include a potential new rail station in the Eastshore neighborhood, and a potential new station on the existing Richmond BART line at I-80.

In addition to fixed-route transit service, connectivity in South Richmond will be enhanced by expansion of flexible transportation services and supportive facilities, including taxi service, paratransit service, carsharing, ridesharing, and private for-hire transportation services.

Figure ES-4 Near-Term Transit Network for South Richmond



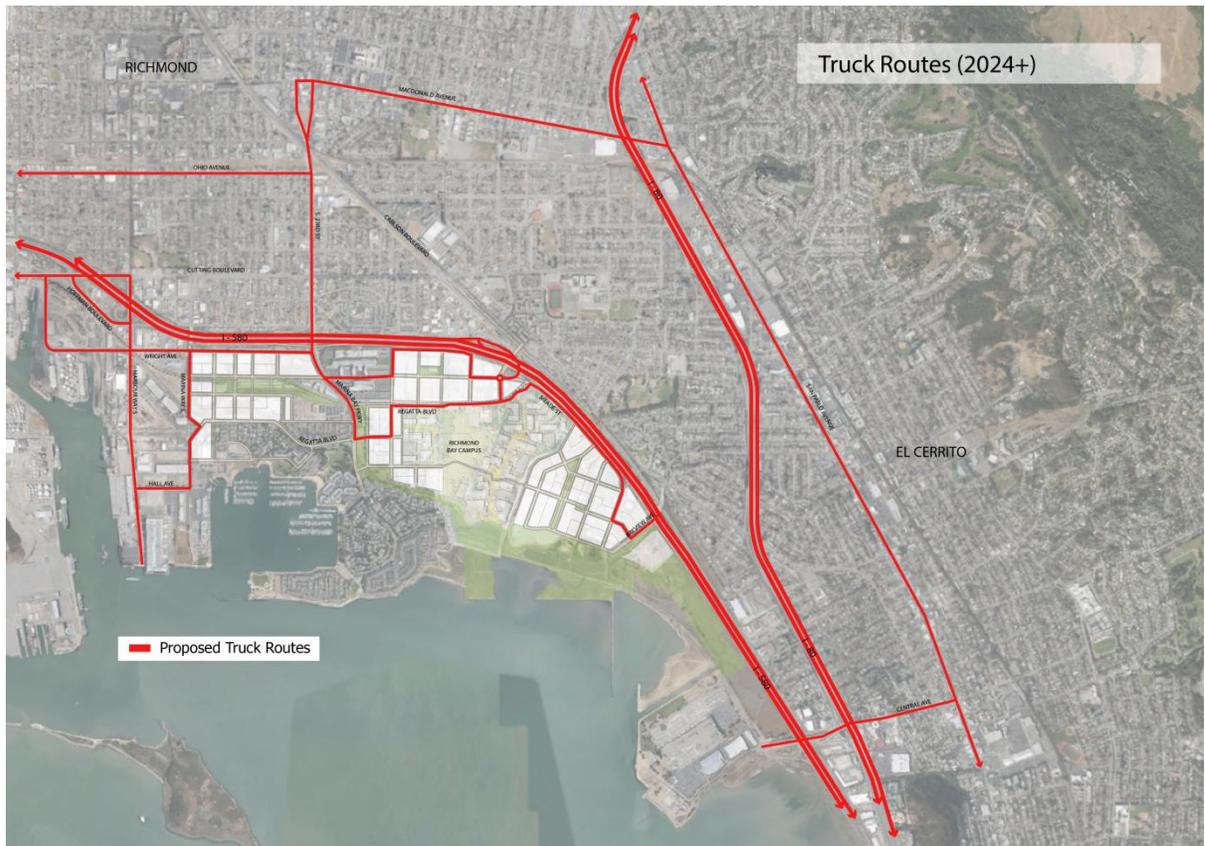
### Freight Access and Vehicle Mobility

The SRTCP supports freight access and vehicle mobility in South Richmond through the following measures:

- Maintaining an extensive network of truck routes, reflecting changes to the street network expected to result from implementation of the Richmond South Shoreline Specific Plan and the LRDP for the BGC at Richmond Bay

- Promoting safety and predictability through the physical and operational separation of truck and bike traffic in key corridors
- Establishing new network links, including a new connection over I-580 and the UPRR in the vicinity of South 47<sup>th</sup> Street
- Promoting mobility for all modes through traffic signal coordination and synchronization
- Accommodating additional person trips by non-auto modes, maintaining adequate street capacity for goods/vehicle movement

Figure ES-5 Proposed Truck Route Network (2024+)



Source: City of Richmond and NelsonNygaard

## Non-Motorized Transportation

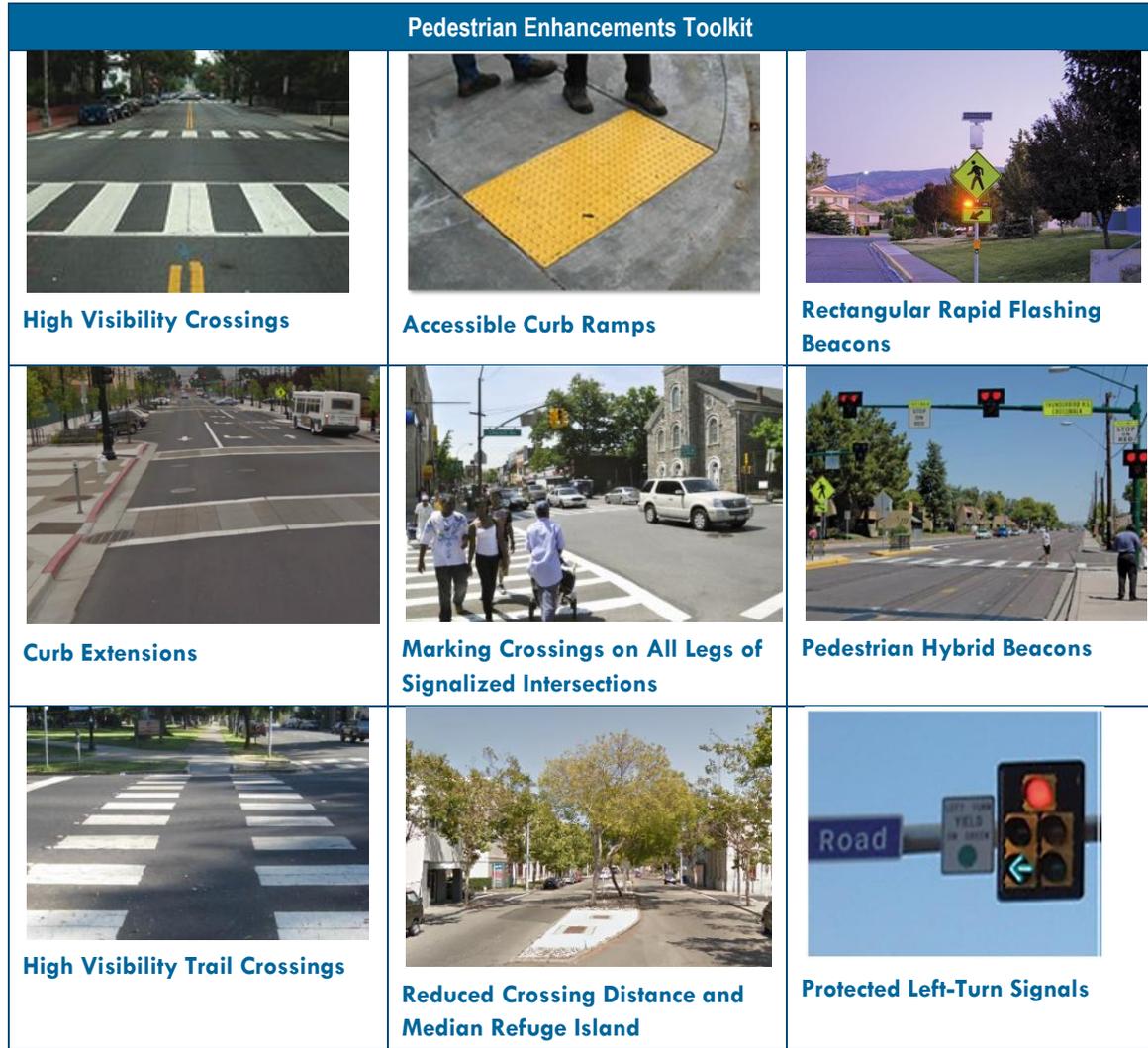
The SRTC recommends changes to streetscapes in corridors throughout South Richmond, enhancing safety, comfort, convenience and connectivity for people walking or traveling by bicycle or other non-motorized options.

## Pedestrian Facilities

For each key corridor, recommended pedestrian safety improvements include streetscape enhancements, intersection/signal changes, and crosswalk installations, such as those shown in Figure ES-6.

In the near-term (2015-2024), pedestrian improvements can be installed quickly and cost-effectively with striping, paint, and movable curbs/bollards. Over time and once proven effective, such low-cost measures can be replaced with permanent installation of new curbs, gutters, sidewalks, related safety features, street furniture, and landscaping.

**Figure ES-6 Recommended Pedestrian Enhancements for South Richmond**



**Bicycle Facilities**

The SRTCP establishes a connected network of on-street and off-street bikeways that minimize conflicts with motor vehicles and is comfortable for use by cyclists of all ages and abilities. This plan builds upon Richmond’s Bicycle Master Plan, updating recommended facility types in some corridors in light of new guidance adopted by the National Association of City Transportation Officials (NACTO) since 2011. SRTCP bicycle facility types are shown in Figure ES-7.

Figure ES-7 Recommended Bicycle Facilities for South Richmond

Bicycle Facility Types	
 <p><b>Shared Use Paths</b> Accommodate bicyclists, pedestrians, joggers, wheelchair users and other non-motorized travelers, with full separation from traffic.</p>	 <p><b>Separated Bikeways</b> Also known as “cycle tracks,” separated bikeways have a vertical physical barrier between traffic and bicycles. Barriers may be curbs, planters, bollards or parked vehicles. May be one-way or two-way, and located on-street, or at sidewalk level.</p>
 <p><b>Bike Lanes</b> Provide dedicated space for on-street bicycle mobility; separated by striping.</p>	 <p><b>Bicycle Boulevard/ Neighborhood Greenway</b> Low traffic streets prioritized for bicycle and pedestrian mobility. Treatments include bike stencils/ signs, stop signs on cross-streets, and traffic calming measures.</p>

### Bicycle Facility Types



#### **Bicycle Route with Sharrows**

Shared lane markings indicate that bicyclist may use the full travel lane.



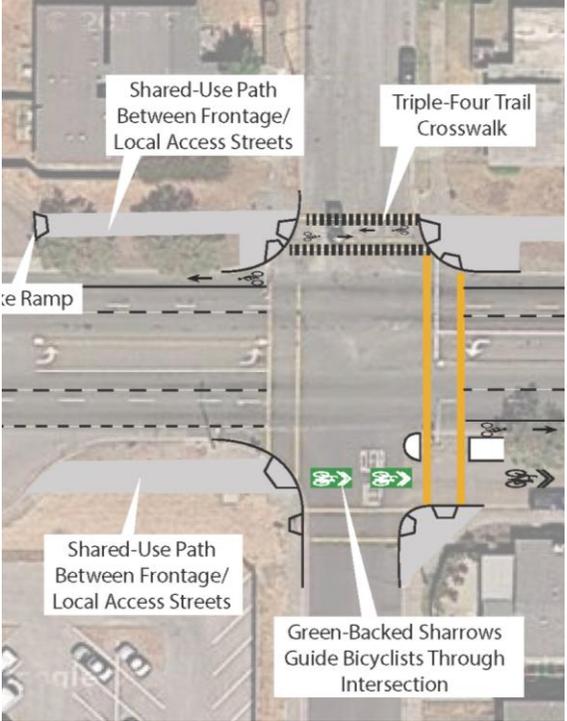
#### **Protected Signal Phase for Bicycles**

Installation of visible bicycle signal heads, with appropriate signal clearance timing for bikes, and prohibition of vehicle right turns on red

To support bicycle access and connectivity, the SRTCP also provides guidance for the provision of bicycle parking and bikesharing, including:

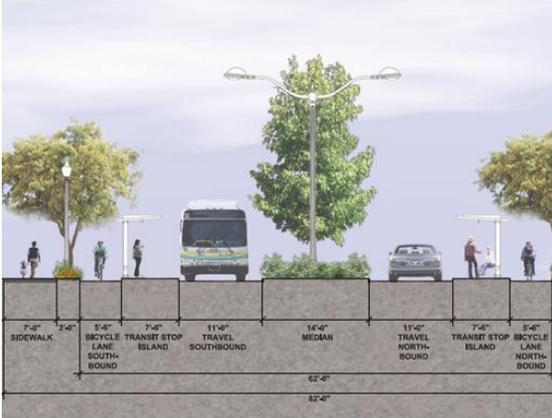
- Providing bike-racks for short-term bicycle parking near key destinations, community centers and employment sites.
- Requiring bike racks, and secure, off-street bike storage for all major new developments
- Partnering with transit agencies, WETA, UC, and local organizations to develop and staff one or more Bike Stations in South Richmond, with secure, attended bike parking, and bike repair services, and to ensure that bikes are accommodated on all public transit vehicles Candidate locations include the BGC Bay and the Ferry Terminal.
- Partnering with Bay Area Bikeshare to study the feasibility of expanding its regional bikesharing service to Richmond and El Cerrito.

Figure ES-8 Summary of Recommendations for Key Corridors

Street	Near-Term (2015-2024)	Long-Term (2030+)
<p><b>Cutting Boulevard</b></p> 	<ul style="list-style-type: none"> <li>▪ Maintain Truck Route West of Harbour Way South</li> <li>▪ Establish Primary Transit Corridor, with service every 15 minutes on a combination of routes connecting to El Cerrito Del Norte BART, Richmond BART (via Harbour Way S), Marin County (Golden Gate Transit), and the new Ferry Terminal (via Marina Way).</li> <li>▪ Rebalance street, adding buffered bike lanes and reducing the number of general purpose travel lanes from S. 41<sup>st</sup> Street to Harbour Way South.</li> <li>▪ Maintain center median, S. 23<sup>rd</sup> St. to S. 41<sup>st</sup> St.</li> <li>▪ Add landscaped center median with turn pockets at major intersections, Harbour Way S to S. 23<sup>rd</sup> Street.</li> <li>▪ East of S. 41<sup>st</sup> Street, maintain current cross-section; add sharrows to frontage lane(s) and mark bikeway connection from frontage lane(s) to pedestrian crossings.</li> <li>▪ Stripe high-visibility crosswalks with median refuges (striped or, preferably, raised median) at priority crossing locations and enhance existing marked crosswalks</li> <li>▪ Enhance existing unsignalized, marked crossings with high-visibility striping, and Rectangular Rapid Flashing Beacons (RRFB's).</li> </ul>	<ul style="list-style-type: none"> <li>▪ Maintain Truck Route W of Harbour Way S</li> <li>▪ Expand service on Primary Transit Corridor from Harbour Way S to San Pablo Ave, with new frequent service to the Ferry Terminal via Marina Way S, and expanded service on other corridors.</li> <li>▪ S. 23<sup>rd</sup> St to San Pablo Avenue: Rebalance street, with three general purpose travel lanes – one in each direction, plus center turn pockets, and two lanes dedicated to transit or all HOV (pending further evaluation), with one-way separated bikeways on either side. Note that decisions about the alignment of any future dedicated transit only or HOV lanes will be made based on further planning and evaluation of corridor constraints, travel demand, and transit service plans. Should demand, funding availability and political support warrant, grade separated transit may be accommodated in a median alignment.</li> <li>▪ S. 23<sup>rd</sup> to S. 41<sup>st</sup>: Accommodate raised, separated bikeways on both sides with removal of parking lanes, reduction in travel lanes or removal of center median.</li> <li>▪ Harbour Way S. to S. 23<sup>rd</sup> St: Rebuild Cutting with raised and separated, bikeways on both sides.</li> </ul>

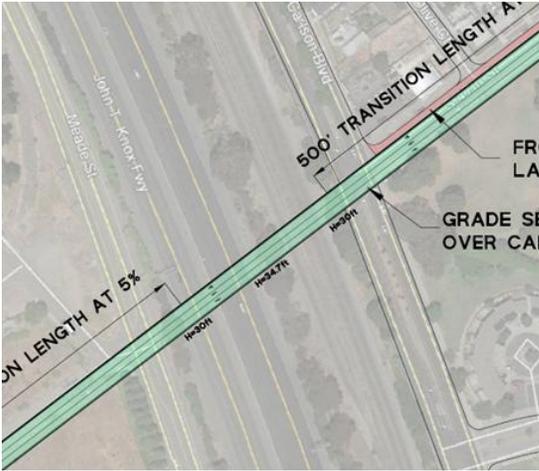
Street	Near-Term (2015-2024)	Long-Term (2030+)
<p><b>South 23rd/Marina Bay Parkway</b></p> 	<ul style="list-style-type: none"> <li>▪ Maintain as a primary Truck Route</li> <li>▪ Establish as a Primary Transit Corridor with frequent service (every 15 minutes) on a combination of routes, including a new connection from Richmond BART to El Cerrito Plaza BART via South Shoreline</li> <li>▪ Maine to Cutting: Maintain existing configuration</li> <li>▪ Cutting to Potrero: Re-stripe with bike lanes as per Richmond Livable Corridors guidance.</li> <li>▪ I-580 Overpass: Build modified version of interchange layout recommended in BMP:             <ul style="list-style-type: none"> <li>○ Square-off and narrow intersections with ramps</li> <li>○ Reduce from six to four travel lanes</li> <li>○ Add separated bikeways (one-way each side)</li> </ul> </li> <li>▪ I-580 to Meeker: Rebalance from six to four travel lanes, with median and center turn pockets; adding separated bikeways (one-way on each side)</li> <li>▪ North of Meeker add new transit stop islands between bike lane and travel lanes</li> <li>▪ Meeker to Regatta Blvd: Integrate Moody Underpass, with modifications to reduce crossing distance and turning speeds at Meeker/Marina Bay Parkway</li> </ul>	<ul style="list-style-type: none"> <li>▪ Maintain as a primary Truck Route</li> <li>▪ Expand service on Primary Transit Corridor</li> <li>▪ Monitor transit travel times in this and other corridors in the Plan Area. Consider restricting one NB lane to HOV, as necessary to maintain person capacity</li> <li>▪ Cutting to Potrero: Rebalance, with two through lanes, one turn lane, and parking, separated bikeways, and extended sidewalks on both sides.</li> <li>▪ I-580 Overpass: Consider full interchange redesign options, including rebuilding the interchange as a classic “urban diamond”</li> <li>▪ I-580 to Meeker: Provide two travel lanes in each direction. Maintain center median, with turn pockets. Maintain separated bikeways and transit stop islands. Expand sidewalk on west side, and add off-street shared-use path on east side of right-of-way</li> <li>▪ Marina Bay Parkway/Regatta Blvd: Re-design as a “T” intersection, as proposed in the South Shoreline Specific Plan</li> <li>▪ Formalize curb extensions and other near-term interventions identified as near-term measures</li> </ul>

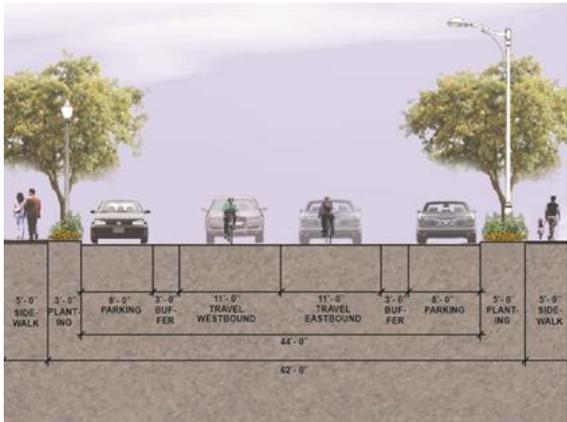
Street	Near-Term (2015-2024)	Long-Term (2030+)
<p><b>Harbour Way South</b></p> 	<ul style="list-style-type: none"> <li>▪ Maintain as a primary Truck Route</li> <li>▪ Ford Point to Hoffman Boulevard:               <ul style="list-style-type: none"> <li>○ Add two-way separated bikeway on east side</li> <li>○ Formalize parking on west side, with parking restrictions near driveways and intersections to improve sight lines, and enhance safety of truck turning movements.</li> </ul> </li> <li>▪ Hoffman to Cutting:               <ul style="list-style-type: none"> <li>○ Add one-way separated bikeways through I-580 interchange</li> <li>○ Square up on and off-ramps with curb extensions and soft-hit posts</li> </ul> </li> <li>▪ North Rail Spur (BNSF) crossing at Harbour/Wright: Add warning lights, gates and traffic signals.</li> <li>▪ Hoffman/Harbour:               <ul style="list-style-type: none"> <li>○ Stripe triple-four trail crossings on east and north side of intersection</li> <li>○ Stripe large corner bulb/queue on both SE and SW corners of the intersection to allow cyclists to make two-stage left turn crossings.</li> <li>○ Stripe curb extension on SE corner, to slow and improve safety of auto turning movements.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Maintain as a primary Truck Route</li> <li>▪ Ford Point to Hoffman Boulevard: Raised two-way cycletrack on the east side of the roadway</li> <li>▪ Hoffman Boulevard to Cutting Boulevard:               <ul style="list-style-type: none"> <li>○ Raised one-way cycletracks through I-580</li> <li>○ Square up On- and Off Ramps per Pedestrian Plan with hardscape curb extensions</li> <li>○ Stripe large sidewalk extension with soft-hit posts in the northbound direction, north of off-ramp</li> </ul> </li> <li>▪ Hoffman Boulevard/Harbour Way Intersection               <ul style="list-style-type: none"> <li>○ Modify signal to allow bike phase concurrent with NB protected left-turn</li> <li>○ Formalize curb extensions with curb and gutter</li> </ul> </li> </ul>

Street	Near-Term (2015-2024)	Long-Term (2030+)
<p><b>Marina Way South</b></p> 	<ul style="list-style-type: none"> <li>▪ Maintain as Truck Route S of Wright Ave</li> <li>▪ Establish as a Secondary Transit Corridor, with service every 15-30 minutes on lines connecting to the Ferry Terminal, El Cerrito Del Norte BART (via Cutting), and Richmond BART (via Cutting-Harbour Way S, and MacDonald)</li> <li>▪ Cutting to Hall Avenue: Maintain existing center median, with turn pockets at major intersections. Re-balance street, converting from four to two travel lanes; adding one buffered bike lane in each direction, separated from general purpose travel lane at selected intersections by new transit stop islands</li> </ul>	<ul style="list-style-type: none"> <li>▪ Maintain as Truck Route S of Wright Ave</li> <li>▪ Expand transit, with frequent service (every 15 minutes) on a combination of lines.</li> <li>▪ Cutting to Hall Ave: Formalize separation of bike lanes, with addition of a 4' rolled curb and 3' striped buffer zone.</li> <li>▪ Marina Way/Regatta: Consider realigning Marina Way to intersect with Regatta Boulevard at 90 degree angle on the SE side of the existing southern rail spur, as proposed in the Richmond South Shoreline Specific Plan. This would allow traffic to proceed from Regatta Boulevard to Marina Way South (south of Regatta) as a primary east-west "through" traffic movement, without a railroad crossing. Note: This new intersection should be signalized, with allowance for railroad signal preemption.</li> </ul>
<p><b>Hoffman Boulevard</b></p> 	<ul style="list-style-type: none"> <li>▪ Cutting Boulevard to Harbour Way <ul style="list-style-type: none"> <li>○ Lane reduction/parking removal in the southbound direction and removal of left-turn pocket at Harbour Way intersection</li> <li>○ Stripe continuous bicycle lanes through each intersection approach</li> <li>○ Consider two-way bikeway on west side</li> </ul> </li> <li>▪ Hoffman Boulevard/Harbour Way <ul style="list-style-type: none"> <li>○ Stripe triple-four trail crossings on east and south sides of intersection</li> <li>○ Stripe queue boxes on SE and SW corners</li> </ul> </li> <li>▪ Maintain space for L-turn at western approach to Harbour Way</li> </ul>	<ul style="list-style-type: none"> <li>▪ Add to the City's Truck Route Network</li> <li>▪ Cutting Boulevard to Harbour Way <ul style="list-style-type: none"> <li>○ Conduct a feasibility study for shared-use path parallel to BNSF rail spur</li> <li>○ If a parallel path is not feasible, develop two-way bikeway on SW side</li> </ul> </li> <li>▪ Cutting /Hoffman: Add bicycle signal phase</li> <li>▪ Hoffman Boulevard/Harbour Way Intersection <ul style="list-style-type: none"> <li>○ Realign the intersection of the EB I-580 on-ramp with Harbour Way S. to reduce speeds.</li> </ul> </li> </ul>

Street	Near-Term (2015-2024)	Long-Term (2030+)
<p><b>Carlson Boulevard</b></p> 	<ul style="list-style-type: none"> <li>▪ Establish as a Secondary Transit Corridor, with expanded service on the current AC Transit Line 71</li> <li>▪ Carlson Boulevard/Richmond Greenway <ul style="list-style-type: none"> <li>○ Install two-way cycletrack adjacent to southbound 23rd Street</li> <li>○ Stripe bike lane on part of 22<sup>nd</sup> Street</li> <li>○ Class I spur path on the east side of Carlson between the Richmond Greenway and Broadway (May require r.o.w. acquisition).</li> <li>○ Add two-way cycletrack on Carlson between Broadway and 23<sup>rd</sup> Street</li> <li>○ Install bicycle signal at Broadway</li> </ul> </li> <li>▪ Broadway to Bayview: <ul style="list-style-type: none"> <li>○ Right-size from four to two lanes</li> <li>○ Add buffered bicycle lanes</li> </ul> </li> <li>▪ Carlson Boulevard/Bayview Avenue <ul style="list-style-type: none"> <li>▪ Eliminate selected turn pockets, stripe curb extensions, and accommodate bikeways and “protected intersection” features.</li> </ul> </li> <li>▪ Bayview to Tehama: Add bike lanes per BMP</li> <li>▪ Tehama Ave to Central Ave: <ul style="list-style-type: none"> <li>○ Mark crossings every two blocks (~500’).</li> </ul> </li> <li>▪ I-80 WB and EB On-Ramps <ul style="list-style-type: none"> <li>○ Narrow on-ramps to have one receiving lane</li> <li>○ Extend curbs with planters and safe-hit posts</li> <li>○ Remove right turn slip lane at EB ramps</li> <li>○ Complete warrant analysis for signalization of NB left-turn onto I-80E, and left turns from the I-80 WB exit ramps</li> </ul> </li> <li>▪ Complete warrant analysis for signals at Tehama/San Luis, Columbia, and Sacramento</li> </ul>	<ul style="list-style-type: none"> <li>▪ Broadway to Bayview Avenue <ul style="list-style-type: none"> <li>○ Right size with conversion from four to two travel lanes</li> <li>○ Add two-way cycletrack on W side</li> </ul> </li> <li>▪ Cutting Boulevard/Carlson Boulevard <ul style="list-style-type: none"> <li>○ Consider implementing a roundabout instead of a signal pending future feasibility analysis</li> <li>○ Define street edge with gutters and curb ext. on NW and SW corners</li> <li>○ Close sidewalk gap on south side of Cutting Boulevard (Spring to Carlson)</li> <li>○ Provide extra wide sidewalk on South side of Cutting with space marked for travel by bicycles, linking Spring Street bikeway with a wide crossing connection to the Carlson bikeway.</li> <li>○ Widen SB Carlson approach to accommodate right-turn pocket</li> <li>○ Install protected turn phasing</li> <li>○ Consider grade separation of the railroad tracks in the longer term, depending on City/community support</li> </ul> </li> <li>▪ Bayview Avenue to Tehama Avenue <ul style="list-style-type: none"> <li>○ Maintain Class II bike lanes as proposed for near-term</li> <li>○ Consider four- to three-lane reduction, with parking-separated bikeways, and median islands at unsignalized crossings</li> </ul> </li> <li>▪ Carlson/Bayview and Carlson/Broadway <ul style="list-style-type: none"> <li>○ Add bike or protected turn phases</li> </ul> </li> </ul>

Street	Near-Term (2015-2024)	Long-Term (2030+)
<p><b>Central Avenue</b></p> 	<ul style="list-style-type: none"> <li>▪ Maintain Truck Route from El Cerrito to SF Bay</li> <li>▪ Rydin Road to Jacuzzi: Re-stripe bike lanes and add new shared-use path from 300' E of Rydin to intersect Bay Trail N of Rydin/Central</li> <li>▪ Jacuzzi to Pierce: Add Shared-Use Path on S. side</li> <li>▪ Pierce Street: Consistent with El Cerrito plans, add two-way separated bikeway Central to Cerrito Creek</li> <li>▪ San Joaquin at Central: Extend curbs to narrow the pedestrian crossing of San Joaquin on the north side of Central Ave; reduce curb radius</li> <li>▪ Sacramento-San Luis-San Joaquin: Designate Sacramento Ave and San Joaquin St. as bicycle boulevards; install wayfinding, and traffic calming to provide a low-stress alternative for E-W travel</li> <li>▪ Restripe crossings with triple-four trail crossing and high visibility crosswalk markings, as appropriate</li> </ul>	<ul style="list-style-type: none"> <li>▪ Maintain Truck Route from El Cerrito to SF Bay</li> <li>▪ Formalize raise two-way separated bikeway with CCTA Central Avenue Interchange Realignment</li> <li>▪ Rydin Road/Central Avenue/I-580 On-Ramp               <ul style="list-style-type: none"> <li>○ Signalize intersection with a bike phase to support diagonal crossing of Bay Trail</li> </ul> </li> <li>▪ Central Avenue/Jacuzzi Street and Central Avenue/I-80 Ramps               <ul style="list-style-type: none"> <li>○ Consider bicycle signal phasing to control movement on path</li> </ul> </li> </ul>
<p><b>Bayview Avenue</b></p> 	<ul style="list-style-type: none"> <li>▪ Establish a Primary Transit Corridor, with frequent service (every 15-min.) connecting Richmond BART with El Cerrito Plaza BART via Bayview Ave</li> <li>▪ Right-size I-580 overpass to four lanes</li> <li>▪ Repair and extend sidewalk on SE side of overpass</li> <li>▪ Add two-way, barrier separated bikeway to SE side</li> <li>▪ Add a temporary, barrier, or curb protected pedestrian walkway to the NW side of overpass</li> <li>▪ Bayview/Carlson: Modify signals and use temp. barriers and soft-hit posts to extend curbs</li> <li>▪ Carlson to Potrero via Ellis/Cypress Greenway:               <ul style="list-style-type: none"> <li>○ Install wayfinding signage and pavement markings identifying route</li> <li>○ Widen path to Class I standard, where feasible within r.o.w.; repair/re-pave path</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Expand service on this Primary Transit Corridor from Richmond BART to El Cerrito Plaza BART, via the BGC and Bayview Ave</li> <li>▪ Consider potential reconstruction of Bayview Ave at I-580, reconfiguring EB on-/off-ramps to meet Bayview at an elevated intersection, directly adjacent to the expressway</li> <li>▪ If the Bayview interchange is not realigned, formalize the recommended near-term changes to the r.o.w., including dedicated pedestrian and bicycle facilities, with full curb extensions at Carlson Boulevard</li> </ul>

Street	Near-Term (2015-2024)	Long-Term (2030+)
<p><b>Juliga Woods Street/ Spring Street</b></p> 	<ul style="list-style-type: none"> <li>▪ Maintain a Truck Route on Regatta Boulevard from Meade Street to WB I-580 on/off-ramps</li> <li>▪ Add wayfinding signage and in-lane sharrow markings to indicate that Juliga Woods Street and South 31<sup>st</sup> From Woods to Cutting, are a designated Neighborhood Greenway/Bicycle Boulevard</li> <li>▪ Establish a new and direct pedestrian and bicycle connection from the Regatta Boulevard overpass to Cutting Boulevard via the Spring Street right-of-way. Develop a short segment of shared-use path through this undeveloped right-of-way</li> <li>▪ Repave Spring Street and designate it as a Neighborhood Greenway/Bicycle Boulevard</li> </ul>	<ul style="list-style-type: none"> <li>▪ Maintain a Truck Route on Regatta Boulevard from Meade Street to WB I-580 on/off-ramps</li> <li>▪ Consider development of a two-way cycle track on Spring Street from Regatta Boulevard to Cutting, with provision for access to/from bikeways in both directions on Cutting and Carlson via an extended sidewalk on S side of Cutting (Spring to Carlson).</li> <li>▪ Develop a two-way cycle track on the NE side of the Regatta Boulevard overpass of I-580, keeping bicyclists separated from potential conflict with turning movements, between Regatta Boulevard/Juliga Woods Street and the on/off-ramps to WB I-580.</li> </ul>
<p><b>South 47th Street</b></p> 	<ul style="list-style-type: none"> <li>▪ Near-term Option A would make South 47<sup>th</sup> Street a Primary Transit Corridor with frequent service on a combination of routes. This option assumes that a new local transit route and shuttles would be aligned to connect BGC and the larger South Shoreline area with the El Cerrito Del Norte BART via Bayview.</li> <li>▪ S. 47<sup>th</sup> Street from Carlson to Potrero Ave:             <ul style="list-style-type: none"> <li>○ Maintain existing curbs, with parking on both sides, and a 20' shared roadway in the middle</li> <li>○ Add "sharrows" indicating that bicycles should travel in the shared space; sign S. 47<sup>th</sup> St. as a Neighborhood Greenway/Bicycle Boulevard</li> <li>○ Extend curbs at intersections to narrow pedestrian crossing distances (Temporary curb extensions can be employed in the near-term where funding is limited)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Construct a new multimodal bridge, with two travel lanes and a parallel bike/ped path, over I-580, the UPRR and Carlson Blvd. Bridge would connect the NE corner of the BGC with a landing N of Carlson Boulevard (As a less costly alternative, consider a bike/ped. only bridge in the same alignment)</li> <li>▪ If a multimodal bridge is constructed in the alignment of S. 47<sup>th</sup> Street, implement Long-Term Transit Network Option B, including a Primary Transit Corridor, with frequent service from the Ferry Terminal and BGC to El Cerrito Del Norte BART via S. 47<sup>th</sup> St.</li> <li>▪ S. 47<sup>th</sup> Street from Carlson to Potrero Ave: Replace parking with two-way separated bikeway on SE side of street</li> <li>▪ Add high visibility crossings where feasible</li> </ul>

Street	Near-Term (2015-2024)	Long-Term (2030+)
<p><b>Potrero Avenue</b></p>  <p>The diagram shows a cross-section of Potrero Avenue with the following lane widths from left to right: 5'-0" SIDE-WALK, 3'-0" PLANTING, 8'-0" PARKING, 3'-0" BUF-FER, 11'-0" TRAVEL WESTBOUND, 11'-0" TRAVEL EASTBOUND, 3'-0" BUF-FER, 8'-0" PARKING, 3'-0" PLANTING, and 5'-0" SIDE-WALK. The total width of the roadway is 44'-0", and the total width of the right-of-way is 62'-0".</p>	<ul style="list-style-type: none"> <li>▪ Consider two options for multimodal accommodation, depending on the width of the right-of-way, analysis of local parking patterns and community priorities:                     <ul style="list-style-type: none"> <li>○ Option A: Where curb to curb width is a minimum of 46', keep existing curb lines, stripe parking lanes and bike lanes on both sides, with two general purpose travel lanes in the center of the roadway.</li> <li>○ Option B: Where curb to curb width is a minimum of 44', keep existing curb lines, stripe parking lanes on both sides, add a buffer zone (3'), with two shared general purpose travel lanes, with green backed sharrows, indicating that cyclists may take the full lane.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ If a multimodal bridge is constructed in the alignment of S. 47<sup>th</sup> Street, implement Long-Term Transit Network Option B, with a Primary Transit Corridor, from the Ferry Terminal and BGC to El Cerrito Del Norte BART, via S. 47<sup>th</sup> St and Potrero Avenue</li> <li>▪ Potrero Ave, Carlson Blvd to San Pablo Avenue: Maintain existing curb lines, with parking on one side and buffered bike lanes.</li> <li>▪ Along the entire corridor, add high visibility crosswalks and curb extensions where feasible.</li> </ul>

## FUNDING AND IMPLEMENTATION

Many of the streetscape enhancement concepts recommended for key corridors in this SRTCP are intended to be flexible, to accommodate changes in the scale, pace and type of development in the area, and associated changes in travel demand. As such, the SRTCP focuses primarily on prioritization of and options for funding concepts recommended for the near-term (2015-2024). Detailed planning and funding for the long-term improvements (those improvements recommended for 2030 or beyond) will happen in the future, with the City making updates to SRTCP concept designs, and programmatic recommendations, based on new information, and changes to local conditions, projected travel patterns, and best practices in planning and design.

### Evaluation Criteria

To prioritize implementation steps, multi-modal improvements within key corridor segments, were evaluated against criteria relating to the following:

- Connecting South Richmond
- Access to Regional Transit Hubs
- Transit Service Enhancement
- Proximity to Key Destinations
- Multimodal Safety
- Ease of Implementation

### Project and Corridor Prioritization

Based on these evaluation criteria, each corridor segment was given an overall letter grade. The letter grades “A” through “F” were assigned to each segment for each criterion and then averaged to establish a composite grade. These grades serve as general guidance for the relative priority for the connectivity improvements recommended for a given corridor/segment.

SRTCP corridor segments with the highest level of priority (those with a composite corridor segment priority of “A”), are shown in Figure ES-9, below. Due to their combination of high-impact, feasibility, and attractiveness for grant funding, multimodal improvements recommended for these high priority corridor segments are well positioned for early-action funding and implementation.

**ES-9 High Priority Corridor Segments**

Corridor	Segment	Type of Improvement
Carlson Boulevard	Broadway Ave to Bayview Ave	Multimodal (Right-Sizing)
	Bayview Ave to Tehama Ave	Multimodal
Harbour Way	North of Cutting Boulevard	Transit Service Enhancement
	Hall Avenue to Ferry Terminal	Transit Service Enhancement
Marina Bay Parkway	Potrero Ave to Regatta Boulevard	Multimodal (Right-Sizing)
Bayview Avenue	S. 51 <sup>st</sup> Street/Meade St. to Carlson Boulevard	Multimodal (Right Sizing)
Cutting Boulevard	Harbour Way S. to S. 23 <sup>rd</sup> Street	Multimodal (Right Sizing)
	South 41 <sup>st</sup> Street to I-80	Multimodal

## **Potential Funding Sources**

To implement the SRTCP, careful consideration will need to be given to identify the best funding source for each project. The following are some of the best potential funding sources for the types of high priority connectivity projects and services recommended in this plan:

- Active Transportation Program
- Highway Safety Improvement Program
- One Bay Area Grant (OBAG)
- Transportation Development Act (TDA), Article 3
- Measure J (Contra Costa County)
- Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant program
- California Cap and Trade Program
- Development Impact Fees
- Federal funding options
- State funding options

# 1 INTRODUCTION

*The purpose of the South Richmond Transportation Connectivity Plan (SRTCP) is to identify deficiencies in existing networks of transportation facilities and services and develop specific recommendations to improve multimodal connectivity to and within the area.*

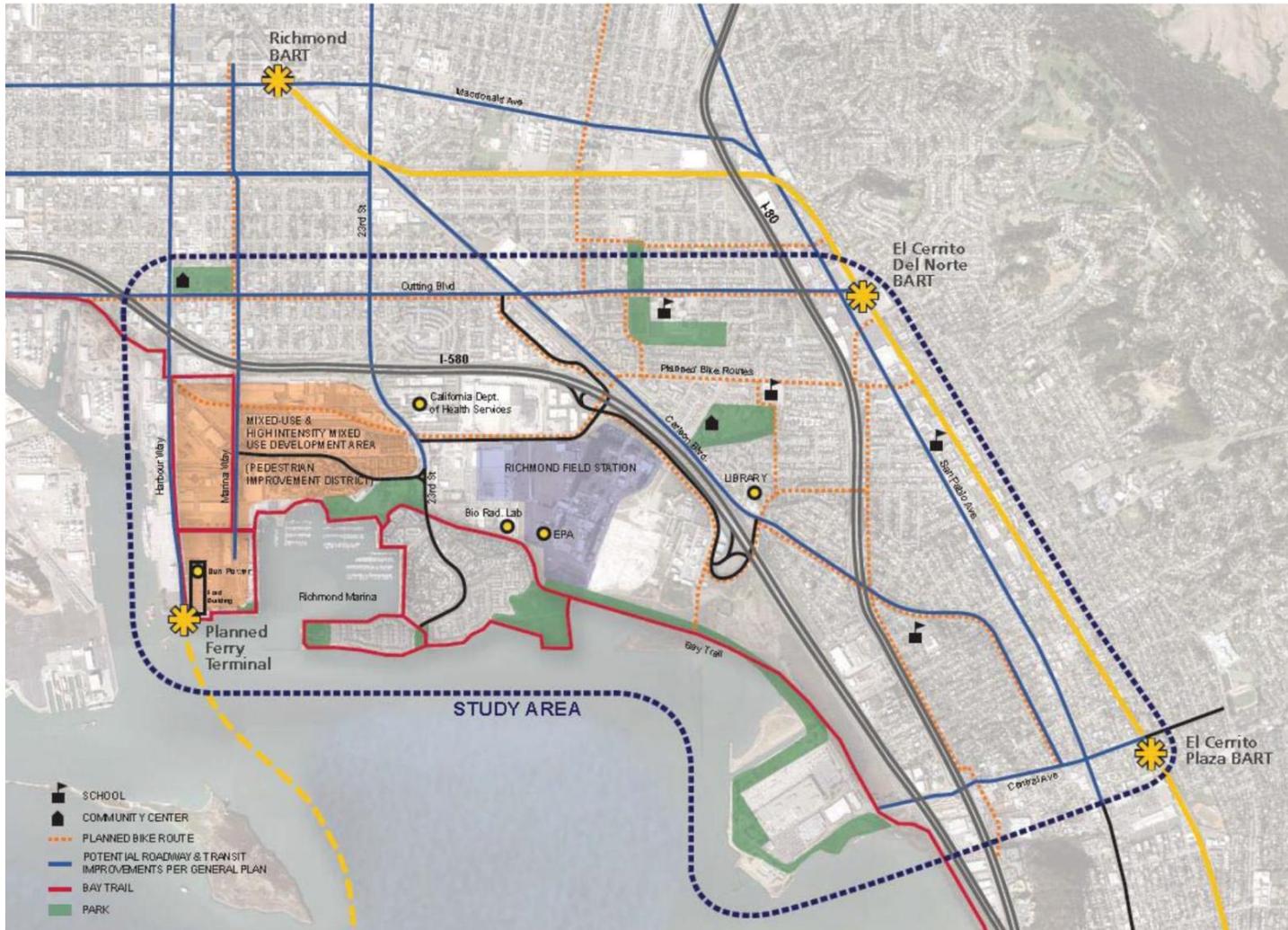
From a broad view, South Richmond is an area with great opportunity and regional accessibility. The South Richmond Transportation Connectivity Plan (SRTCP) Area, shown in Figure 1-1, includes the Richmond Annex and Southwest Annex, Central Richmond neighborhoods south of Maine Avenue and east of San Pablo Avenue, and the South Shoreline/Marina Bay area, located between I-580 and Richmond's Inner Harbor. The perimeter of the area is generally accessible by transit via three nearby BART Stations and multiple shuttle and AC Transit bus routes, by walking or cycling via the Bay Trail, and by driving via I-580, I-80, and major arterials including San Pablo Avenue, Central Avenue, Carlson Boulevard, Cutting Boulevard, and South 23<sup>rd</sup> Street/Marina Bay Parkway.

Viewed from the street, however, the SRTCP area is divided into two different types of places, each with distinct transportation networks, and characteristics of land use and urban form. Neighborhoods north and east of I-580 are largely residential, with a dense grid of wide local streets, most with sidewalks. In contrast, the South Shoreline area is occupied primarily by commercial uses, including light and heavy industry, and many vacant parcels. It has extensive off-street segments of the Bay Trail, but a discontinuous and disconnected network of local streets, many without sidewalks.

In combination, South Richmond is both blessed with opportunity and burdened with barriers to connectivity. The South Shoreline area is poised for transformation, starting with the planned re-opening (2018) of ferry service to San Francisco from a new terminal at Ford Point, and the planned development of a major new research center, the Berkeley Global Campus at Richmond Bay, on the current site of UC Berkeley's Richmond Field Station. The Richmond South Shoreline Specific Plan – developed in coordination with this SRTCP – anticipates additional mixed-use development and activities with supportive infrastructure and services in the vicinity.

This transformation represents an opportunity for residents and businesses in the neighborhoods north and east of I-580. These stakeholders stand to benefit from improved access to employment, services, and the educational and recreational opportunities associated with potential development along the Shoreline. A central challenge for the City and transportation service providers is to remove barriers to connectivity between the South Shoreline area and other Richmond neighborhoods, as well as nearby transit stations (BART and Amtrak) to allow residents across the City to realize these opportunities. Major barriers include the Union Pacific Railroad (UPRR), rail spurs, and Interstates 80 and 580, which have limited crossings for vehicles and even fewer crossings that are safe and comfortable for pedestrians and bicyclists of all ages and abilities. Other notable issues include missing links in the existing networks of sidewalks, bike lanes and off-street trails.

Figure 1-1 South Richmond Transportation Connectivity Plan (SRTCP) Area

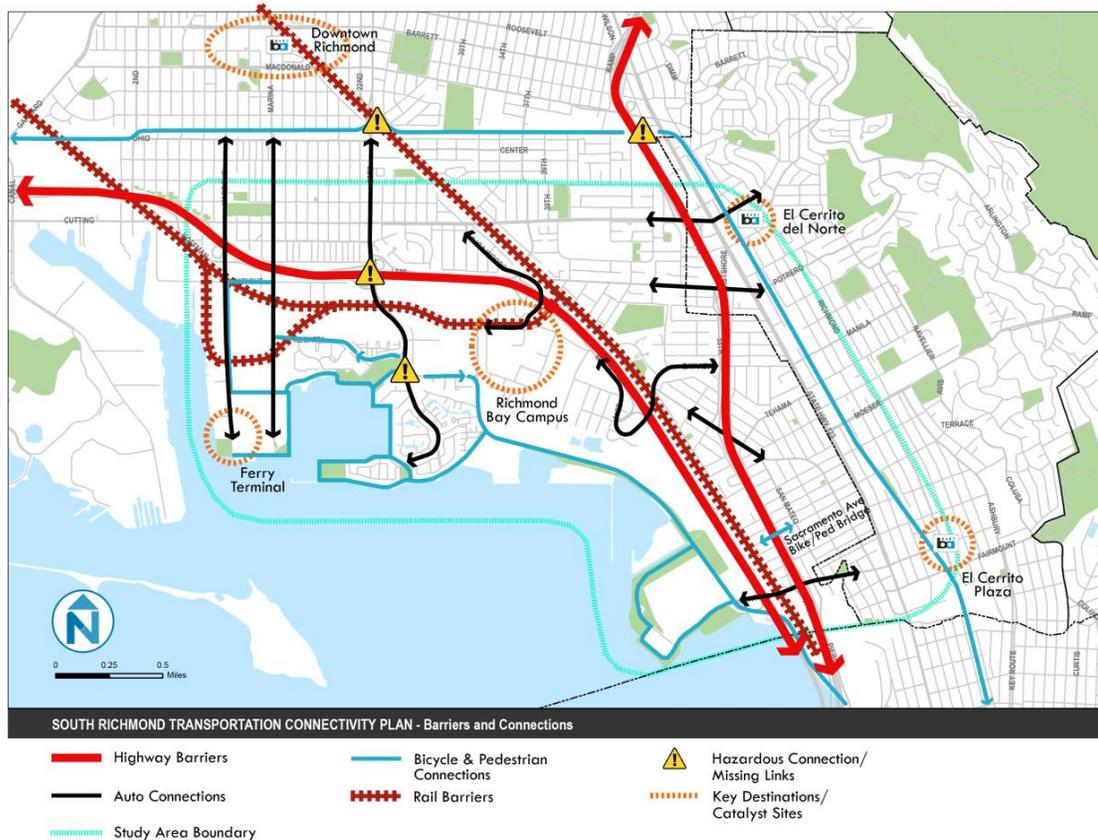


Source: City of Richmond, CA

## GOALS AND OBJECTIVES

The purpose of the SRTCP is to identify deficiencies in the existing transportation networks and develop specific recommendations to improve multimodal connectivity to and within South Richmond. Figure 1-2 illustrates major barriers to connectivity to and within South Richmond, including highways and railways, as well as the limited multimodal connections that do exist.

Figure 1-2 Connections, Barriers and Missing Links



A key goal of this plan is to overcome these barriers, enhancing connectivity to and circulation within South Richmond to ensure that the benefits of growth and development along the Shoreline are shared Citywide. This plan is not, however, limited to planning for these essential connections. A key finding of this preliminary review is the prevalence of missing links, and deficiencies in the transportation networks serving both sides of I-580/UPRR barrier. The well gridded street networks north of I-580 and within the Annex neighborhoods are interrupted by wide arterial streets, with high speed traffic, and few marked crossings. Local transit service is indirect and infrequent in most corridors. Shuttles bypass many neighborhoods entirely on the way to providing a direct connections from BART to destinations in the South Shoreline area. Many streets in these areas also lack bicycle facilities, ADA accessible curb ramps, or sufficient street lighting to provide residents and passers-by with a sense of safety and security.

At the same time that they facilitate the hazard of high speed traffic, the wide rights of way and relatively low traffic volumes on many of the streets and roadways in South Richmond present

opportunities for the City to consider expanding or adding new pedestrian, bicycle and transit facilities within the public right-of-way.

In addition to enhancing connectivity, the goals of the plan are three-fold:

1. To strengthen existing businesses and neighborhoods in the area by making them more accessible to the rest of Richmond, adjacent communities and the larger Bay Area.
2. To plan for the transportation facilities and services that will be necessary to support and accommodate the new development planned for the area in the Richmond South Shoreline Specific Plan (RSSSP), the Long Range Development Plan (LRDP) for Berkeley Global Campus at Richmond Bay, and the Richmond General Plan 2030,
3. To ensure that the residents of neighborhoods across the City of Richmond have improved access to and benefit from the employment, educational and recreational opportunities existing in and planned for the South Shoreline area.

Other specific plan objectives include:

- Connecting neighborhoods
- Connecting to transit stations and adjacent communities
- Evaluating innovative solutions
- Encouraging balanced travel mode split
- Balancing modal priorities in the use of limited public rights-of-way

## **RELATED PLANS**

The SRTCP was developed in coordination with previously completed, and currently ongoing planning efforts by the City of Richmond and key plan participants, including AC Transit, BART, and the University of California and the Lawrence Berkeley National Laboratories, which have led planning for the Berkeley Global Campus at Richmond Bay. This section provides a brief overview of related plans and how they informed or were addressed by the SRTCP planning process.

### **Richmond South Shoreline Specific Plan (City)**

The SRTCP has been developed and is intended to be implemented in close coordination with the implementation of the Richmond South Shoreline Specific Plan (RSSSP). The RSSSP details the community and stakeholder defined vision for land development, urban design, open spaces, and supporting transportation facilities and services for a 500 acre portion of the South Shoreline Area. As an amendment to the City of Richmond General Plan for 2030, the RSSSP defines a land use plan and associated development standards for an area South and West of I-580, surrounding the existing UC Berkeley's existing Richmond Field Station – future site of the Berkeley Global Campus at Richmond Bay. This includes two light industrial/commercial “change areas” identified in the Richmond 2030 General Plan:

- The Regatta/Marina Bay Change Area (CA-15), bounded by Regatta Blvd, I-580, Marina Way to the west and Sycamore Avenue to the East, and
- The Southern Gateway Change Area (CA-16), located south and west of I-580, and east of 32<sup>nd</sup> Street.

Figure 1-3 South Shoreline Specific Plan Area



Source: City of Richmond (goggle base)

The goal of the Specific Plan is to help the City leverage the opportunity of UC's planned investment in the Berkeley Global Campus at Richmond Bay, by catalyzing growth in associated research and development activities, and supportive commercial and residential development in the adjacent neighborhoods that are today occupied by low-density commercial and industrial land uses, and many vacant parcels. Transportation-related elements of the RSSSP focus on campus access strategies, parking, transportation demand management (TDM) programs, and thoroughfare design standards that enable multimodal access to the Berkeley Global Campus and adjacent neighborhoods. The goal of these strategies is to accommodate substantial new growth and development with a limited increase in motor vehicle traffic to or within the South Shoreline.

### **General Plan 2030 (City)**

Adopted in May 2012, the Richmond General Plan 2030 is a comprehensive framework for the City's sustainable growth and development, with a focus on public health and healthy neighborhoods. As required by the State, the Plan includes elements related to land use, transportation, housing, open space, conservation, noise, and safety. In addition, the Plan includes elements addressing economic development, climate change, arts and culture, education and human services, community facilities and infrastructure, historic resources, and the National Historic Park. The City of Richmond is also one of the first in the nation to include a comprehensive community health and wellness element in its General Plan. The focus of that element extends to promoting the use of healthy, active modes of transportation, such as walking and bicycling, and reducing the public health and safety impacts of traffic violence.

With the exception of the RSSSP Area and the Berkeley Global Campus at Richmond Bay, the SRTCP assumes future land use and development in South Richmond will occur as planned and projected in the Richmond General Plan 2030.

## **Bay Campus Long Range Development Plan (LRDP)**

The University of California, Berkeley has proposed to establish a new research campus on the current site of its Richmond Field Station (RFS), with the goal of catalyzing new discoveries, economic revitalization, and community vibrancy by facilitating research and development enterprise and fostering connectivity with the surrounding community. This Long Range Development Plan (LRDP), prepared in collaboration with the Lawrence Berkeley National Laboratory (LBNL):

- provides a framework to achieve development goals, underpins entitlement for up to 5.4 million gross square feet of research, education, and support space,
- identifies the need for selected transportation improvements connecting the campus locally and regionally, and
- promotes the achievement of ambitious sustainability goals.

Projects and programs recommended in this SRTCP are intended to support full buildout of the Berkeley Global Campus Richmond Bay, with the assumption that ~50% of all trips to the campus will be made by driving alone, with half or more of all trips made by people walking, cycling, ridesharing or riding transit and/or shuttles.

## **Plan Bay Area (MTC/ABAG)**

Adopted in July 2013, Plan Bay Area is an integrated regional transportation and land use strategy for the nine-county San Francisco Bay Area. The plan integrates the region's 2040 Regional Transportation Plan, with its state required Sustainable Communities Strategy (SCS), to accommodate future population growth in a way that reduces greenhouse gas emissions from cars and light trucks. It advances initiatives to expand housing and transportation choices, create healthier communities, and build a stronger regional economy. Plan Bay Area directs 80% of the region's future housing needs to Priority Development Areas (PDAs), located within walking distance of frequent transit service, accessible to commercial and public services, and offering a range of housing choices.

Much of the SRTCP planning area is contained within the 1,350 acre South Richmond Priority Development Area (SRPDA), which includes the RSSSP area, and the Richmond Bay Campus, site of the future Berkeley Global Campus. To the west, the PDA extends to the Port of Richmond and the Ford Peninsula, and to the north it includes neighborhoods north of I-80, to Ohio Avenue, between S. 23<sup>rd</sup> Street and Harbour Way South.

## **Richmond Bicycle Master Plan (City)**

The Richmond Bicycle Master Plan (BMP, 2013) was developed as an action plan to implement key policies and programs of General Plan 2030. It establishes a blueprint for a 145-mile network of bikeways and associated support facilities across the City, focusing on safe routes of access to schools, employment centers, shops, parks, and open spaces.

The Bicycle facilities recommended in this SRTCP largely follow the network recommendations of the BMP. However, the recommended facility type(s) and treatments in each key corridor in South Richmond have been updated, consistent with changes in best practices in bicycle and pedestrian facility design and implementation since 2011. These changes include adoption of the

Urban Bikeway Design Guide (2<sup>nd</sup> Ed., 2012), and the Urban Street Design Guide (2013) by the National Association of City Transportation Officials (NACTO).

## **Richmond Pedestrian Plan (City)**

The Richmond Pedestrian Plan (2011) was developed with funding from the Caltrans Environmental Justice: Context-Sensitive Design Planning Grant Program, and project coordination by the Local Government Commission – a non-profit organization that works with local agencies to build livable communities. The plan aims to improve the safety, convenience, and appeal of walking throughout the City. It details recommendations for right-sizing South Richmond arterials, reducing turning radii, and street crossing distances, and enhancing crossings to improve the safety and comfort of people walking. The pedestrian facility types and street designs recommended in the SRTCP are largely consistent with the recommendations of the Pedestrian Plan, which are highlighted for key corridors in Chapter 10 - Corridor Profiles.

## **WCCTAC Transit Enhancement and Wayfinding Plan (CCTA)**

The purpose of the West Contra Costa Transit Enhancement and Wayfinding Plan is to generate increased transit ridership by improving access to transit centers. The Plan includes recommendations for pedestrian and bicycle access to Richmond BART, El Cerrito Del Norte BART, and El Cerrito Plaza BART, and the planned Richmond Ferry Terminal on the Ford Peninsula. The SRTCP addresses many of the opportunities and challenges identified in this WCCTAC Transit Enhancement Plan related to access between these stations and key destinations in South Richmond.

## **Livable Corridors Initiative (City)**

The Richmond Livable Corridors Form-Based Code (2015) has been developed concurrently with the SRTCP. It is an implementation tool that is designed to guide the growth and transformation of key corridors in Central and South Richmond, including San Pablo Avenue, MacDonald Avenue, and South 23<sup>rd</sup> Street. In addition to detailed guidance on the form and design of buildings along each corridor, the Form-Based Code specifies street design guidance. This includes guidance on the number, width and restrictions on the use of travel lanes – including on-street bike lanes – and the width of sidewalks and associated parts of the pedestrian realm. The SRTCP defers to the Livable Corridors Form-Based Code for the design of South 23<sup>rd</sup> Street/Marina Bay Parkway north of I-580.

## **BART Vision Plan**

The BART Vision Plan seeks to identify where and how to maintain the BART system in a state of good repair, expand service on existing lines, and build new regional transit infrastructure where most appropriate in the long-term. One preliminary concept for new service in the inner-East Bay, is to add a new line along the San Francisco Bay shoreline from Hercules to Oakland, via the Union Pacific Railroad corridor. This “Eastshore” Corridor is currently served by Amtrak Capitol Corridor trains, and was previously identified as a potential urban rail transit corridor in the San Francisco Bay Area Regional Rail Plan (MTC, 2007). The long-term potential for development of a new South Richmond rail transit station in this Eastshore Corridor, in the vicinity of the BGC at Richmond Bay/S. 47<sup>th</sup> Street, was considered in planning for key SRTCP corridors, including

Carlson Boulevard, S. 47<sup>th</sup> Street, and Potrero Avenue, as well as the area-wide travel networks for transit, walking, and bicycling.

## **AC Transit PLAN/ACT**

As a member of the TAC for the SRTCP, AC Transit has been actively involved in the review and development of proposed South Richmond transit network options for the near-term (2015-2024), and long-term (2030+). To enhance service in the very near-term (2015-2018), AC Transit has initiated planning for new transit lines and upgraded service on existing transit lines. A Draft Proposal presented to the public in March of 2015, presents two options for expanding service along either the MacDonald Avenue-San Pablo Avenue corridor, from Point Richmond to Richmond BART and El Cerrito Plaza BART (Option 1), or the 23<sup>rd</sup> Avenue/ Marina Bay Parkway corridor, from Ford Point to Contra Costa College (Option 2). Implementation of Option 2 would provide frequent transit service (service every 15 minutes) along streets identified in the SRTCP as key components of a Primary Transit Network for South Richmond (see Chapter 7 – Public Transit Network Connectivity).

## **PLANNING PROCESS**

The SRTCP was developed through a comprehensive and coordinated planning process, initiated in September of 2013, with funding from the Caltrans Community-Based Transportation Planning Program. Planning work was conducted in the following six phases, with public and stakeholder engagement as described in this section and the following.

### **Phase 1 – Project Initiation**

Much recent planning work has been done to shape future development, transportation facilities and services in South Richmond. To ensure that the SRTCP would build upon this foundation, the project team conducted a thorough review of recent plans affecting South Richmond, including General Plan 2030, the Richmond Bicycle Master Plan, the Richmond Pedestrian Plan, and the WCCTAC Transit Enhancement Plan, among others. To enlist the resources and collaboration of other public agencies – including agencies responsible for implementing plan recommendations, such as WCCTAC, BART, WETA and AC Transit – the City established and convened an initial meeting of the Technical Advisory Committee (TAC) for the SRTCP. In addition to supporting the existing conditions analysis (Phase 2), project initiation steps included identifying gaps in available data and information, and targeting future outreach and data collection activities.

### **Phase 2 – Identify Needs, Issues and Opportunities**

Drawing from the findings of recent planning efforts, preliminary analysis of existing conditions, and initial public outreach, the project team assessed future needs, issues, and opportunities for multimodal connections to and within South Richmond. This Phase included a special focus on identifying barriers and opportunities for connections between South Richmond and adjacent neighborhoods and transit stations to the north and east, and documenting projected changes to the land uses and demographics of the area, as they relate to future transportation needs.

This inventory of needs, issues and opportunities was shaped in part by the field investigation and community survey work conducted by Richmond High School student participants in the UC Berkeley Center for Cities and Schools' Youth Plan Learn Act Now! (YPLAN) Program.

City staff and consultants also participated in a daylong charrette planning session at Richmond City Hall in November of 2013 to distill key issues and opportunities by corridor and by mode of transportation.

Existing modal travel networks, planned enhancements, and Phase 2 findings related to needs, issues and opportunities for enhancing connectivity are summarized in Chapters 2 (Land use) and 3 (Multimodal Access and Connectivity) of this SRTCP.

### **Phase 3 – Define and Analyze Key Corridors**

In line with the implementation and connectivity focus of this SRTCP, planning, evaluation and conceptual design work were focused in eight multimodal travel corridors located within and connecting to the SRTCP Area. Although some programmatic improvements are recommended for the entire study area, most of the specific multimodal connectivity projects and services recommended in this plan are located within one or several of these key corridors.

Key nodes and corridors were identified through review of existing conditions and adopted plans affecting the plan area, input from interviewed stakeholders and members of the general public at Community Meetings, and input from implementing agencies and other public sector partners on the TAC. Broadly, they provide a geographic focus for analysis of and planning for some of the essential connections this plan is intended to make or strengthen. These include existing and new multimodal connections between Central and South Richmond neighborhoods, the Richmond Annex/SW Annex, and key destinations, transit centers, employment sites, and growth centers.

### **Phase 4 – Refine Transportation and Public Realm Improvements**

After defining key corridors and corridor improvement options in Phase 3, the project team proceeded with development, evaluation and refinement of transportation and public realm improvements recommended for each corridor and each mode of transportation. To vet alternative treatments for specific corridors, and their implications for mode-specific travel networks in South Richmond, preliminary corridor recommendations were presented to community stakeholders (Community Meeting #2, March 2014), and implementing agencies (TAC Meeting #2, March 2014). After revising profiles of and recommendations for each corridor to address public and agency comments and feedback, the updated corridor concepts were presented to staff from multiple City departments and agencies, and further refined based on their feedback and guidance.

### **Phase 5 – Develop Funding and Implementation Strategy**

To prepare and enable the City of Richmond and its partners to translate the vision of the SRTCP into real change in transportation facilities and services on the streets and paths of South Richmond, a comprehensive Funding and Implementation Strategy (Chapter 11) was developed. This strategy includes (1) a set of planning-level cost-estimates prepared by BKF Engineers, for all capital improvement projects recommended in each key corridor for the near-term (2015-2024), (2) criteria for prioritizing streetscape enhancements and multimodal improvements within key corridors, and (3) an inventory of potential funding sources for projects and corridor-level improvements, including information about project eligibility, and the timing of upcoming calls for projects if information is available.

## **Phase 6 – Draft Plan**

This Draft SRTCP integrates the analysis, findings, and deliverables from previous phases of project work into a single document. It describes current and anticipated future conditions in the Plan Area, the community connectivity vision based community outreach, the preferred transportation framework, including specific recommendations and conceptual designs for improvements to key corridors, and a complementary funding and implementation strategy. After this Draft Plan has been reviewed by the public and the City has received feedback from key stakeholders and public agency partners, the City and consultant team will collaborate in the development of a revised Final Draft SRTCP to be submitted to the Richmond City Council for review, adoption and implementation.

## **PUBLIC INVOLVEMENT**

The recommendations of this SRTCP reflect input and feedback on corridor options received from community members, Richmond High School students, employers, and other public agencies through a comprehensive public and stakeholder engagement process.

## **Richmond High School Health Academy / YPLAN Program**

From its inception, the SRTCP has been framed and guided by the interest and insights of a passionate group of Richmond High School Students, representing a generation of young Richmonders that has the most to gain from plan implementation. In partnership with the UC Berkeley Center for Cities and Schools' YPLAN (Youth-Plan-Learn- Act- Now!) Program, students at Richmond High School's Health Academy, City staff and consultant team members developed a community transportation survey to inform the SRTCP planning process. The survey, administered to over 500 community members by the Richmond High School students, sought to reveal residents' travel patterns, preferences, and concerns, with a particular focus on barriers to access to the South Shoreline area from other parts of Richmond. With guidance from City staff and consultant team members, students analyzed and summarized survey results.

Figure 1-4 Richmond High School YPLAN Student Planners



Source: UC Berkeley Center for Cities and Schools/ YPLAN Program

In addition to this Community Survey, students toured key corridors within the South Shoreline area and conducted a site analysis, identifying deficiencies, barriers, safety hazards and opportunities for enhancement. In December of 2013, students presented findings of this site analysis, and their Community Survey to City staff and members of the public in an open meeting at Richmond City Hall Council Chambers. Key findings of the survey and site analysis are reflected in the summary of issues and opportunities detailed in Chapter 3.

## Stakeholder Meetings

To identify key issues and opportunities, and obtain guidance on potential connectivity solutions, the project team conducted outreach to key stakeholders at the outset of the planning process. In November 2013 invitations for stakeholder interviews or focus group sessions were sent to a broad spectrum of South Richmond stakeholders identified by City staff. This included business groups, employers, neighborhood associations, Contra Costa Health Services, members of City Commissions, and representatives of schools, community centers and other public service providers.

From November 2013-January 2014, stakeholder meetings were held with all of the following groups and individuals who responded to City invitations:

- Members of the Richmond Planning Commission
- Richmond Council of Industries
- Nystrom United Revitalization Effort (NURVE) representing parts of the Iron Triangle, Santa Fe, and Coronado neighborhoods
- Richmond Annex Neighborhood Council

- Southwest Annex Neighborhood Council
- Members of the Richmond Bicycle and Pedestrian Advisory Committee (BPAC)
- Contra Costa Health Services
- Cybertan, a private, Richmond-based transportation company

## **Community Meetings**

A series of public meetings were held at critical stages in the SRTCP planning process to garner public input on issues and opportunities, provide community education about best practices in multimodal planning and design, and obtain community feedback on preliminary network plans and streetscape design concepts. These meetings included:

- **Community Meeting # 1** - On Thursday, January 16, 2014, the City of Richmond kicked off the community planning process for the SRTCP by hosting an initial community workshop at the Booker T. Anderson Community Center. The purpose of the workshop was to introduce the project, present best practices for improving transportation access, and garner community input on key issues and opportunities, as well as planning principles and approach.
- **Community Meeting #2** – On Thursday, March 27, 2014, the City of Richmond hosted a second community workshop for the SRTCP at the West Contra Costa YMCA in Richmond. The purpose of the meeting was to introduce options for street and network improvements to key corridors in Richmond, including Cutting Boulevard, Carlson Boulevard, Harbour Way, and Marina Way, and to discuss potential new connections.
- **Community Meeting # 3** – On Wednesday, March 18, 2015, the City of Richmond hosted a third and final community workshop for the SRTCP at Richmond City Hall. City staff and the consultant team presented and obtained community feedback on key elements of the Draft SRTCP, including final recommendations and concept designs for each key corridor. Community members also provided guidance on funding options and implementation priorities.

## **Technical Advisory Committee (TAC) Meetings**

To support implementation and ensure consistency with plans and projects currently under development by key implementing agencies, the City convened a Technical Advisory Committee (TAC) for the SRTCP, comprised of representatives of the following partner agencies:

- Caltrans
- BART
- AC Transit
- Golden Gate Transit
- West Contra Costa Transportation Advisory Committee (WCCTAC)
- Water Emergency Transportation Authority (WETA)
- Lawrence Berkeley National Laboratory (LBNL)
- UC Berkeley

TAC meetings were held at critical junctures in the planning process. At the first TAC meeting, held in November 2013, agency partners provided their perspectives on current and future needs, issues and opportunities, and offered updates on current and prospective future projects and

planning processes. A second TAC meeting was held in March 2014, at which the project team presented and obtained feedback on preliminary concepts and options for key corridors.

In lieu of a third TAC meeting, key corridor recommendations were presented to a meeting of representatives of relevant City Departments, including Engineering, Public Works, Planning, the City Manager's Office, and representatives of the Richmond Police and Fire Departments.

## **ORGANIZATION OF THE PLAN**

This plan is organized into chapters that present analysis of existing conditions, a planning framework for each mode of transportation, detailed recommendations by corridor, and an overall funding and implementation strategy, as follows.

### **Chapter 1 – Introduction**

This Chapter provides an overview of the SRTCP, a summary of project goals and objectives, related plans, and the planning and public involvement processes used to develop the plan.

### **Chapter 2 – Existing Conditions: Land Use & Urban Form**

Chapter 2 documents existing conditions of land use and urban form, as they influence and relate to the demand for access and connectivity in South Richmond. Demographics of the SRTCP area are presented by census-tract, while the land use, urban form, and future planning context are presented for each of the key corridors dealt with in this plan.

### **Chapter 3 – Existing Conditions: Multimodal Access & Connectivity**

This Chapter provides a summary of current and future needs, issues and opportunities for enhancing multimodal access to and circulation within the SRTCP area. Existing conditions, services, and planned enhancements are presented by mode of transportation, including transit, non-motorized transportation (pedestrian and bicycle access), and automobiles, including freight.

### **Chapter 4 – Connectivity Framework**

This chapter provides an overview of the process and rationale used to identify key multimodal travel corridors providing connectivity to and within the South Richmond, including identification of major trip origins and destinations in the area.

### **Chapter 5 – Pedestrian Connectivity Framework**

Chapter 5 presents the proposed areawide network of pedestrian connections and improvements, and includes a toolkit of treatments for corridors, streets, and street crossings to enhance the mobility and safety of people walking to and within South Richmond. Each treatment is presented with design details, and examples of its proposed application in an identified SRTCP corridor.

### **Chapter 6 – Bicycle Connectivity Framework**

This chapter introduces the plan's focus on accommodating the many so-called "willing but wary" cyclists who appreciate greater separation from motor vehicle traffic, or travel on shared streets designed for slow speeds. After providing a definition of proposed bicycle facility types and a toolkit of proposed design and signal treatments for streets and intersections, it presents SRTCP

proposed network of bicycle connections, with specific recommendations by corridor, recommendations for bike parking and bike sharing, and proposed implementation phasing.

### **Chapter 7 – Public Transit Connectivity**

Chapter 7 presents a vision and toolbox of treatments to enable provision of fast, frequent and reliable public transit and shuttle services, including new connections to and within South Richmond. It presents a near-term transit network vision for the period 2015-2024, and two options for the long-term (2030+) network, detailing streets and corridors appropriate for inclusion in a Primary Transit Network, with service every 15-minutes or better all day.

### **Chapter 8 – Freight Access & Vehicle Mobility Framework**

This chapter specifies freight and motor vehicle access and mobility goals and objectives for the SRTCP, and describes a framework for achieving those goals, with updated truck routes, proposed signal system enhancements, a strategy for modal separation, transportation demand management (TDM) to maintain vehicle capacity for goods movement, and new network links.

### **Chapter 9 – Urban Design Framework**

Chapter 9 presents the recommended urban design concepts and vision for the SRTCP, including streetscape elements (lighting, plantings, street trees, furniture, etc.) recommended for each corridor. The chapter also profiles general plan land use designations for properties along each corridor, and offers guidance for gateway/public art treatments at the many highway underpasses/overpasses in the area.

### **Chapter 10 – Corridor Profiles**

This chapter provides a detailed overview of existing conditions, planned improvements, future planning considerations, and operational requirements for each SRTCP key corridor. This background information is followed by conceptual recommendations for streetscape and transportation improvements for both the near-term (2015-2024) and long-term (2030+), including concept design drawings for selected street segment and intersections.

Key corridors profiled in this chapter include:

- Cutting Boulevard
- South 23rd Street/ Marina Bay Parkway
- Harbour Way S/ Marina Way S
- Hoffman Boulevard
- Carlson Boulevard
- Central Avenue
- Bayview Avenue
- Juliga Woods Street/ Spring Street
- South 47th Street/ Potrero Avenue

### **Chapter 11 – Funding and Implementation**

The final chapter of the SRTCP provides an overview of the criteria used to evaluate recommended transportation improvements, and an evaluation based ranking/prioritization of

near-term (2015-2024) improvement projects by corridor segment. This is followed by a summary of cost estimates for near-term concepts by corridor, and a description of potential local, regional, state and federal funding opportunities.

## 2 EXISTING CONDITIONS: LAND USE & URBAN FORM

This chapter profiles the overall land use and urban design character of the study area's key transportation corridors. This includes an overview of the predominant land uses as well as the primary physical elements that shape the character and sense of place of each corridor. In order to provide context related to the existing and anticipated users of South Richmond's transportation network, this chapter begins with an analysis of the existing residential and employment demographics of the study area.

### SUMMARY OF ISSUES AND OPPORTUNITIES

In addition to the freeways and railroad tracks that create major barriers within the area, the existing land use and urban form in South Richmond highlights a number of important issues and opportunities for consideration in the SRTCP, including the following:

- Many street rights-of-way tend to be wide and often out of proportion with current traffic volumes and the scale of surrounding development. As a result, the street corridors support high vehicle speeds and generally lack a human scaled public realm that is comfortable for pedestrians and bicyclists.
- A lack of consistent, high quality improvements such as sidewalks and bike lanes that support safe and comfortable movement by pedestrians and cyclists. This is particularly noticeable at the most critical points, such as railroad crossings and freeway underpasses and overpasses, where such facilities often do not exist.
- The majority of commercial uses along key corridors are auto-oriented in their design with surface parking located between the sidewalk and commercial buildings, which contributes to an environment that is unattractive and inhospitable for pedestrians.
- Residential structures are designed to optimize automobile access, with garage doors and curb cuts as dominant features of the streetscape. As a result, residential blocks have fewer "eyes on the street" and more potential for conflicts between vehicles, pedestrians and bicycles. In some areas, residential development has side yards fronting onto the primary corridor, resulting in street frontages that are disengaged from adjoining streets, discouraging pedestrian movement.
- Industrial districts are particularly harsh environments for pedestrians and bicyclists, often with little or no buffering between the right of way and adjacent uses. In some areas, non-motorized transportation infrastructure is completely absent.
- Street trees and landscaping in the public right-of-way are often sparse and inconsistent, resulting in a pedestrian environment that is visually barren and lacking in human scale.

The following represent some of the key opportunities in the study area:

- Although freeways and railroad tracks present considerable obstacles to mobility, the City's existing grid block pattern north of I-580 allows for good accessibility into surrounding neighborhoods and a high degree of route choice. South of I-580, initial concepts in the South Shoreline Specific Plan have identified opportunities for providing greater connectivity in the street and trail systems that will enhance mobility.
- Although also identified as a challenge, the wide rights-of-way found throughout the study area offer opportunities for installation of pedestrian, bike, and transit facilities, as well as landscaping and green infrastructure.
- The existing residential development patterns north of I-580 and relatively low volumes of through traffic provide an opportunity to implement complete street design strategies that balance vehicular, bicycle and pedestrian modes while enhancing neighborhood identity and sense of place.

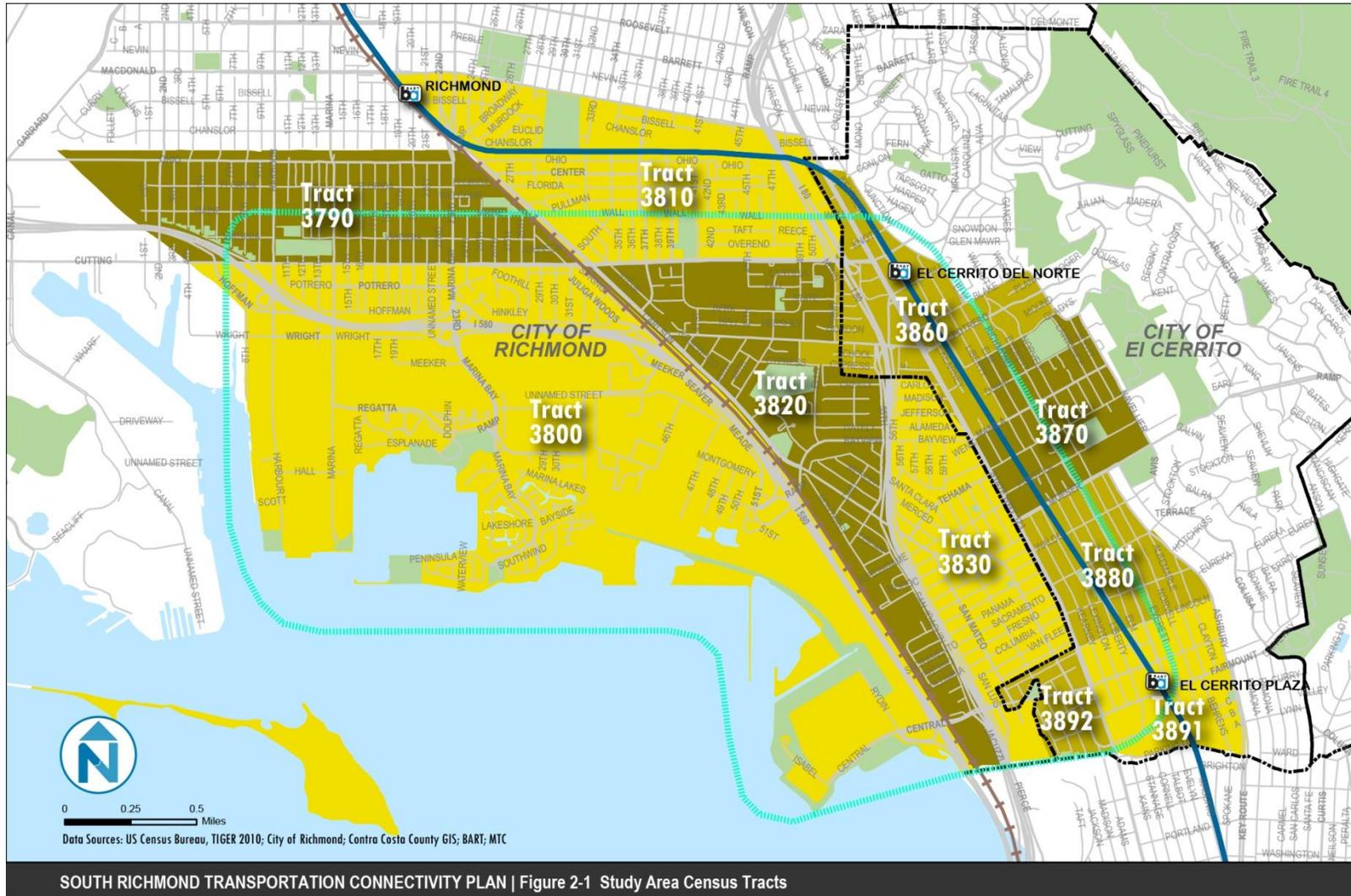
## STUDY AREA DEMOGRAPHICS

South Richmond is a diverse community, with a wide range of transportation needs. The following summary of key demographic indicators provides context for the assessment of the South Richmond community's mobility and connectivity needs. Demographics are important because factors such as age, income, and car ownership have a direct correlation to travel behavior—modes of travel and the distance and frequency of travel. Findings from research into the relationship between socio-economic factors and travel include:

- Higher income households typically own newer and more dependable cars and drive more than low-income households.
- Lower income households tend to use bus transit more often than higher income households.
- Households with one or no vehicles walk, bike or take bus transit at two to three times the rate of more affluent households with two or more vehicles.
- Households with children drive more often than those without children.
- The very young, the elderly, and women drive less and make shorter trips than employed males between 18 and 65.
- Automobile use and vehicle miles traveled have been shown to increase with a corresponding increase in any of the following variables: average household size, average number of children, median household income, and average number of bedrooms.

Demographic data for the study area were evaluated by census tract. Of the ten tracts located either entirely or partially within the SRTCP area (see Figure 2-1), four are in the City of El Cerrito, and were included because of the important regional connections provided by the El Cerrito Del Norte and El Cerrito Plaza BART stations, I-80 and San Pablo Avenue.

Figure 2-1 Study Area Census Tracts



- SRTCPC Study Area
- BART
- Amtrak
- City Boundaries
- Parks & Open Space

## Area Profile

### Population

According to the 2010 Census, 41,510 people reside in the SRTCP area, including approximately 40% of the total population of Richmond (total population 103,701). As shown in Figure 2-2, the age distribution of the population in the study area closely mirrors the demographic profiles of both the City of Richmond and Contra Costa County as a whole. The average median age in the study area is 36.6 years, slightly higher than the median age in Richmond (34.8 years) and slightly lower than that of Contra Costa County (38.5 years).<sup>1</sup> Important to note is that age groups which tend to have relatively limited transportation options, including school age youth (5-17) and seniors (65+), comprise over one quarter (28%) of the study area population (see Figure 2-3). Understanding the needs of these groups will be particularly important when considering how to increase overall accessibility and mobility in the study area.

Household income levels vary considerably throughout the study area, both above and below Richmond’s median household income of \$54,554 (see Figure 2-5). At \$33,226, the census tract with the lowest median household income is Tract 3790, which includes the northern sections of the Santa Fe, Coronado, and Cortez-Stege neighborhoods in Richmond. The census tract with the highest median household income is Tract 3880 in El Cerrito’s Midtown neighborhood at \$76,964.

**Figure 2-2 Population and Age Distribution**

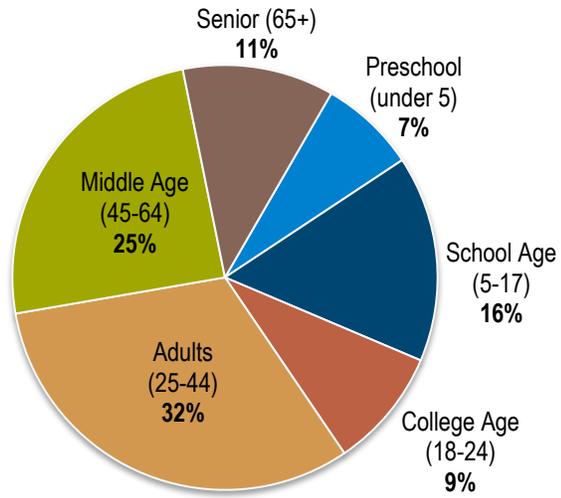
Age Group	Study Area Census Tracts*		City of Richmond		Contra Costa County	
	Population	%	Population	%	Population	%
Preschool (under 5)	3,053	7	7,679	7	67,018	6
School Age (5-17)	6,516	16	18,121	17	193,487	18
Young Adult (18-24)	3,788	9	10,364	10	86,951	8
Adults (25-44)	13,185	32	30,846	30	278,293	27
Middle Age (45-64)	10,186	25	26,109	25	292,838	28
Senior (65+)	4,782	11	10,582	10	130,438	12
<b>Total</b>	<b>41,510</b>	<b>100</b>	<b>103,701</b>	<b>100</b>	<b>1,049,025</b>	<b>100</b>

\* Includes census tracts located in El Cerrito

Sources: US Census Bureau 2010, data table QT-P1; WRT 2013

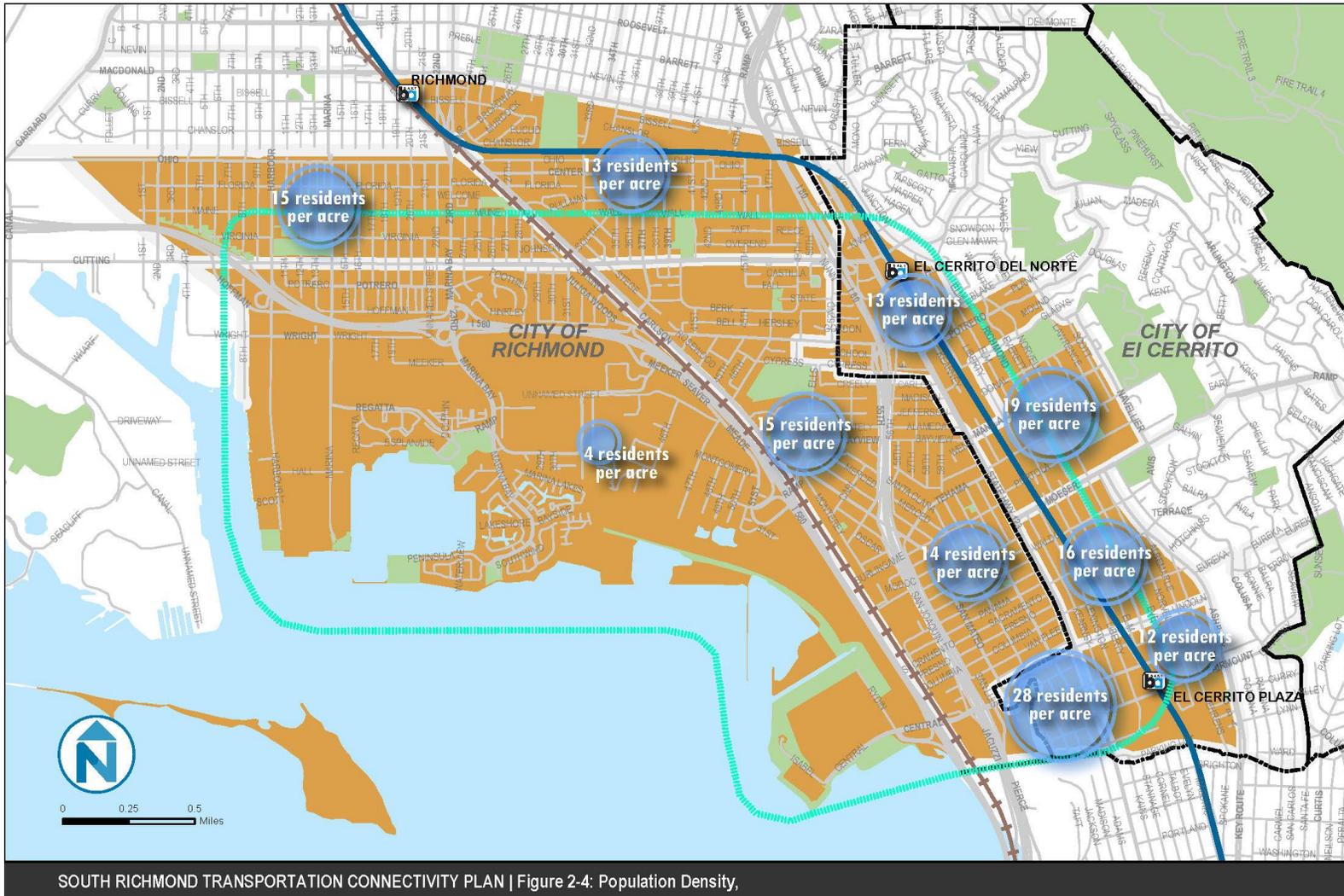
<sup>1</sup> US Census Bureau 2010, data table QT-P1; WRT 2013

Figure 2-3 Study Area Age Distribution



Sources: US Census Bureau 2010, data table QT-P1; WRT 2013

Figure 2-4 Population Density, Residents

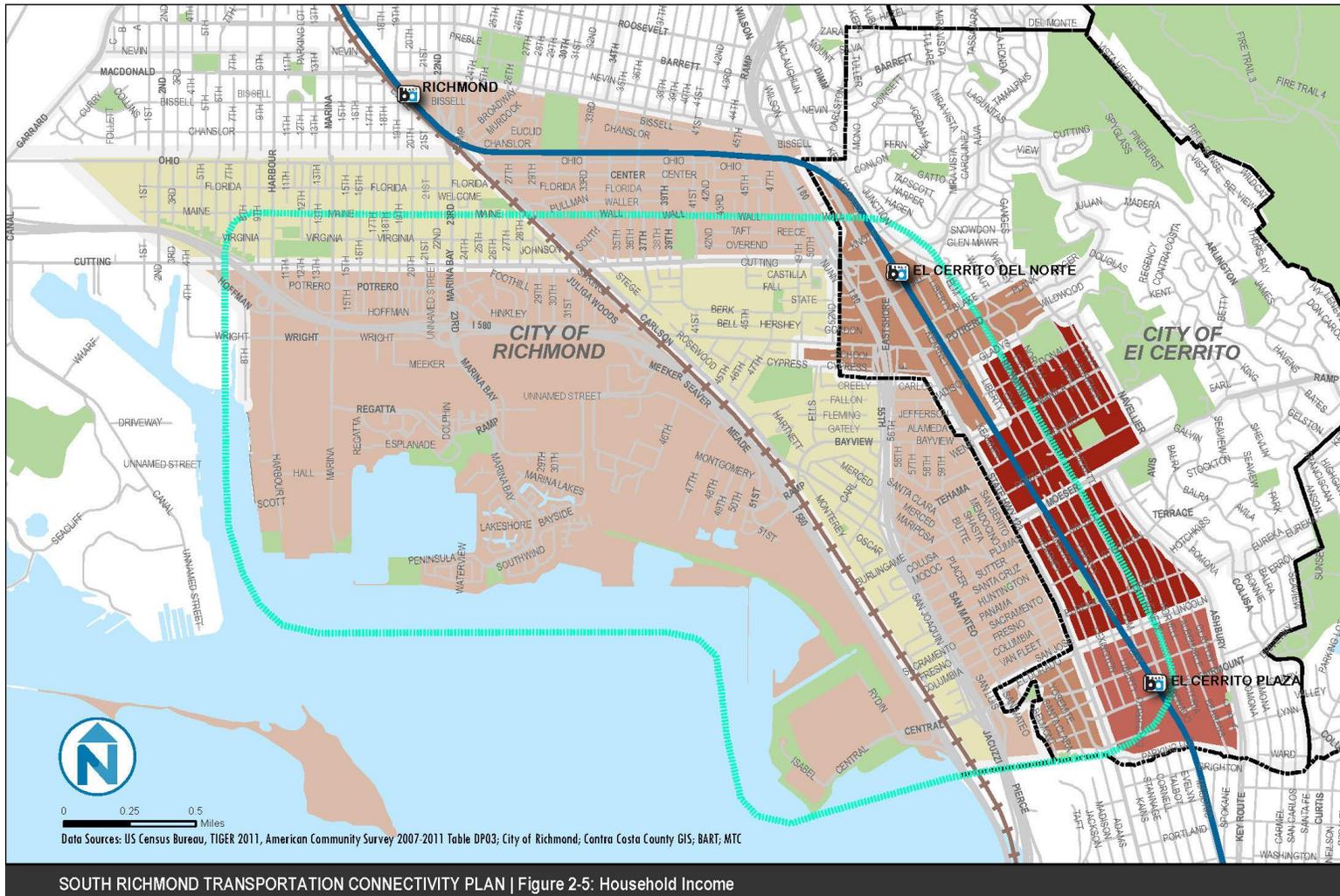


SOUTH RICHMOND TRANSPORTATION CONNECTIVITY PLAN | Figure 2-4: Population Density,

- SRTCPC Study Area
- BART
- Amtrak
- City Boundaries
- Parks & Open Space
- Study Area Census Tracts
- Census Tract Density

**SRTCPC | CHAPTER 2: EXISTING CONDITIONS—LAND USE | FINAL**  
City of Richmond, CA

**Figure 2-5 Household Income**



While demographics are often correlated with travel demand and mode choice, the factor that most closely correlates with transit use is density. Higher density neighborhoods, regardless of the income level of the community, generate higher transit ridership that justifies more frequent service levels than lower density neighborhoods. The average population density for the study area is 10 residents per acre, although population is unevenly distributed throughout. For example, Tract 3892, covering El Cerrito's southern Midtown neighborhood, has the greatest population density with 28 residents per acre; while Tract 3800, which includes the entire Richmond South Shoreline, has the lowest density with 4 residents per acre, due to the predominance of employment type uses in the area (see Figure 2-4). Employment density may also correlate with transit ridership, although not as directly as residential density.

## KEY CORRIDORS

South Richmond is traversed by several key street corridors that are important for mobility in the study area. These corridors connect the rest of Richmond and surrounding communities to important destinations on the South Shoreline, including existing employment centers, shoreline parks, and the National Parks Service's visitor center, and to future uses such as the proposed Berkeley Global Campus (BGC) at Richmond Bay and the ferry to San Francisco (beginning service in 2017). They also connect the South Shoreline to downtowns in Richmond and El Cerrito, to the three local BART stations (Richmond, El Cerrito Plaza, and El Cerrito del Norte), and to Amtrak's Capital Corridor line.

This section describes eleven corridors that have been identified as playing an important (currently or potentially) in serving the connectivity needs of South Richmond. Each of these corridors traverses different neighborhoods and is unique in terms of its urban form, land use, and aesthetic character—factors that have been shown to influence travel behavior and mode choices. For example:

- A mix of land-uses and compact development patterns make trips by bike and foot more feasible.
- Higher densities make regular and frequent transit service more economically viable and more likely.
- Low density development patterns make walking and cycling less attractive due to long distances between origins and destinations.
- The supply and condition of facilities for pedestrians, bicyclists and transit users has a direct correlation to the propensity for people to walk, bike or take transit.
- The quality of the environment (e.g., safe, well-lighted, attractive, etc.) significantly influences people's decisions about whether to walk, bike or take transit.

Figure 2-6 Key Corridors & Primary Land Use Character



----- SRTCPC Study Area

--- BART

--- Amtrak

--- City Boundaries

--- Parks & Open Space

🏫 Schools

🏛️ Community/Rec Centers

🏛️ Government Buildings/Courts

🏥 Medical Facilities

**Key Corridors | Primary Land Use Character**

--- Low Density Residential

--- Low / Medium Density Residential

--- Commercial

--- Institutional

--- Industrial

--- Freeway Overpass

## Cutting Boulevard

Cutting Boulevard is the longest east-west corridor in the study area, extending approximately 2.5 miles from I-580 in the west to the Ohlone Greenway in the east, where it connects to the El Cerrito del Norte BART Station.

### Land Use

Cutting Boulevard, running east/west and connecting San Pablo Avenue to Point Richmond, can generally be subdivided into three sections of land use. West of 23<sup>rd</sup> Street it is a low density, mixed-use corridor consisting primarily of single family homes and auto-oriented, single story commercial uses such as gas stations and other auto services, convenience markets, and strip commercial developments. Commercial uses are typically single-use and located at intersections, although there are no particularly strong nodes that serve as a center of activity for the corridor. One important destination on this section of Cutting is Martin Luther King Memorial Park located on the north side of the street between Harbour Way and Marina Way.

Between S. 23<sup>rd</sup> Street and I-80, the land uses along Cutting are more uniformly single family residential with a node of commercial development between 31<sup>st</sup> Street and Stege Avenue. Important destinations along this section of Cutting include John F. Kennedy High School and park, both located near the intersection of 41<sup>st</sup> Street.

East of I-80, in El Cerrito, the land uses are predominantly commercial, and include the El Cerrito Del Norte BART Station.

### Urban Form

For most of its length, Cutting forms the short end of blocks with intersections every 275 feet, allowing for a high degree of permeability into surrounding neighborhoods. Throughout the Cutting corridor there is a general consistency in the development pattern. Residential development consists primarily of eclectically-styled one or two story homes built with generous setbacks that typically include a front yard (see Figures 2-8 and 2-9). Nearly all residences with front facades on Cutting have driveways, with garages that dominate front façades. Residences with entrances on cross streets that share parcel frontage with Cutting often have tall, non-permeable fencing limiting direct access to Cutting, both visually and physically. Lots and side yards along Cutting are typically narrow, helping to create a consistent but low residential street wall. In contrast, most commercial development has deep setbacks and/or street-fronting surface parking that create significant gaps in the urban fabric. Commercial structures are rarely taller than one story and are typically formula retail or strip commercial prototypes (see Figure 2-10).

**Figure 2-7 Cutting Boulevard Typical Development Dimensions**

	Typical Dimensions
Residential setback—frontage to back of sidewalk (ft)	10-20
Commercial setback—frontage to back of sidewalk (ft)	0-40
Sidewalk width (ft)	5-15
Planting strip width (ft)	0-12
Building height (stories)	1-2

**Figure 2-8 Cutting Boulevard Typical Residential Streetscape West of 23<sup>rd</sup> Street**



**Figure 2-9 Cutting Boulevard Typical Commercial Streetscape**



Source: WRT

West of 23<sup>rd</sup> Street and east of I-580, street trees on Cutting are sparse and irregularly spaced. Between 23<sup>rd</sup> and I-80 there is a center median as well as side medians separating local access lanes; here, street trees are abundant and consistent, contributing to a sense of enclosure for the street (see Figure 2-11).

Figure 2-10 Cutting Boulevard Typical Streetscape East of 23<sup>rd</sup> Street



### Future Planning Context

The vision for the Cutting Boulevard corridor in the 2030 General Plan recognizes the three distinct subareas, two of which are in the study area. The Central Subarea between I-580 and Carlson Boulevard is designated as ‘medium intensity mixed-use with a commercial emphasis’ at key intersections (Harbour Way, Marina Way, and 23<sup>rd</sup> Street), while areas between intersections are mixed-use with a residential emphasis. Streetscape design in the Central Subarea is intended to minimize traffic volumes and speeds with wide planters and other amenities to promote a safe walking environment.

The Eastern Subarea of Cutting east of Carlson is designated as ‘medium density mixed-use’ with a residential emphasis. The planned streetscape design continues the existing multi-way boulevard and street tree treatment. Overall, the General Plan encourages reuse of vacant and underdeveloped sites along Cutting, especially at key intersections. Two to five story buildings are envisioned to accentuate strategic gateways to the corridor and City.

## Carlson Boulevard

The portion of Carlson Boulevard within the study area stretches approximately 3.25 miles north to south from Maine Avenue to the El Cerrito Plaza BART Station at San Pablo Avenue. Carlson intersects with several major corridors including Cutting Boulevard, Bayview Avenue, I-80, Central Avenue, and San Pablo Avenue.

### Land Use

Carlson Boulevard is divided into two sections north and south of Bayview. On the northern section, Carlson runs directly parallel to the Union Pacific Railroad, and I-580, and there are no structures along the west side of the street. On the east side, there is a mix of single- and large multi-family residential, commercial, institutional, and open space uses, as well as a few large vacant parcels. Important destinations along this section of Carlson are Crescent Park and the Bayview Branch Public Library, both located just north of the intersection with Bayview.

South of Bayview, there are primarily residential structures on both sides of Carlson. A small commercial retail center is located at the intersection of Central and San Pablo Avenues.

### Urban Form

Due to the dominance of single family residential uses south of Bayview, the urban character here is more consistent than the northern section of the corridor; however, a number of physical characteristics are typical throughout. In general, single family residences have a consistent setback allowing for a small to medium size front yard, although driveways and garage doors are still dominant features of the streetscape (see Figures 2-12 and 2-13). Sidewalks and planting strips are narrow, and each single family home has a driveway and curb cut. A 7 ft - 15 ft wide center median separates north- and southbound traffic on the street. Street trees on the sidewalk and median are relatively sparse and irregularly spaced, although the landscaping along the western side of Crescent Park provides a more consistent appearance. Retail uses at the far southern end of Carlson all have their front facades on San Pablo with large, surface parking lots creating a strongly auto-oriented condition along Carlson.

**Figure 2-11 Carlson Boulevard Typical Development Dimensions**

	Typical Dimensions
Residential setback—frontage to back of sidewalk (ft)	0-20
Commercial setback—frontage to back of sidewalk (ft)	0-80
Sidewalk width (ft)	5-7
Planting strip width (ft)	0-2
Building height (stories)	1-2

**Figure 2-12 Carlson Boulevard Typical Residential Streetscape**



North of Bayview on the west side of Carlson, there is a 20 to 40 foot buffer separating the street from the railroad right of way; this includes a chain link fence along the street curb, scattered trees and shrubs, and no sidewalk. As a result, access to neighborhoods on the west side of the railroad is limited to three locations at Cutting Blvd., Bayview Ave., and Central Ave. On the east side, the city's regular block pattern continues, although a number of large developments reduce overall permeability. Multi-family residential and commercial developments have relatively deep setbacks with landscaping or surface parking. In general, this section of Carlson lacks a strong, consistent physical character or identity (see Figure 2-14).

**Figure 2-13 Carlson Boulevard Typical Commercial Streetscape North of Bayview**



### **Future Planning Context**

In the General Plan, land uses along the Carlson Boulevard corridor east of the railroad and I-580 are designated as 'medium density mixed-use with a residential emphasis' south of Cutting Boulevard and north of Florida Avenue. Parcels between Cutting and Florida fronting Carlson are designated as 'medium intensity mixed-use with a commercial emphasis' in to maximize the potential for higher-density mixed-use development on the large underutilized parcels in the area.

The General Plan envisions Carlson between Ohio and Potrero Avenues as a multi-modal community connector street accommodating transit, cyclists, pedestrians, and autos. It calls for robust landscaping along sidewalks and in the median to help create a pedestrian-friendly context that supports adjacent infill development. For the corridor in general, the General Plan seeks to strengthen neighborhood identity with a modern architectural vocabulary of industrial building elements including pitched roofs, deep overhangs, recessed entryways, and utilitarian building materials. Development should transform underutilized lots into two to five-story mixed-use residential buildings. Local-serving ground floor retail and offices should be provided in some buildings to serve the surrounding community. All buildings along Carlson Boulevard should be set back to allow for landscaped buffers that help visually mitigate potential traffic impacts.

## 23<sup>rd</sup> Street/Marina Bay Parkway

One of the primary north-south routes through the center of Richmond is 23<sup>rd</sup> Street, which extends from the city’s northern border with the City of San Pablo to I-580. The street crosses I-580 via an overpass and continues south as Marina Bay Parkway, which terminates at Shimada Friendship Park in the Marina Bay neighborhood. Only the far southern portion of 23<sup>rd</sup> Street south of Maine Avenue is included in the study area.

### Land Use

South of Maine Avenue on 23<sup>rd</sup> Street, the primary land use is single family residential, except at the Cutting intersection where there are auto-oriented commercial uses at the corners. Just north of the I-580 overpass there are also a number of landscaped vacant parcels that function as a buffer between the street and the surrounding neighborhoods. Heading south along Marina Bay Parkway from the I-580 overpass, land uses transition from auto-oriented commercial, office and institutional (California Department of Public Health) to primarily single- and multi-family residential south of Jetty Drive. Marina Park is a significant open space along the western side of the corridor, while two large vacant parcels flank the east side at the intersection with Regatta Boulevard.

### Urban Form

On the 23<sup>rd</sup> Street portion of the corridor, the urban character is very similar to Carlson Boulevard’s residential blocks, where single family homes with front yards and relatively narrow sidewalks dominate. As on both Cutting and Carlson, auto-oriented commercial uses are surrounded by parking, creating significant breaks in the street wall (see Figures 2-15 and 2-16).

**Figure 2-14** 23<sup>rd</sup> Street/Marina Bay Parkway Typical Development Dimensions

	Typical Dimensions
Residential setback—frontage to back of sidewalk (ft)	0-30
Commercial setback—frontage to back of sidewalk (ft)	0-80
Sidewalk width (ft)	5-7
Planting strip width (ft)	0-2
Building height (stories)	1-2

Figure 2-15 23<sup>rd</sup> Street Streetscape North of I-580



Marina Bay Parkway stands in significant contrast to the 23<sup>rd</sup> Street portion of the corridor in that it functions more like a suburban collector street than an urban main street. Whereas on 23<sup>rd</sup> Street most structures address the street and have a relatively consistent setback, the majority of structures on Marina Bay Parkway are either surrounded by surface parking lots (in the case of commercial and institutional uses, see Figure 2-17) or clustered together with their primary entrances facing private or semi-private, curvilinear internal streets (in the case of residential uses). Since there is no regular block pattern along this section of the corridor, permeability into the surrounding neighborhoods is limited. Any residences with frontages on Marina Bay are typically blocked visually and physically by fencing or dense landscaping (see Figure 2-18).

Sidewalk access is only available on the west side of Marina Bay Parkway and is typically quite narrow. The landscaping palate is consistent and well-maintained both in the center median and along the street edges.

### Future Planning Context

Because of the significant barrier that I-580 poses to permeability between the South Shoreline area and the rest of Richmond, the General Plan does not address 23<sup>rd</sup> Street and Marina Bay Parkway as a single corridor for planning purposes. The land use vision described for 23<sup>rd</sup> Street between Cutting and I-580 is a medium density mixed use corridor with a commercial emphasis. It is further envisioned as a community connector street where new infill development respects the existing residential neighborhood character. The 'Livable Corridors Form-Based Code' categorizes this section of 23<sup>rd</sup> Street as a T4

Figure 2-16 Marina Bay Parkway Commercial Streetscape

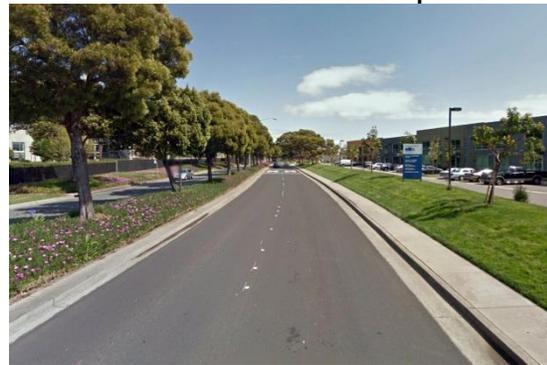


Figure 2-17 Marina Bay Parkway Typical Residential Streetscape



and T5 Main Street, which functions as a vibrant main street commercial environment. It is envisioned as a focal point for surrounding neighborhoods and new residential development while providing walkable access to day-to-day and regional amenities, including commercial, retail, entertainment, civic, and public uses. Structures in these zones will have an allowable height of three to five stories.

Currently, the General Plan describes a broad vision for land uses and urban form along Marina Bay Parkway, which includes medium-intensity mixed use and business/light industrial development. A new network of north-south streets is planned to break up large blocks and knit together the district, while pedestrian-friendly amenities and signature 10-12 story “point tower” buildings will help to bring a new identity to the area. The UC Berkeley Global Campus at Richmond Bay is central to this vision. It is important to note, however, that the area is currently subject to a focused planning process embodied in the Richmond South Shoreline Specific Plan. While this overall vision will certainly be expressed in the Specific Plan, specific aspects are likely to be refined over the course of the next years as the Plan is refined.

## Marina Way & Harbour Way

Marina Way and Harbour Way serve as important north-south links into the western side of the study area and both terminate at the shoreline on the Ford Peninsula. Each crosses I-580 via an overpass and is, in turn, crossed by two at-grade railroad crossings serving local freight lines, which represent significant access issues for all transportation modes.

### Land Use

The primary land uses along Marina and Harbour are industrial and office/commercial. There is also a considerable amount of undeveloped/vacant land throughout the Ford Peninsula. Important destinations in the area include Lucrecia Edwards Park (at the southern terminus of Marina), the Ford Building, Rosie the Riveter WWII Home Front National Historic Park, and the future commuter Ferry Terminal (all located at the southern terminus of Harbour).

### Urban Form

The character of Marina and Harbour is shaped primarily by the industrial uses on the Ford Peninsula. Very large blocks hinder east-west connectivity and most structures feature blank walls along the street. Surface parking and vacant lots dominate the streetscape, and where sidewalks are present, they are typically narrow with little or no landscaping (see Figures 2-19, 2-20, and 2-21). Street trees are scarce and irregularly spaced, even on Marina where there is a center median. Overall, these corridors are extremely unwelcoming to non-motorized travel.

**Figure 2-18 Marina Way & Harbour Way Typical Development Dimensions**

	Typical Dimensions
Residential setback—frontage to back of sidewalk (ft)	NA
Commercial setback—frontage to back of sidewalk (ft)	0-80
Sidewalk width (ft)	5-7
Planting strip width (ft)	0-2
Building height (stories)	1-3

**Figure 2-19 Marina Way Typical Streetscape**



Sources: WRT

Figure 2-20 Harbour Way Typical Streetscape



Sources: WRT,

### Future Planning Context

The General Plan envisions Marina Way and Harbour Boulevard as important industrial corridors in the Port Priority Use Area. As such, they are expected to maintain their strong working waterfront character, although enhancements are planned to improve safety for bicyclists and pedestrians.

## Regatta Boulevard

Regatta Boulevard is currently the primary east-west corridor in the South Shoreline area, crossing I-580 via an overpass and extending to Marina Way. As discussed in further detail below, its alignment is likely to change as a result of the Long Range Development Plan (LRDP) for the Richmond Bay Campus, which is currently in draft form.

### Land Use

East of Marina Bay Parkway, Regatta is flanked by the Richmond Field Station, owned by UC Berkeley, and numerous industrial uses. Much of the land in the Field Station is currently open space. West of Marina Bay Parkway, the primary land uses along Regatta are multi-family residential, open space, and a small amount of industrial at the western end. An important destination on the corridor is Marina Park at the intersection with Marina Bay Parkway.

### Urban Form

The industrial developments along Regatta are similar in character to those along Marina Way and Harbour Boulevard, with long, blank walls and large surface parking lots. Much of the eastern end of the corridor has no sidewalks or landscaping; as a result, conditions for pedestrians and cyclists can be dangerous and unwelcoming (see Figures 2-22 and 2-23). In contrast, the western end of Regatta has a well-maintained sidewalk on the northern side of the street and attractive landscaping. Similar to Marina Bay Parkway, however, all of the multi-family residential development here is internally oriented away from the street, with high fences and dense vegetation that dominate the streetscape (see Figure 2-24).

**Figure 2-21 Regatta Boulevard Typical Development Dimensions**

	Typical Dimensions
Residential setback—frontage to back of sidewalk (ft)	20-35
Industrial setback—frontage to back of sidewalk (ft)	0-160
Sidewalk width (ft)	0-10
Planting strip width (ft)	0-2
Building height (stories)	1-3

**Figure 2-22 Regatta Boulevard Typical Streetscape East of Marina Bay Parkway**



Figure 2-23 Regatta Boulevard Typical Streetscape East of Marina Bay Parkway



### Future Planning Context

The Regatta Boulevard corridor is designated as part of the same planning subarea as Marina Bay Parkway in the General Plan. See the “Future Planning Context” section under the Marina Bay Parkway corridor for more information.

Regatta is also a key corridor in the LRDP, serving as the northern edge of the Richmond Bay Campus. The street’s short north-south leg is planned for relocation further to the west to maintain the campus’s contiguous layout. Additionally, the LRDP designates Regatta as a multi-modal route, improving bike, pedestrian and transit access in the area. Development on the campus will primarily be scientific research facilities as part of the LRDP, although in general, the current plan calls for a relatively inward-oriented design, with major streets on the perimeter such as Regatta serving primarily as circulation routes. As such, Regatta is not anticipated to have a highly active street frontage.

## Juliga Woods Street

Juliga Woods Street serves as a short but important connector between Cutting Boulevard and the South Shoreline area south of I-580. It extends from 31<sup>st</sup> Street, just south of Cutting to the Regatta Boulevard overpass.

### Land Use

The primary land use along Juliga Woods is light industrial, with a number of lots serving as storage for mechanical equipment. There are also several vacant parcels.

### Urban Form

Although Juliga Woods is fronted by a few single story, small scale industrial structures, the streetscape is dominated visually by 6 foot tall chain link fences erected along almost every parcel line. Fencing continues onto the Regatta overpass. Sidewalks are narrow and there is virtually no landscaping. Overall the street is extremely uninviting for non-motorized transportation users. (see Figures 2-25 and 2-26)

**Figure 2-24 Juliga Woods Street  
 Typical Development Dimensions**

	Typical Dimensions
Residential setback—frontage to back of sidewalk (ft)	NA
Industrial setback—frontage to back of sidewalk (ft)	0-60
Sidewalk width (ft)	6
Planting strip width (ft)	NA
Building height (stories)	1-2

**Figure 2-25 Juliga Woods Street Typical Streetscape**



### Future Planning Context

The General Plan envisions the area around Juliga Woods as a technical support district for the new Global Campus that would continue to host light industrial uses in a manner that is compatible with surrounding residential uses. New infill development should maintain the existing architectural pattern with flexible double-floor height structures that allow a wide variety of uses including light manufacturing and incubator businesses, lofts and commercial uses. This building format would maintain the unique urban design characteristics of productive and safe mixed-use neighborhoods, and also would allow a transition between uses, depending on changing economic markets. Zero or shallow building setbacks should be allowed in order to create a uniform rhythm and engaging street edge with doors and windows providing “eyes-on-the-street.”

## Bayview Avenue

Bayview Avenue serves as an important connector between Carlson Boulevard and the South Shoreline area south of I-580 via the Bayview overpass. It extends from San Pablo Avenue to Seaport Avenue, although it is bisected by I-80, preventing direct through traffic.

### Land Use

East of Carlson Boulevard, the primary land use on Bayview is single and multi-family residential. Immediately west of Carlson is the Bayview overpass. An important destination on the corridor is the Bayview Branch Public Library.

### Urban Form

The urban character on Bayview is very similar to Carlson Boulevard’s residential blocks, where the predominant streetscape pattern is made up of single- and two-family homes with front yards and relatively narrow sidewalks. Due to a moderate grade change, some yards are elevated 3-4 feet by retaining walls. A portion of the street has a narrow planted median, but otherwise there is little landscaping in the public realm (see Figures 2-27 and 2-28). The Bayview overpass, while extremely utilitarian in design and function, offers spectacular views of the Richmond South Shoreline, San Francisco Bay, and the San Francisco skyline (see Figure 2-29).

**Figure 2-26 Bayview Avenue  
 Typical Development Dimensions**

	Typical Dimensions
Residential setback—frontage to back of sidewalk (ft)	0-40
Commercial setback—frontage to back of sidewalk (ft)	NA
Sidewalk width (ft)	5-6
Planting strip width (ft)	1-2
Building height (stories)	1-3

**Figure 2-27 Bayview Avenue Typical Streetscape**



**Figure 2-28 Bayview Avenue Overpass**



### **Future Planning Context**

The General Plan envisions the Bayview corridor as maintaining its existing residential character east of I580. Although still in the conceptual planning phase, the South Shoreline Specific Plan may propose alternatives for a realigned Bayview overpass that reduces its footprint to allow for more development, potentially with light industrial, R&D, and/or residential land uses.

## Potrero Avenue

Potrero Avenue is a key east-west corridor connecting San Pablo Avenue and Carlson Boulevard, crossing I-80 via an underpass. The eastern half of Potrero east of 52<sup>nd</sup> Street is located within the City of El Cerrito.

### Land Use

Land uses along Potrero consist almost entirely of single family residential except for a small area of commercial at the intersection with San Pablo. An important destination on Potrero is the Stege Elementary School near the intersection of 49<sup>th</sup> Street.

### Urban Form

The urban character on Potrero is similar to the residential blocks of other key corridors in terms of architectural and streetscape design (e.g. Carlson Boulevard, Bayview Avenue). The overall development pattern is extremely consistent along the entire length of the corridor, although the average setback on Potrero is somewhat deeper than in other locations (see Figures 2-30, 2-31, and 2-32). The block pattern along Potrero is a mix of short and long blocks with good overall permeability to the surrounding neighborhoods.

**Figure 2-29 Potrero Avenue Typical Development Dimensions**

	Typical Dimensions
Residential setback—frontage to back of sidewalk (ft)	10-25
Commercial setback—frontage to back of sidewalk (ft)	0-65
Sidewalk width (ft)	5-6
Planting strip width (ft)	1-2
Building height (stories)	1-2

**Figure 2-30 Potrero Avenue Typical Residential Streetscape**



**Figure 2-31 Potrero Avenue Commercial Streetscape @ San Pablo Avenue**



### Future Planning Context

The General Plan envisions the Potrero corridor as maintaining its existing residential character.

## Central Avenue

Central Avenue is a key east-west corridor connecting Point Isabel to the El Cerrito Plaza BART Station. It crosses I-580 via an overpass and I-80 via an underpass. Central Avenue east of San Mateo Street is located within the City of El Cerrito.

### Land Use

Several land use types are represented along the Central corridor. East of Central Park, primary land uses are single- and multi-family residential, whereas on the corridor’s western end, commercial, office, and open space dominate. Important destinations along the corridor are Central Park near the intersection with Santa Clara Street, the Hoffman Marsh west of I-580, and the Costco at Point Isabel.

**Figure 2-32 Central Avenue Typical Development Dimensions**

	Typical Dimensions
Residential setback—frontage to back of sidewalk (ft)	0-10
Commercial setback—frontage to back of sidewalk (ft)	5-60
Sidewalk width (ft)	5-6
Planting strip width (ft)	1-2
Building height (stories)	2-4

### Urban Form

The residential blocks along Central have a more urban character than most of the other key corridors in South Richmond. East of Central Park, 2-3 story multi-family homes are typically built directly to the edge of the sidewalk or with only a narrow setback. As along most other corridors, however, sidewalks are narrow and landscaping is sparse and/or inconsistent (see Figures 2-33 and 2-34). Further west, there are more single family homes with deeper setbacks and small front yards.

**Figure 2-33 Central Avenue Typical Residential Streetscape**



Most local retail along Central is auto-oriented with significant surface parking. The large Costco development at Point Isabel is a typical big box development surrounded by surface parking, although sidewalks and consistent landscaping are present (see Figure 2-35).

Figure 2-34 Central Avenue Typical Commercial Streetscape @ 580 (left) and Costco (right)



### Future Planning Context

East of Central Park, Central Avenue is located within the jurisdiction of the City of El Cerrito. As part of the Central Avenue and Liberty Street Streetscape improvements project, the City is scheduled to make improvements to Central Avenue from San Pablo Avenue, east to the Ohlone Greenway. Improvements will include sidewalk replacement, and installation of decorative concrete on median noses, pedestrian-level lighting, curb bulb-outs, curb ramps, high-visibility crosswalk signage and striping, bike route signage and striping, street trees, and street furniture<sup>2</sup>. This project will improve multimodal connections from the Richmond Annex, in the South Richmond Study Area to the El Cerrito Plaza BART Station and surrounding land uses and activities.

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<sup>2</sup> <http://www.el-cerrito.org/index.aspx?NID=518>

## San Pablo Avenue

San Pablo Avenue is a key north-south corridor on the far eastern side of the study area. It is important both as a transit corridor and as a destination due to its considerable commercial activity. The entirety of the San Pablo Avenue right of way is located within the City of El Cerrito, which is a limiting factor on any direct actions the City of Richmond can take as part of the Connectivity Plan.

### Land Use

The primary land use present along San Pablo is commercial, which is mostly in the form of retail development with some small scale office uses. This includes both small-scale, pedestrian-oriented retail as well as large format auto-oriented retailers such as Safeway and Walgreens. Additionally, there are a few multi-family residential and mixed-use residential developments scattered throughout the corridor.

### Urban Form

San Pablo Avenue hosts a mix of walkable areas that promote an active street frontage, and other areas that are dominated by surface parking. Stand-alone, small-scale retail uses along San Pablo are typically one story in height with a zero or shallow front and side setback. The style and quality of architecture varies, but there is typically a high level of ground floor transparency. These structures usually have no dedicated parking or else it is at the rear or side of the parcel. Notable exceptions are chain restaurants and auto-specific uses such as car dealerships where surface parking is more often directly fronting the street. Larger developments such as large format retailers and strip commercial developments are notable for their formula architecture and large surface parking lots. (see Figure 2-36, 2-37, and 2-38)

**Figure 2-35 San Pablo Avenue Typical Development Dimensions**

	Typical Dimensions
Residential setback—frontage to back of sidewalk (ft)	0-10
Commercial setback—frontage to back of sidewalk (ft)	0-350
Sidewalk width (ft)	8-20
Planting strip width (ft)	0-5
Building height (stories)	1-4

Figure 2-36 San Pablo Avenue Typical Small-Scale Commercial and Mixed-Use Streetscape



Figure 2-37 San Pablo Avenue Typical Large Scale Commercial Streetscape



### Planning Context

In September 2014, the City of El Cerrito adopted the San Pablo Avenue Specific Plan to guide development in the corridor. The plan and associated form-based development code, are intended to enable San Pablo Avenue to transition from an auto-oriented corridor, to a mixed-use district, with housing and shops, served by a truly multimodal corridor. Plans for San Pablo Avenue include installation of class I and II bike lanes, a separated bikeway through the City’s Midtown District, bulb outs, landscaping, and other techniques that emphasize accessibility for people while walking, riding a bicycle, or using public transit services.

## 3 EXISTING CONDITIONS: MULTIMODAL ACCESS & CONNECTIVITY

### Transit

This section provides a description of the existing and planned transit service in South Richmond, including a range of bus, rail, ferry, and shuttle services. For each service, the section profiles frequency of service, hours of operation, and geographic coverage, as well as available ridership information and plans for service improvements. The section begins with a discussion of identified barriers in the transportation network, as well as opportunities for future improvements.

### SUMMARY OF ISSUES AND OPPORTUNITIES

#### Barriers and Other Issues

Despite its close proximity to three BART stations, frequent AC Transit bus service, and a Capitol Corridor station, most of the Study Area is not well served by transit today. Two highways—I-80 and I-50—and the Union Pacific rail right-of-way, as well as several railroad spurs, divide the Study Area. Most of these transit lines do not cross south of I-80 into the South Shoreline area, leaving the Marina Bay Campus and future ferry terminal sites disconnected from downtown Richmond and the regional transit network. AC Transit line 74 serves the area, extending as far south as Ford Point, via Marina Bay Parkway, Regatta Boulevard, Marina Way S., Hall Avenue and Harbour Way, South, but does not meet frequent service standards (i.e. minimum peak headways of 15 minutes or less).

An additional challenge is the need to coordinate the many shuttle services in the area. The City of Richmond operates two shuttle routes in the Study Area, and the University of California also operates a service, connecting to the Richmond Field Station. These shuttles make limited stops, bypassing many of the residential neighborhoods within and near the SRTCP area. This poses both a challenge and also presents an opportunity to better coordinate service and improve connections to these surrounding neighborhoods.

#### Opportunities

Significant opportunities to improve transit connections in the South Richmond Study Area include:

- AC Transit is evaluating the possibility of combining two bus lines to create a new service connecting El Cerrito Del Norte BART and the Richmond Civic Center via Cutting Boulevard and 23rd Street. This may provide an opportunity to create a more frequent combined service on key corridors within the Study Area.
- Ferry service is planned for the Study Area, which will provide a direct connection to downtown San Francisco.
- Various regional bus operators provide a wide range of service from the nearby BART stations to surrounding counties. With better coordination between these bus services and local shuttles, the Study Area could be more effectively connected to other parts of the region by transit.
- In the long-term (at least five years from now), BART and Capitol Corridor are both evaluating potential service frequency increases in Richmond.
- BART and MTC have begun a conceptual planning process that may evaluate upgraded passenger rail service along the Union Pacific right-of-way between Hercules and San Leandro, potentially serving the Richmond Bay Campus.
- At present, land uses in South Richmond are not sufficiently dense or diverse to generate strong transit ridership. As the Berkeley Global Campus at Richmond Bay opens and other development occurs, the market will expand.

## BUS AND RAIL SERVICE

### AC Transit

AC Transit is the primary operator of bus service in South Richmond and the surrounding area. AC Transit bus lines connect to cities throughout West Contra Cost and Alameda Counties and across the Bay Bridge to the Transbay Terminal in San Francisco. Figure 3-1 provides an overview of existing AC Transit service in South Richmond, including both local and Transbay lines.

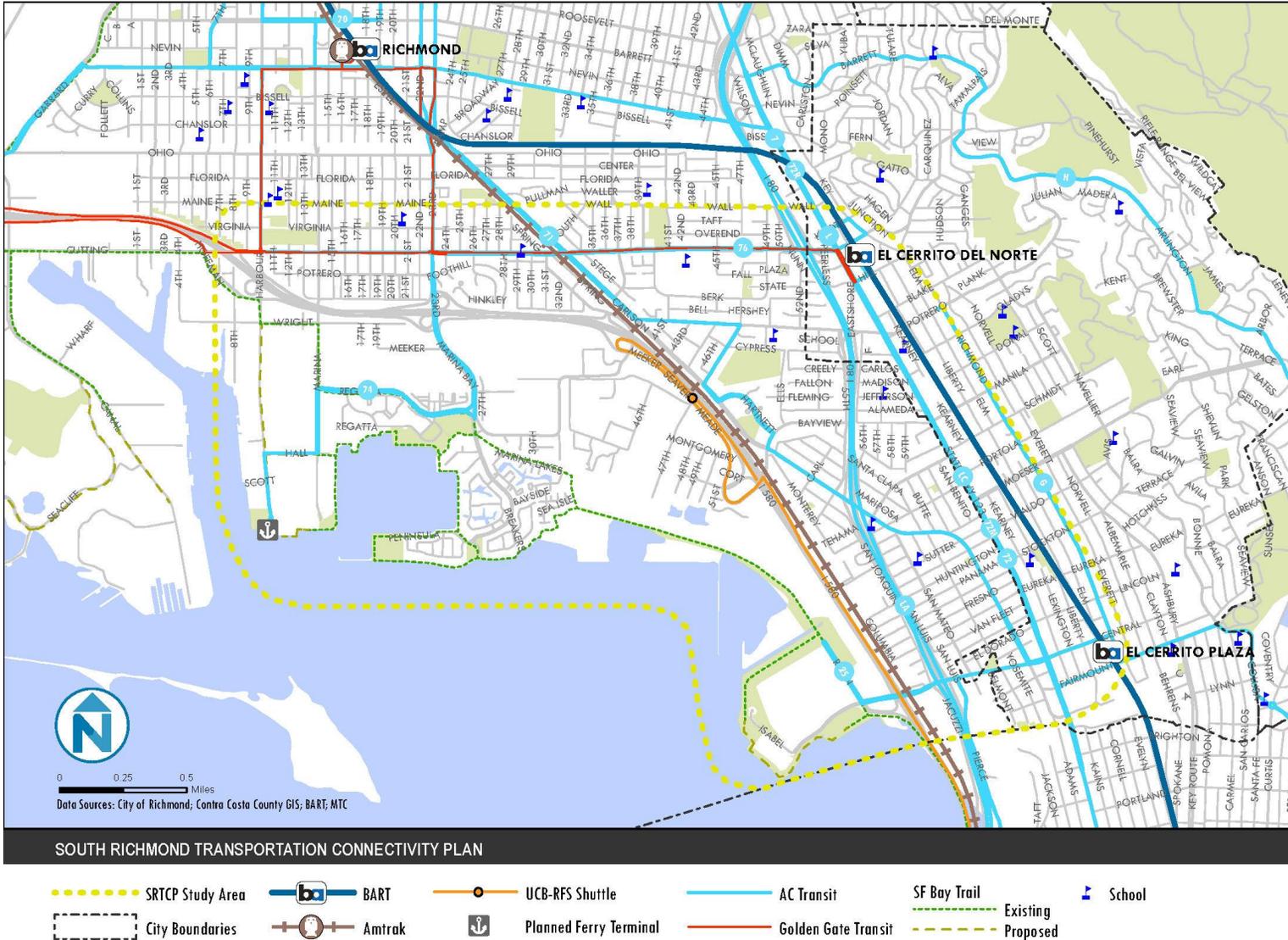
**Figure 3-1 Existing AC Transit Service in South Richmond**

Line	Frequency	Span	Geographic Coverage
<b>Local Lines</b>			
7	40 minutes	Weekdays: 6 a.m.-8 p.m. Weekend: 8 a.m.-6:30 p.m.	El Cerrito Del Norte BART to Berkeley BART via Arlington Ave. and Shattuck Ave.
25	Main line: 30-40 minutes Richmond spur: 4 daily weekday trips	Weekdays: 7:30 a.m.-8 p.m. Weekends: 8 a.m.-6 p.m. Richmond spur: Weekdays only. Two morning trips and two afternoon trips.	Two-way loop: El Cerrito Plaza BART, Central Ave, Pierce St., University Village, Gilman St., Hopkins St., Martin Luther King Jr. Way, Berkeley BART, Martin Luther King Jr. Way, Solano Ave., Colusa Ave., Fairmount Ave. Weekday spur line (4 daily trips) connects to Point Isabel Regional Shoreline.
71	30 minutes	Weekdays: 5 a.m.-7 p.m. Weekend:	El Cerrito Plaza BART to Richmond Parkway Transit Center via Carlson Blvd., Richmond BART, Rumrill Blvd., Contra Costa College, Parchester Village, Giant Highway, Atlas Rd., and Richmond Parkway

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 City of Richmond, CA

Line	Frequency	Span	Geographic Coverage
72	30 minutes (15 minute combined headway with 72M)	Weekdays: 5 a.m.-12 a.m. Weekend: 5 a.m.-12 a.m.	Richmond Hilltop Mall to Oakland Amtrak on San Pablo Avenue via Contra Costa College, San Pablo, Richmond, El Cerrito del Norte BART, downtown Oakland, and Jack London Square
72M	30 minutes (15 minute combined headway with 72)	Weekdays: 5:30 a.m.-11:30 p.m. Weekend: 6 a.m.-12 a.m.	Shortened version of route 72. Contra Costa College to Oakland Amtrak on San Pablo Avenue via San Pablo, Richmond, El Cerrito del Norte BART, downtown Oakland, and Jack London Square
72R	12 minutes	Weekdays: 6 a.m.-7 p.m.	San Pablo Rapid — Contra Costa College to Jack London Square via El Cerrito del Norte BART, San Pablo Ave. and downtown Oakland
74	40 minutes	Weekdays: 5:30 a.m.-9 p.m. Weekends: 7 a.m.-8 p.m.	Richmond Marina Bay to El Sobrante via Richmond BART, 23rd St., Contra Costa College and San Pablo Dam Rd.
76	30 minutes	Weekdays: 6 a.m.-7 p.m. Weekends: 6:30 a.m.-7:30 p.m.	El Cerrito del Norte BART to Hilltop Mall via Cutting Blvd., Richmond BART, North Richmond, Church Lane, Market St., Contra Costa College, Birmingham Dr. and Shane Rd.
<b>Transbay Lines</b>			
G	30-60 minutes	Weekday peak period	Peak-direction express bus service (local passengers permitted) from El Cerrito to San Francisco via Albany and Berkeley
H	20-25 minutes	Weekday peak period	Peak-direction express bus service (local passengers permitted) from Richmond to San Francisco via Kensington and Berkeley
L	15-50 minutes	Weekdays To San Francisco: 5:30-8 a.m. To San Pablo: 3-9 p.m.	Peak-direction express bus service (Transbay passengers only) from San Pablo to San Francisco via Richmond, El Cerrito, and Albany
LA	15-30 minutes	Weekday peak period	Peak-direction express bus service (local passengers permitted) from Richmond to San Francisco via El Sobrante, Richmond, and El Cerrito. No stops in Study Area.
LC	30-60 minutes	Weekdays To Richmond: 7:30-9 p.m.	Peak-direction express bus service (Transbay passengers only) from Richmond to San Francisco via El Sobrante, San Pablo, Richmond, El Cerrito, and Albany

Figure 3-2 Map of Transit Service in the Study Area



Several AC Transit bus lines directly or indirectly serve the Study Area. Although many AC Transit bus lines operate near the northern and eastern boundaries of the Study Area – along San Pablo Avenue and MacDonald Avenue, only two lines cross I-580 to reach the South Shoreline area. With a southern terminus at the future site of the Richmond Ferry Terminal, Line 74, operates at 40-minute headways on weekdays, connecting to the Richmond Intermodal Terminal via Regatta Boulevard, and Marina Bay Parkway/23<sup>rd</sup> Street (Line 74 extends further north to the Hilltop Mall).

Line 25, serves the Point Isabel Regional Shoreline, from Berkeley BART, making four trips daily. Both of these lines provide weekend service.

Line 76 provides east-west service on Cutting Boulevard from the El Cerrito Del Norte BART Station to Harbour Way, where the line turns north to serve Central Richmond (including the Richmond Intermodal Terminal), North Richmond, Hilltop Mall and Contra Costa College.

UC Berkeley's Richmond Field Station, located in the South Shoreline area and site of the future Berkeley Global Campus at Richmond Bay, is not currently directly served by any AC Transit lines.

### **Potential Changes to AC Transit Service**

In 2012 and 2013, an Inner East Bay Comprehensive Operational Analysis (COA) was completed as a sub element of the Metropolitan Transportation Commission's Transit Sustainability Project (TSP). This COA, which was initially presented to the AC Transit Board of Directors in July 2013, provides recommendations for enhancing local and Transbay bus service to South Richmond and other core urban areas of the inner East Bay, including:

- Expanding service on the L-Line, from Richmond to the Transbay Terminal in San Francisco (to provide additional transit capacity in the Transbay corridor).
- Combining productive segments of lines 74 and 76 to create a new service connecting El Cerrito Del Norte BART and the Richmond Civic Center via Cutting Boulevard and 23<sup>rd</sup> Street<sup>1</sup>. This and other recommendations specific to local service in South Richmond will be refined in the next year through the completion of a subarea plan, in collaboration with BART and the cities of Richmond and El Cerrito.

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<sup>11</sup> Metropolitan Transportation Commission (2013). Inner East Bay Comprehensive Operational Analysis (as referenced in the AC Transit Staff Report to the Planning Committee, Report No. 12-291b)

## BART

Two BART stations—El Cerrito del Norte and El Cerrito Plaza—are located within the study area, and a third—the Richmond Intermodal Terminal—is located approximately half a mile north of the Study Area's northwest boundary. Two BART lines serve these three stations (the Richmond—Daly City/Millbrae line is split into two variants in the table below (Figure 3-3), one extending to Millbrae on weekdays, and one that terminates at Daly City on weekends).

Figure 3-3 BART Lines Serving the Study Area

Line	Service Span	Service Frequency
Richmond—Millbrae	Weekdays 4 a.m.-8 p.m.	15 minutes
Richmond—Daly City	Saturday 9 a.m.-7 p.m.	20 minutes
Richmond—Fremont	Weekdays 4 a.m.-12:30 a.m. Saturday 6 a.m.-12:30 a.m. Sunday 8 a.m.-12a.m.	Weekdays before 7:30 p.m.: 15 minutes Weekdays after 7:30 p.m. and weekends: 20 minutes

Source: BART

Figure 3-4 BART System Map



Source: BART

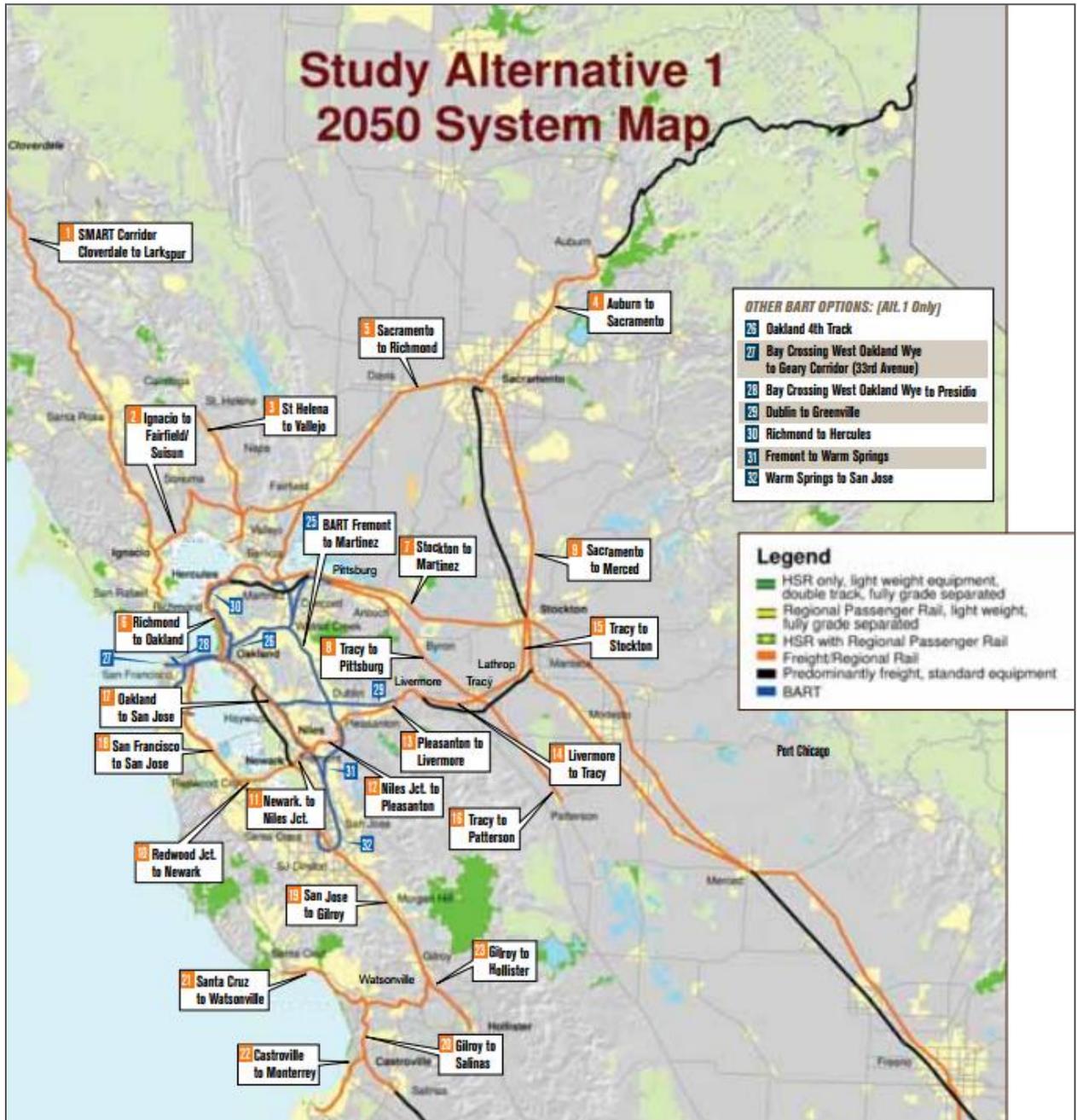
These BART lines provide frequent, fast and reliable service to much of the Bay Area. However, all three stations are located at the periphery of the South Richmond Study Area and are not within easy walking distance of most study area neighborhoods, including the South Shoreline area.

### **BART Planning Efforts in the Study Area**

BART is currently undertaking the *Future BART* project, a major evaluation of how to maintain its system in a state of good repair, what parts of the existing system should be targeted for capital improvements, and what areas of the region are appropriate for future expansion. Initial recommendations of this study include a first phase of changes, including extending evening service on the Richmond-Millbrae line to 9 p.m. on weekdays. A second phase would include increased service frequencies on the Richmond line.

The *BART Vision Plan*, a key component of the *Future BART* project is evaluating potential corridors for service expansion in the long-term and potential locations for infill stations on existing BART lines. Expansion corridors may be served with alternative technology, rather than standard BART service. A concept-level plan of corridors appropriate for further planning and evaluation includes a line along the East Bay shoreline from West Oakland to the Richmond BART station. The *2007 Regional Rail Plan for the Bay Area* also identified this line, called the Eastshore Corridor, as appropriate for future implementation of Diesel Multiple Unit (DMU) urban rail service (similar to the service model under development for the eBART extension in East Contra Costa County) along the existing Union Pacific Railroad Alignment. A map of one study alternative for the Regional Rail Plan is shown in Figure 3-5. This may require adding a third and potentially fourth track to the existing rail corridor. The Eastshore Corridor would connect Hercules to San Leandro by way of Richmond, Berkeley and Oakland, parallel to the existing BART alignment but much closer to the shoreline. If built, this new service could improve connections to the new Berkeley Global Campus through an infill rail station.

Figure 3-5 Regional Rail Plan Study Alternative



Source: MTC

## Capitol Corridor

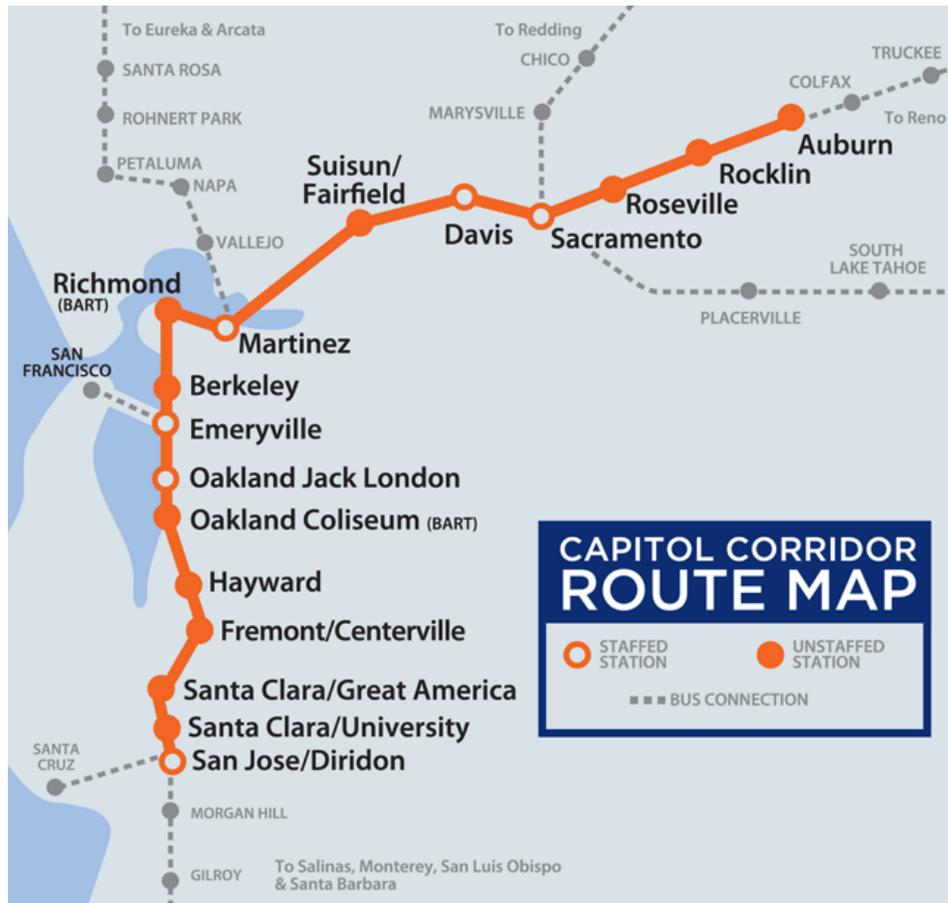
Capitol Corridor commuter rail trains serve the Richmond Intermodal Station immediately north of the Study Area, where a direct connection to BART is available. From Richmond, the Capitol Corridor commuter line extends north to Martinez, Davis, and Sacramento, and south to Berkeley, Emeryville, Jack London Square in Oakland and the Oakland Coliseum. Several trips each day continue farther south to downtown San Jose.

Capitol Corridor trains make 15 round-trips on weekdays (seven of these trips serve San Jose, and the other half stop at points farther north), arriving at Richmond Station roughly every 1-2 hours, from 6:00 a.m. to 10:30 p.m. On weekends, Capitol Corridor trains make 11 round trips (seven go to San Jose), operating from 7:00 a.m.-10:30 p.m.

### Proposed Changes on the Capitol Corridor

In conjunction with the High Speed Rail 2012 Business Plan, the Capitol Corridor Joint Powers Authority (CCJPA), which manages planning and operations for the Capitol Corridor, intends to increase frequencies and reduce travel times by upgrading existing rail infrastructure in the corridor. These improvements could begin in 2018. CCJPA is also exploring an extension to Salinas. This is currently in the environmental review phase, and is not yet funded.

Figure 3-6 Capitol Corridor Route Map



Source: Capitol Corridor Joint Powers Authority

## Amtrak San Joaquin

Richmond Intermodal Station is also served by Amtrak's San Joaquin line, which connects Oakland (Jack London Square) and Richmond to the Central Valley, with a southern terminus in Bakersfield. Managed by Caltrans in partnership with Amtrak, the San Joaquin makes four round trips daily, with major stops in Fresno, Stockton, among other Central Valley Communities.

## Other Regional Transit Connections

This section profiles the transit services of five other operators that connect to the Study Area or nearby BART Stations.

### Golden Gate Transit

Golden Gate Transit operates two routes providing service from Marin County to Richmond and El Cerrito, via the Richmond—San Rafael Bridge: Routes 40 and 42 (shown on Figure 3-7). In Richmond, both routes operate on Cutting Boulevard, along the northern section of the Study Area. The routes are variants of the same service, with Route 42 providing a spur loop to the Richmond BART station via 23rd Street, Macdonald Avenue, and Harbour Way.

Routes 40 and 42 operate on weekdays from 5:30 a.m. to 11 p.m., with no weekend service. Peak headways are 20-30 minutes, and midday headways are 30-60 minutes.

Figure 3-7 Golden Gate Transit Service in Western Contra Costa County



Source: Golden Gate Transit

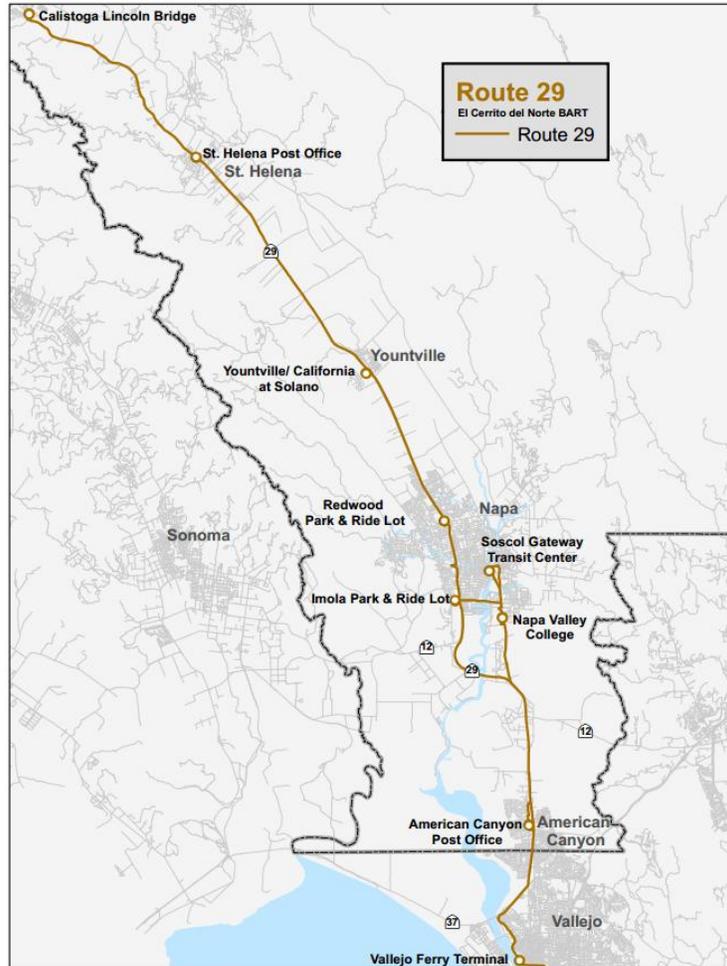
### Fairfield and Suisun Transit (FAST)

Fairfield and Suisun Transit (FAST) route 90 is a weekday express service from El Cerrito del Norte BART, on the East side of the Study Area, to Fairfield and Suisun City via the I-80 corridor. The service operates from 5:00 a.m. to 7:30 p.m., with peak hour headways ranging from 15-40 minutes, and midday headways of 30-60 minutes.

## Napa VINE

Napa VINE route 29 operates weekday express bus service between Napa County and the El Cerrito del Norte BART station, serving towns along State Route 29, with stops in El Cerrito, Vallejo, American Canyon, Napa, Yountville, St. Helena, and Calistoga. The service operates weekdays from 4:30 a.m. to 7:30 p.m. Headways throughout the day are 40-60 minutes. Figure 3-8 shows a map of the route.

Figure 3-8 Napa VINE Route 29 Map

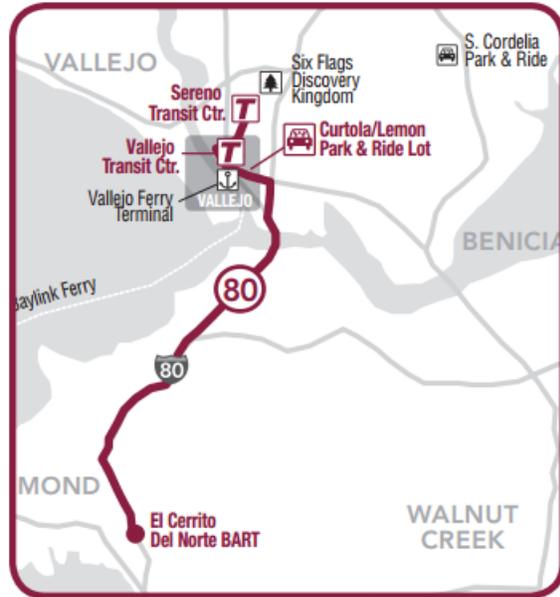


Source: Napa VINE

### SolTrans

SolTrans, which provides transit service in Solano County, operates the route 80 bus service between El Cerrito del Norte BART station and Vallejo. Weekday service operates from 4:30 a.m. to 11 p.m., with 15-minute peak headways and 30-minute midday headways. Saturday service operates from 6 a.m. to 11 p.m., with 30 minute headways. The route makes numerous local stops in downtown Vallejo, and then expresses on I-80 to El Cerrito del Norte BART, in the northeast corner of the Study Area. A map of the route is shown in Figure 3-9.

Figure 3-9 SolTrans Route 80



Source: SolTrans

### WestCAT

WestCAT, the transit operator for western Contra Costa County, including Pinole and Hercules, provides two bus lines serving the Study Area:

- Line J (comprised of two variants, JR and JL) connects Hercules to El Cerrito del Norte BART station via I-80. Service operates on weekdays from 4:30 a.m. to 12 a.m. with 15-minute peak headways and 30-minute midday headways. Service runs on Saturdays from 6 a.m. to 10:30 p.m. with 40 minute headways, and on Sundays from 7:30 a.m. to 8:30 p.m. with 40 minute headways.
- Line JX/JPX also connects Hercules with El Cerrito del Norte BART station, with weekday express service from 5:30 a.m. to 8 p.m. Headways are 15 minutes during the peak and 60 minutes during midday.

## FERRY SERVICE

Figure 3-10 Proposed Site of Richmond Ferry Terminal



Source: WETA

The San Francisco Bay Area Water Emergency Transportation Authority (WETA) is planning to operate ferry service between the Ferry Building in San Francisco and the Richmond Ferry Terminal, located in the southwest corner of the Study Area at the southern end of Harbour Way.

A one-way trip from Richmond to the Ferry building will take approximately 30-35 minutes<sup>2</sup>. The ferries planned for service on this route will have capacity for up to 300 passengers per trip.

WETA is planning to build a new ferry terminal in place of the existing facility immediately adjacent to the Ford Building (pictured in Figure 3-11), which will function as a waiting area for passengers. The new terminal will accommodate one vessel at a time for passenger loading and unloading. Parking for passengers will be provided at an existing lot (pictured in Figure 3-12), although WETA is also studying alternatives that could include expanded parking.

Auto access to the site will be primarily by way of Harbour Way South and Marina Way South, both of which connect to I-580 and downtown Richmond. The terminal is also directly served by AC Transit Line 74 and accessible by walking or cycling on the Bay Trail. The terminal project will also include bicycle and pedestrian trail enhancements and improvements to Sheridan Point Park, which is located adjacent to the ferry terminal.

On March 5<sup>th</sup>, 2015, the WETA Board of Directors approved a cooperative agreement with the City of Richmond and the Contra Costa Transportation Authority (CCTA) to provide operations

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<sup>2</sup> Source: <http://richmondconfidential.org/2012/06/22/officials-showcase-proposed-richmond-commuter-ferry/>

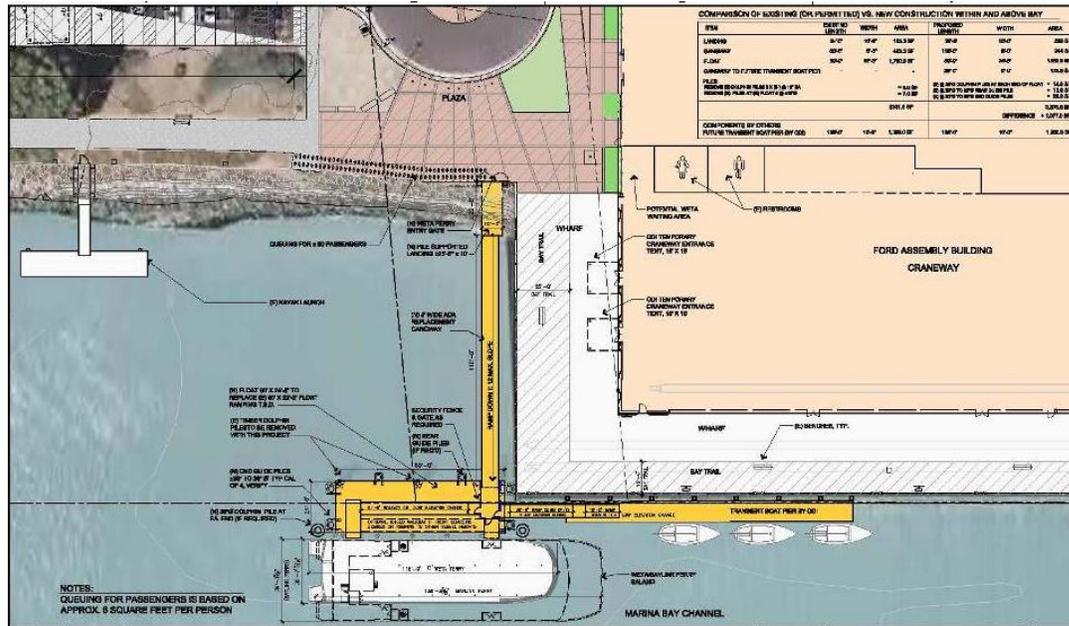
funding for the ferry service, from Ford Point to San Francisco, beginning in 2018. WETA is now seeking capital funding to purchase vessels and build the new Richmond Ferry Terminal.

Figure 3-11 Planned Site Layout for Richmond Ferry Terminal



Source: WETA

Figure 3-12 Richmond Ferry Terminal Proposed Float and Gangway Layout Plan



Source: WETA

## SHUTTLE SERVICE

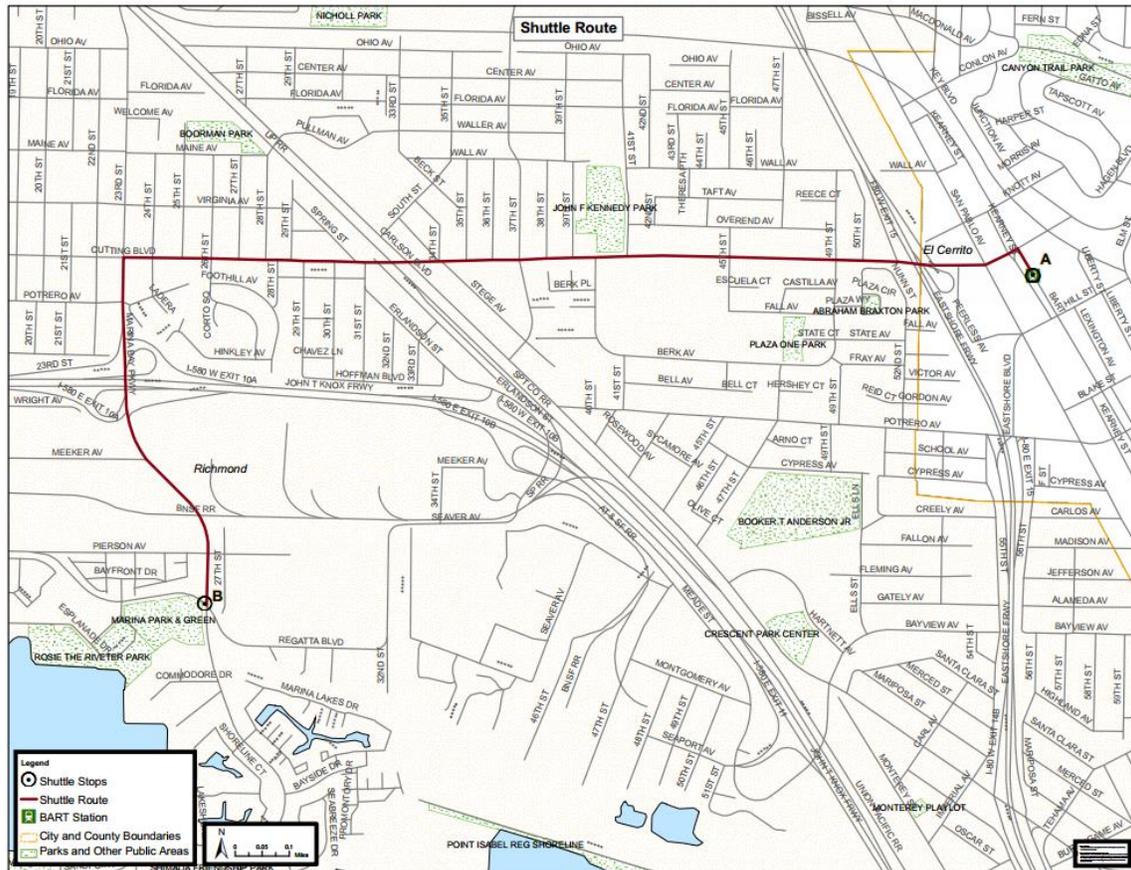
Five fixed-route bus shuttle services currently operate in or near South Richmond..

### Marina Bay Circular and Richmond Circular Shuttles

The City of Richmond contracts with a private company to provide the two free weekday shuttle routes that serve the study area: the Marina Bay Circular Shuttle and the Richmond Circular Shuttle.

The Marina Bay Circular Shuttle (shown in Figure 3-13) is an express route connecting the El Cerrito del Norte BART station with the Marina Bay Business and Residential Complex at the intersection of Marina Bay Parkway and Regatta Boulevard, across I-580 from the BART station. No intermediate stops are made between Marina Bay and the BART station. Peak-period headways are 10-15 minutes, with service from 6:30 a.m. to 8:00 a.m. and from 3:30 p.m. to 5:00 p.m.

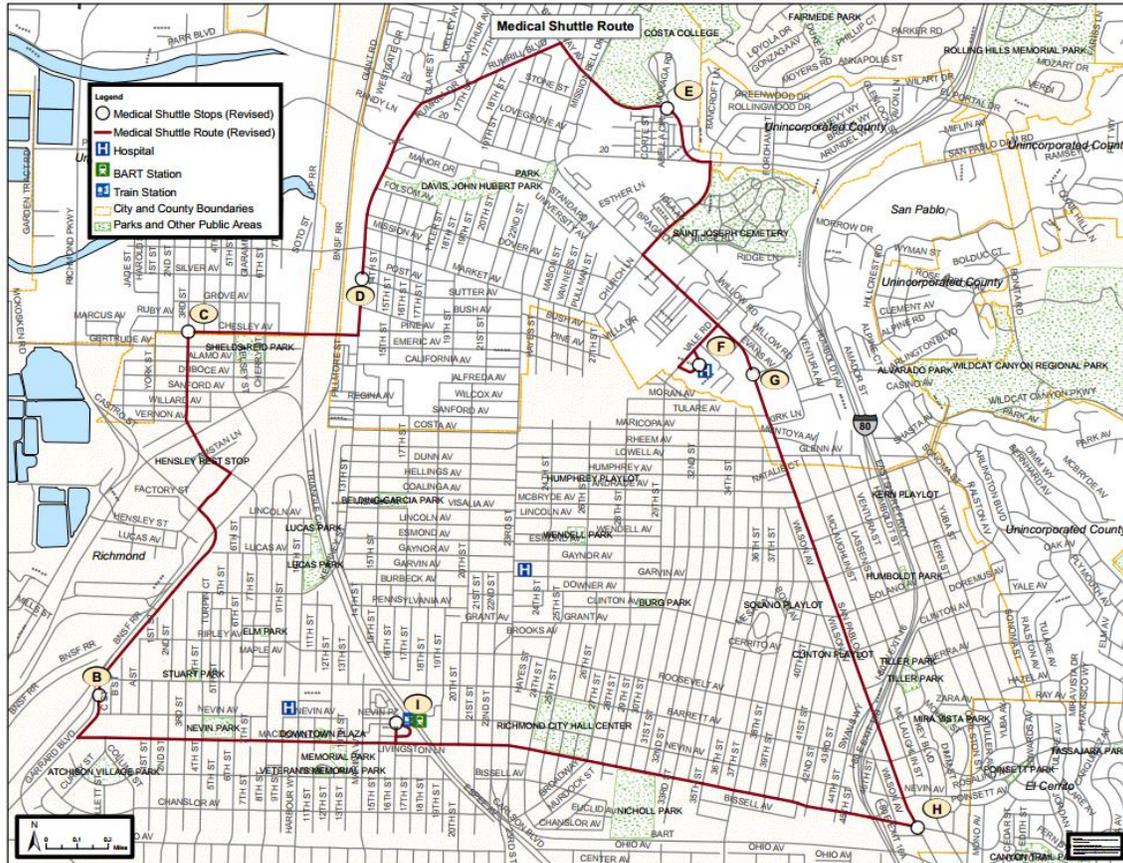
Figure 3-13 Marina Bay Circular Shuttle Route Map



Source: City of Richmond

The Richmond Circular Shuttle (shown in Figure 3-14) operates as a loop, connecting the Richmond BART station and downtown Richmond to the south, with various points around Richmond to the north. The service operates from 7:00-11:00 a.m. and from 2:30-6:30 p.m., with headways of 15-20 minutes in both directions.

Figure 3-14 Richmond Circular Shuttle Route Map



Source: City of Richmond

### Richmond Field Station Shuttle (UC Berkeley)

The University of California, Berkeley operates the Richmond Field Station (RFS) Shuttle, connecting the main UC campus in Berkeley with the Richmond Field Station and UC's Regatta Facility, in the center of the Study Area. The shuttle costs \$1.50 per trip to ride, and is open to the general public. The RFS shuttle operates weekdays on approximately 60-90 minute headways, from 6:45 a.m. to 6:10 p.m. Only three of the three of the 11 daily shuttle trips stop at the RFS, and all runs stop at the Regatta Facility immediately to the west. One trip per day connects to the El Cerrito Plaza BART station.

The Environmental Impact Report for the Richmond Bay Campus recommends improving the existing shuttle service to reduce driving trips to the site. Recommendations include:

- Collaborate with major employers to provide employer-based “open-door” shuttles to BART, the planned ferry terminal and other transit hubs.

- Make shuttle use appealing for employees and visitors through frequent scheduling; display real time arrival information at key stops, building lobbies, and over the network; integrate closed-circuit television or emergency phones into shuttle stops; and provide network access in shuttle vehicles.
- Establish a Berkeley-Richmond Bay Shuttle that provides a no-transfer 20-minute ride from the Lawrence Berkeley National Laboratory (LBNL) to the Berkeley Global Campus at Richmond Bay, with a single stop at the main UC Berkeley campus en route. A separate shuttle would run continuously between the El Cerrito Plaza or El Cerrito del Norte BART station and the BGC at Richmond Bay, providing a nonstop ride of approximately nine minutes to the BGC at Richmond Bay.

### **Kaiser Permanente Shuttle**

Kaiser Permanente operates a free weekday shuttle bus between the Richmond Intermodal Terminal and the Richmond Kaiser Permanente Medical Center located about one third of a mile to the west on Nevin Avenue in Richmond. Shuttles run from 6 a.m. to 7 p.m., operating at 15 minute headways.

### **Ford Point Shuttle**

Orton Development sponsors a privately operated shuttle service to Richmond BART station for tenants of the Ford Building and occasional special events on the Ford Peninsula.

## **TRANSIT RIDERSHIP**

This section summarizes available data on transit ridership in South Richmond.

### **AC Transit**

**Figure 3-15 Daily Unlinked Trips on AC Transit Routes Serving the Study Area<sup>3</sup>**

Route	Boardings
<b>Local Lines</b>	
7	700
25	750
71	1,400
72	3,700
72M	3,800
72R	6,200
74	1,100
76	1,900
<b>Transbay Lines</b>	
G	244
H	370
L	503
LA	449
LC	32

<sup>3</sup> Ridership data is for the entire line, including portions of the line that are outside the Study Area.

Figure 3-15 summarizes the overall ridership for each of the AC Transit routes that serve the Study Area. These ridership counts are total boardings for the entire routes, including route segments that are not within the Study Area.

Routes 72R and 72M, which operate on San Pablo Avenue through the Study Area, are among AC Transit's highest-ridership routes. Routes 25 and 74, the only routes to travel south of I-580 into the shoreline area, have much lower daily ridership numbers.

**BART**

This section profiles information on the BART ridership and travel patterns of riders accessing BART at each of the three BART stations in and near the South Richmond Study Area (El Cerrito Plaza BART, El Cerrito Del Norte BART, and the Richmond Intermodal Terminal). This data includes surveys of the origin and destination of each trip through the station (boarding or alighting), and of riders' mode of access to the station(s).

Figure 3-16 shows the total number of riders entering each BART station on an average weekday in October 2013. El Cerrito Del Norte Station, which is the closest to the center of the South Richmond Study area by radial distance or walking distance, has the highest ridership of the three stations (Average daily ridership at El Cerrito Del Norte BART is more than twice that of the Richmond Intermodal Terminal (the station with the fewest daily patrons of the three)).

**Figure 3-16 Average Weekday Entries at BART Stations in the Study Area (October 2013)**

Station	Entries
El Cerrito del Norte	7,403
El Cerrito Plaza	4,214
Richmond	3,651

Source: BART

Figure 3-17 illustrates the most common destinations for BART riders entering stations in or near the Study Area. These reflect trips that could be from home, work, or another location. Berkeley, downtown San Francisco and downtown Oakland are the most common destinations for riders entering each of the stations.

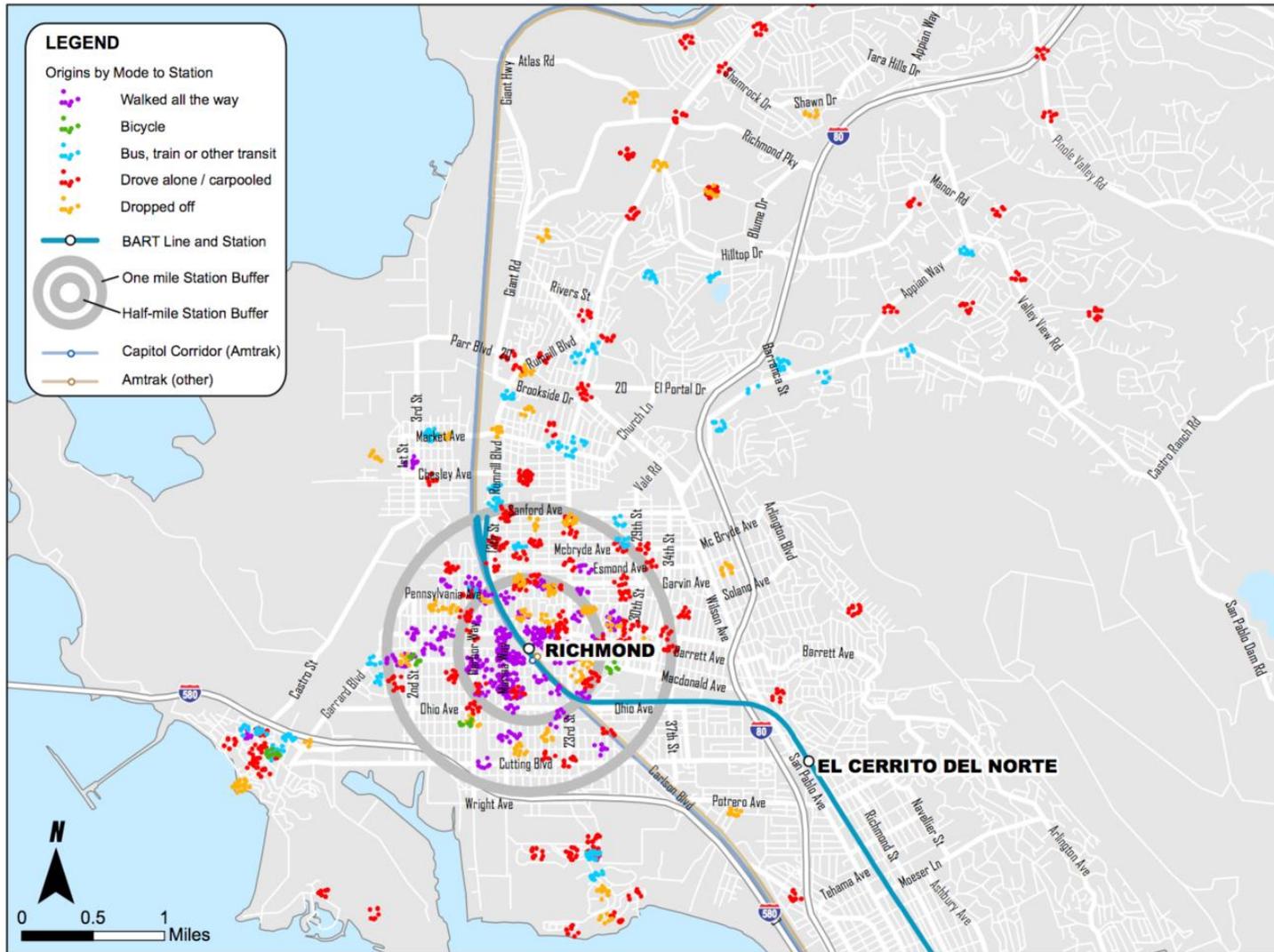
**Figure 3-17 Most Common Destinations for BART Riders Boarding Study Area BART Stations (October 2013, Listed in Order of Most Boardings)**

El Cerrito del Norte	El Cerrito Plaza	Richmond
Berkeley	Berkeley	Berkeley
Montgomery Street	Montgomery Street	Powell Street
Embarcadero	Embarcadero	Montgomery Street
Powell Street	Civic Center	Embarcadero
12th Street Oakland	Powell Street	Civic Center
Civic Center	12th Street Oakland	12th Street Oakland
19th Street Oakland	19th Street Oakland	MacArthur
MacArthur	MacArthur	19th Street Oakland
Coliseum / Oakland Airport	El Cerrito Del Norte	El Cerrito Del Norte
Daly City	Richmond	16th Street Mission

Source: BART

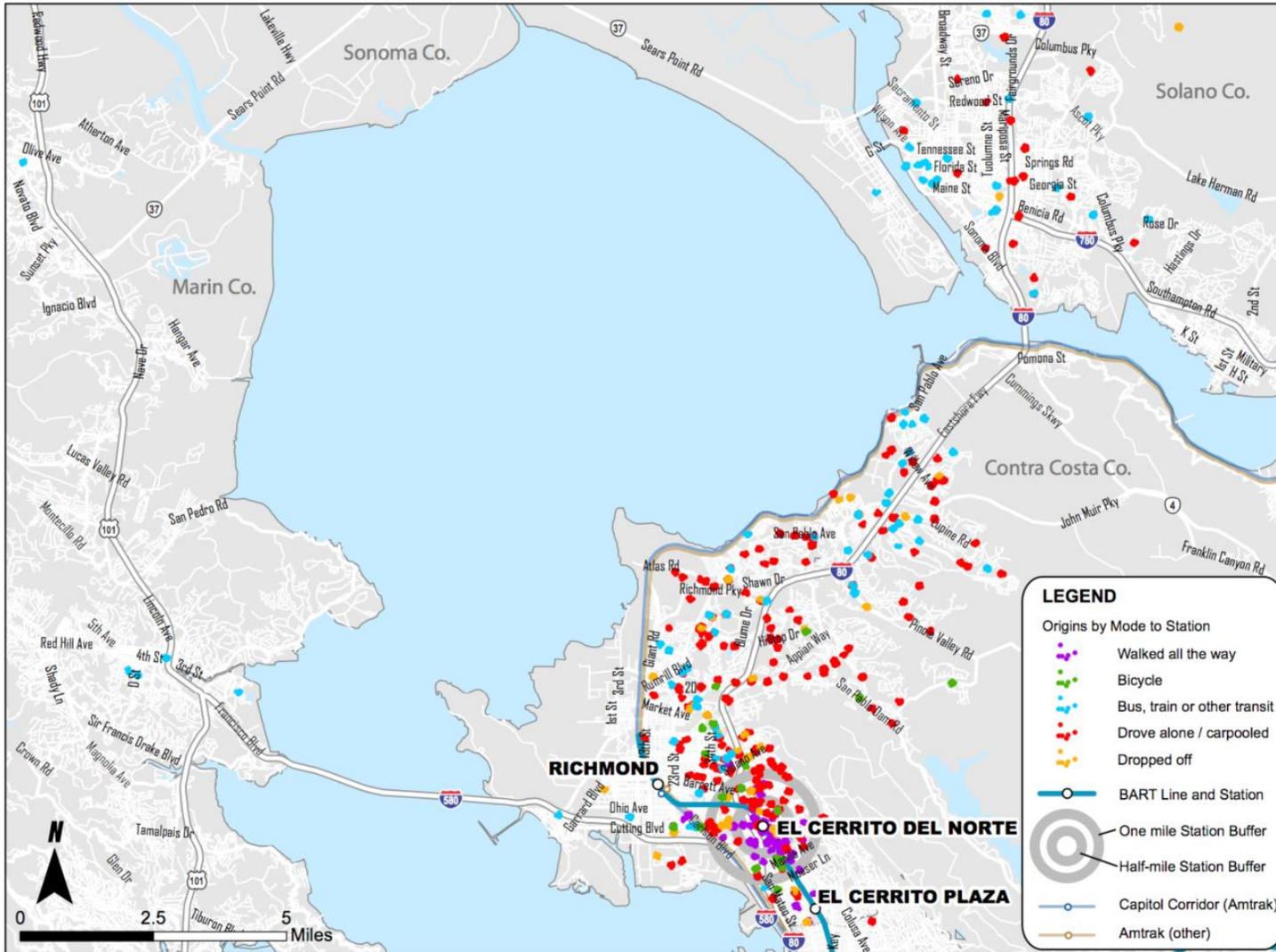
Figures 3-18 through 3-20 illustrate the home locations of BART riders at each of the three BART stations in or near the Study Area, color coded by mode of access (walk, bike, drive, etc.).

Figure 3-18 Richmond Station: Home Locations of BART Riders by Mode



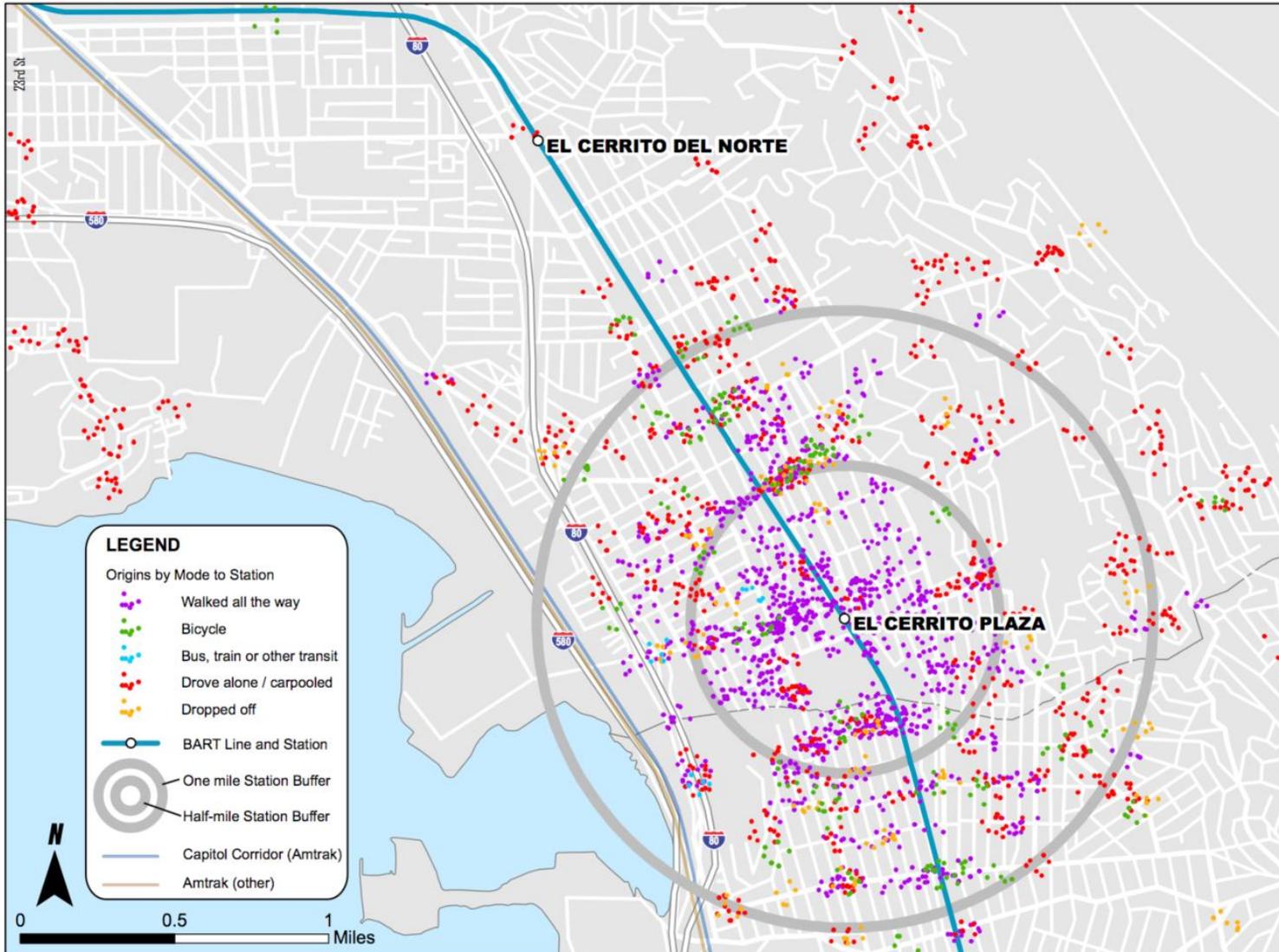
Data Sources: ESRI, 2008 BART Station Profile Study (weekday only; data are weighted from survey sample to represent average weekday ridership)

Figure 3-19 El Cerrito del Norte Station: Home Locations of BART Riders by Mode



Data Sources: ESRI, 2008 BART Station Profile Study (weekday only; data are weighted from survey sample to represent average weekday ridership)

Figure 3-20 El Cerrito Plaza: Home Locations of BART Riders by Mode



Data Sources: ESRI, 2008 BART Station Profile Study (weekday only; data are weighted from survey sample to represent average weekday ridership)

In a single table, Figure 3-21 summarizes the information on mode of access for BART riders using each of the three stations located in or near the South Richmond Study Area.

**Figure 3-21 Mode of Travel to BART Stations in the Study Area (for Home-Origin Trips)**

Station	Walk	Bike	Transit	Drive Alone	Carpool	Dropped Off
El Cerrito del Norte	13%	3%	22%	44%	7%	10%
El Cerrito Plaza	43%	6%	1%	38%	4%	7%
Richmond	24%	2%	21%	35%	3%	15%

Source: 2008 BART Station Profile Study (weekday only, data weighted from survey sample to represent average weekday ridership)

As Figure 3-22 shows, El Cerrito Plaza attracts the highest share of walking and biking trips of the three stations, with nearly half of riders accessing the station by non-motorized modes of transportation. The Richmond Intermodal Terminal has a lower drive-alone rate than El Cerrito Plaza, with many riders accessing the station by walking, riding transit, or being dropped-off. Not surprisingly, given the many regional bus routes serving the station, El Cerrito del Norte has the highest share of riders accessing the station by transit. Del Norte BART also has the highest share of riders arriving by driving alone, and the lowest share of riders who walk all the way from home to station.

The maps in Figures 3-18 through 3-20 above show only home-based trips, not the mode used to travel from BART to reach employment sites within South Richmond Study Area. The majority of BART riders who live within the Study Area access BART by driving alone or being dropped off, with a small share of riders taking transit or a shuttle to the Richmond Intermodal Terminal. The high drive-alone access mode share for all three stations is likely due to the significant walking distance from most residential neighborhoods to the stations, identified barriers to bicycle and pedestrian connectivity, and a poor and uninviting environment for walking along the way.

### Golden Gate Transit

Figure 3-22 the total ridership for Golden Gate Transit routes 40 and 42, which serve the Study Area on Cutting Boulevard.

On route 40 eastbound, from San Rafael to Richmond, over 90% of weekday riders board at the transit center in San Rafael, and about 48% travel to El Cerrito del Norte BART station. An additional 29% disembark at another stop in Richmond, either at the intersection of Tewksbury Avenue and Castro Street (12%), or along Cutting Boulevard (17%). Westbound ridership patterns (towards San Rafael from Richmond) are similar, with a slightly larger share boarding on Cutting Boulevard (21%) than alighted there.

Route 42 is similar to route 40, but makes a detour to serve Richmond BART. Ridership patterns are similar overall to route 40, but a sizeable share of riders on route 42 board at Richmond BART (35% of eastbound riders), or alight there (35% of westbound riders).

**Figure 3-22 Average Weekday Boardings on Golden Gate Transit Routes 40 and 42 (October 2012 through September 2013)**

Route	Direction	Boardings
40	East	119
40	West	102
42	East	313
42	West	316

Source: Golden Gate Transit

Route 42, which makes the detour off of Cutting Boulevard to the Richmond BART station, has over three times as many riders as Route 42, suggesting that at present, far fewer riders are traveling to or from the South Richmond Study area than points farther north in Richmond.

### **Capitol Corridor**

From October 2012 through September 2013, Capitol Corridor trains averaged 291 boardings per day at the Richmond Intermodal Terminal (approximately 7% of all boardings on the line).

### **Kaiser Permanente Shuttle**

The Kaiser Permanente Shuttle from Richmond BART Station to the Kaiser Permanente Medical Center has 110 boardings on average per day, including boardings in both directions, a relatively substantial number given the short distance the route travels.

## Non-Motorized Access & Connectivity

This section provides an overview of existing conditions, planned improvements and additional opportunities to enhance bicycle and pedestrian access throughout the SRTCP Study Area. Additional information about current conditions within the study area can be found in the *South Shoreline Specific Plan* (draft, 2013). That document provides details about the walking and bicycling environment within the Specific Plan area. This section focuses on connectivity between the South Shoreline area and surrounding neighborhoods.

### SUMMARY OF ISSUES AND OPPORTUNITIES

Notable issues and barriers to connectivity by non-motorized modes of transportation in the Study Area include:

- North and east of I-580, pedestrians and bicyclists are challenged to cross major arterial roadways, which have wide street widths, wide spacing between signalized intersections and associated marked crossings and lack ADA accessible curb ramps in many places.
- Pedestrians and bicyclists seeking to cross I-580 and I-80 within the Study Area are in most cases required to use one of a limited number of overpasses, which carry high traffic volumes at high speeds that are uninviting and potentially hazardous to cross.
- The Southwest Annex is particularly tightly constrained for bicyclists and pedestrians, as it is bounded by I-80 and I-580, and major arterials Central Avenue and Carlson Boulevard (a ped/bike crossing of I-80 at Sacramento Avenue is the only direct route out of the neighborhood to the east).
- In the South Shoreline area, large block sizes limit pedestrian accessibility, while rail spurs and crossings of such present a connectivity challenge for bicyclists.
- In over half of the recent collisions in the Study Area involving pedestrians, motor vehicle drivers failed to yield right-of-way to pedestrians (this problem occurred most frequently on Cutting Boulevard and San Pablo Avenue)

Adopted plans and projects under development present many opportunities for enhanced bicycle and pedestrian connectivity in South Richmond, including:

- The Richmond Greenway Gap Closure Project is slated to provide an important new bicycle and pedestrian connection under I-80, connecting the Richmond Greenway with the extensive Ohlone Greenway immediately northeast of the Study Area.
- Wide streets with relatively low traffic volumes in many parts of the Study Area present the opportunity for the City to add or expand existing dedicated bicycle and pedestrian facilities within the public right-of-way with minimal property acquisition or impact to auto mobility.
- Curb extensions, directional ramps, high-visibility crosswalk striping, and median refuge islands are recommended in the Pedestrian Plan for installation at many intersections on major arterial roadways in the Study Area.
- Class II bicycle lanes are recommended in the Bicycle Master Plan for many corridors in the Study Area and have recently been striped to improve bicyclist comfort and safety on a key segment of Cutting Boulevard west of I-80.

## EXISTING BICYCLE AND PEDESTRIAN CONNECTIONS

The SRTCP study area is divided by the I-580 corridor, which separates the primarily industrial and commercial areas of South Richmond from the older residential neighborhoods to the north and east. Richmond's residential streets provide great opportunities for walking and bicycling, and the City has identified many opportunities to enhance them to improve safety, access and comfort for pedestrians and bicyclists. The land uses and street network on the south side of I-580 poses some unique challenges to walking and bicycling. The *South Shoreline Specific Plan* and *Richmond Bay Campus Long Range Development Plan* develop a vision for pedestrian and bicycle friendly communities throughout South Richmond. In addition, the study area also includes portions of El Cerrito, centered around San Pablo Avenue and the City's two BART stations. Several plans, including the *San Pablo Avenue Specific Plan/Complete Streets Plan* and *El Cerrito Active Transportation Plan*, are underway to enhance bicycling and walking in these areas as well.

### Existing Pedestrian and ADA Facilities and Services

#### Central Richmond

The residential neighborhoods north of I-580 are laid on a north-south grid found throughout most of Richmond with a block size of approximately 450 feet by 225 feet in length, which creates a fine-grained, walkable pedestrian network. Sidewalks are provided on almost all roadways in the areas, however many corners do not have ADA accessible curb ramps at intersections. Many of the neighborhood streets through this area jog slightly at Potrero Avenue and create offset intersections, which may be difficult for pedestrians to cross. Signalized intersections through this area on major arterials such as Cutting Boulevard and South 23<sup>rd</sup> Street are located typically 700 feet apart, which can create long walking distances and delay for pedestrians trying to cross these multi-lane roadways.

#### Richmond Annex and Southwest Annex

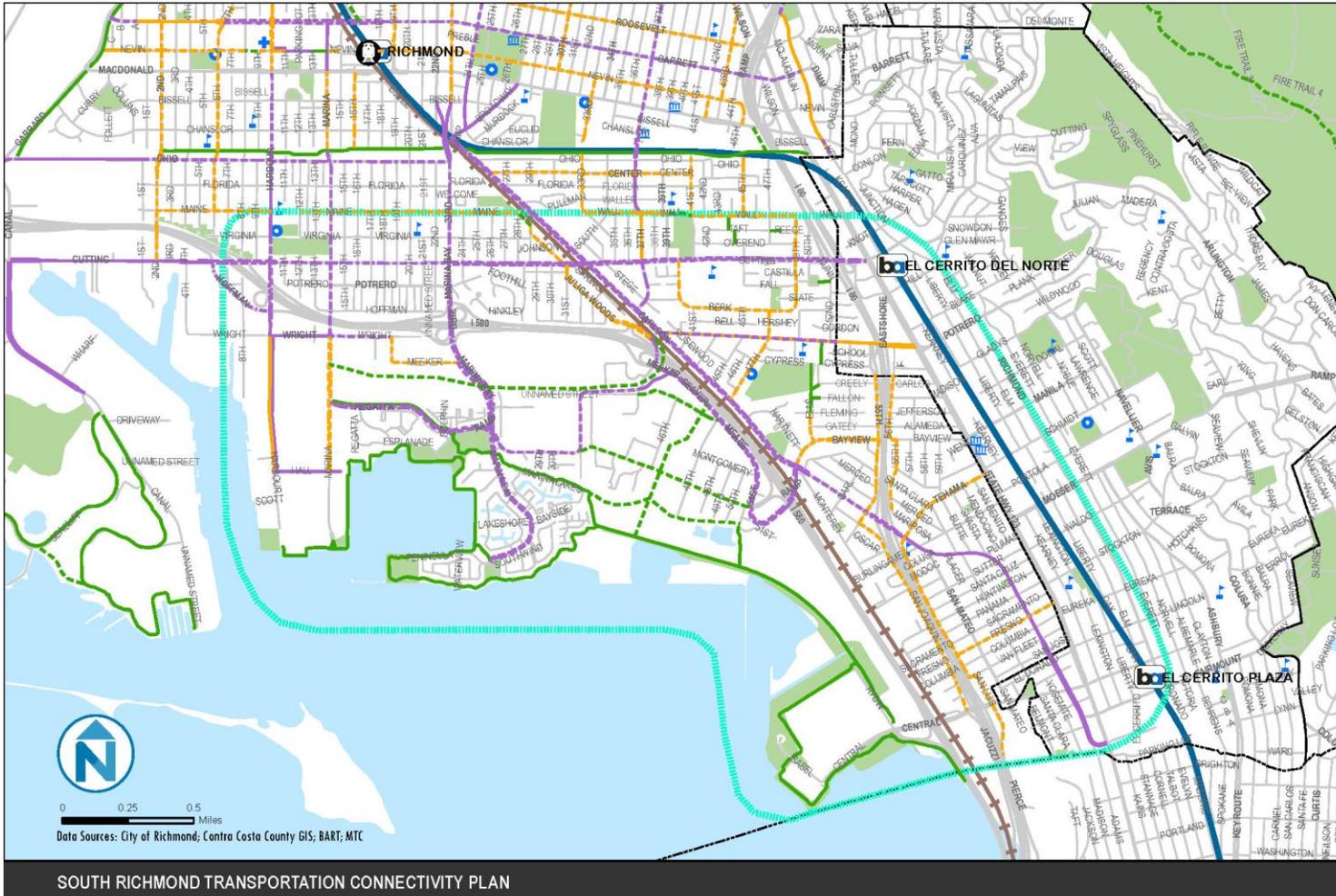
East of Carlson Boulevard, only Bayview Avenue and Cutting Boulevard provide connections to neighborhoods surrounding Kennedy High School and on to El Cerrito Del Norte BART Station, due the active rail line on which Amtrak service also runs as well as I-80 further east. The street grid between Carlson and San Pablo Avenue has a fragmented street network with many cul-de-sacs which limits connectivity in each direction. Sidewalks are located throughout the area, but accessible curb ramps are located sporadically through the neighborhood.

To the south, the grid begins again below Bayview Avenue becoming a more regular grid in the Southwest Annex and Richmond Annex neighborhoods. The block sizes in this neighborhood are approximately 550 feet by 200 feet, which also creates a fine-grained, walkable neighborhood scale; however, these two neighborhoods are substantially fractured by I-580, I-80, the railroad tracks, and—to some extent—Carlson Boulevard San Pablo Avenue, which run somewhat parallel to each other through the area. The Southwest Annex is approximately one block in length with a mix of industrial and residential uses, and is situated between I-580 and I-80. A pedestrian overcrossing at Sacramento Street provides a connection to the Richmond Annex neighborhood. Central Avenue and Carlson Boulevard provide the only other connection points outside of the Southwest Annex. The grid of Richmond Annex, which is approximately four blocks wide, provides for good walkability; however, Central Avenue, San Pablo Avenue (SR 123) and Carlson Boulevard do present crossing barriers for pedestrians. Sidewalks are located throughout the area, but curb ramps are located sporadically through the neighborhood.

Figure 3-23 Pedestrian Routes in South Richmond



Figure 3-24 Existing and Planned Bicycle Facilities in South Richmond



0 0.25 0.5 Miles  
 Data Sources: City of Richmond; Contra Costa County GIS; BART; MTC

SOUTH RICHMOND TRANSPORTATION CONNECTIVITY PLAN

- |                     |                     |                   |                |        |                           |
|---------------------|---------------------|-------------------|----------------|--------|---------------------------|
| <b>BMP Existing</b> | <b>BMP Proposed</b> | SRTCPC Study Area | Amtrak Station | BART   | Governmental Bldgs/Courts |
| Class 1 Path        | Class 1 Path        | City Boundaries   | BART Station   | Amtrak | Medical                   |
| Class 2 Lane        | Class 2 Lane        |                   |                |        | Community/Rec Center      |
| Class 3 Route       | Class 3 Route       |                   |                |        | School                    |
| Class 2/3           |                     |                   |                |        |                           |

## South Richmond

The Marina Bay area, south of I-580, has an existing roadway network that primarily serves the current and previous industrial land uses in the area. The area is marked by long block lengths, a roadway network with limited connectivity, and multiple railroad lines and spurs. While medium- and large-sized employers are located in the South Shoreline area, many of these employer destinations are located in office park type settings, with large buildings adjacent to surface parking. As a result, pedestrians face long walking distances with limited access. Many blocks are 1/4 or 1/3 of a mile in length, which accommodates the large building footprints, but makes it difficult for pedestrians in the area to walk from their office to lunch or access the Bay Trail. Additionally, sidewalks are often not provided on both sides of the roadway in the study area. Diagonal or parallel curb ramps are typically provided where sidewalks are located but some are not yet upgraded to meet current ADA standards. The major infrastructure barriers are also a significant consideration both in terms of distances required to get from one location to the other and pedestrian safety. Two major rail lines run east-west through the study area between Meeker Avenue and Regatta Boulevard. Multiple rail spurs extend off the main lines. Each of these rail lines intersects area roadways with at-grade rail crossings, with differing levels of pedestrian accommodation.

The San Francisco Bay Trail provides a regionally significant pedestrian route through the area. The Trail largely follows the constructed shoreline through the SRTCP study area, eventually turning south through San Francisco Bay wetlands to provide a connection to Central Avenue. Many key destinations and attractions are located along the Bay Trail, including the Rosie the Riveter National Historical Park, the proposed WETA Ferry Terminal, the Ford Plant, and single-family housing along the southern portion of Marina Bay Parkway. Existing Bicycle Facilities

Bicycle facilities are primarily located on the roadways that provide continuous access through South Richmond, typically over the highways or railroad tracks.

## Central Richmond

Though the City has striped many segments of bicycle lanes in Central Richmond, the overall network connectivity to South Richmond remains fragmented. Between the Richmond Greenway and Virginia Avenue, Class II bicycle lanes are striped on Harbor Way in both directions, providing a discontinuous connection south to the Bay Trail, the future WETA Ferry Terminal, and the Rosie the Riveter National Park. Further north where bicycle lanes are proposed, Harbor Way connects to Kaiser Hospital and other destinations in Downtown. Marina Way also provides a direct route to the Richmond BART station but has no existing bicycle facilities. South 23<sup>rd</sup> Street has striped Class II bicycle lanes connecting Bissell and Ohio Avenues, which provides a partial connection to the southern portion of Downtown. South of Ohio Avenue, the City is planning to stripe Class II bicycle lanes through to Cutting Boulevard.

Just outside of the study area to the north, the Richmond Greenway extends along the north side of Ohio Avenue, and eventually becomes the Ohlone Greenway in El Cerrito. Once the planned Richmond Greenway Gap Closure is completed, the Richmond Greenway/Ohlone Greenway corridor will provide direct path access to both El Cerrito BART stations and beyond, all the way to Berkeley via a Class I path connection. The Richmond Greenway Gap Closure project will finish the connection of the Richmond Greenway to San Pablo Avenue and the current Baxter Creek Park terminus of the Ohlone Greenway via a signalized trail crossing.

South of the Greenway, Cutting Boulevard provides one of the few continuous east-west roadways through central Richmond. Bicycle lanes are currently planned on Cutting Boulevard between Carlson Boulevard and San Pablo Avenue. This will provide a needed connection to El Cerrito Del Norte BART from the central Richmond area. Additionally, Potrero Avenue east of Carlson Boulevard is signed Class III bicycle route to San Pablo Avenue.

### **Richmond Annex and Southwest Annex**

Bicycle facilities in the Annex neighborhoods are currently limited to Carlson Boulevard. The striped Class II bicycle lanes provide a connection from Tehama Avenue to El Cerrito Plaza. Two short segments of Class I Path also provide a north-south connection on Ellis Street connecting north to Potrero Avenue. The Carlson Boulevard bike lanes provide the Richmond Annex with a significant new connection to commercial areas along San Pablo Avenue and the Plaza, but a gap remains between the Carlson Boulevard bicycle lanes and the Ohlone Greenway and El Cerrito Plaza BART Station. Likewise, though some ride on San Pablo Avenue today, no existing bicycle facilities are located on that roadway.

On the southern edge of these neighborhoods, Central Avenue extends east-west between the Bay Trail and El Cerrito Plaza BART. On the I-580 overpass, bicycle lanes are striped though pavement legends and bicycle lane signage are not in place. East of the overpass, Central Avenue narrows and is a heavily auto trafficked route to El Cerrito Plaza due to the I-80 Ramps. The nearest overpasses to Central Avenue are approximately one mile to the north and south. As such, alternative routes in the area are limited, and creative solutions must be sought to connect the continuous Bay Trail Class I paths through South Richmond and the Richmond Bay Campus with shopping destinations and the El Cerrito Plaza BART Station.

### **South Richmond**

Existing on-street bicycle routes are primarily limited to the on-street continuation of the Bay Trail west of Marina Way. The Bay Trail provides a primary Class I shared-use path through the area between Harbor Way and Central Avenue as well as to destinations further north and south. The Bay Trail hugs the constructed coastline and provides a Class I path through to Hall Avenue and around the Ford Plant. At Hall Avenue, the Bay trail continues west on Class II Bicycle lanes, which connect to Class II bicycle lanes northbound on Harbor Way. In the southbound direction, Harbor Way is a Class III signed bicycle route. The on-street trail continuation turns onto Hoffman Boulevard, which does not currently have a bicycle facility, and continues east onto Cutting Boulevard and Canal Boulevard, which both have Class II bicycle lanes and connect to Class I Path segments in the Point Richmond area.

Wright Avenue between Harbor Way and Marina Way also provides a Class II east-west connection. Cutting Boulevard east of Carlson Boulevard has Class II bicycle lanes and provides an east-west connection from Central and South Richmond to the El Cerrito Del Norte BART Station.

### **Pedestrian and Bicycle Collisions**

Collision data from the SWITRS database was analyzed for the South Richmond study area. Between 2007 and 2011, 36 bicycle-vehicle related collisions and 56 pedestrian-vehicle related collisions occurred within the SRTCP Study Area. According to the OTS Traffic & Safety collision rankings (2010), the City of Richmond continues to rank average for bicycle and pedestrian

collisions in cities of its size (100,001 – 250,000 residents). When ranked by daily vehicle miles traveled, City of Richmond ranks 35th out of 53 comparably sized cities for bicycle collisions. For pedestrian collisions, Richmond ranks slightly higher, at 19th out of 53 comparably sized California cities, for pedestrian collisions. Most of these reported collisions occurred in Central Richmond, north of I-580. This is consistent with where the highest bicycle ridership is expected based on key destinations and existing bicycle facilities.

Of those collisions in the South Richmond study area, 21 bicycle collisions and 28 pedestrian collisions occurred within the City of Richmond, with the remainder occurring in the City of El Cerrito (15 bicycle and 28 pedestrian). Approximately one third of bicycle collisions were due to wrong-way riding. Wrong-way riding is often an indication that adequate bicycle facilities that support proper bicycle behavior are lacking. While 44 percent of bicycle collisions caused severe injuries or other visible injuries, it should be noted that many collisions, particularly those without injury, go unreported. The majority of the collisions occurred on Cutting Boulevard and San Pablo Avenue, which are both high speed, multilane arterials. Three of the collisions occurred on the on-street connection of the Bay Trail between Hoffman Boulevard and South 2<sup>nd</sup> Street.

Of the 56 pedestrian-related collisions, over half resulted in severe injuries, other visible injuries, or fatalities. Two pedestrian fatalities occurred in the study area—one on I-580 west of Marina Way and the other at the Carlson Boulevard/Carl Avenue intersection. In over half of the collisions, the driver failed to yield to the pedestrian right-of-way, while one quarter of collisions were caused by a pedestrian violation. Cutting Boulevard/20<sup>th</sup> Street, Cutting Boulevard/37<sup>th</sup> Street, and San Pablo Avenue/Lincoln Avenue each had three or more pedestrian collisions between 2007 and 2011.

This collision history suggests that pedestrian and bicycle safety improvements along and across major arterials will be important to create safe and accessible walking and bicycling routes between South Richmond and surrounding areas. In particular, safety improvements along Cutting Boulevard, Carlson Boulevard and San Pablo Avenue should be investigated. The freeway interchanges and active railroad crossings should also be evaluated for safety improvements.

## **BARRIERS AND CONSTRAINTS**

I-580 and I-80 are major linear barriers that limit access north to Central Richmond and the Richmond Intermodal Station/BART and east to destinations in Richmond Annex, Southwest Annex, and the El Cerrito BART stations. Along the 3.5 mile length of I-580 through South Richmond, only six overpasses provide access to the South Shoreline Area: Harbor Way, Marina Way, Marina Bay Parkway, Regatta Boulevard, Bayview Avenue, and Central Avenue. Each of these overpasses presents an intimidating barrier for bicyclists and pedestrians given the wide cross-sections and high speeds. With the exception of Regatta Boulevard which is two lanes in width, each overpass is typically four- to six-lanes wide.

Within the South Shoreline area, railroad tracks, large block sizes, and a discontinuous roadway network present the largest barriers to bicycle and pedestrian connectivity. Numerous rail lines cross the South Richmond area, some of which continue to provide freight access to active industry in the area.

## PLANNED IMPROVEMENTS

The City of Richmond has made great strides towards improving pedestrian and bicycle safety and access in recent years; however, a variety of proposals remain, from both the City of Richmond and the City of El Cerrito, in several planning documents. Figure 3-25 summarizes the proposals for pedestrian improvements in the South Richmond area from the:

- City of Richmond Pedestrian Plan (2011)
- City of Richmond Bicycle Master Plan (2011)
- City of Richmond General Plan (2010)
- Richmond Livable Corridors (Draft, 2013)
- WCCTAC Transit Wayfinding and Enhancement Plan (2011)
- Richmond Bay Campus LRDP EIR (Draft, 2013)
- South Shoreline Specific Plan (Draft, 2013)
- City of El Cerrito San Pablo Avenue Complete Streets Plan (Draft, 2013)
- City of El Cerrito Active Transportation Plan (Draft, 2013)

Of these plans, the *General Plan* and *Bicycle Master Plan* are the only documents that treat the city as a whole, with other plans focused on corridors or neighborhoods. For example, the focus of the *Pedestrian Plan* is on the areas of highest need throughout the city, with particular attention to low-income communities in North and Central Richmond. As such, proposed projects contained in the Plan would enhance connectivity to and from the South Richmond area and, in particular, connections to Richmond BART, but do not directly address connectivity needs within South Richmond.

**Figure 3-25 Recommended Projects from Related Planning Documents**

Location	Proposal	Details	Plan
<b>City of Richmond and WCCTAC Documents</b>			
Carlson Boulevard	Class II Bicycle lanes	<ul style="list-style-type: none"> <li>▪ South 23<sup>rd</sup> Street to Tehama Avenue</li> </ul>	<i>City of Richmond Bicycle Master Plan</i>
Carlson and Cutting Boulevard Rail Crossing	Rail crossing	<ul style="list-style-type: none"> <li>▪ UPRR rail lines create one of the most dangerous intersections in the state, according to the California Public Utilities Commission despite proximity to schools and residences</li> <li>▪ Consider grade separation or roundabout</li> </ul>	<i>City of Richmond General Plan</i>
Cutting Boulevard	Intersection Improvements at Harbor Way, Marina Way, and South 23 <sup>rd</sup> Street, Class II bicycle lanes and landscaping	<ul style="list-style-type: none"> <li>▪ Curb extensions, directional ramps, high-visibility crosswalk striping, and median refuges</li> <li>▪ Stripe Class II bicycle lanes and parking</li> <li>▪ Tree plantings and landscape maintenance west of South 23<sup>rd</sup> Street</li> <li>▪ Consideration of roundabout at Cutting and Carlson Boulevards</li> <li>▪ Possibility of light-rail on Cutting in long-term</li> </ul>	<i>City of Richmond Pedestrian Plan</i>

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City of Richmond, CA

Location	Proposal	Details	Plan
Cutting Boulevard	Class Bicycle lanes	<ul style="list-style-type: none"> <li>Hoffman Boulevard to Carlson Boulevard</li> <li>50<sup>th</sup> Street to San Pablo Avenue</li> <li>Completed Carlson Boulevard to 50<sup>th</sup> Street</li> </ul>	<i>City of Richmond Bicycle Master Plan</i>
Harbor Way	Class II Bicycle lanes	<ul style="list-style-type: none"> <li>Virginia Avenue to Hoffman Boulevard</li> </ul>	<i>City of Richmond Bicycle Master Plan</i>
Harbor Way/I-580 Interchange	Interchange pedestrian improvements and Class II bicycle lanes	<ul style="list-style-type: none"> <li>Stripe high-visibility crosswalks and refuge islands at Cutting Boulevard</li> <li>Class II Bicycle lanes on Harbor Way and Hoffman Boulevard, including bike detection</li> <li>Curb extensions and directional ramps at Cutting</li> <li>Widen sidewalks on Cutting</li> <li>Tighten curb radii and add crosswalks at I-580 Ramps</li> <li>Realign I-580 Ramps to intersect at 90-degrees</li> </ul>	<i>City of Richmond Pedestrian Plan</i>
Harbor Way/Wright Avenue Rail Crossing	Rail crossing	<ul style="list-style-type: none"> <li>BNSF rail line crosses at-grade through at unsignalized intersections with no warning lights or gates</li> <li>Need to coordinate traffic signals and gates</li> </ul>	<i>City of Richmond General Plan</i>
Hoffman Boulevard	Class II Bicycle lanes	<ul style="list-style-type: none"> <li>Cutting Boulevard to Harbor Way</li> </ul>	<i>City of Richmond Bicycle Master Plan</i>
Marina Way	Class II Bicycle lanes	<ul style="list-style-type: none"> <li>Richmond Greenway to Wright Avenue</li> </ul>	<i>City of Richmond Bicycle Master Plan</i>
	Class III Bicycle route	<ul style="list-style-type: none"> <li>Wright Avenue to Hall Avenue</li> </ul>	<i>City of Richmond Bicycle Master Plan</i>
Marina Way	Corridor streetscape improvements and Class II bicycle lanes between Hoffman Boulevard and Macdonald Avenue	<ul style="list-style-type: none"> <li>Stripe 6' Class II Bicycle lanes and 7' Parking Lane</li> <li>Stripe 10-11' center median and 10-11' travel lanes</li> <li>Add pedestrian-scale lighting (long-term)</li> <li>Build 8-10' landscaped median</li> </ul>	<i>City of Richmond Pedestrian Plan</i>
Marina Way South Rail Crossing	Rail crossing	<ul style="list-style-type: none"> <li>Creates a barrier to proposed South Shoreline and Ferry Terminal development</li> </ul>	<i>City of Richmond General Plan</i>
Marina Bay Parkway/South 23 <sup>rd</sup> Street	Class II Bicycle lanes	<ul style="list-style-type: none"> <li>Bissell Avenue to Bay Trail Spur</li> </ul>	<i>City of Richmond Bicycle Master Plan</i>
Marina Bay Parkway Rail Crossing	Rail crossing	<ul style="list-style-type: none"> <li>Creates a barrier and temporarily cuts off circulation to the area</li> <li>Consider grade separation</li> </ul>	<i>City of Richmond General Plan</i>

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Location	Proposal	Details	Plan
Marina Bay Parkway/I-580 Interchange	Interchange pedestrian improvements and buffered bicycle lanes	<ul style="list-style-type: none"> <li>▪ Class II Bicycle lanes</li> <li>▪ Connect bicycle lanes to Officer Moody Class I Path/Railroad Undercrossing</li> <li>▪ Consider narrowing lanes or road diet on South 23<sup>rd</sup> Street to improve bicycle connection</li> <li>▪ Stripe crosswalk at freeway ramps and relocated crosswalks to improve visibility, as necessary</li> <li>▪ Intersect freeway off-ramps at 90-degrees</li> <li>▪ Consider installing a roundabout at Meeker Avenue</li> </ul>	<i>City of Richmond Pedestrian Plan</i>
Meade Street	Class II Bicycle lanes	<ul style="list-style-type: none"> <li>▪ Regatta Boulevard to Carlson Boulevard</li> </ul>	<i>City of Richmond Bicycle Master Plan</i>
Meeker Avenue/South 19 <sup>th</sup> Street	Class III Bicycle route	<ul style="list-style-type: none"> <li>▪ Wright Avenue to Marina Bay Parkway</li> </ul>	<i>City of Richmond Bicycle Master Plan</i>
Meeker Avenue/Marina Bay Parkway	Traffic calming and crossing improvements	<ul style="list-style-type: none"> <li>▪ Meeker Avenue/Marina Bay Park intersection has high speeds despite higher use crosswalks</li> <li>▪ Consider traffic calming measures</li> </ul>	<i>City of Richmond General Plan</i>
Regatta Boulevard	Class II Bicycle lanes	<ul style="list-style-type: none"> <li>▪ Marina Way to Meade Street</li> </ul>	<i>City of Richmond Bicycle Master Plan</i>
Richmond BART	Bicycle and Pedestrian Improvements	<ul style="list-style-type: none"> <li>▪ Road diets on Barrett Avenue, Cutting Boulevard, and South 23<sup>rd</sup></li> <li>▪ Lighting improvements at 15<sup>th</sup> Street/Ohio Avenue</li> <li>▪ Class I connection between Marina Way and 15<sup>th</sup> Street</li> <li>▪ Class III Bicycle route on Ohio Avenue and Marina Way and 15<sup>th</sup> Street</li> <li>▪ Class II Bicycle lanes on Marina Way south of Ohio Avenue</li> </ul>	<i>WCCTAC Transit Enhancement and Wayfinding Plan</i>
Richmond Bay Campus	Bicycle and Pedestrian Improvements	<ul style="list-style-type: none"> <li>▪ Class II Bicycle lanes and pedestrians paths on new streets on the RBC Site, with connections to the Bay Trail</li> <li>▪ Possible bike sharing system</li> <li>▪ Sidewalks on all internal streets</li> <li>▪ Internal pedestrian pathways</li> </ul>	<i>Richmond Bay Campus LRDP EIR</i>
	Primary Circulation Routes	<ul style="list-style-type: none"> <li>▪ Major streets: Regatta Boulevard, Meade Street</li> <li>▪ Minor streets: Lark Drive and South 46<sup>th</sup> Street</li> </ul>	<i>Richmond Bay Campus LRDP EIR</i>
	Class I Paths	<ul style="list-style-type: none"> <li>▪ Seaver Avenue</li> <li>▪ South 36<sup>th</sup> Street</li> <li>▪ Commodore Drive/Seaport Avenue</li> <li>▪ Extension of Path paralleling Marina Lakes Drive/Bayside Court</li> </ul>	<i>City of Richmond Bicycle Master Plan</i>

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City of Richmond, CA

<b>Location</b>	<b>Proposal</b>	<b>Details</b>	<b>Plan</b>
San Pablo Avenue	Streetscape Improvements, Super Sharrows/Green-Shared Lane	<ul style="list-style-type: none"> <li>Stripe Super Sharrow/Green-Shared Lane on San Pablo Avenue between City Limit and Macdonald Avenue</li> </ul>	<i>Richmond Livable Corridors</i>
South 23 <sup>rd</sup> Street	Streetscape Improvements, Lane Reduction, Class II Bicycle lanes	<ul style="list-style-type: none"> <li>Reduce auto travel lanes to provide 7' bicycle lane and 8' parking lane</li> <li>Provide 9' sidewalks with curb extensions, bus bulb-outs, and stormwater treatment planters, where appropriate</li> </ul>	<i>Richmond Livable Corridors</i>
South Richmond Rail Line	Class I Path	<ul style="list-style-type: none"> <li>Marina Way to Juliga Woods</li> </ul>	<i>City of Richmond Bicycle Master Plan</i>
Proposed WETA Ferry Terminal area	Bicycle and Pedestrian Improvements	<ul style="list-style-type: none"> <li>Intersection crossing enhancement at Marina Bay Parkway/Meeker Avenue</li> <li>Class I path spurs from Marina Way and Regatta Square to Bay Trail</li> <li>Interchange improvements at Harbor Way and Marina Bay Parkway</li> <li>Mid-Block crossing enhancement on Regatta Boulevard</li> <li>Improve Class I path on north side of Regatta and Class I Path on Marina Bay Parkway</li> <li>Road Diet Marina Way between Hoffman Boulevard and Hall Avenue</li> <li>Wayfinding signage plan</li> </ul>	<i>WCCTAC Transit Enhancement and Wayfinding Plan</i>
Wayfinding Signage to Transit	Wayfinding Signage	<ul style="list-style-type: none"> <li>Planned sign content noting distances and nearby destinations</li> <li>Installation locations</li> </ul>	<i>WCCTAC Transit Enhancement and Wayfinding Plan</i>
Wright Avenue	Class II Bicycle lanes	<ul style="list-style-type: none"> <li>Marina Way to South 19<sup>th</sup> Street/Meeker Avenue</li> </ul>	<i>City of Richmond Bicycle Master Plan</i>
<b><i>City of El Cerrito Planning Documents</i></b>			
El Cerrito Plaza BART to the Bay Trail (Central Avenue, Pierce Street)	Bikeway between El Cerrito Plaza BART Station with the Bay Trail	<ul style="list-style-type: none"> <li>Two-way separated bikeway on west-side of Pierce Street</li> <li>Upgrade existing edgeline striping on Central Avenue overbridge with Class II pavement legends and signage</li> <li>Class I Path on south side of Central Avenue between Jacuzzi Street and Pierce Street</li> </ul>	<i>City of El Cerrito Active Transportation Plan (draft)</i>
Cutting Boulevard and Hill Street	Two-Way Conversion west of San Pablo Avenue	<ul style="list-style-type: none"> <li>Convert existing one-way couplet to two-way roadways</li> </ul>	<i>City of El Cerrito San Pablo Avenue Complete Streets &amp; Specific Plan (draft)</i>

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Location	Proposal	Details	Plan
El Cerrito Del Norte BART Station Area	Bicycle and Pedestrian Improvements	<ul style="list-style-type: none"> <li>▪ Class II Bicycle lanes on Potrero Avenue between Carlson Boulevard and Ohlone Greenway</li> <li>▪ Road Diet on Cutting Boulevard and Class II Bicycle lanes</li> <li>▪ Intersection reconfiguration at Eastshore Boulevard/Potrero Avenue</li> <li>▪ Crossing enhancements at San Pablo Avenue/Potrero Avenue and Potrero Avenue/Ohlone Greenway</li> <li>▪ Wayfinding signage plan</li> </ul>	<i>WCCTAC Transit Enhancement and Wayfinding Plan</i>
El Cerrito Plaza BART Station Area	Bicycle and Pedestrian Improvements	<ul style="list-style-type: none"> <li>▪ Intersection traffic control improvements at Rydin Road/Central Avenue</li> <li>▪ HAWK/Pedestrian Hybrid Beacon at Central Avenue/Belmont Avenue intersection</li> <li>▪ Intersection crossing enhancements at Central Avenue/San Joaquin Street/I-80 WB Off-Ramp intersection</li> <li>▪ Class I Path under I-80 on south side of Central Avenue</li> <li>▪ Improve Cerrito Creek trail to Class I Path</li> <li>▪ Sign and strip Class II Bicycle lanes on Central Avenue on I-580/Central Avenue Overpass</li> <li>▪ Wayfinding signage plan</li> </ul>	<i>WCCTAC Transit Enhancement and Wayfinding Plan</i>
Fairmount Avenue	Class III Bicycle route with Green-Backed Sharrows, Intersection Improvements	<ul style="list-style-type: none"> <li>▪ Green-backed sharrows between Carlson Boulevard and Ashbury</li> <li>▪ Raised crosswalks at side-street east of Richmond Street</li> <li>▪ RRFBs, curb extensions, and median refuges at Carlson Boulevard</li> </ul>	<i>City of El Cerrito Active Transportation Plan (draft)</i>
Potrero Avenue	Class II Bicycle lanes and/or Class III Route with Sharrows between City Limit and Lexington Street	<ul style="list-style-type: none"> <li>▪ Class II bicycle lanes between 55<sup>th</sup> Street and Lexington Street</li> <li>▪ Class II bicycle lanes or Class III bicycle route with sharrows between City Limit and 55<sup>th</sup> Street</li> </ul>	<i>City of El Cerrito Active Transportation Plan (draft)</i>
San Pablo Avenue	Super sharrow/green shared lane	<ul style="list-style-type: none"> <li>▪ Concepts under development</li> </ul>	<i>City of El Cerrito San Pablo Avenue Complete Streets &amp; Specific Plan (draft)</i>
	Class II Bicycle lanes	<ul style="list-style-type: none"> <li>▪ Concepts under development</li> </ul>	<i>City of El Cerrito San Pablo Avenue Complete Streets &amp; Specific Plan</i>
	One-Way Cycletracks	<ul style="list-style-type: none"> <li>▪ Concepts under development</li> </ul>	<i>City of El Cerrito San Pablo Avenue Complete Streets &amp; Specific Plan (draft)</i>

As this list demonstrates, both the City of Richmond and the City of El Cerrito have already identified many projects to improve walking and bicycling. Additional opportunities to enhance safety, connectivity and accessibility within South Richmond:

- Pedestrian access improvements to local bus stops and transit hubs
- Streetscape improvements to encourage walking
- Public safety enhancements, including street lighting and enforcement
- “8 to 80” bicycle facilities that are comfortable for a wide range of users, including children and less experienced bicyclists.
- Secure short- and long-term bicycle parking at key destinations
- Closing bicycle facilities gaps on otherwise continuous roadways
- Enhancing connections and wayfinding to/from the Bay Trail

## Auto Access and Circulation

This section provides an overview of the existing street and roadway network in the South Richmond Transportation Connectivity Plan Study Area, including a profile of traffic volumes, roadway capacity, and auto level of service (LOS) at critical intersections and street segments. The primary focus of this section is on auto access to and circulation within South Richmond, including connectivity between the South Shoreline Area (site of the future Richmond Ferry Terminal and the planned Richmond Bay Campus of UC Berkeley’s Lawrence Berkeley National Laboratories), and neighborhoods to the north and east of I-580.

The contents of this section are based on a review of existing and available plans, studies and data pertinent to the area, including the Richmond General Plan and the Richmond Field Station Concept Plan; initial deliverables of the Richmond South Shoreline Specific Plan; and the documentation related to the Long Range Development Plan (LRDP) and Environmental Impact Report (EIR) for the Richmond Bay Campus of the University of California and Lawrence Berkeley National Laboratories (LBNL) – a site now referred to as the Berkeley Global Campus at Richmond Bay

### SUMMARY OF KEY ISSUES AND OPPORTUNITIES

The South Richmond area is served by a number of important local and regional connections, including the San Francisco Bay Trail, two major highways (I-80 and I-580), and four regional transit stations/terminals (including three BART Stations and the planned Richmond Ferry Terminal). However, poor *connectivity* and barriers to circulation within the Study Area limit accessibility (See Figure 3-26). Interstate 580 provides regional access to South Richmond, while simultaneously bisecting the Study Area from Northwest to Southeast, forming a barrier that isolates the South Shoreline area from other South Richmond neighborhoods and adjacent communities.

The potential redevelopment of large parcels within the Study Area presents the opportunity to extend and intensify the existing street network. This would create a dense and continuous grid of complete streets that supports walking and bicycling, strengthen connections to regional transit, and capitalize on the Study Area’s regionally accessible location. A critical challenge will be to connect major sites of the redevelopment area with existing buildings and neighborhoods in a way that improves access and mobility within South Richmond, while integrating new development into the fabric of the City and the region.

### STREET AND ROADWAY NETWORK

The City of Richmond is served by two interstate highways, an expressway, and a system of arterials, collectors, and local streets that distribute traffic to the various neighborhoods, business districts, employment centers and shopping centers in the City.

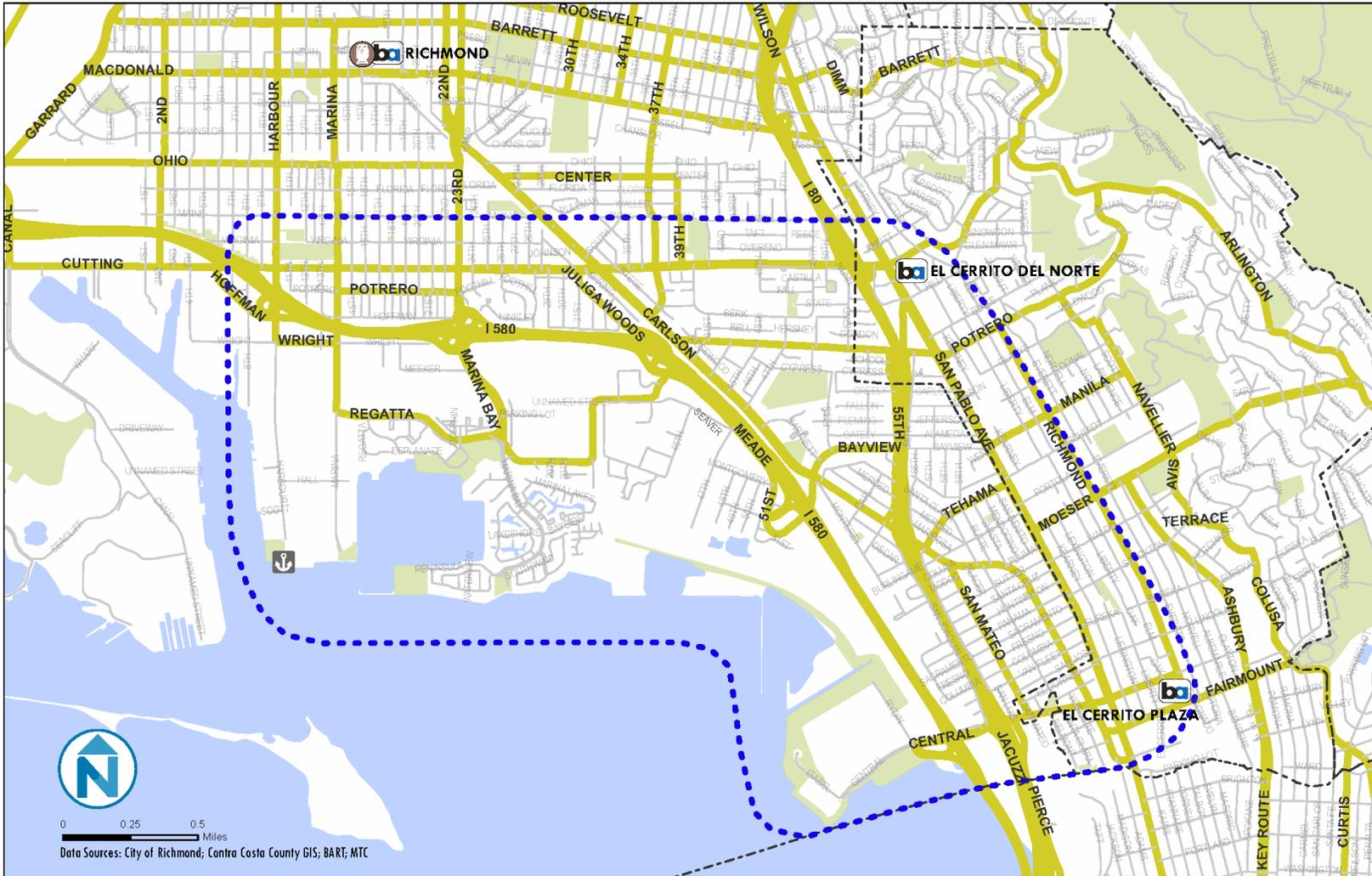
Figure 3-26 Study Area – Issues & Opportunities



SOUTH RICHMOND TRANSPORTATION CONNECTIVITY PLAN - Barriers and Connections

- Highway Barriers
- Bicycle & Pedestrian Connections
- Auto Connections
- Rail Barriers
- Hazardous Connection/ Missing Links
- Key Destinations/ Catalyst Sites
- Study Area Boundary

Figure 3-27 Primary Arterial & Collector Streets



0 0.25 0.5 Miles

Data Sources: City of Richmond; Contra Costa County GIS; BART; MTC

SOUTH RICHMOND TRANSPORTATION CONNECTIVITY PLAN - Major Roads

- - - - - SRTCPC Study Area
- City Boundaries
- BART
- Amtrak
- Planned Ferry Terminal

## Highways

Both I-80 and I-580 are maintained by Caltrans. They are the major commuter routes to San Francisco and the East Bay and also serve as links for intercity travel to and through Richmond. I-580 (John T Knox Freeway) provides connections to Point Richmond and Marin County to the west via the Richmond-San Rafael Bridge; and to Albany, Berkeley, Oakland, San Francisco and other Bay Area destinations to the south via I-80, which merges with I-580 immediately south of the Study Area and City Limit. To the north, I-80 provides connections to East Richmond, El Sobrante, Hercules, and other destinations in Contra Costa, Napa and Solano Counties. I-580 is directly accessible via interchanges at Bayview Avenue/Seaport Ave, Juliga Woods St/Regatta Boulevard, South 23<sup>rd</sup> Street/Marina Bay Parkway, and Hoffman Boulevard/Harbor Way South. I-80 is accessible near the southern boundary of the Study Area at Central Avenue in El Cerrito.

## Arterials and Collectors

The arterial streets serving the Study Area (shown by location in Figure 3-27 and by classification in Figure 3-28) include:

- Cutting Boulevard is a primary east-west arterial that runs from South Garrard Boulevard near the western city limit to San Pablo Boulevard; it provides access to I-80.
- Regatta Boulevard is a curvilinear east-west circulator located in the South Shoreline Area; it provides access to I-580 through the Richmond Bay Campus site to the east, and to the future Richmond Ferry Terminal to the west.
- Carlson Boulevard is an arterial that begins at S 23<sup>rd</sup> Street in Central Richmond, parallels the Amtrak rail line, and ends at San Pablo Avenue; it provides access to I-80.
- Harbour Way South is a north-south arterial; it provides access to I-580 and the future Richmond Ferry Terminal, and connects the northern neighborhoods with the shoreline.
- S 23<sup>rd</sup> Street/Marina Bay Parkway is a primary north-south circulator through the center of Richmond. It provides access to Central Richmond and Richmond BART to the north; and to the Marina Bay, the Bay Trail and City and regional parks to the south, including Shimada Friendship Park, Barbara and Jay Vincent Park, and Marina Park.
- San Pablo Avenue is a north-south arterial along the eastern city limit; it provides access to the El Cerrito del Norte and El Cerrito Plaza BART Stations.

Significant collector streets serving the Study Area include:

- Marina Way South is a north-south collector that provides access to the future Richmond Ferry Terminal to the south, and Central Richmond to the north.
- Bayview Avenue is a curvilinear road that crosses over I-580 and connects the South Shoreline with the eastern neighborhoods of Richmond.
- Meade Street runs parallel to I-80; it connects Regatta Boulevard with Bayview Avenue.

**Figure 3-28 Highway, Arterial and Collector Roadways**

Direction	Highway	Arterial	Collector
East-West	I-580	Cutting Boulevard	Marina Way South
		Regatta Boulevard	Meade Street
		Carlson Boulevard	Bayview Avenue
North-South	I-80	Harbour Way South	
		S 23rd Street	
		Marina Bay Parkway	
		San Pablo Avenue	

As illustrated in Figure 3-26 limited access to and crossings of I-80 and I-580 make these highways effective barriers to multimodal access and connectivity within South Richmond. Travelers of all modes are limited to these few crossings, increasing traffic and leading to longer travel distances.

## TRAFFIC OPERATIONS

### Level of Service

Vehicular traffic conditions in Richmond are measured in terms of level of service (LOS), denoted with a letter “grade” from A through F, with A representing a completely free flowing system and F representing a constrained and congested system. The specific method for calculation differs for street segments and intersections and between state and local roads, but typically, auto LOS is based on measurement of traffic volumes to the theoretical capacity of a given roadway segment or intersection. A summary description of typical traffic conditions under each LOS is provided in Figure 3-29.

**Figure 3-29 Qualitative Description of Level of Service**

Level of Service	Driver's Perception	Volume/Capacity Ratio
A/B	Characterized by light congestion. Motorists are generally able to maintain desired speeds on two and four lane roads and make lane changes on four lane roads. Motorists are still able to pass through traffic-controlled intersections in one green phase. Stop-controlled approach motorists begin to notice absence of available gaps.	< 0.60
C	Represents moderate traffic congestion. Average vehicle speeds continue to be near the motorist's desired speed for two and four lane roads. Lane change maneuvers on four lane roads increase to maintain desired speed. Turning traffic and slow vehicles begin to have an adverse impact on traffic flows. Occasionally, motorists do not clear the intersection on the first green phase.	0.70 - 0.79
D	Characterized by congestion with average vehicle speeds decreasing below the motorist's desired level for two and four lane roads. Lane change maneuvers on four lane roads are difficult to make and adversely affect traffic flow like turning traffic and slow vehicles. Multiple cars must wait through more than one green phase at a traffic	0.80 - 0.89

Level of Service	Driver's Perception	Volume/Capacity Ratio
	signal. Stop-controlled approach motorists experience queuing due to a reduction in available gaps.	
E	The lowest grade possible without stop-and-go operations. Driving speeds are substantially reduced and brief periods of stop-and-go conditions can occur on two and four lane roads and lane changes are minimal. At signalized intersections, long vehicle queues can form waiting to be served by the signal's green phase. Insufficient gaps on the major streets cause extensive queuing on the stop-controlled approaches.	0.90 - 0.99
F	Represents stop-and-go conditions for two and four lane roads. Traffic flow is constrained and lane changes minimal. Drivers at signalized intersections may wait several green phases prior to being served. Motorists on stop-controlled approaches experience insufficient gaps of suitable size to cross safely through a major traffic stream.	> 1.00

Source: 2000 Highway Capacity Manual and Richmond General Plan 2030 Draft EIR

## Recent Auto LOS Assessments

Recent measurements of traffic volumes and assessments of the performance of roadway segments and intersections relative to Richmond, Contra Costa County, and Caltrans performance standards have been conducted as part of the environmental impact analysis process for both the Richmond General Plan for 2030 and the Long Range Development Plan (LRDP) for Berkeley Global Campus at Richmond Bay).

The Richmond General Plan 2030 Draft Environmental Impact Report (EIR) reports roadway segment LOS based on existing and projected future daily traffic counts for selected intersections.

The Richmond Bay Campus [Berkeley Global Campus at Richmond Bay] LRDP Environmental Impact Report (EIR) reports LOS for both signalized and unsignalized intersections to indicate performance for intersections likely to be impacted by Campus development, including selected intersections within the South Richmond Study Area<sup>4</sup>.

## Level of Service Standards

The West Contra Costa Transportation Advisory Committee (WCCTAC) maintains an Action Plan for West Contra Costa transportation systems, which has established the LOS standard or performance target for 23<sup>rd</sup> Street, Carlson Boulevard, Cutting Boulevard as LOS D or better.

The Contra Costa Transportation Authority (CCTA) prepares the state-mandated Congestion Management Plan (CMP) which establishes LOS standards for CMP-monitored roadways. Two CMP-monitored roadways fall into the Study Area: Cutting Boulevard and San Pablo Avenue, both of which have a standard of LOS E.

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<sup>4</sup> For signalized intersections, the Richmond Bay Campus LRDP estimates average control delay and then assigns LOS; while for unsignalized intersections, it defines operations by average control delay per vehicle for each stop-controlled movement.

City policy, stated in the Richmond General Plan 2030 is to maintain vehicular LOS for signalized intersections consistent with these standards established by the Contra Costa Transportation Authority (CCTA) and the West Contra Costa Transportation Advisory Committee (WCCTAC).

The LOS for highway segments on I-80 and I-580 is based on measures of density (passenger cars/ lane/ mile), traffic speed, travel time, delay, and freedom to maneuver. Similar to roadway segment and intersection LOS, highway segment LOS per Caltrans is denoted with a letter grade A through F.

## Recent Traffic Volumes

### Roadway Segments

The most recent information on daily and peak hour motor vehicle traffic volumes on selected segments of the local street and roadway network of South Richmond are shown on Figure 3-30 (with capacity and LOS), and on Figure 3-31. Most roadways in the study area are operating at well below theoretical capacity based on either daily or peak-hour volumes. This may be explained by the relatively low density of population, employment and services and wide streets in significant portions study area, as well as the grid pattern of streets north and east of I-580, which allows traffic to distribute evenly and bypass potential congestion hot-spots/choke points. (Note that the use of average daily traffic volumes and potential daily capacity for area roadways offer minimal value as performance measures, because they do not indicate conditions during periods of peak travel, when motorists and other road users are most likely to experience the impacts of traffic congestion).

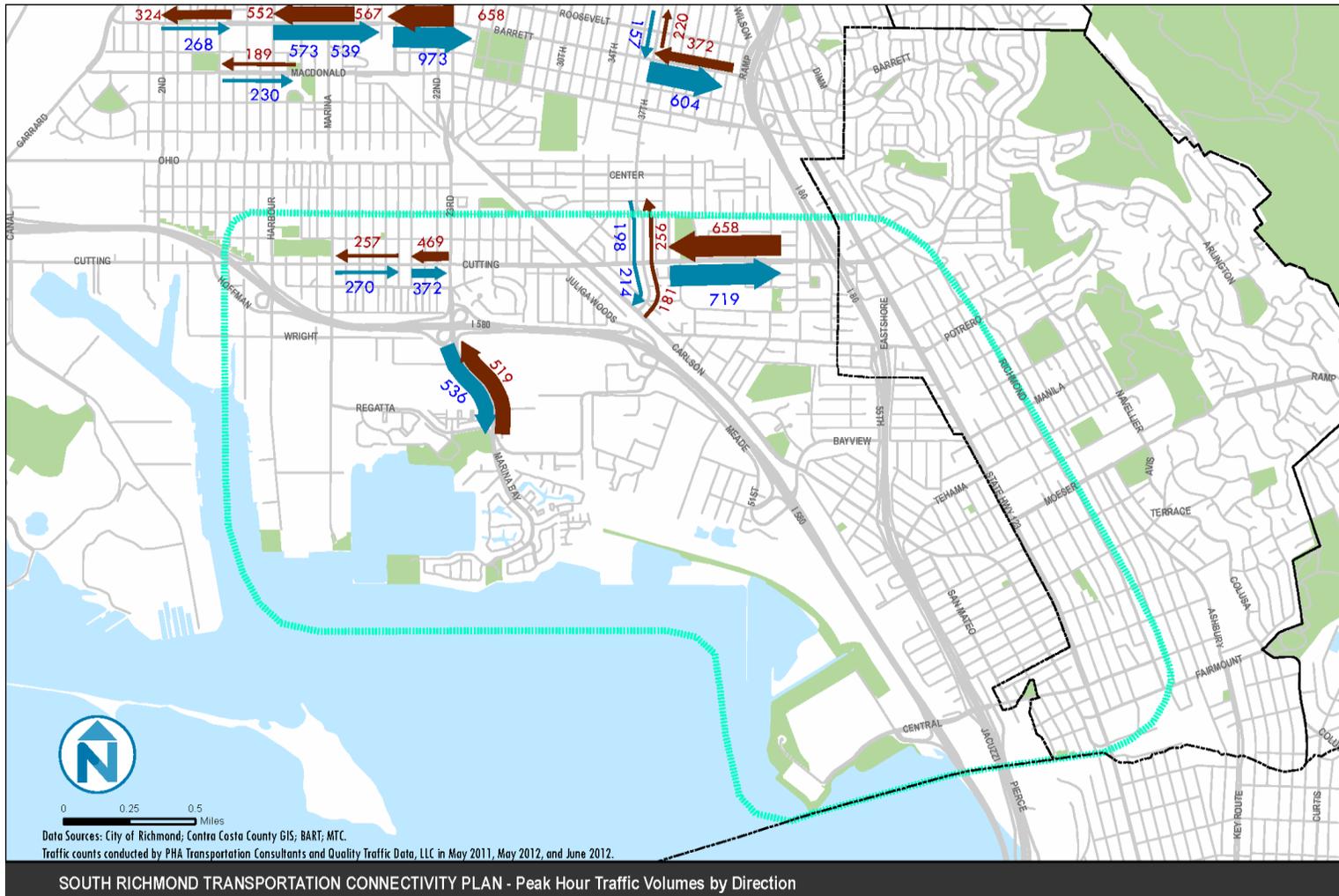
**Figure 3-30 Existing Traffic Counts, Capacity & Level of Service**

Street Segment	ADT	CAPACITY	LOS	LANES
37th from Carlson to Stege	3,420	n/a	n/a	2
37th from Cutting to Wall	3,711	n/a	n/a	2
Cutting from 15th to 16 <sup>th</sup>	4,443	32,500	A	4
Cutting from 49th to 50 <sup>th</sup>	13,170	32,500	A	4
Cutting from 22nd to 21 <sup>st</sup>	9,657	32,500	A	4
Cutting from Berk to 39 <sup>th</sup>	14,973	32,500	A	4
Marina Bay Parkway from Regatta to Jetty Dr	9,754	38,200	A	4

Source: General Plan 2030 EIR

It is important to note that the data reported in Figures 3-32, 3-33, and 3-34 include a limited number of roadway segments and exclude some portions of the Study Area (including the Richmond Annex and the Southwest Annex) where peak hour delays and congestion may be prevalent.

Figure 3-31 Peak Hour Traffic Volumes



SOUTH RICHMOND TRANSPORTATION CONNECTIVITY PLAN - Peak Hour Traffic Volumes by Direction

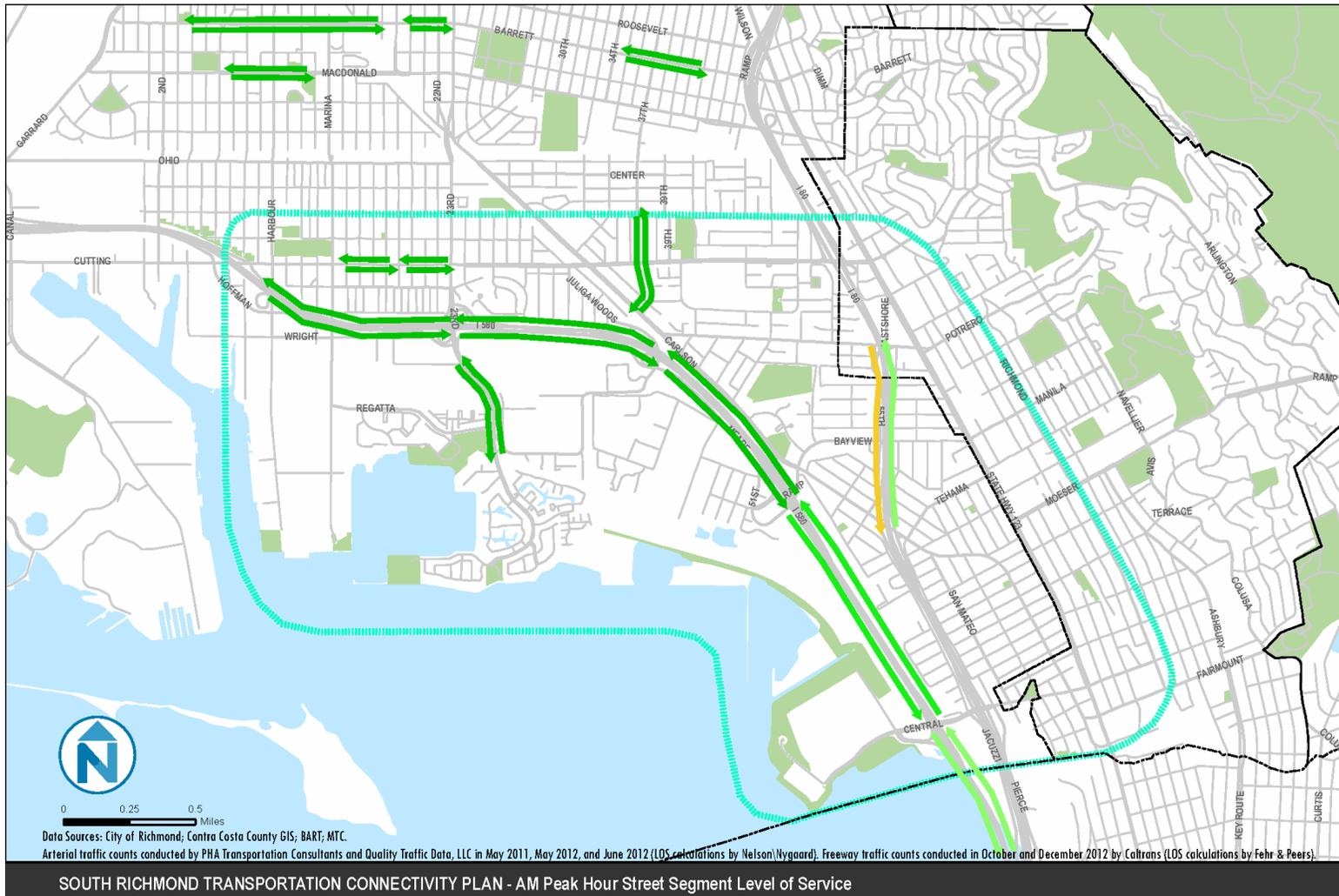
Recent peak-hour LOS measurement for selected street and highway segments in and near the Study Area are shown in Figure 3-33 and Figure 3-34 for the AM and PM peak hours respectively (Note: See Figure 3-32, below, for tabular reference to highway segment LOS by direction for both AM and PM peak hours, along with the vehicular density measurements reported in the LRDP EIR for the Richmond Bay Campus).

**Figure 3-32 Freeway Segment Peak Hour Levels of Service**

Freeway Segment	Type	Dir	AM Peak Hour		PM Peak Hour	
			Density	LOS	Density	LOS
I-580 (between Harbor Way & Marina Bay Pkwy)	Weave	EB	N/A	A	N/A	A
	Weave	WB	N/A	A	N/A	A
I-580 (between Marina Bay Pkwy & Regatta Blvd)	Weave	EB	N/A	A	N/A	A
	Weave	WB	N/A	A	N/A	A
I-580 (between Regatta Blvd & Bayview Blvd)	Weave	EB	N/A	A	N/A	A
	Weave	WB	N/A	A	N/A	A
I-580 (between Bayview Blvd & Central Ave)	Basic	EB	15.4	B	14	B
	Basic	WB	14.3	B	16.9	B
I-580 (between Central Ave & I-80)	Basic	EB	23.5	C	28.7	D
	Basic	WB	25	C	22.6	C
I-580 (between Carlson Blvd & Potrero Ave)	Basic	EB	21.3	C	27.3	D
	Basic	WB	29.5	D	24	C
I-80 (at Gilman St Overpass)	Basic	EB	21.7	C	27.3	D
	Basic	WB	30.9	D	25.6	C

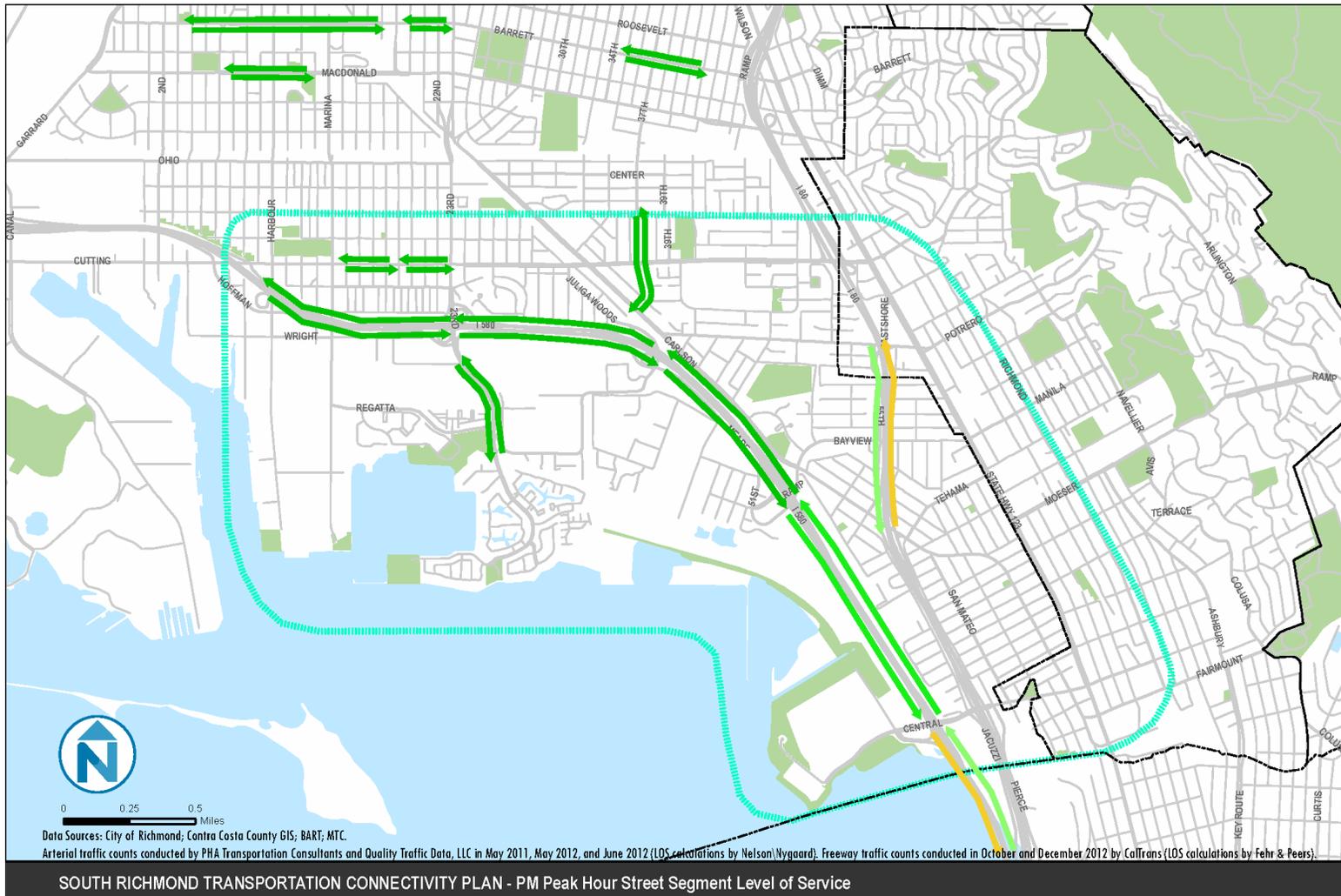
Source: Richmond Bay Campus LRDP Transportation Impact Analysis, Fehr & Peers

Figure 3-33 AM Peak Hour Street Segment Levels of Service

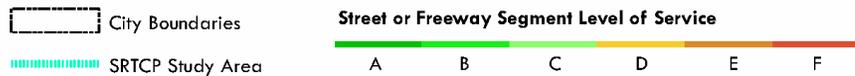


SOUTH RICHMOND TRANSPORTATION CONNECTIVITY PLAN - AM Peak Hour Street Segment Level of Service

Figure 3-34 PM Peak Hour Street/Highway Segment Levels of Service



SOUTH RICHMOND TRANSPORTATION CONNECTIVITY PLAN - PM Peak Hour Street Segment Level of Service



### Study Area Intersections

LOS analysis was conducted for selected intersections in South Richmond as part of the environmental impact analysis for the Richmond Bay Campus LRDP. This LOS assessment was based on analysis of approach lane geometries at each intersection and intersection turning movements for both the AM and PM peak hours. Figures 3-35 and 3-36 show the location and recent weekday AM and PM peak hour intersection LOS for selected intersections in and near the South Richmond Study Area. All but one of these intersections – Marina Bay Parkway & Meeker Avenue – operate at LOS D or better during the PM peak hour.

**Figure 3-35 Major Intersection Peak Hour Traffic Volumes & Levels of Service**

Intersection	Control	AM Peak Hour		PM Peak Hour	
		Delay (seconds)	LOS	Delay (seconds)	LOS
23rd Street & Cutting Boulevard	Signal	22.9	C	23	C
23rd Street & WB I-580 Ramps	Signal	6.9	A	6.8	A
23rd Street & EB I-580 Ramps	Signal	3.6	A	6.3	A
Marina Bay Parkway & Meeker Avenue	Signal	37.1	D	115.8	F
Marina Bay Parkway & Regatta Boulevard	Signal	30	C	43.6	D
Julia Woods St & WB I-580 Ramps	Side Street Stop	2.5 (10.0)	A (B)	4.4 (10.9)	A (B)
Regatta Boulevard & EB I-580 Ramps	Signal	9.7	A	9.1	A
Meade Street & Regatta Boulevard	Side Street Stop	6.4 (10.6)	A (B)	5.6 (10.0)	A (B)
Meade Street & Seaver Avenue	Side Street Stop	1.3 (9.7)	A (A)	3.0 (9.0)	A (A)
EB I-580 Ramps & Bayview Avenue	All-Way Stop	27.6	D	20	C
WB I-580 Ramps & Bayview Avenue	Signal	5.4	A	6.7	A
Carlson Boulevard & Bayview Avenue	Signal	27	C	21.6	C
Carlson Boulevard & WB I-80 Ramps	Signal	19.3	B	20	B
Carlson Boulevard & EB I-80 Ramps	Signal	10.7	B	9.8	A

Source: Richmond Bay Campus LRDP Transportation Impact Analysis, Fehr & Peers



## GENERAL PLAN POLICIES

A number of relevant policies and implementing actions are outlined in the General Plan Circulation Element (2012). These provide strategic direction for City, regional and state transportation resource allocation and planning within the Study Area. Relevant General Plan policies and actions include:

### Policies

- *An Interconnected Street System:* Promote an interconnected system of streets that adequately serves current and future travel needs. By promoting an interconnected system for streets along with pedestrian, bicycle and transit facilities, the City can support streets that are compatible with surrounding land uses, street function and community character.
- *Place-Based Circulation Approach:* Promote the place-based planning approach and classification system. This integrated approach linking functional access-way requirements with surrounding land uses and urban design and promotes community character, active use of streets and improved quality of life.
- *Place-Based Circulation Classification System and Multi-Modal Level of Service Standards:* Classify all streets in the City to conform to the Place-Based Circulation Classification System discussed in the Circulation Element of the General Plan and adopt multi-modal level of service (MMLOS) standards that are consistent with each street type's intended function and character
- *Vehicular Level of Service Standards for West County Routes of Regional Significance:* Maintain vehicular level of service (LOS) standards for signalized intersections consistent with the Contra Costa Transportation Authority's (CCTA) West County Action Plan for Routes of Regional Significance. Require a traffic impact study for projects that would generate more than 100 net new peak-hour vehicular trips. Projects found to be inconsistent with the CCTA's West County Action Plan for Routes of Regional Significance may be approved if findings of special circumstances, including appropriate mitigation measures, are adopted by the City.

### Actions

- *Street Capacity and Infrastructure Improvements:* Maintain adequate street capacity and reduce congestion for all modes of transportation on the street and freeway system. Address congestion along corridors by enhancing the public transportation system, promoting mixed-use development patterns to reduce vehicle miles traveled and by implementing transportation demand management strategies to increase mobility options.
- *Street Connectivity Ordinance:* Utilize the American Planning Association's PAS Report 556, Smart Codes: Model Land-Development Regulations to develop a Street Connectivity Ordinance that would require a high level of street connectivity in new public and private development projects.  
Specifically, the ordinance would:

- Require a proposed development to provide multiple direct connections in its local street system to and between local destinations, such as parks, schools, and retail, without requiring the use of arterial streets;
- Require a proposed development to incorporate and continue all collector or local streets stubbed to the boundary of the development by previously approved, but unbuilt, development or existing development;
- Establish minimum internal and external street connectivity indices to provide adequate internal connectivity within a subdivision or planned development;
- Prohibit dead-end streets except in cases where such streets would be designed to connect with future streets on abutting land;
- Prohibit the use of long unconnected cul-de-sacs; and
- Prohibit the use of gated entry ways into residential developments.

## PLANNED IMPROVEMENTS

### Planned improvements to Streets and Roadways

The Richmond General Plan Circulation Element (2012) identifies several intersections and roadway segments within the Study Area that could benefit from improvement. While critical circulation improvements are included in Richmond’s Capital Improvement Program, the following mitigation measures require detailed study:

- *Marina Bay Parkway Rail Crossing:* To reduce delays of up to 20 minutes, associated with slow moving train crossings of Marina Bay Parkway, and provide access for emergency vehicles, the City of Richmond is currently building a grade separated crossing of this key east-west railroad corridor through the SRTCP area. This project—the Officer Bradley A. Moody Memorial Underpass project is due for completion by the Fall of 2015.
- *Marina Way South Rail Crossing:* Train crossings at Marina Way South create a barrier between the proposed waterfront transit-oriented development area from the regional routes and the rest of the City. The possible new route to Interstate 80 via an extension of Regatta Boulevard could improve access to the area.
- *Meeker Avenue / 23<sup>rd</sup> Street / Marina Bay Parkway:* At the junction of major workplaces, the shopping center and the Berkeley Global Campus at Richmond Bay, the General Plan Circulation Element (2012) cited high traffic speeds and a “less than ideal” (p.4.12) pedestrian environment at the intersection of Meeker Avenue and Marina Bay Parkway. Possible improvements identified in the plan include traffic calming measures.
- *Harbour Way/Wright Avenue Rail Crossing:* At Harbour Way and Wright Avenue, the BNSF rail line crosses at grade through the unsignalized intersection. There are no warning lights or gates. There is a need for improvements such as coordinated traffic signals and gates at this intersection.
- *Carlson and Cutting Boulevard Rail Crossing:* The Union Pacific Rail Road (UPRR) tracks cross Carlson Boulevard at Cutting Boulevard, creating one of the most dangerous intersections in the State, according to the California Public Utilities Commission. The intersection is located near schools and is regularly used by pedestrians. A grade separation at this location may be the most effective long-term solution to safety and noise issues. A more cost-effective approach using a traffic circle has been recommended as part of Richmond’s Pedestrian Master Plan.

A key goal of the proposed General Plan is to ensure the accommodation of multiple travel modes on the existing street network, through careful management of the evolving roadway system (both physical and operational). In doing so, the General Plan introduces a new approach to circulation that de-emphasizes vehicular capacity-based hierarchy for streets (freeways, arterials, collectors, local roadways). The City’s “Place-Based Classification System” is tailored to surrounding land use, street function and desired character. Its objective is to make planners aware of the streets’ intended functions and design characteristics when evaluating street performance and deciding where improvements are needed. The General Plan also proposes place-based evaluation criteria for street and multi-use trail performance, which are proposed in lieu of conventional auto-based LOS.

# 4 CONNECTIVITY FRAMEWORK

## OVERVIEW

The SRTCP focuses on key travel corridors within and connecting to South Richmond to assess existing travel conditions, identify connectivity barriers and opportunities, evaluate tradeoffs in the current and potential future use of street rights-of-way, and to plan and prioritize multimodal connectivity improvements. This chapter provides an overview of the process and rationale used to identify key multimodal travel corridors providing connectivity to and within the South Richmond plan area. Although some programmatic improvements are recommended for the entire study area, most of the specific multimodal connectivity projects and services recommended in this plan are located within one or more of the key corridors and nodes defined in this Chapter. Projects and programs recommended for these corridors are designed to improve the safety, mobility, and accessibility for people and goods by all modes of transportation.

The nodes and corridors defined in this Chapter were identified through review of existing conditions and adopted plans affecting the plan area, input from interviewed stakeholders and members of the general public at Community Meetings held in South Richmond in 2014, and input from implementing agencies and other public sector partners on the Technical Advisory Committee (TAC). Broadly, they provide a geographic focus for analysis of and planning for some of the essential connections this plan is intended to make or strengthen. These include existing and new multimodal connections between existing Central and South Richmond neighborhoods, the Richmond Annex, and key destinations, transit centers, employment sites, and growth centers, including:

- The Richmond Ferry Terminal at Ford Point
- The Berkeley Global Campus at Richmond Bay (Richmond Field Station)
- Rosie the Riveter/WWII Home Front National Historical Park
- Richmond BART/Intermodal Terminal
- El Cerrito Del Norte BART
- El Cerrito Plaza BART
- Eastshore State Park
- California Department of Public Health
- The Port of Richmond
- Development opportunity sites in the Richmond South Shoreline area

## MULTIMODAL CORRIDORS/CONNECTIONS

The key corridors and connections analyzed in the SRTCP are shown in Figure 4-1 (Map of Key Corridors and Connections). Primary trip origins and destinations at the end of each corridor/connection have been identified Figure 4-2, where possible.

Figure 4-1 Multimodal Corridors/Connections and Focal Points



**Figure 4-2 Key Connections and Corridors**

#	From	To	Via	Corridor Opportunities and Challenges
1	<b>Richmond Ferry Terminal/ Shoreline</b>	Richmond BART/ Iron Triangle	<b>Harbor Way/ Marina Way</b> to MacDonald Ave	Parallel arterials Marina Way and Harbor Way provide important connections across I-580, linking the new Richmond Ferry Terminal, the Port of Richmond, and other parts of the Shoreline area with the Nystrom and Iron Triangle neighborhoods and Richmond BART. Challenges include: balancing goods movement, bicycle and pedestrian access/safety, and auto access to the Ferry terminal, and addressing conflicts at rail crossings and I-580 ramps.
2	<b>Bay Trail, Marina Bay and Berkeley Global Campus (BGC)</b>	Richmond BART/ Civic Center/ Iron Triangle	<b>Marina Bay Parkway/S 23rd Street</b> to MacDonald Ave	Marina Bay Parkway is currently the primary route of access to the Shoreline/Marina Bay area for Central Richmond residents and the only crossing of I-580 currently served by AC Transit (Line 74). It also provides direct access from the Shoreline to Richmond BART and the Richmond Civic Center.
3	<b>Berkeley Global Campus (BGC) at Richmond Bay</b>	El Cerrito Del Norte BART, Parkview, Eastshore, Laurel Park	<b>South-47<sup>th</sup> to Potrero:</b> Potential New Crossing of I-580, UPRR and Carlson. <b>Bayview</b> to Potrero <b>Regatta-Juliga</b> Woods/Spring-Cutting <b>Regatta-Potrero:</b> Potential crossing over I-580, UPRR and Carlson.	This broadly defined corridor connects what will be the largest employment node in the SRTCP Plan Area to El Cerrito Del Norte BART, the most heavily used and regionally accessible public transit station in the area. Although it is the closest BART Station to the BGC, El Cerrito Del Norte BART is largely inaccessible by walking, cycling or taking public transit because of the barriers formed by I-580, the Union Pacific Railroad (UPRR), and Carlson Blvd. Current connections via Bayview Avenue and Juliga Woods-31 <sup>st</sup> -Cutting are indirect, have discontinuous bicycle and pedestrian facilities, minimal signage, and lack transit service. This corridor is defined broadly, as each mode may require a different route/connection within the corridor.
4	<b>El Cerrito Del Norte BART</b>	South 4 <sup>th</sup> Street (Access to Point Richmond and the Port of Richmond)	<b>Cutting Boulevard</b>	Cutting Blvd. is the most direct and heavily traveled East-West corridor within the South Richmond Study Area. It connects to El Cerrito Del Norte BART and the I-80/San Pablo Ave Corridor to the East with the Port of Richmond and Point Richmond to the West. Portions of Cutting are currently primary freight and transit routes, while others are necessary link s in the Citywide bicycle and pedestrian networks. Challenges include the variety of different street configurations throughout the corridor, driveways, the proximate intersections with Carlson Blvd and the UPRR, and the steep cross slope of outside lanes in some corridor segments.

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#	From	To	Via	Corridor Opportunities and Challenges
5	<b>Richmond Ferry Terminal</b>	Berkeley Global Campus (BGC) at Richmond Bay	<b>Regatta Blvd (West) / Bay Trail</b>	This broadly defined corridor provides an important connection from the Richmond Ferry Terminal and the BGC to destinations North and East. The corridor includes multiple streets/paths, as transit and auto access are only possible via Regatta, while some bicyclists and pedestrians may prefer to use the Bay Trail. Challenges include accommodating multimodal travel demand E-W on Regatta and N-S on Marina Way S., without a rail spur crossing, and accommodating separated bikeway(s), on-street parking, and ample pedestrian walkways along Regatta Blvd (West), between Marina Bay Parkway and Marina Way South.
6	<b>El Cerrito Plaza BART</b>	Richmond BART/Civic Center	<b>Carlson Blvd to 23<sup>rd</sup> St-MacDonald Ave</b>	Carlson Blvd. provides a direct connection between the Richmond BART/ Richmond Civic Center area and El Cerrito Plaza BART (via Central Ave) and the cities of Albany and El Cerrito to the South. It traverses the entire South Richmond Study Area diagonally from SE to NW. The corridor has a wide right-of-way and high traffic volumes and speeds in segments. Bicycle and pedestrian improvements have been completed or are planned in segments, but gaps remain and connections to other key corridors and nodes in South Richmond are key planning considerations.
7	<b>Bay Trail at Harbor Way</b>	Bay Trail in Pt. Richmond	<b>Hoffman Boulevard</b>	This short corridor provides an important connection from Harbor Way and the larger South Shoreline area (including the Richmond Ferry Terminal) to Point Richmond and segments of the San Francisco Bay Trail located to the east of the Santa Fe Channel.
8	<b>El Cerrito/ El Cerrito Plaza BART</b>	San Francisco Bay Trail	<b>Central Avenue / Sacramento Ave</b>	Central Avenue is the primary auto/transit connection from El Cerrito Plaza BART and the San Pablo Avenue Corridor to the San Francisco Bay shore. In addition to traffic associated with entrances/exits to both I-80, and I-580, the key challenge associated with this corridor is the constrained right-of-way of Central Ave; limiting options for additional modal separation. As such, the corridor is broadly defined in the SRTCP to include consideration of parallel routes for E-W pedestrian and bicycle connectivity. Sacramento Avenue, provides an opportunity for a low-stress bicycle/pedestrian connection across I-80, with connections to Fairmount School to the east and the Bay Trail (via San Joaquin) to the west.

## KEY INTERSECTIONS/NODES

Many of the most significant gaps in the multimodal transportation network in South Richmond are at the intersections of major arterial roadways, including some that are co-located with railroad crossings and/or expressway interchanges. In many cases, these intersections present barriers to multimodal connectivity or multiple points of conflict between motor vehicles, pedestrians, and bicyclists. Pedestrian and bicycle facilities are provided at one or more approaches, but are discontinuous through the intersection, reducing safety and connectivity. Figure 4-3 identifies some of the key intersections/nodes along identified SRTCP corridors that were a focus of this planning effort.

Improvements to many of these intersections and crossings have been recommended in recently adopted plans, such as the ‘Livable Corridors Form-Based Code’ (FBC), the Richmond Bicycle Master Plan (BMP), and the Richmond Pedestrian Plan. In such cases, the SRTCP provides conceptual designs for selected nodes and corridors not covered in these recently adopted plans. It also recommends changes to plans to meet the established connectivity goals of this plan, accommodating potential travel demand associated with the land uses envisioned in the LRDP for the BGC at Richmond Bay, and the Richmond South Shoreline Specific Plan (RSSSP).

**Figure 4-3 Key Intersections/Nodes**

#	Street	Cross-Street/Rail	Notes/Rationale for Selection
1	<b>Cutting Blvd.</b>	Carlson Blvd/UPRR/Spring Street	Major arterial and road crossings in close proximity; discontinuous bicycle/pedestrian facilities on all approaches.
2	<b>Marina Bay Parkway</b>	Regatta Boulevard	Wide intersection creates long crossing distances/exposure for travelers of all modes. The South Shoreline Specific Plan has proposed realignment of the intersection to create two “T” intersections with Marina Bay Parkway.
3	<b>Harbour Way</b>	Southern Rail Spur	Multimodal At-Grade Crossing. Community stakeholders have expressed concerns about potential delays for ferry-traffic and emergency vehicles at this rail crossing.
4	<b>Harbour Way</b>	Wright Ave/ Northern Rail Spur	Multimodal At-Grade Crossing. Community stakeholders expressed concerns about potential delays for ferry-traffic and emergency vehicles at this rail crossing.
5	<b>Harbour Way</b>	Hoffman Boulevard	Bay Trail alignment requiring bike turning movements on streets with a high percentage of truck traffic
6	<b>Marina Bay Parkway/ 23<sup>rd</sup> Street</b>	I-580	Pedestrian, bicycle and vehicular traffic conflicts with high speed vehicular traffic exiting/entering I-580 in both directions.
7	<b>San Joaquin/ Jacuzzi</b>	Central Avenue (and I-80 exits/entrance ramps)	Lack of bicycle and pedestrian facilities. Wide turning radii. Multiple points of conflict between motor vehicles and non-motorized travelers, due to high speed traffic entering/exiting I-80, and co-located intersections with wide turning radii.
8	<b>Bayview Ave</b>	I-580/UPRR, Carlson Blvd	Lack of dedicated bicycle/ pedestrian facilities on both sides; conflicts with high speed vehicular traffic/turning movements – especially at intersection of Bayview Ave/ Carlson Blvd.



# 5 PEDESTRIAN CONNECTIVITY FRAMEWORK

## OVERVIEW

The South Richmond Transportation Connectivity Plan (SRTCP) seeks to create a safer, more comfortable, and connected environment for walking. These improvements recognize that virtually every trip begins and ends with walking. South Richmond’s pedestrian environment presents unique challenges in walkability as a result of industrial land uses, large block sizes, wide roadway cross-sections, and the multiple highways and railroads that traverse the area. Infrastructure improvements focus on safely and efficiently connecting pedestrians to and from destinations in South Richmond and enhancing connectivity across major barriers, including highway interchanges and railroad tracks. Major pedestrian destinations include the Bay Trail, the planned Richmond Ferry Terminal, new development planned for the South Shoreline area, including the BGC at Richmond Bay, and BART stations in Richmond and neighboring El Cerrito.

## Pedestrian Toolkit

Figures 5-1 and 5-2 show design specifications for both walkways and pedestrian crossings. This range of proposed treatments for South Richmond comprises a “toolbox” that can be used in a variety of different situations. Appropriate treatments for individual streets and corridors are selected based on consideration of important contextual factors, such as adjacent land uses, the width of the street, space available within the full public right of way, traffic volumes, and the importance/priority of the street segment within larger City and regional travel networks for each mode of transportation.

**Figure 5-1 Pedestrian Toolkit – Midblock/Segment**

Type	Design Details	Proposed Examples
	<p><b>Class I Shared-Use Path</b></p> <ul style="list-style-type: none"> <li>▪ Paved space located off of the vehicle right of way</li> <li>▪ Shared space for use by bicycle and pedestrian traffic</li> <li>▪ Restricted for exclusive use by non-motorized traffic</li> </ul>	<p>e.g. Central Avenue connection to Bay Trail</p>

**Figure 5-2 Pedestrian Toolkit – Intersection**

Type	Design Details	Examples
	<p><b>Protected Left-Turn Phases</b></p> <ul style="list-style-type: none"> <li>▪ Pedestrian crossing signal only conflicts with traffic turning right on red.</li> <li>▪ Allows pedestrians safer crossing opportunities; also eliminates potential conflicts for turning vehicles and on-coming through traffic of all modes</li> </ul>	<p>Multiple Nodes and Corridors</p>
	<p><b>Crosswalks at Interchanges</b></p> <ul style="list-style-type: none"> <li>▪ At unsignalized crosswalks site crosswalk with “split the difference” between the shortest path and the most visible path</li> <li>▪ Where possible bring crosswalks under signal control</li> </ul>	<p>e.g. I-580/Harbour Way Interchange, I-80/Carlson Boulevard Interchange</p>
	<p><b>High-Visibility Crosswalk Striping</b></p> <ul style="list-style-type: none"> <li>▪ Typically defined by its’ ladder or “triple four” striping pattern</li> <li>▪ Increases pedestrian visibility to drivers</li> </ul>	<p>e.g. Harbour Way and Hoffman Boulevard</p>
	<p><b>High-Visibility Trail Crossings</b></p> <ul style="list-style-type: none"> <li>▪ High-visibility crosswalk striping with bicycle pavement stencils to reinforce shared bicycle/pedestrian space</li> </ul>	<p>e.g. Central Avenue connection to Bay Trail</p>
	<p><b>Marking Crosswalks at All Legs of Signalized Intersections</b></p> <ul style="list-style-type: none"> <li>▪ Maximize pedestrian connectivity</li> <li>▪ Signal heads with pedestrian crossing signal</li> </ul>	<p>e.g. Carlson Boulevard corridor, Hoffman Boulevard/Harbour Way</p>

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Type	Design Details	Examples
	<p><b>Curb Extensions/Bulb Outs</b></p> <ul style="list-style-type: none"> <li>▪ Should be narrower than the parking lane to allow for increased visibility</li> <li>▪ Combine vegetation to reduce pavement uses and visually separate sidewalk from the roadway</li> </ul>	<p>e.g. Hoffman Boulevard/Harbour Way</p>
	<p><b>Median Refuges</b></p> <ul style="list-style-type: none"> <li>▪ Raised islands placed in the center of the roadway, along the pedestrian path.</li> <li>▪ Separates pedestrian from traffic and opposing traffic lanes from one another.</li> </ul>	<p>e.g. Carlson Boulevard corridor</p>
	<p><b>Rectangular Rapid Flashing Beacons (RRFBs)</b></p> <ul style="list-style-type: none"> <li>▪ Rapid flashing LED lamp at motorists eye level</li> <li>▪ Actuated by pedestrian wishing to cross roadway</li> </ul>	<p>e.g. Cutting Boulevard</p>
	<p><b>Pedestrian Hybrid Beacons (PHBs)</b></p> <ul style="list-style-type: none"> <li>▪ Signal actuated by pedestrian that uses a beacon flasher and a traffic control signal to allow pedestrian clearance time to cross a roadway</li> </ul>	<p>e.g. Sacramento Avenue/Carlson Boulevard</p>
	<p><b>Curb Ramps</b></p> <ul style="list-style-type: none"> <li>▪ All curb ramps should be ADA compliant</li> <li>▪ Include two curb ramps per corner so that ramps are directional and direct pedestrians into the crosswalk</li> <li>▪ At path crossings, install oversized curb ramps to allow two-way bicycle and pedestrian traffic</li> </ul>	<p>e.g. all intersections</p>

## Recommended Network of Pedestrian Connections

The following treatments seek to create a network of pedestrian facilities allowing for safe options for walking throughout South Richmond. These treatments are focused on corridors with the most direct and desirable connections to and from transit hubs, (BART, Amtrak, and the future Richmond Ferry Terminal), the Bay Trail, residences, schools and parks. Major barriers to walkability in South Richmond are addressed through intersection and segment improvements at highway ramps and existing rail tracks. As proposed, the treatments will include streetscape improvements, intersection improvements and crosswalk installations. In many cases, near-term (through 2024) pedestrian improvements can be installed quickly and cost-effectively with striping, paint, and movable curbs/bollards. Over time and once proven effective, such low-cost/temporary measures can be replaced with permanent installation of new curbs, sidewalks and related safety features, facilities, street furniture, and landscaping.

Figure 5-3 South Richmond Pedestrian Project List

Location		Short Term Treatment	Long Term Treatment
<b>Hoffman Blvd</b>	Cutting Boulevard to Harbour Way	<ul style="list-style-type: none"> <li>Intersection improvements at Hoffman and Harbour including: trail crossings, corner bulbs and striped curb extensions.</li> </ul>	<ul style="list-style-type: none"> <li>"Rail with Trail" Class I shared-use path</li> <li>Formalized curb extensions at Hoffman and Harbour Way</li> </ul>
<b>Harbour Way</b>	Bay Trail Class I Bike Path to Hoffman Boulevard	<ul style="list-style-type: none"> <li>Intersection improvements at Harbour Way/Wright Avenue and Harbour/1000' feet north of Hall Avenue Rail Crossings including: pedestrian railroad crossing gates, ADA accessible accommodations through intersection, sidewalk and curbs</li> </ul>	-
	Hoffman Boulevard to Cutting Boulevard	<ul style="list-style-type: none"> <li>Intersection improvements at Harbour and Hoffman including: high visibility crosswalks, median refuges, curb extensions, directional curb ramps.</li> <li>Intersection improvements at Harbour and I-580 ramps include: tightened curb radii and additional crosswalks</li> <li>Northbound striped sidewalk extension at I-580</li> <li>Widen sidewalks on Cutting Boulevard</li> </ul>	<ul style="list-style-type: none"> <li>Formalized curb extensions at Harbour and Cutting, Harbour and I-580 ramps and Harbour and Hoffman</li> </ul>
<b>Marina Way</b>	Hoffman Boulevard to Macdonald Avenue	<ul style="list-style-type: none"> <li>Streetscape improvements</li> </ul>	-

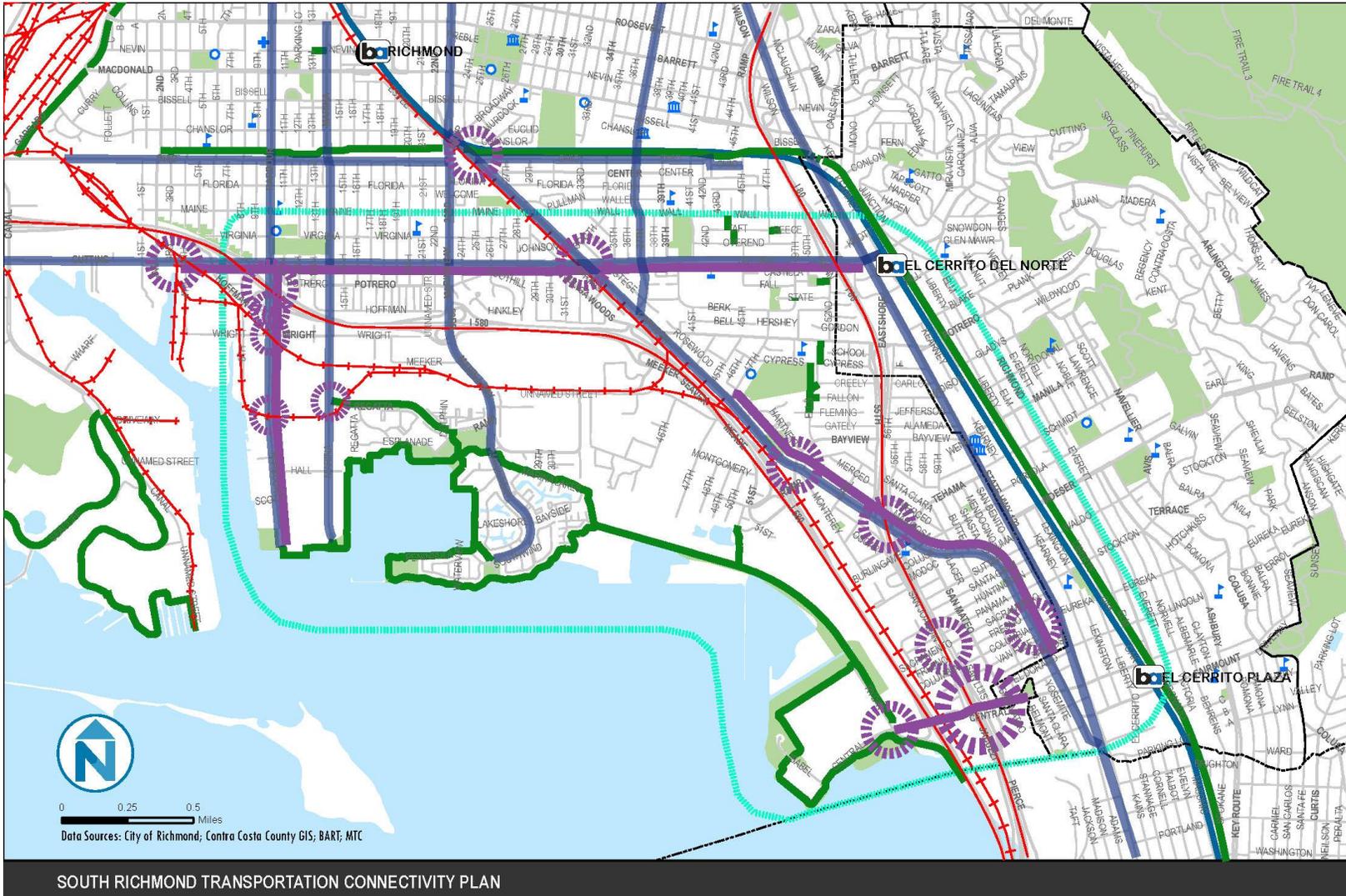
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Location		Short Term Treatment	Long Term Treatment
CONTINUED...			
<b>Central Ave</b>	Bay Trail to Central Avenue	<ul style="list-style-type: none"> <li>Bay Trail extension to Central Ave intersection</li> </ul>	-
	Rydin Road to Jacuzzi Street	<ul style="list-style-type: none"> <li>Intersection improvements at Central and Rydin including striping triple-four trail crossings</li> </ul>	-
	Jacuzzi Street to Pierce Road	<ul style="list-style-type: none"> <li>Shared-use path on south side of street</li> </ul>	-
	300' east of Rydin Road north to Existing Bay Trail Path	<ul style="list-style-type: none"> <li>Shared-use path spur to the Bay Trail from Central Avenue</li> </ul>	-
<b>Pierce Street</b>	Central Avenue to Cerrito Creek	-	-
		<ul style="list-style-type: none"> <li></li> </ul>	
<b>Sacramento Avenue</b>		<ul style="list-style-type: none"> <li>Enhanced crosswalk at Carlson Boulevard</li> <li>Restripe existing crosswalks as high-visibility ladder trail crossing</li> </ul>	-
<b>San Luis Street</b>		<ul style="list-style-type: none"> <li>Widen sidewalk at landing of pedestrian bridge</li> <li>Restripe existing crosswalks as high-visibility ladder trail crossing</li> </ul>	-
<b>San Joaquin Street</b>		<ul style="list-style-type: none"> <li>Widen sidewalk to bridge</li> <li>Streetscape improvements</li> <li>Restripe existing crosswalks as high-visibility ladder crosswalks</li> </ul>	-

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Location		Short Term Treatment	Long Term Treatment
<b>Carlson Boulevard</b>	Broadway to Bayview Avenue	<ul style="list-style-type: none"> <li>▪ Class I path on the east side of Carlson Blvd between Broadway and Richmond Greenway</li> <li>▪ Intersection improvements at Carlson and Bayview including curb extensions and median nose</li> </ul>	<ul style="list-style-type: none"> <li>▪ Widened sidewalk</li> <li>▪ Pedestrian scale lighting</li> <li>▪ Pedestrian wayfinding signs</li> <li>▪ Intersection improvements at Carlson and Cutting including: formalized curb extensions, widened sidewalk, and additional sidewalks</li> </ul>
	Bayview to Tehama Avenue	<ul style="list-style-type: none"> <li>▪ Intersection improvements at Carlson and I-80 including: median refuge and curb extension striping</li> </ul>	<ul style="list-style-type: none"> <li>▪ Median refuge at unsignalized crosswalks</li> <li>▪ Pedestrian scale lighting</li> <li>▪ Pedestrian wayfinding signs</li> </ul>
	Tehama to Central	<ul style="list-style-type: none"> <li>▪ Crosswalks every two blocks (including at newly signalized intersections with Columbia St)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Pedestrian scale lighting</li> <li>▪ Pedestrian wayfinding signs</li> </ul>

Figure 5-4 Proposed Pedestrian Network & Improvements



SOUTH RICHMOND TRANSPORTATION CONNECTIVITY PLAN

-  SRTC Study Area
-  City Boundaries
-  Amtrak Station
-  BART Station
-  BART
-  Rail
-  Governmental Bldgs/Courts
-  Medical
-  Community/Rec Center
-  School
-  Pedestrian Plan Key Route
-  Shared-Use Paths
-  Barrier to Walking
-  Proposed Pedestrian Intersection Improvements
-  Proposed Pedestrian Corridor Improvements

## Phasing

Figure 5-1 presents both near-term and long-term interventions proposed to address current deficiencies and future needs, as grant-funding or developer-funding are able to be secured. Differentiating the phasing of these improvements gives Richmond the flexibility to increase comfort and safety for pedestrians in the existing condition through lower-cost and easier to implement solutions while also planning for more formalized facilities in the future. This is particularly important in the South Richmond area as the Berkeley Global Campus (BGC) at Richmond Bay and the larger South Shoreline area develop.

### Short-Term Implementation Plan

Tools for short-term implementation for pedestrian accommodations are treatments that have few barriers for application and approval. Similar to the proposed near-term bicycle treatments, these are low cost physical treatments that may include paint, soft-hit posts, and planter boxes. Short-term treatments can also be more extensive interventions that are prioritized due to safety concerns or other reasons. Short-term improvements are intended to be in place for the next fifteen years, or until long-range improvements can be made. Many of the design tools described in Figures 5-1 and 5-2 can be implemented more cost effectively through the use of the following types of materials:

- **Signing and Striping:** Many of the crosswalk enhancements, such as high-visibility striping, trail crossings, curb extensions, and median refuges can be created in the short-term through striping. These pedestrian zones can be further protected with vertical barriers, as described below. Colorized pavement can also be used to outline curb extensions and median refuge areas.
- **Pedestrian-Activated Beacons:** Rectangular Rapid Flashing Beacons (RRFBs) can be installed in the near-term as a cost-effective safety tool at mid-block, or other crossings limited to non-motorized travelers. They can be relocated in the future, as needed, to accommodate other long-term needs and plans.
- **Vertical Barriers:** Vertical barriers can provide physical separation between pedestrians and the travelway without modifying existing curb lines and drainage patterns. In the long-term, these projects would include raised curbs, sidewalks, paths, and similarly more cost and design-intensive solutions.
  - **Soft-Hit Posts/Delineators:** Soft-hit posts or vertical delineators can be spaced to delineate pedestrian and driver space. These may be more appropriate applications in areas without substantial truck traffic or heavy turning movements near their installation.
  - **Planter Boxes:** Raised planter boxes can be used to provide landscaping and improve the aesthetic and placemaking qualities of a streetscape while also provided a sturdy vertical separation between pedestrians, bicyclists and drivers.

### Long-Term Implementation Plan

Facilities considered for long-term implementation are those treatments requiring major curb work or right-of-way changes. These treatments can include shifting curb lines, sidewalk installation, and Class I shared use paths. These treatments may be reliant on grant or developer funding, and more significant construction efforts. As a result, long-term treatments may not be installed until 2030 or later.

# 6 BICYCLE CONNECTIVITY FRAMEWORK

## OVERVIEW

With the exception of key segments of the Bay Trail, the existing bicycle network within and connecting to South Richmond is limited. However, the bike facilities recommended in this Plan offer the potential to connect South Richmond to key destinations including BART/Amtrak stations, the future Ferry Terminal, the Bay Trail, local businesses and nearby neighborhoods. Creating a network of bicycle facilities will provide safe access to key destinations within and proximate to South Richmond. It will also help to provide an essential “first-mile(s)/last-mile(s)” connection between regional transit stations and primary destinations and trip origins within South Richmond.

The primary objective of the bicycle network and the corridor specific bicycle facilities recommended in this plan is to establish a connected network of on-street and off-street bikeways that minimize conflicts with motor vehicles and are comfortable for use by cyclists of all ages and abilities with minimal stress. This plan recognizes the recommendations included in Richmond’s Bicycle Master Plan and is consistent with that plan where applicable.

Figure 6-4 shows the existing (2014) bicycle facility network for the Plan Area, and proposed improvements for the near-term (2015-2024). Recommended facility types are reflective of the plan’s focus on accommodating so called “willing but wary” cyclists who appreciate greater separation from motor vehicle traffic or traveling in mixed-traffic only on streets designed for shared use and slow vehicle speeds. These facility types include, but are not limited to:

- **Shared-use off-street paths:** Shared use paths, such as the Bay Trail, accommodate bicyclists, pedestrians, joggers, wheelchair users and other non-motorized travelers, with full separation from traffic. Where such trails intersect with streets, this plan recommends installation of high visibility “triple-four” trail crossing pavement markings indicating shared use by bicyclists and pedestrians and appropriate lighting and warning signals, as warranted. These are generally referred to as Class I bike facilities.
- **Separated bikeways** (also commonly referred to as “cycle tracks”) are bikeways that have a vertical physical barrier between traffic and bicycles. These barriers provide physical protection and separation from traffic and can include curbs, planters, bollards and parking. They can be located on-street, or at sidewalk level. They can also be one-way or two-way facilities (a facility type more appropriate for implementation on corridors with few intersections or driveways).
- **Bicycle Lanes** provide space on the street specifically and exclusively for use by bicyclists. This space is created through the use of pavement markings and is typically located on the

right side of the street, with the direction of traffic. These are generally referred to as Class II bike facilities.

- **Bicycle Boulevards** (also referred to as Neighborhood Greenways) are typically streets with low daily traffic volumes and speeds that allow for bicycle priority on-street, and comfortable pedestrian travel and crossings in all directions. Treatments on these streets vary but can include a mixture of the following: wayfinding signage, sharrows, bike lanes, protected bikeways, bicycle signal priority, and traffic calming/speed management measures.
- **Shared Streets.** Like Neighborhood Greenways and Bicycle Boulevards, shared streets include traffic calming measures and provide safety and priority for pedestrians and bicyclists. Rather than supporting mobility for any one mode, however, these streets put are designed with a focus on their function as public space, in relation and service to adjacent land uses and activities. While such streets can serve as key elements of a low-stress bike network, vehicle traffic is slowed to 5-10 mph by design, inviting pedestrians to linger, play and cross at will between intersections.
- **Sharrows**, or shared lane markings, are pavement markings used to designate a shared street space for autos and bicycles.

For all existing and planned bikeways, across the full range of bicycle facility types, effective implementation will require prioritizing maintenance and street sweeping of bikeways and streets with bike facilities, and regular enforcement of restrictions on the use of bicycle-only facilities.

## **Bicycle Toolkit**

Figure 6-1 contains information on the design specifications of both on street and off street bicycle treatments. Appropriate treatments for each corridor were selected from the following toolkit based on available right of way, daily multi-modal traffic volumes, and the land use and travel network context.

Figure 6-1 Bicycle Toolkit – Midblock/Segment

MIDBLOCK/SEGMENT

**Protected Bikeways**

**One-Way Separated Bikeways**

- 3' striped buffer with vertical protection, such as landscaped planters, raised curb, or similar elements
- 5' bike lanes in one direction



**Proposed Example**

Harbour Way between Cutting Boulevard and Hoffman Boulevard (near-term)

**Two-Way Separated Bikeways**

- 3' striped buffer with vertical protection, such as landscaped planters, raised curb, or similar elements
- 5' bike lanes in each direction
- Requires protected signal phasing at intersections



**Proposed Example**

Hoffman Boulevard (long-term), Carlson Boulevard (long-term), and Harbour Way

MIDBLOCK/SEGMENT

**Protected Bikeways** *(continued)*

**Class I Paths**

- Off-street pathway exclusive for non-motorized transit use
- 10'-12' paved travelway for wheeled vehicles
- 2'-3' shoulders composed of an weather surface material that is free of vegetation, shall be provided on both sides of the traveled way when not on a structure.



Source:Parkways.Seattle.gov

**Proposed Example**

Central Avenue (near-term) and Hoffman Boulevard (long-term option)

**Buffered Bicycle Lanes**

- 3' striped buffer, typically denoted by two solid white lines and diagonal hatched striping
- 5' bike lane in one direction
- 4" edgeline to separate the bicycle lane from a parking lane (if applicable)



**Proposed Example**

Carlson Boulevard (near-term)

MIDBLOCK/SEGMENT

**Bicycle Lanes**

- 6' desired lane width
- 6-8" edgeline to separate vehicle traffic from bicycle lane
- 4" edgeline to separate the bicycle lane from a parking lane (if applicable)
- Bicycle lane symbol or signage should be used to define the space



**Proposed Example**

Hoffman Boulevard (near-term), Marina Way,  
Central Avenue west of Jacuzzi Street

MIDBLOCK/SEGMENT

**Bicycle Boulevard/ Neighborhood Greenway**

- Oversized bicycle boulevard pavement legends centered on effective travel lane width with directional arrows to indicate route shifting route alignment, where relevant
- Traffic calming improvements, such as speed tables, chicanes, curb extensions, installation of stop signs on cross streets, and speed feedback signs
- Bicycle wayfinding and destination signs per WCCTAC Transit Enhancement & Wayfinding Plan



**Proposed Example**

Sacramento Avenue and San Joaquin Street

MIDBLOCK/SEGMENT

**Bicycle Route with Sharrows**

- Shared lane marking or sharrows large enough to be visible to all users
- Sharrows should be placed near the center of the travel lane



**Proposed Example**

Sacramento Avenue and San Joaquin Street  
(near-term)

Note: Proposed bikeways are detailed in Figure 1-3.

INTERSECTION

**Bicycle Signal/Protected Signal Phasing for Bikes**

- Installation of visible bicycle signal heads
- Prohibition of right on red
- Appropriate signal clearance timing for bicyclists
- Signage denoting bicycle signals



**Proposed Example**

Hoffman/Harbour/I-580 Ramps (Long-Term), Central Avenue/Jacuzzi Street/I-80 Ramps (Long-Term)

INTERSECTION

**Curb Extensions / Bulb Outs**

- Should be narrower than the parking lane to allow for increased visibility
- Combine vegetation to reduce pavement uses and visually separate sidewalk from the roadway



**Proposed Example**

Harbour Way/Hoffman Boulevard, Carlson Boulevard/ I-80 EB Ramp

INTERSECTION

**Enhanced Bike-Crossings and Trail Crossings**

- Use of bicyclist-activated beacons, such as RRFBs and Pedestrian Hybrid Beacons (PHBs), where appropriate
- High-visibility crosswalk
- Removal of parking and other sight distance limitations on street and trail
- Median refuges at least six feet wide at unsignalized crossings
- At Bay Trail/path crossings, use “triple-four” trail crossing striping. These crossing markings include two rows of high-visibility continental striping (approximately 4' in width) from curb to curb, separated by an 8' unstriped crossing zone in which bicycle lane legends with arrows are typically painted. These markings are intended to alert all road users to look for people riding bikes through the crossing.
- At Bay Trail/path crossings, consider the use of raised crossings, which keep trails/walkways level through intersections, rather than requiring trail users to ramps down from curb to street level, as at most cross walks. In addition to supporting mobility and improving safety and comfort for people walking and riding bicycles, raised crossings improve safety for all users at intersections by functioning as “speed tables” that calm traffic by creating a physical deterrent for high speed travel into the intersection.



**Proposed Example**

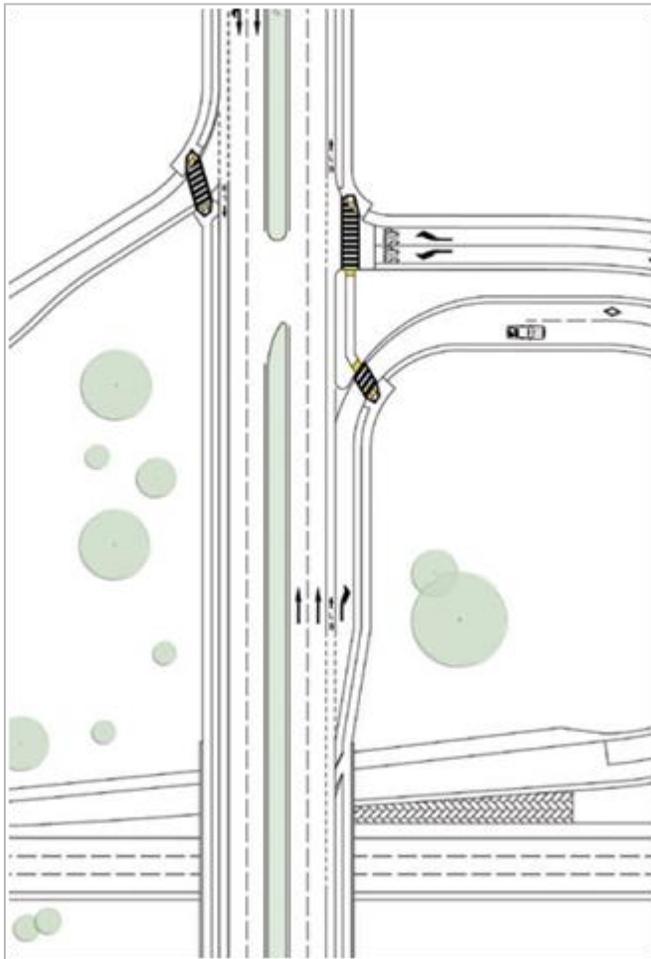
Carlson Boulevard through Richmond Annex,  
Cutting Boulevard corridor wide, Central Avenue  
connection to Bay Trail



INTERSECTION

**Bike Ramps Through Interchanges**

- Provide Class II bicycle lanes through ramps with conflict-zone striping through weave areas
- Construct parallel path facility to allow bicyclists to travel off-street and use crosswalks
- Install bike ramps between on-street and off-street facilities
- At unsignalized crosswalks site crosswalk with “split the difference” between the shortest path and the most visible path
- Where possible bring crosswalks under signal control



**Proposed Example**

80/Carlson Boulevard Interchange,  
I-580/Harbour Way Interchange

## Recommended Network of Bicycle Connections

The SRCTP seeks to make bicycle connections to and from major destinations in South Richmond and proximate transit hubs using on-street and off-street bicycle treatments. Existing bicycle treatments in South Richmond are primarily limited to the on-street alignment of the Bay Trail along Harbour Way and Cutting Boulevard, but this Plan proposes to expand the bicycle network to include the streets listed in Figure 6-3. The treatments suggested for these roadway segments include protected bikeways, bicycle lanes and bicycle boulevards, as detailed in Figures 6-1 and 6-2. In most cases, striped buffers and treatments with vertical physical barriers are preferred to provide additional comfort and protection for bicyclists. This is a particular concern in South Richmond as a result of the active industrial land uses in the area which generate heavy truck traffic in addition as well as the many highway interchanges in the area. These facilities also serve a critical function as the on-street alignment of the Bay Trail, connections between the Bay Trail and BART stations, and connections between key residential and employment areas in Richmond and areas BART stations.

Figure 6-2 identifies both short-term and long-term improvements proposed for the corridor. Where feasible, short-term projects, that focus on signing and striping improvements that may be lower cost and easier to implement. In the long-term, many of the low-cost and temporary measures implemented in the near-term are proposed to be formalized by moving, or installing curbs, gutters, planter boxes, street trees, street furniture or other streetscape features.

Figure 6-2 South Richmond Bicycle Project List

Location		Near Term Treatment <sup>1</sup>	Long Term Treatment <sup>1</sup>
Hoffman Blvd	Cutting Boulevard to Harbour Way	<ul style="list-style-type: none"> <li>Two-way separated bikeway on west side of Hoffman Boulevard</li> </ul> OR <ul style="list-style-type: none"> <li>Class II Bicycle Lanes</li> </ul>	<ul style="list-style-type: none"> <li>Two-way separated bikeway on west side of Hoffman Blvd., <u>OR</u></li> <li>“Rail with Trail” Class I shared-use path to the west of Hoffman Boulevard on the existing rail alignment</li> </ul>
	Bay Trail/Ford Plant to Hoffman Boulevard	<ul style="list-style-type: none"> <li>Two-way separated bikeway on the east side of Harbour Way, including railroad crossing and intersection improvements</li> </ul>	<ul style="list-style-type: none"> <li>Raised two-way separated bikeway on the east side of Harbour Way, including railroad crossing and intersection improvements.</li> </ul>
Harbour Way	Hoffman Boulevard to Cutting Boulevard	<ul style="list-style-type: none"> <li>One-way separated bikeways through interchange</li> </ul>	<ul style="list-style-type: none"> <li>Raised one-way separated bikeways through interchange</li> </ul>
	North of Cutting Boulevard	<ul style="list-style-type: none"> <li>Class II Bicycle Lanes</li> </ul>	-

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Location		Near Term Treatment <sup>1</sup>	Long Term Treatment <sup>1</sup>	
<b>Marina Way</b>		<ul style="list-style-type: none"> <li>▪ Buffered Class II Bicycle Lanes</li> </ul>	<ul style="list-style-type: none"> <li>▪ One-way bikeways, separated by buffer with raised curb (and transit stop islands).).</li> </ul>	
<b>Central Avenue Corridor (Bay Trail to Richmond Annex &amp; El Cerrito Plaza BART)</b>	<b>Central Avenue</b>	Bay Trail/Rydin Avenue to Pierce Street	<ul style="list-style-type: none"> <li>▪ Extend Class I Path to intersection at Central Ave</li> </ul>	-
		Bay Trail/Rydin Road to Jacuzzi Street	<ul style="list-style-type: none"> <li>▪ Formalized existing Class II Bicycle Lanes with pavement legends and signs</li> </ul>	-
		Jacuzzi Street to Pierce Road	<ul style="list-style-type: none"> <li>▪ Class I Path on south side</li> </ul>	-
		300' east of Rydin Road north to Existing Bay Trail Path	<ul style="list-style-type: none"> <li>▪ Class I Path through vacant parcel</li> </ul>	-
	<b>Pierce Street</b>	Central Avenue to Cerrito Creek	<ul style="list-style-type: none"> <li>▪ Two-way separated bikeway on west side</li> <li>▪ Connect to and extend Cerrito Creek trail</li> </ul>	<ul style="list-style-type: none"> <li>▪ Raised two-way separated bikeway on west side</li> </ul>
	<b>Sacramento Avenue</b>		<ul style="list-style-type: none"> <li>▪ Designated and stripe as Bicycle Boulevard, including traffic calming improvements</li> <li>▪ Path crossing improvements at San Luis Street</li> </ul>	-
	<b>San Joaquin Street</b>		<ul style="list-style-type: none"> <li>▪ Designated and stripe as Bicycle Boulevard, including traffic calming improvements</li> </ul>	-
<b>Carlson Boulevard</b>	Broadway to Bayview Avenue	<ul style="list-style-type: none"> <li>▪ Buffered Class II Bicycle Lanes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Two-way separated bikeway on W side of Carlson</li> </ul>	
	Bayview to Tehama Avenue	<ul style="list-style-type: none"> <li>▪ Class II Bicycle Lanes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Consider parking separated bikeways</li> </ul>	
<b>South 23rd Street/Marina Bay Parkway</b>	Cutting Boulevard to Potrero Avenue	<ul style="list-style-type: none"> <li>▪ Class II Bicycle Lanes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Parking-separate one-way bikeways</li> </ul>	
	I-580 to Meeker Avenue	<ul style="list-style-type: none"> <li>▪ One-way separated bikeways</li> </ul>	<ul style="list-style-type: none"> <li>▪ Parking-separate one-way bikeways</li> <li>▪ Class I Path on east side</li> </ul>	
	Meeker Avenue to Regatta Boulevard	<ul style="list-style-type: none"> <li>▪ Shared-Use Paths on each side of Moody Underpass</li> </ul>	<ul style="list-style-type: none"> <li>▪ Realignment of Regatta Boulevard/Marina Bay Parkway intersection</li> </ul>	
<b>South 47th Street</b>	Carlson Boulevard to	<ul style="list-style-type: none"> <li>▪ Bicycle Boulevard with traffic calming</li> </ul>	<ul style="list-style-type: none"> <li>▪ Construct multi-modal bridge of I-580, UPRR,</li> </ul>	

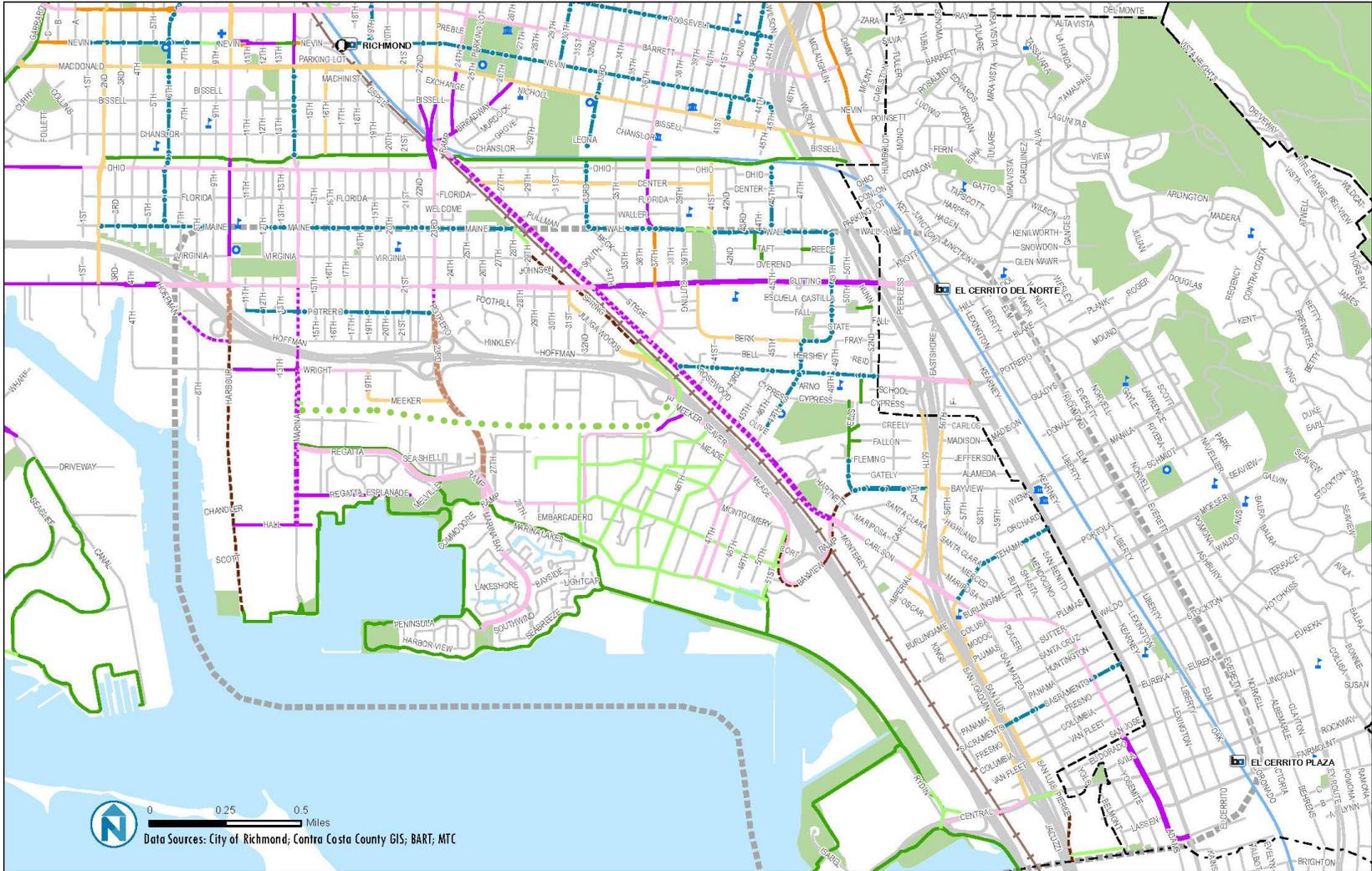
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Location		Near Term Treatment <sup>1</sup>	Long Term Treatment <sup>1</sup>
	Potrero Avenue	treatments	and Carlson Blvd, with class I path on one side <ul style="list-style-type: none"> <li>Two-way separated bikeway on South 47<sup>th</sup></li> </ul>
<b>Potrero Avenue</b>	47th Street to San Pablo Avenue	<ul style="list-style-type: none"> <li>Class II Bicycle Lanes (46' cross-section)</li> </ul> <u>OR</u> <ul style="list-style-type: none"> <li>Class III Bicycle Route with Sharrows and buffer between parking and travel lane (44' x-section)</li> </ul>	<ul style="list-style-type: none"> <li>Remove parking on on-side of roadway and stripe buffered Class II bicycle lanes</li> </ul>
<b>Juliga Woods-South 31st Street</b>	-	<ul style="list-style-type: none"> <li>Bicycle Boulevard with traffic calming treatments</li> </ul>	<ul style="list-style-type: none"> <li>Two-way separated bikeway on east side of Regatta Boulevard</li> </ul>
<b>Spring Street</b>	Cutting Boulevard to Regatta Boulevard	<ul style="list-style-type: none"> <li>Bicycle Boulevard with traffic calming treatments</li> </ul>	<ul style="list-style-type: none"> <li>Two-way separated bikeway</li> </ul>
<b>Bayview Avenue</b>		<ul style="list-style-type: none"> <li>Two-way separated bikeway on south side</li> <li>Buffered bicycle lanes on north side</li> </ul>	<ul style="list-style-type: none"> <li>Raised two-way separated bikeway pending Bayview Avenue improvements</li> </ul>
<b>Berkeley Global Campus at Richmond Bay</b>	East-west corridors	<ul style="list-style-type: none"> <li>Consistent with the BMP, and the Richmond Bay Campus LRDP, establish two east-west bicycle routes through the BGC: (1) in the alignment of Lark Drive, with accommodation for non-motorized travelers in a shared street or a separated path (class 1). (2), a Class I path along the southern edge of the campus connecting the Bay Trail at Meeker Slough with the Seaport neighborhood to the southeast.</li> </ul>	
<b>San Francisco Bay Trail</b>	All off-street segments in South Richmond	<ul style="list-style-type: none"> <li>Prioritize maintenance and sweeping</li> <li>Address deficiencies</li> <li>Support separation of bicyclists and other roadway users</li> </ul>	<ul style="list-style-type: none"> <li>Accommodate growing ridership on Bay Trail by upgrading all off-street trail segments to Caltrans standards for Class I paths (10' to 10' width, with min. 2' shoulder zone).</li> </ul>

1. The Corridor Profiles in Chapter 10, provide additional detail about intersection and segment proposals for each corridor.

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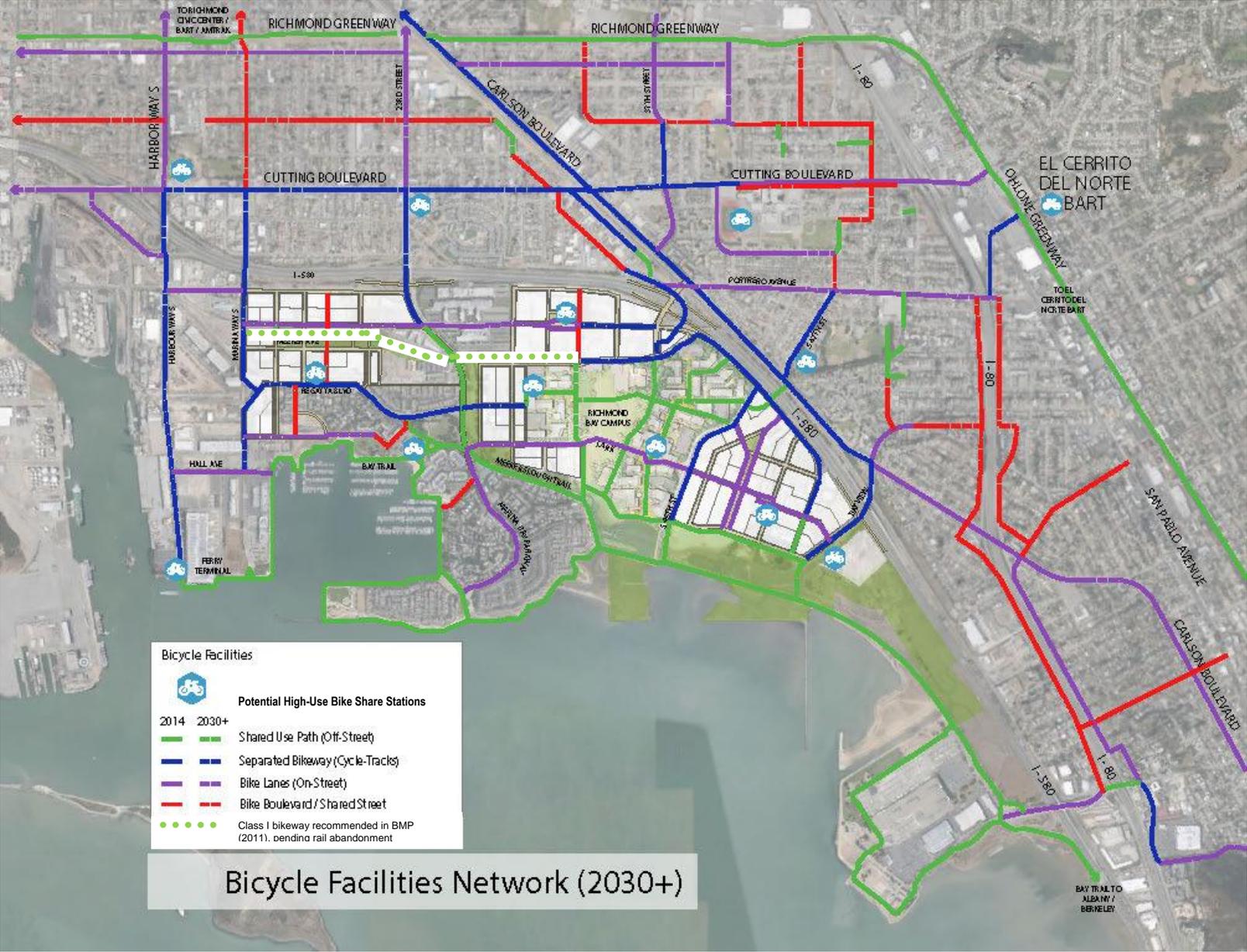
**Figure 6-3 Near-Term Bicycle Network**



**SOUTH RICHMOND TRANSPORTATION CONNECTIVITY PLAN - NEAR TERM CONDITIONS**

- |                          |                          |                           |  |                                  |                     |             |                          |
|--------------------------|--------------------------|---------------------------|--|----------------------------------|---------------------|-------------|--------------------------|
| <b>Existing Bikeways</b> | <b>Proposed Bikeways</b> | <b>Buffered Bike Lane</b> | <b>Community/Rec Center</b>  | <b>Governmental Bldgs/Courts</b> | <b>BART Station</b> | <b>BART</b> | <b>SRTCPC Study Area</b> |
| Class I Path             | Bicycle Boulevard        | One-Way Cycle Track       | School   | Medical                          | Amtrak Station      | Amtrak      | City Boundaries          |
| Class II Lane            | Class I Path             | Two-Way Cycle Track       | Note: Existing bikeways are shown only where those facilities would be maintained in the future. |                                  |                     |             |                          |
| Class III Route          | Class II Lane            |                           |  |                                  |                     |             |                          |
|                          | Class III Route          |                           |  |                                  |                     |             |                          |
- Class I bikeway recommended in BMP (2011), pending certification of abandonment by Surface Trans. Board

Figure 6-4 Long-Term Bicycle Network



## San Francisco Bay Trail

As the Berkeley Global Campus and other change areas in South Richmond develop, use of the San Francisco Bay Trail is expected to increase substantially. To accommodate growing demand for bicycle and pedestrian use of these regional facilities, all existing off-street segments of the San Francisco Bay Trail should be improved to meet Caltrans standards for Class I path facilities, over the long-term (by 2030). This may include widening the paved trail to 12'-14,' and separating travel ways for wheeled and non-wheeled users – with accommodation for pedestrians in a parallel crushed gravel pathway, where feasible<sup>1</sup>.

### Phasing

As indicated the Figure 6-3 , both near-term and long-term proposals are made to account the existing needs of South Richmond as well as future needs as grant-funding or developer-funding is able to be secured. Differentiating the phasing of these improvements gives Richmond the flexibility to increase comfort for bicyclists in the existing condition through lower-cost and easier to implement solutions while also planning for more formalized facilities in the future. This is particularly important in the South Richmond area as development from the South Shoreline Specific Plan and the planned Richmond Labs projects are constructed. The short-term and long-term design considerations are presented below.

### Short-Term Implementation Plan

Tools for short-term implementation for bicycle infrastructure mainly entail treatments that have few barriers for application and approval. Short-term improvements are intended to be in place for the next fifteen years, or until long-range improvements can be made. Many of the design tools describe in Figures 6-1 and 6-2 can be implemented more cost effectively through the use of the following types of materials:

- **Signing and Striping:** many of the separated bikeway, bicycle lane, and bicycle boulevard improvements can be made using signing and striping. Striping can denote bicycle as well as buffer space to create buffered bicycle lanes or separated bikeways. Striping and colorized pavement can also be used to outline curb extensions and median refuge areas.
- **Vertical Barriers:** vertical barriers can provide physical separation between bicyclists and the travel way while still being on-street treatments. In the long-term, these projects would include raised curb, sidewalk, paths, and similarly more cost and design-intensive solutions
  - Soft-Hit Posts/Delineators: Soft-hit posts or vertical delineators can be spaced to delineate bicyclist and driver space. These may be more appropriate applications in areas without substantial truck traffic or heavy turning movements near their installation.

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<sup>1</sup> Per Caltrans Highway Design Manual, July 1, 2015, 1000-4, “Where heavy bicycle volumes are anticipated and/or significant pedestrian traffic is expected, the paved width of a two-way bike path should be greater than 10 feet, preferably 12 feet or more,” and... “A minimum 2-foot wide shoulder, composed of the same pavement material as the bike path or all weather surface material that is free of vegetation, shall be provided adjacent to the traveled way of the bike path when not on a structure” (Caltrans Highway Design Manual , July 1, 2015, 1000-4.

- **Planter Boxes:** Raised planter boxes can be used to provide landscaping and improve the aesthetic and placemaking qualities while also provided a sturdy vertical separation between bicyclists and drivers.

### Long-Term Implementation Plan

Treatments considered for long-term implementation in the SRTCP include those treatments requiring major curb work or right-of-way changes. These treatments include improvements required curb work, such as raised sidewalk, paths, curb extensions, and raised separated bikeways in addition to projects that may require additional outreach and political support, such as parking removal, approval for a “rail-with-trail” project, or in limited cases, intersection or interchange realignment. These are considered for implementation after 2030.

### Bike Parking and Terminal Facilities

Bike parking is an essential component of any user-friendly bicycle transportation network. To ensure that all major destinations in South Richmond are convenient to access by bicycle, the following measures will be implemented:



- **Short-term Bike Parking:** Work with UC/LBNL and other major employers and property owners throughout the South Richmond to ensure the provision of an ample supply of short term bike parking racks, as well as access to at least one secure, covered bike parking area located:
  - within each neighborhood subarea, as defined in the Richmond Bay Specific Plan Area
  - within each quadrant of the BGC at Richmond Bay, and
  - at each major civic and employment site north and east of I-580, including schools, and community centers.
- **Bike Stations:** Bike Stations are covered, secure, attended bike parking facilities, with on-site bike repair services. The City should partner with BART, WETA, UC/LBNL, and a local or regional non-profit cycling advocacy organization, and/or a local bike repair shop to develop and staff a Bike Station at the BGC at Richmond Bay, the ferry terminal, and at each BART Station in the vicinity of South Richmond.



- **Add Public Short-Term Parking:** Inventory the existing supply of bike racks at all public parks and sites in Shoreline area, identifying as appropriate for provision of additional bike parking locations where all racks are utilized during periods of peak park use, and others where bikes are parked and locked to trees, fencing, street furniture, or other property.



- **Require Bike Parking for All New Development:** All new commercial and residential development in South Richmond should be required to provide or fund provision of an ample supply of both:
  - short-term bike parking visible and accessible from streets and bikeways, and
  - secure, off-street bike storage within building(s).

Large employment sites shall be required to provide showers and lockers for use by cyclists and other employees as needed. For land uses in areas south of I-580, and east of Marina Way South, specific requirements for bike parking, showers, and lockers are detailed in the Development Standards section of the Richmond South Shoreline Specific Plan.

## Bike Sharing

Bike sharing is a flexible public transportation service that provides on-demand access to a network of adjustable public bicycles available for short-term use. Within a given service area, bikes may be used for round-trip tours, or for one-way trips, so long as the bike is parked at another secure bike sharing station within the same service area.



Bay Area Bike Share currently operates in San Francisco, San Jose, and the San Francisco Peninsula. Users can gain access to the system at payment kiosks, using either 24-hour subscriptions (cash or credit card-based payment) or annual subscriptions, obtaining a key fob to unlock bicycles at any bike share station in the service area.

### Bikeshare Feasibility Study

Once WETA ferry service to Richmond is operational and initial stages of development are underway at the BGC, and in other parts of the SRTCP area, the City, UC/BGC at Richmond Bay, WETA, and local bicycle advocacy organizations should work with MTC, Bay Area Bikeshare, BART, and other partners to study the feasibility of expanding the regional system to include service areas in Richmond and El Cerrito.

### Potential Bikeshare Locations in South Richmond

Bike sharing is most cost-effective in dense, mixed-use neighborhoods especially where it can provide a convenient connection to regional transit stations. Ridership analysis of existing bikeshare systems indicates that stations must be closely spaced (up to 28 stations per square mile) to ensure that most destinations within a given service area are located within a short walk of a station, providing for equitable and convenient access. If implemented in South Richmond, appropriate station locations should be determined through careful planning and analysis of existing and planned on-street and off-street bike facilities, and local land uses, including evaluation of population and employment density.

Although specific bikeshare station locations need not be determined at this time, Figure 6-4 identifies potential high priority bike sharing stations that might be expected to see the greatest utilization once a service is established in Richmond. These include the planned Richmond Ferry Terminal on the Ford Peninsula, a central location on the Berkeley Global Campus at Richmond Bay, the Richmond, El Cerrito Plaza, and El Cerrito Del Norte BART Stations, and major destinations north of I-580, such as Kennedy High School and the Richmond Civic Center.

# 7 PUBLIC TRANSIT CONNECTIVITY FRAMEWORK

## Overview

To expand access and mobility for existing residents and businesses, and to accommodate most growth in travel demand with non-auto modes of transportation, public transit service to and within South Richmond must be substantially expanded. The vision for expanded transit access and connectivity includes:

- Better geographic coverage of the entire SRTCP area, including parts of the South Shoreline Specific Plan area that are not directly served today.
- Provision of fast, frequent and reliable transit service along a set of primary transit corridors, where riders can expect a bus arriving every 15 minutes or better throughout the day.
- Direct, frequent service connections to major destinations and regional transit stations in the area. These include the three nearby BART Stations (Richmond Intermodal Terminal [BART/Amtrak], El Cerrito Del Norte BART, and El Cerrito Plaza BART), the WETA Ferry Terminal on the Ford Peninsula, destinations in Central Richmond/Richmond Civic Center and along McDonald Avenue, San Pablo Avenue, and Cutting Boulevard, among other corridors.

Efficient, multimodal access to transit. To achieve this vision for transit connectivity in the long-term, this plan calls for:

- Major investment in new public transit facilities and services, including initiation of ferry service from Richmond to San Francisco, expanded frequency on a network of primary transit corridors traversing South Richmond, and better connecting existing neighborhoods and new districts to BART stations in Richmond and El Cerrito.
- Collaboration between local and regional transit agencies, the University of California (UC)/ Berkeley Global Campus (BGC) at Richmond Bay, and the City of Richmond in funding, designing and operating transit service to and through South Richmond.
- Continuation and limited expansion of existing UC Campus Shuttle service, including enhanced frequency of service on the inter-campus shuttle between UC Berkeley and the BGC at Richmond Bay, and a new circulator shuttle service within and along the perimeter of the BGC.
- Coordination with other regional transit agencies, including BART, Capitol Corridor, Golden Gate Transit, and agencies serving the I-80 corridor to improve the regional accessibility of South Richmond.
  - Intermodal connections, with expanded bike parking at BART stations, the ferry terminal, and at high-use bus transit stops throughout South Richmond. In addition, all

public transit services in the SRTCP area should accommodate bikes, with user friendly on-board or exterior bike racks.

The long-term vision also responds to long-range planning by BART and the Metropolitan Transportation Commission (MTC), which are considering options for additional regional rail service on the Capitol Corridor between Hercules and Oakland, with a potential new Eastshore Station at the northeast corner of the planned Berkeley Global Campus (BGC), and a potential new infill BART Station where the existing Richmond Line crosses I-80.

## OVERVIEW OF EXISTING CONDITIONS

The Plan Area is served by limited frequency local and regional transit services today:

- AC Transit Line 71 provides service every 30 minutes (5am-7pm weekdays) from El Cerrito Plaza BART to Richmond BART via Carlson Boulevard, with a deviation to S.47<sup>th</sup> and Potrero Avenue.
- AC Transit Line 25 provides two AM and two PM trips to the Point Isabel Regional Shoreline from El Cerrito, Albany and Berkeley, via Central Avenue.

San Pablo Avenue is the only corridor within the SRTCP area, which currently has frequent transit service south of MacDonald Avenue. Service every 7-15 minutes is provided by a combination of Line 72 (San Pablo Ave to Hilltop Mall), Line 72 M (San Pablo Ave to Richmond Civic Center/Richmond BART via MacDonald Ave), and Line 72 R, which offers limited stop service every 12 minutes along the length of the San Pablo Avenue corridor, from Contra Costa College to El Cerrito (and beyond to Albany, Berkeley and Oakland) via San Pablo Avenue.

AC Transit line 74 provides the only direct service to portions of the study area located on the Bay side of I-580, including Marina Bay and the South Shoreline Specific Plan Area. Line 74 connects the Ford Peninsula, location of the planned WETA Ferry Terminal, to Richmond BART via Harbour Way South, Regatta Boulevard, and Marina Bay Parkway/S. 23<sup>rd</sup> Street (During the closure of Marina Bay Parkway for ongoing construction of the Moody Underpass, Line 74 has been re-routed along I-580 from Marina Bay Parkway west to Regatta Boulevard, then south and west along Regatta to Marina Way South). However, service on Line 74 is infrequent, with buses scheduled to arrive at 40 minute intervals on weekdays, with less frequent service still on weekends and during off-peak periods. Access to the Richmond Field Station (RFS), future site of the Berkeley Global Campus (BGC) at Richmond Bay, is provided by the University of California's RFS Shuttle, which makes connections to El Cerrito Plaza BART, campus housing in Albany, and the UC and Lawrence Berkeley National Laboratories (LBNL) campuses in Berkeley, while the City of Richmond operates a shuttle between El Cerrito Del Norte BART and Marina Bay (AC Transit does not currently serve the RFS site, or the adjacent Seaport Neighborhood. These shuttles make limited stops, bypassing neighborhoods in and around the Plan Area.

## Phasing

Public transit needs and a recommended transit service vision have been developed for two different time horizons in this plan, including near-term, and long-term visions, as follows:

- **Near-term transit vision for the period 2015-2024:** This includes a recommended transit network and associated improvements to serve existing demand and land use patterns, while addressing expected near-term changes to land uses, and transportation networks in South Richmond. These changes include the planned opening of WETA ferry

service to San Francisco from the Ford Peninsula, and pending major development applications along Marina Way South and within the South Shoreline Specific Plan area.

- **Long-term transit vision for the period 2030 and beyond:** The long-term transit network options presented in this plan include recommended transit service and facility improvements that respond to and support the planned land use vision for South Richmond as articulated in the Richmond General Plan for 2030, the South Shoreline Specific Plan, the Richmond Livable Corridors Form-Based Code, and the Long Range Development Plan (LRDP) for the Berkeley Global Campus (BGC).

## NEAR-TERM TRANSIT NETWORK

The near-term (2015-2024) vision for public transit represents a substantial enhancement in transit service frequency, reliability, and connectivity to and within the SRTCP area. The proposed network realigns and expands current service on AC Transit Lines 74 and 76, and adds several new routes. In combination, these changes would provide frequent transit service (service every 15 minutes at least 18 hours per day) along several of the key multimodal travel corridors in the Plan Area, and better geographic coverage of the South Shoreline area, south and west of I-580 – that is slated for substantial new growth and development.

Figure 7-1 shows the proposed near-term transit network for the Plan Area, including:

- **Primary transit corridors**, recommended for frequent service (every 15 minutes or better) at least 18 hours a day on weekdays, and
- **Secondary transit corridors**, recommended for local service at frequencies of 20-60 minutes at least 18 hours a day weekdays (with peak period service every 20-30 minutes).

## Primary Transit Corridors

Primary frequent transit corridors are proposed for the near-term as follows.

- **Primary Transit Corridor A (PTC–A): Cutting Boulevard: Harbour Way South-El Cerrito Del Norte BART:** In the near-term, Cutting Boulevard can be served by two transit routes, with staggered headways, providing combined all day service frequency of four trips per hour in both directions (service every 15 minutes). These routes include:
  - Expanded service on AC Transit Line 76, connecting Central Richmond to El Cerrito Del Norte BART via Harbour Way South and Cutting Boulevard with service every 20-30 minutes all day.
  - Expanded, direct service on Golden Gate Transit lines 40 and 42 between El Cerrito Del Norte BART and Marin County, via Cutting Boulevard, Point Richmond, and I-580 (assumes expanded service, with three or more trips per hour during peak periods, and at least two trips per hour during off-peak periods).
- **Primary Transit Corridor (PTC – B): Richmond BART-Berkeley Global Campus (BGC) -El Cerrito Plaza BART:** A new AC Transit route is proposed to provide direct access to the BGC at Richmond Bay and the South Shoreline area from Central Richmond, El Cerrito, and the rest of the Bay Area transit system. The line is proposed to extend from Richmond BART to El Cerrito Plaza BART via South 23<sup>rd</sup> St, Marina Bay Parkway, Regatta Boulevard, Bayview Avenue, Carlson Boulevard, and Central Avenue. If substantial new development occurs at the BGC and in nearby neighborhoods within the South Shoreline Specific Plan area, this corridor could support service every 15 minutes all day by 2024. This

line would replace and enhance service frequency along a key segment of AC Transit Line 74 (S.23<sup>rd</sup> and Marina Bay Parkway, between MacDonald Avenue and Regatta Boulevard), which it proposed for realignment along Harbour Way South and Marina Way South (see PTC- C). This line would provide the only direct service to the BGC and the adjacent Seaport neighborhood, and would bring frequent service to Carlson Boulevard, from Bayview Avenue to Central Avenue, improving connections from the Richmond Annex to El Cerrito (including El Cerrito Plaza BART).

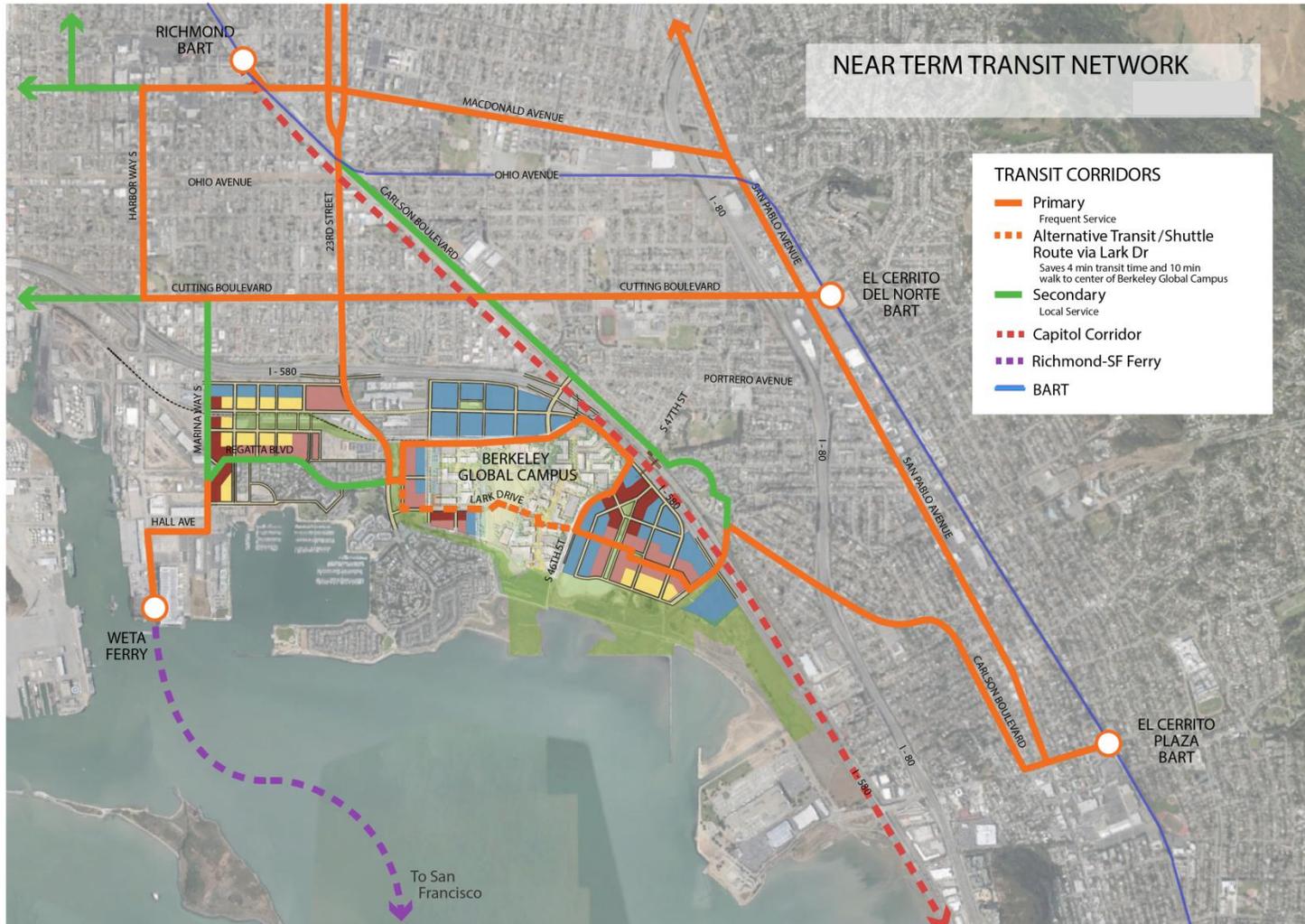
- **PTC-C: Central Richmond to Cutting Boulevard via Harbour Way S:** A combination of routes is proposed to achieve primary frequent transit service standards on this corridor. Baseline local service along this entire corridor is propose with a realigned AC Transit route 74 providing service every 30 minutes all day from Richmond BART to the WETA Ferry terminal via MacDonald Avenue-Harbour Way S-Cutting Boulevard-Marina Way S- Hall Ave-Harbour Way S. Realignment of AC Transit Line 76 (El Cerrito Del Norte BART to Richmond BART via Cutting Boulevard) from S. 23<sup>rd</sup> Street to Harbour Way South, and expanded service every 30 minutes all day, the existing residential neighborhoods along Harbour Way South between Cutting Boulevard and MacDonald Avenue would see service frequency enhanced to every 15-minutes at least 18-hours per day.

## Secondary Transit Corridors

As AC Transit and regional partners expand service on major travel corridors, basic local transit service must continue to be provided on secondary corridors covering the rest of the SRTCP plan area. In the near-term (2015-2024) local service – mostly at 30 minute frequency on weekdays – is proposed for the following corridor segments:

- **Central Richmond to the Richmond Annex:** Continued local service on Line 71 along Carlson Boulevard, between S. 23<sup>rd</sup> Street and Bayview Avenue (South of Bayview Avenue, Line 71 is combined with a new route connecting Richmond BART and El Cerrito Plaza BART via the BGC, making Carlson Blvd., south of Bayview Avenue a Primary Transit Corridor with frequent service).
- **Marina Way South:** With the proposed realignment of AC Transit Line 74, to Harbour Way South (north of Cutting Blvd.), and Marina Way South (South of Cutting Blvd), most of the corridor between Central Richmond/Richmond BART and the WETA Ferry Terminal is a Primary Transit Corridor, with frequent service. Between Cutting Boulevard and Hall Avenue, Marina Way South will remain a Secondary Transit Corridor, served only by line 74, with 30-minute frequency on weekdays.
- **Regatta Boulevard (West):** By 2024, with initial phases of development at the BGC and within the South Shoreline Specific Plan Area complete, there will be sufficient demand for local transit service (every 30 minutes on weekdays) between east side of the BGC and the adjacent Seaport neighborhood, and the WETA Ferry Terminal on the Ford Peninsula, via Meade Street-Regatta Boulevard-Marina Way South-Hall Avenue-Harbour Way South. The segment of Regatta Boulevard West, from Marina Bay Parkway to Marina Way South will be limited to 30-minute headways, while all other route segments reach frequent service levels in combination with other routes and are part of the proposed Primary Transit Corridor network.

Figure 7-1 Near-Term Transit Network for South-Richmond



## LONG-TERM NETWORK OPTIONS

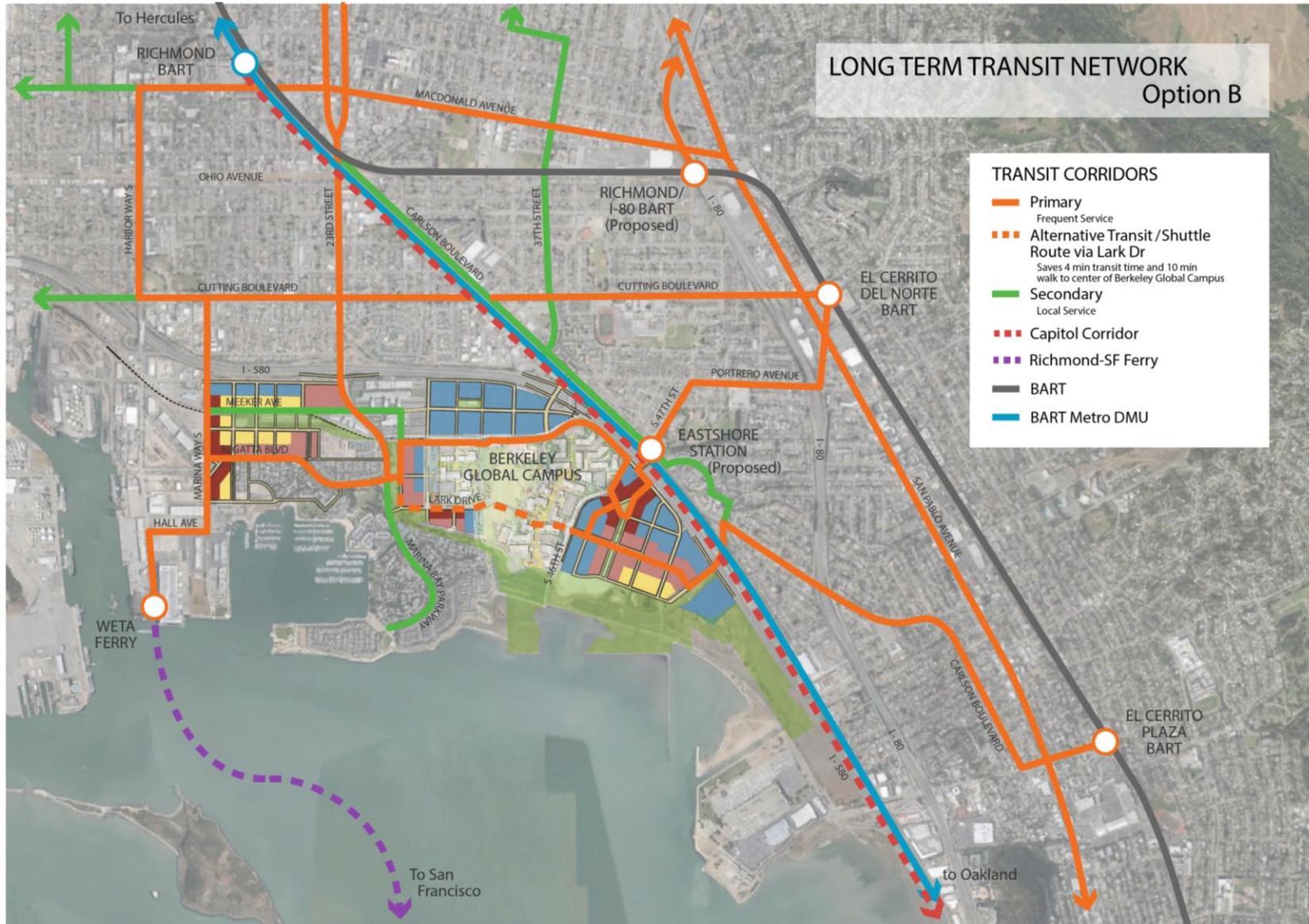
Figures 7-2 and 7-3 show two long-term alternatives for transit service in the plan area. Maps of both long-term network options highlight:

- “Primary transit corridors,” recommended for frequent service (every 15 minutes or better) at least 18 hours a day on weekdays, and
- “Secondary transit corridors,” recommended for local service at frequencies of 20-60 minutes on weekdays.

Figure 7-2 Long-term (2030+) Transit Network Option A



Figure 7-3 Long-term (2030+) Transit Network Option B



Both long-term transit network options provide for primary transit service in the following corridors in the Plan Area:

- **Primary Transit Corridor A (PTC–A): Cutting Boulevard: Harbour Way South-El Cerrito Del Norte BART:** In the long-term vision, with additional development at commercial/mixed-use nodes along the corridor, Cutting Boulevard will be served by up to three routes, providing combined frequent service every 10 minutes all day. These routes include:
  - A realignment of AC Transit Line 76, connecting Central Richmond to El Cerrito Del Norte BART via Harbour Way South and Cutting Boulevard at 30 minute frequency.
  - A new AC Transit line, connecting El Cerrito Del Norte BART with the WETA Ferry Terminal on the Ford Peninsula, with service every 30 minutes, via Cutting Boulevard-Marina Way S- Hall Ave-Harbour Way South.
  - Expanded, direct service on Golden Gate Transit lines 40 and 42 (consolidated on Cutting Blvd) between El Cerrito Del Norte BART and Marin County, via Cutting Boulevard-Point Richmond, and I-580.
- **Primary Transit Corridor (PTC – B): Richmond BART-Berkeley Global Campus (BGC) -El Cerrito Plaza BART:** Direct access to the BGC at Richmond Bay, and the South Shoreline area from Central Richmond, El Cerrito, and the rest of the Bay Area transit system, is provided by a new frequent transit line connecting Richmond BART with El Cerrito Plaza BART via South 23<sup>rd</sup> St, Marina Bay Parkway, Regatta Bayview Avenue, Carlson Boulevard, and Central Avenue.
- **PTC-C: Richmond BART to WETA Ferry Terminal via Harbour Way S and Marina Way S:** A combination of routes is proposed to achieve primary frequent transit service standards on this corridor. Baseline local service along this entire corridor is propose with A realigned AC Transit route 74 providing service every 30 minutes all day from Richmond BART to the WETA ferry terminal via Harbour Way S-Cutting Boulevard-Marina Way S- Hall Ave-Harbour Way S. South of Cutting Blvd, frequent service (every 15 minutes) will be achieved in combination with a new route connecting the WETA Ferry Terminal with El Cerrito Del Norte BART (This route serves Cutting Boulevard and the southern half of PTC-C, at 30 minute frequency).
- **PTC-D: Ferry Terminal to RBC via Regatta Blvd, and Lark Drive (Option B – Extension to El Cerrito Del Norte BART via S. 47<sup>th</sup>):** Both long-term transit network options call for provision of a new frequent shuttle or transit service connecting the BGC with

### Lark Drive Transit Exclusion

In May 2014, the Richmond City Council passed a resolution (40-14) calling for use of Lark Drive to be limited to non-motorized vehicles. If a transit exclusion from Lark Drive is maintained in the long-term, transit service will need to be routed via campus perimeter roadways, including Regatta Boulevard, Meade Street, and S. 47<sup>th</sup> Street as shown in the recommended Long-Term Transit Network options (Figures 7-2 and 7-3). If limited transit service via Lark Drive is permitted in the future, it would provide a direct connection to the campus, saving up to four minutes of added transit travel time each way, as compared to an alternative routing via campus perimeter roadways. For travelers bound for destinations in the middle of campus, the perimeter alignment also requires an additional 8-10 minute walk, increasing total one-way travel time by 11-14 minutes each way. Moreover, the time savings and more direct alignment of service via Lark Drive, would substantially increase the attractiveness of transit for access to/from the adjacent Meeker, Lark Drive/Meeker Slough, and Zeneca/Seaport neighborhoods.

the planned ferry terminal at the Ford Peninsula. Under Option B, this line would continue northeast, providing a direct connection to the El Cerrito Del Norte BART Station via a new multimodal bridge over I-580/UPRR, S. 47<sup>th</sup> Street, and Potrero Avenue. Without access to Lark Drive, this service would provide service to the perimeter of the BGC, with an alignment via Regatta Boulevard and Meade Street, terminating at South 47<sup>th</sup> and Lark Drive. This alignment would not extend across I-580, but connections to the El Cerrito Plaza BART Station could be made by transfer to the route serving PTC-B.

## **Secondary Transit Corridors**

In concert with the development of a street grid (including a new connection through the California Department of Public Health site) and new land uses in the Meeker Avenue and Research & Development neighborhoods, a new secondary local transit route is recommended from Marina Way South to the Zeneca/Seaport neighborhood via Meeker Avenue and Regatta Boulevard.

## **Transit Toolkit**

This section provides an overview and design details for some of the public transit facilities and priority measures recommended for implementation on Primary Transit Corridors in South Richmond.

## High Demand Transit Stops

**Basic amenities** for all stops on local/ secondary transit corridors:

- Bench
- Trash can
- Route Map & Schedule
- Crosswalk at nearest intersection



**Additional amenities** for high demand stops on Primary Transit Corridors: Shelter

- System map
- Ped. scale lighting
- Off-board payment (option)
- Level boarding platform (option)

### Examples

Upgrade Transit Shelters/ Waiting Facilities on all Primary Transit Corridors, including segments of:

- Cutting
- Carlson (in Annex)
- Regatta
- Marina Bay Pkwy/S. 23<sup>rd</sup>
- Marina Way

## Arterial HOV Lane(s)

- High occupancy vehicle (HOV) lanes are restricted to use by vehicles with two or more passengers including carpools, vanpools, shuttles and transit.
- Lane restrictions can be 2+, 3+ or transit-only, and may specify restriction at peak hour only, or permissions (e.g. HOV + Right Turn Only).



### Examples

Consider, through Future Corridor Transit Planning Processes:

- Marina Bay Parkway (S. of Potrero): Arterial HOV lane(s) (Turn +HOV)
- Cutting Blvd: Arterial HOV lanes, or Transit-only Lane(s)

## Transit Signal Priority (TSP)

- Enhances transit speed and reliability by giving transit vehicles an early green light, or extending a green light to allow an approaching bus or train to pass.
- Queue jumps (advance green lights for transit vehicles) enable buses to bypass traffic at signalized intersections. Requires an additional travel lane at intersection, which can be transit-only or shared, on the approach to a signal.



### Examples

TSP appropriate for selected intersections on Primary Transit Corridors, including segments of Cutting Blvd., Marina Way S., Carlson Blvd., Bayview Ave.

## BRT / Median Transit

- Bus Rapid Transit (BRT) in Median transit lanes reduces curbside conflicts with right-turning vehicles and numerous driveways. The lanes are intended to maintain reliable service and reduce travel times through the corridor.



### Examples

Bus Rapid Transit with median stations may be an appropriate long-term solution for Cutting Boulevard. A corridor transit study should be conducted to determine the appropriate alignment of any dedicated transit/BRT lane.

## Transit Island

- Transit stop/waiting area located in travelway, with bikeway located between transit stop and the curb.
- Appropriate for corridors with separated bikeways and frequent transit.
- Eliminates bike/transit conflicts at/ear transit stops



### Examples

Recommended for stops on selected SRTCP Primary Transit Corridors, including: Marina Bay Parkway, Marina Way, Carlson Boulevard and Regatta Blvd.

## **Transit Coordination**

To best achieve the goals and objectives of this plan and the associated SRTCP, the City, AC Transit, UC, LBNL and I-80 corridor transit partners should collaborate to develop a shared vision for the planning, funding, delivery and operation of new transit service to the Richmond Bay Campus and the larger South Shoreline Plan Area.

### **Integrated Shuttle/Transit Service for the RBC and Shoreline Areas**

In the very near-term (2015-2020), demand for transit service to the Richmond Field Station and nearby employment sites in located along Regatta Boulevard and Meade Street, may best be met by continuation and expansion of a shuttle service (e.g. the Richmond Field Station [RFS] Shuttle operated by UC, and/or the Marina Bay Circulator Shuttle to El Cerrito Del Norte BART, sponsored by the City of Richmond).

By 2020, as the Berkeley Global Campus (BGC) and the rest of the South Shoreline area begin to grow and develop, increased density of population and employment in the area will improve transit viability. At this time, in-lieu of providing separate shuttle services, UC, the City of Richmond and AC Transit can jointly seek funding for expanded public transit service in South Richmond, replacing most, if not all private/UC shuttle routes. Although UC may continue to operate a direct, inter-campus shuttle between the main UC Campus in Berkeley and the BGC at Richmond Bay, and circulator shuttle within the BGC, a jointly planned/funded public transit network, operated by AC Transit, would best serve all of the primary and secondary transit corridors defined in the SRTCP.

Similar partnerships between local transit agencies and governments in Oakland and Walnut Creek have been facilitated by the formation of local Business Improvement Districts (BID) that can raise revenue to fund service planning and implementation, and help market new services. This approach ensures the most cost-effective deployment of transit service to the SRTCP Area, and the best integration of new services with the rest of the regional transit network.

### **Extend I-80 Transit Services to the RBC and South Shoreline**

Currently, several express transit lines operated by WestCAT, Fairfield-Suisun Transit (FAST), and Sol Trans terminate at El Cerrito Del Norte BART Station. To provide direct transit connections to the RBC and the larger Plan Area from the I-80 corridor, the City of Richmond, UC/LBNL and regional partners should explore opportunities to extend one or more of these existing I-80 transit services, or selected runs to the South Shoreline Specific Plan Area. This option would be most viable under Long-Term Transit Network Option B, which allows direct transit access to the RBC and the Zeneca/Seaport Neighborhood via Potrero Avenue, South 47<sup>th</sup> Street, and a new multimodal bridge over I-580/UPRR.

### **Consolidate and open Golden Gate Transit service on Cutting Blvd**

A key opportunity for the City of Richmond to achieve high frequency transit service on the Cutting Boulevard is to work with Golden Gate Transit to consolidate and open service currently provided between El Cerrito Del Norte BART and Marin County via I-580 (GGT Lines 40 and 42). This would allow transit patrons seeking to make short trips along Cutting Boulevard (e.g., from Kennedy High School to Harbour Way South) to catch the first bus that comes along – whether it is operated by AC Transit, or Golden Gate Transit. Supporting combined frequent service along Cutting Boulevard would require Golden Gate Transit to consolidate both Lines 40 and 42 along

this route. Direct connections to Central Richmond/Richmond BART/Richmond Civic Center would be possible via transfers to planned frequent service along Harbour Way S (PTC-C), and S. 23<sup>rd</sup> Street (PTC-B). This service vision also assumes that within the City of Richmond, Golden Gate Transit would accept free transfers from connecting AC Transit lines, and offer a local service fare (for trips made exclusively within Contra Costa County) equivalent to the AC Transit local fare(s).

## **Future Eastshore Rail Service**

BART is currently undertaking the BART Vision Plan to identify where and how to maintain the BART system in a state of good repair, expand service on existing lines, and build new regional transit infrastructure where most appropriate in the long-term. One preliminary concept for service in the inner-East Bay, is to add a new line along the East Bay shoreline from Hercules to Oakland, via the Union Pacific Railroad corridor. This “Eastshore” Corridor is currently served by Amtrak Capitol Corridor trains, and was previously identified as a potential urban rail transit corridor in the San Francisco Bay Area Regional Rail Plan (MTC, 2007). The Regional Rail Plan called for Diesel Multiple Unit (DMU) service, similar the eBART service currently under development in East Contra Costa County. If this concept is further developed, the City of Richmond and BART should collaborate to ensure that it includes development of a new infill rail station in the vicinity of S. 47<sup>th</sup> street. If integrated with a new multimodal or bicycle/pedestrian only bridge over I-580 and the UPRR, a station at this location would provide direct access to the BGC and much of South Richmond, vastly expanding the regional transit accessibility of these areas and the adjacent Eastshore, Park View, and Laurel Park neighborhoods.

## **Transit Modes/Technologies**

For the purposes of transit network planning for this plan and the associated SRTCP, both primary and secondary transit corridors are assumed to be served by transit buses operating on street in mixed-traffic. In the long-term, the City, AC Transit, UC/LBNL and other agencies or stakeholders may collaborate to define alternatives for provision of transit service in these corridors, such as bus-rapid transit, streetcar, light rail, or elevated/fixed-guideway transit options (see “Automated Transit Network,” for discussion of personal rapid transit technologies, and their potential for future application in South Richmond). In planning appropriate transit facilities and services for each corridor, the City and AC Transit will benefit from the available capacity on most corridors entering/exiting the SRTCP area, the flexible street designs recommended in this plan, enabling dedication of lanes to transit or high-occupancy-vehicle (HOV) lanes where needed to maintain transit speed and reliability, and consideration of other at-grade or elevated transit options. Ultimately, the transit mode(s) selected and associated operations plan(s) developed for each corridor must provide accessible, cost-effective, consistently fast and reliable service at the frequencies defined in this plan, with direct connections to regional transit stations and key destinations in the Plan Area.

### **Remotely Guided Technology**

At the time this SRTCP was developed, substantial advances in driverless technology are promising to revolutionize transportation service delivery. Successful tests of automobiles and vans that are guided by Global Positioning System (GPS) technology may significantly reduce the cost of providing transit services using existing transportation networks, including streets. Such systems may have the unique ability to provide door to door transportation on-demand.

### **Private Transportation Networks**

Private, door-to-door transportation service providers, such as Uber, SideCar, Lyft, and private, employer provided transit services – such as those operated for the benefit of the employees of Google, Facebook, and other Bay Area technology companies – are also transforming transportation service delivery. These ‘micro-transit’ systems may impact transportation planning as dramatically as the ‘smart phone’ and ‘tablet’ have changed the face and direction of the computer industry.

## Automated Transit Network



PRT, or "Automated Transit Network" (ATN) technology, is a driverless fixed-guideway transit mode allowing passengers to custom-select destinations and bypass intervening stops. The first prototype PRT system was developed in Morgantown, West Virginia in 1975, but the technology is relatively complex and thus remains relatively rare and largely untested for urban mass transit application. Four of the five PRT systems in existence consist of a single line with only a few stations (a new system at London's Heathrow Airport has three branches).

San Jose's Mineta Transportation Institute recently released a comprehensive study of PRT's prospects for more widespread adoption.[1] It found that PRT offers a number of theoretical advantages including:

- Lower capital costs than elevated mass transit. The Mineta report estimates costs for a medium-capacity system of \$10-\$20 million per mile.
- Smaller footprint than elevated light rail systems.
- High service frequency: Current technology allows for service every three seconds, accommodating up to 2,400 passengers per hour.
- Potential as a high-capacity, low-emission transit mode, especially if solar-powered

The Mineta Study also cited factors limiting the viability of PRT implementation, including:

- does not yet have a commercial market;
- is further limited by a lack of credible suppliers;
- currently exists only in the form of "line shuttles"; rather than complex network/systems

The study concluded that "(m)ore research, development, and validation are needed ... before complex, wide-area network implementations will occur."

Key factors to consider in evaluating the potential application of PRT in South Richmond include:

- Due to the excess vehicle capacity on many key corridors in South Richmond, conventional public transit service will remain a cost-effective solution for the near-term (through 2024), even where dedicated lane(s) are needed.
- PRT is not a viable near-term substitute for transit service on most Primary or Secondary Transit Corridors
- The most appropriate corridor to consider for pilot application of PRT service would be a connection from the Berkeley Global Campus (BGC) at Richmond Bay to El Cerrito Del Norte BART Station, which could take advantage of the elevated profile of the infrastructure to bridge major connectivity barriers, including I-80, Carlson Boulevard, I-580, and the UPRR. Additional planning and analysis would be needed to determine if PRT infrastructure in this corridor could be cost-effective compared to infrastructure supporting shuttle and surface transit connections, such as a multimodal bridge over I-580 at S. 47<sup>th</sup> Street.

The City must consider the accessibility and connectivity impact of any PRT system, relative to alternative forms of transit. It would not be consistent with the SRTC objective to enhance connectivity for existing residents to build an elevated transit mode, such as PRT that only connects major employment sites (e.g. the BGC) with regional transit stations, without intermediate points of access.

# 8 FREIGHT ACCESS & VEHICLE MOBILITY FRAMEWORK

## OVERVIEW

The existing conditions analysis determined that most streets within and linking to the SRTCP area have excess vehicle capacity, even during peak periods. However, connectivity barriers and planned new development necessitate planning to maintain access and mobility for trucks and other motor vehicles as the area changes. Key goals and objectives of this plan with respect to goods movement are shown in Figure 8-1, below. In general, this plan seeks to improve freight access and mobility to support growing demand for goods and services, while promoting efficiency, economic vitality, and environmental sustainability.

**Figure 8-1 Freight Access & Mobility Goals and Objectives**

Goal	Objective(s)
Safety	Increase safety for all modes Reduce potential conflicts between trucks and other users
Freight Access, Mobility and Reliability	Maintain access for deliveries Maintain mobility and travel time reliability for the local circulation of people and goods Minimize delays for goods movement
Connectivity	Ensure network connectivity, especially to the Port of Richmond and the regional transportation system
Environmental Sustainability	Reduce the local and global environmental impacts of goods movement and other vehicular mobility

The primary means of achieving these goals and objectives include:

- Maintaining an extensive Truck Route Network, reflecting changes to the street network resulting from implementation of the Richmond Bay Specific Plan and the LRDP for the BGC at Richmond Bay.
- Promoting safety and predictability through the physical and operational separation of truck and bike traffic in key corridors
- Establishing new network links, including a new connection over I-580 and the UPRR in the vicinity of South 47<sup>th</sup> Street.
- Promoting mobility for all modes through traffic signal coordination and synchronization.

- Accommodating additional person trips by non-auto modes, maintaining adequate street capacity for goods/vehicle movement.

The freight access and vehicle mobility recommendations highlighted in this chapter are about more than goods movement and access to the Port of Richmond. Many of the conditions necessary for freight mobility are also essential for maintenance of speed and reliability for transit, carpools and vanpools alike. Moreover, access for service and delivery vehicles is essential to support the development of the vibrant, mixed-use neighborhoods envisioned in the South Shoreline area; which in turn will promote walking, cycling and transit ridership by area residents and employees.

## FRAMEWORK

This section highlights the primary ways in which the SRTCP supports maintenance of freight access and vehicular mobility within South Richmond.

### Updated Truck Route Network

One of the keys to maintaining freight access to the Port of Richmond, and to the many industrial, manufacturing and warehousing activities in the South Shoreline area, is to design a network of streets for priority use by trucks and other vehicles moving goods. This plan recommends an update and amendment to the official Truck Network of the City of Richmond to maintain truck access to and circulation within the South Richmond area. Truck routes are streets where trucks are allowed and encouraged to travel.

Figure 8-2 shows the proposed network of truck routes in and near the SRTCP Plan Area. For comparison purposes, Figure 8-3 highlights segments of the existing Citywide Truck Network located within the Plan Area. The proposed Truck Network reflects changes to the street network proposed in the Administrative Draft of the Richmond South Shoreline Specific Plan (RSSSP), and the Long Range Development Plan (LRDP) for the Berkeley Global Campus at Richmond Bay. These routes:

- Are classified as arterial streets
- Are expected to be frequently used by freight-haulers
- Provide direct connections to Port facilities, or to the regional highway network

### Lane Widths

Throughout South Richmond, existing lane widths vary from 10' to 12' or more. Even where other modes of travel are accommodated or prioritized, designated truck routes shall be designed to accommodate trucks, with wider travel lanes (11), wider corner turning radii, and appropriate clearance for trucks, including trailer trucks, to make wide turns.

All lane widths recommended for SRTCP corridors, including truck routes, are consistent with guidance provided in the Urban Street Design Guide, published by the National Association of City Transportation Officials (NACTO). This guidance, which has been endorsed by Caltrans, calls for 10' lanes on urban streets and 11' lanes on truck and transit routes.

. "Lane widths of 10 feet are  
NACTO Urban Street Design  
Guide (2013) [Caltrans  
Endorsed]"



## Curb Radius

On streets served by transit and streets that are primary emergency response routes, a standard fire truck and 40' bus should be the design vehicle. On these streets, intersections should be designed so that the effective turn radius accommodates the design vehicle, which should be able to turn right from the outside lane of one street onto the cross street without crossing the centerline, and without any wheel striking a curb. The design vehicle, however, need not complete the turn into the outside lane of the receiving street. For typical intersections with right turning buses and trucks, no curb extensions, and curb parking on at least one side of the corner, a 15' curb turning radius is appropriate. Where curb extensions are present, a 30' curb turning radius is appropriate. Where trucks and buses are not expected to turn right, street corners with curb extensions shall have a 15' curb turning radius.

## Signal System Enhancements

Vehicle mobility and freight access can be directly enhanced by maintaining, repairing, and upgrading traffic signal and control systems throughout the Plan Area. The City of Richmond does not currently have an up to date inventory of working and malfunctioning traffic control signal and detection systems. In some cases, malfunctioning signal and detection systems have gone unnoticed for months. This causes safety issues and substantially limits the efficiency of traffic operations and multimodal mobility across the street network.

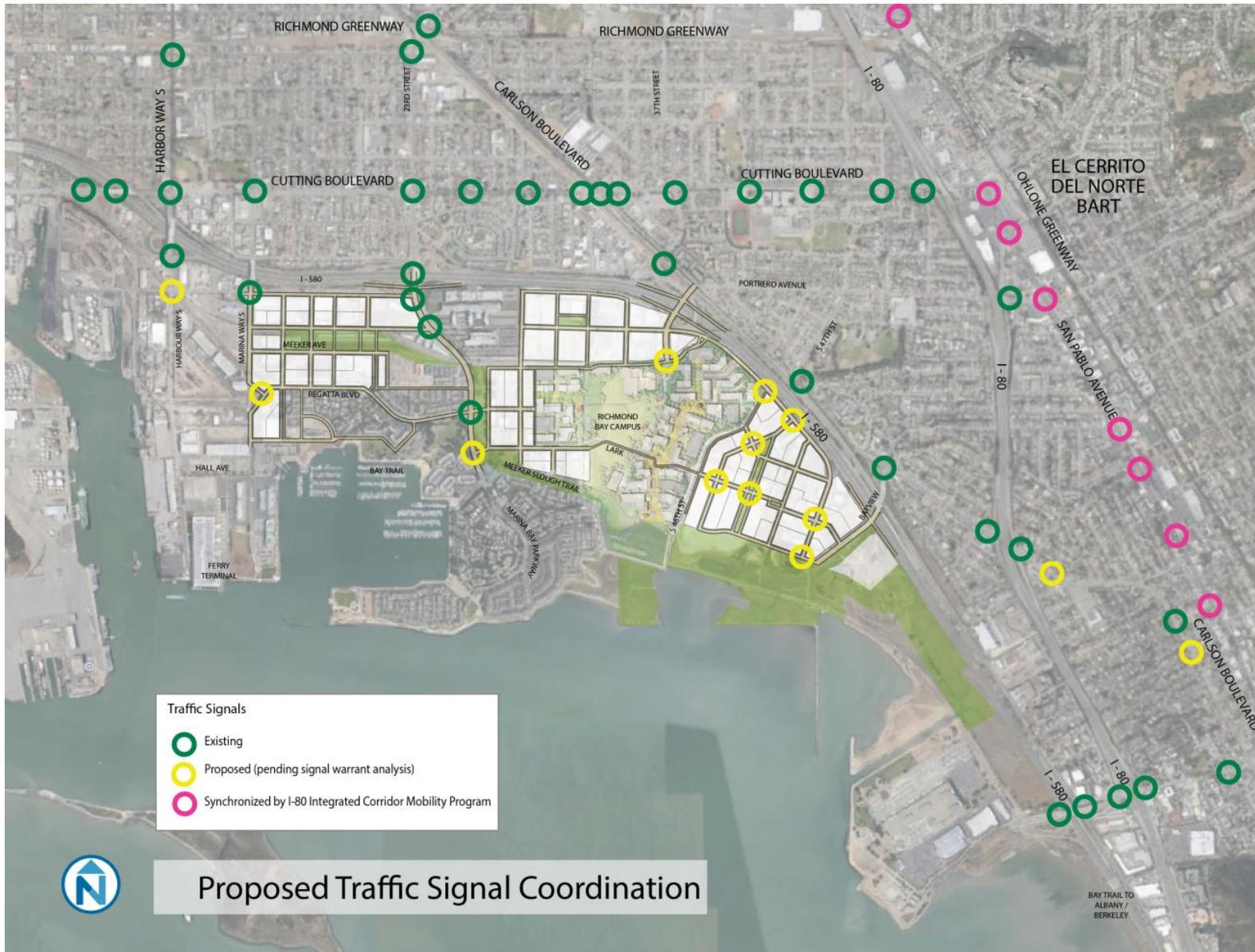
Vehicle access to and mobility within South Richmond is also challenged by the lack of coordination in the timing of signal phases at intersections across the City. Independently timed signals force drivers, transit riders, and freight operators to tolerate delays at many intersections even when little or no cross traffic of any mode is present. Moreover, in many cases, independently established signal phases and timing do not account for different travel patterns during peak and off-peak periods, or differences in the peak direction of travel. To enhance vehicle mobility and freight access to South Richmond, the City should:

- **Conduct an inventory of traffic signal systems** at all intersections in the SRTCP plan area. This inventory should include evaluation of the operations and timing of traffic signals and existing vehicle, bicycle and pedestrian detection systems, and development of a traffic operations action plan, identifying, costing, and prioritizing key capital projects and operational improvements needed to enhance system efficiency.
- **Repair malfunctioning signal and detection systems:** The repair and upgrading of signal and detection systems should be included as integral elements of any corridor-specific improvement projects funded and undertaken by the City and its partners.
- **Collaborate with WCCTAC and CCA to establish and staff a central traffic control center** for West Contra Costa County, to coordinate traffic operations and synchronize demand responsive signal timing in key SRTCP corridors.
- **Interconnect and coordinate traffic signals:** To increase the capacity of the existing and planned street network and to reduce delays for the movement of people and goods, the City should utilize its fiber optic network to connect traffic signals throughout South Richmond and across the City. This would enable central control and responsive management of signal timing, including coordination and synchronization of signal operations within many of the key travel corridors identified in this plan.

Figure 8-2 shows major signalized intersections that should be linked and coordinated to allow central control, coordination and dynamic management of traffic operations.



Figure 8-3 Signalized Intersections Appropriate for Coordination and Central Control



## Safety through Separation

The top priority for the SRTCP is to enhance the safety of the movement of people and goods within South Richmond. Of particular concern is the safety of vulnerable road users, including pedestrians, bicyclists, and other non-motorized users, on corridors frequented by heavy truck traffic. During initial community meetings for this plan, advocates of cycling and freight interests alike voiced support for connectivity strategies that would provide for the physical separation of bikes, pedestrians and trucks on the most heavily traveled corridors in South Richmond.

This plan provides for separation of modes and conflict avoidance through both physical street design measures and traffic operations.

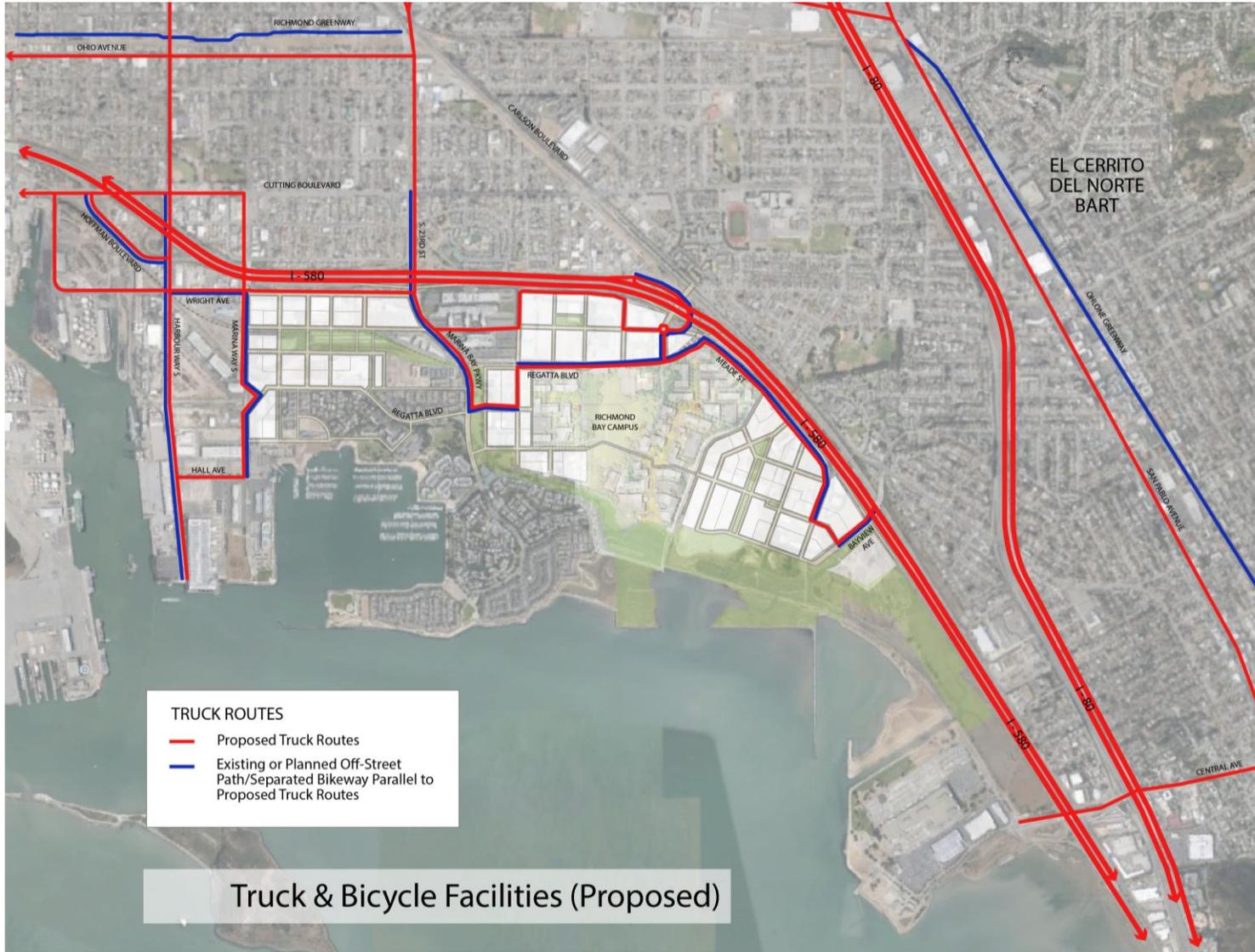
### Separation by Design

Excess capacity in the existing street network in South Richmond provides an opportunity for the physical separation of both pedestrians and bicyclists from parallel motor vehicle traffic on major travel corridors by the reallocation of road space and installation of temporary or permanent barriers. Separated facilities include:

- **Shared Use Paths** (Class I bikeways): Fully separated off-street trails and paths designed for shared use by pedestrians, bicyclists and other non-motorized users. A network of shared use paths is planned within and connecting to the new BGC at Richmond Bay, along segments of Spring Street, and Marina Bay Parkway, connecting Central Richmond and the Cutting Boulevard corridor to the Regatta Boulevard overpass of I-580, along Harbour Way South, and to the west of Marina Bay Parkway and Meeker Avenue, along an existing rail corridor.
- **Separated bikeways:** A primary element of this plan is the establishment of a network of on-street bikeways that are fully separated from motor vehicle traffic lanes by curbs, planter boxes, on-street parking, or other permanent or temporary physical barriers. Such facilities are particularly valuable for reducing potential conflicts between trucks and people traveling by bicycle or walking; enhancing the safety and predictability of travel for all users (Figure 8-4 shows Truck Routes with parallel separated bikeways).
- **Sidewalks:** Raised and curb separated sidewalks are an essential means of separating pedestrians and other vulnerable road users from trucks and traffic on major access routes within South Richmond. Chapter 5 details recommended improvements to pedestrian facilities in the Plan Area. While a curb provides physical separation and some measure of protection, pedestrian safety, separation and comfort are further enhanced by the establishment of a buffer zone between the walkway and adjacent traffic lanes. Chapter 9 – the Urban Design Framework, describes buffer zones and other streetscape elements essential for pedestrian safety as well as predictability and safety for drivers.

Where feasible, this plan prioritizes the installation of separated bikeways and walkways, on or parallel to truck routes and major arterial roadways (see Figure 8-4).

Figure 8-4 Truck Routes and Parallel Paths/Bikeways



## Separation by Operations

Safety and predictability for drivers of trucks and other motor vehicles is also enhanced by the use of separate signal phases. This plan calls for street design and signal system upgrades where feasible in key corridors to provide for protected left turns (i.e. an exclusive green light for turning vehicles, that is not simultaneous with a green light for through movements in the opposite direction by motor vehicles, or the “walk” sign for pedestrian crossing). In addition, bicycle-only signal phases are recommended for high priority intersections within key corridors in the recommended bike network to reduce conflicts between the through and turning movements of bicyclists and motor vehicles, including trucks.

These measures will enhance freight access and vehicle mobility by improving predictability for drivers and reducing potential conflicts with vulnerable road users.

For more information on these and other types of separated bicycle and pedestrian facilities recommended in this plan, see Chapters 5 and 6.

## New Network Links

A key factor of travel network efficiency is redundancy; that is the number of alternative routes that can be traveled, or modes that can be used to reach a common destination. A redundant network offers many different pathways of travel. In an efficient and well linked street grid, with a high density of intersections, Trucks, cars, and can easily bypass congestion hotspots, by using a different route. In fact, congestion can be minimized or avoided, when vehicle traffic is distributed across the network, rather than concentrated on a few key network links.

To the north of I-580 and west of I-80, the street-grid in south and central Richmond offers some of the characteristics of an efficient grid network. However, the major barriers of I-580, I-80, and the Union Pacific Railroad create choke points, where travelers of all modes are forced to use a few key network links.

One of the key corridor improvements recommended for the long-term (2030 and beyond) is the addition of a new overpass/crossing of I-580, the Union Pacific Railroad and Carlson Boulevard at South 47<sup>th</sup> Street. The South-47<sup>th</sup> Street-Potrero Avenue Corridor Profiles two options for a new connection in this corridor (1) a new bicycle and pedestrian bridge, providing direct access to the South Shoreline area, from Booker T. Anderson Park, and (2) a fully multimodal bridge, with one general purpose travel lane in each direction in adjacent to a 12' wide bicycle and pedestrian facility on the same structure. Both bridge/overpass options would advance freight access and vehicle mobility in South Richmond by providing important new links in the travel network.

A new path connection to the BGC from the northeast (including El Cerrito Del Norte BART Station) would make this and other employment sites in the South Shoreline area far easier to reach by bike or on foot; increasing the share of people using these modes for commuting and reducing vehicle trips on other street network links of I-580, including key truck routes on Marina Bay Parkway/S. 23<sup>rd</sup>, and Bayview Avenue.

If a new overpass at S. 47<sup>th</sup> Street is constructed to accommodate general-purpose traffic, including trucks and transit, as shown in Figure 8-4, it would directly enhance freight access and vehicle mobility by providing an important new network link across the Plan Area's most constrictive rail and highway barriers. By providing new connections, a vehicle bridge/overpass at this location would reduce traffic on nearby street network links and distribute vehicle traffic over

a wider area of the existing street grid in South Richmond, helping to reduce and avoid congestion.

## **Maintaining Vehicle Capacity for Freight**

One important way that the SRTCP supports freight access and vehicle mobility in South Richmond is by making investments that help maintain vehicle movement capacity on key corridors for freight. The plan does this in part by shifting demand for new person trips to and within the area to non-auto modes of transportation.

With no improvement to transit service, or bikeways, free parking, and few incentives to arrive by other modes, new development might eventually lead to substantial congestion on key corridors during peak periods – particularly on the limited road connections to the South Shoreline area (e.g. Bayview Avenue, Regatta Boulevard, Marina Bay Parkway, Marina Way South, and Harbour Way South) – many of which are also designated truck routes. This plan provides commuter access and mitigates the impact of planned growth and development by providing the transportation choices necessary to (a) accommodate the majority of new trips with alternatives to driving alone, and (b) shift a substantial share of current auto commuters to carpooling or non-auto modes.

Within individual corridors, street design and modal investment priorities support both non-auto access and freight/vehicle mobility strategies. For example, in the Harbour Way/ Marina Way South corridor, this plan proposes long-term investment in separated bikeways on both streets; however, the plan vision calls for concentration of new north-south frequent transit service along Marina Way South; leaving Harbour Way as a primary auto access route to the Richmond Ferry Terminal, as well as a primary truck route connection between the Port of Richmond and the interstate highway system via I-580.

# 9 URBAN DESIGN FRAMEWORK

## URBAN DESIGN CONCEPT & VISION

The South Shoreline is projected to become a dynamic mixed use district featuring vibrant employment centers, walkable residential neighborhoods, and dramatic open space resources. As development occurs, the street corridors that connect the area to the rest of the city and the region will be required to accommodate a larger volume and broader range of users. The design of South Richmond's streets and associated public realm will be critical to ensuring an efficient and balanced transportation network that also provides a safe, comfortable, and attractive public space for the community.

The purpose of this chapter is to describe the vision and concepts that will guide streetscape design along South Richmond's key transportation corridors—focusing primarily on the non-street portion of the public right-of-way, i.e., the area between the curb and fronting parcel lines and median areas. The design vision for these areas outside the vehicular travelways is consistent with the street design and circulation recommendations described elsewhere in this Plan, as well as the land use plans set forth in the Richmond Bay Specific Plan and the City's General Plan.

Overall, the urban design concept for the plan area is intended to:

- Create safe, multi-modal streets that provide well-defined and graciously-scaled spaces that support and promote active pedestrian use;
- Mitigate the visual and micro-climate affects associated with the large area of required pavement within the street right-of-way;
- Contribute to an attractive and aesthetically distinctive identity that promotes the economic vitality of area businesses, provides quality residential environments, and enhances property values;
- Incorporate design that is contemporary, while also reinforcing the connection to the area's maritime and industrial heritage;
- Enhance environmental quality by absorbing harmful air pollutants, reducing stormwater runoff, and moderating heat island effects;
- Calm vehicular travel speeds by changing drivers' perceptions of corridor scale and character; and
- Create sustainable and resilient amenities that are cost effective and easy to maintain.



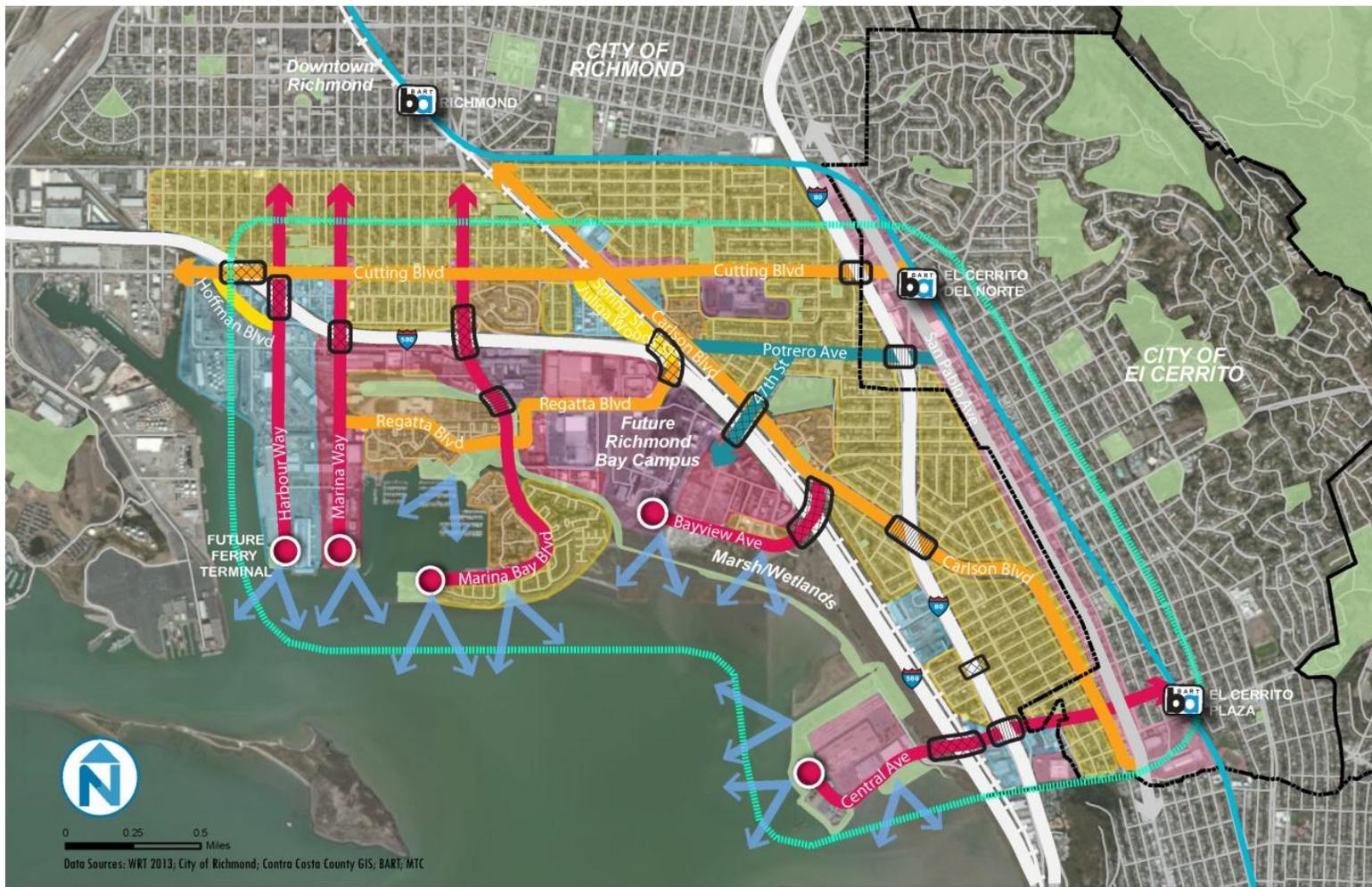
## APPROACH

This chapter is not intended as a detailed public realm design plan, but rather presents a framework to guide the design and implementation of sidewalks and other public areas. This framework seeks to ensure that South Richmond’s public rights-of-way reflect the character of local neighborhoods and include the essential features necessary to function as complete streets. In addition to this Plan, the Richmond Livable Corridors Form-Based Code, adopted in 2010, should be consulted as a reference as streets are designed in the future. It provides design guidelines and implementation priorities for City streets and public spaces that complement the recommendations in this plan.

## CORRIDOR TYPES & DESCRIPTIONS

The corridors discussed in this plan all facilitate multimodal circulation within South Richmond, and/or connect the South Shoreline area to the rest of Richmond and the region. Nevertheless, each corridor fulfills a different set of functions based on its street capacity, modal priorities, design, surrounding land uses, and nearby destinations. For purposes of this plan, streets have been categorized by corridor type based on shared traits in order to provide consistent direction on the design of the various elements that comprise a cohesive streetscape. Key corridor types are described below and shown in Figure 9-1.

Figure 9-1 Key Corridor Types



SOUTH RICHMOND TRANSPORTATION CONNECTIVITY PLAN | Figure 8-1: Key Corridor Types



## Shoreline Connectors

### Harbour Way, Marina Way, Marina Bay Parkway/S. 23rd Street, Bayview Avenue, Central Avenue

These multi-modal corridors provide primary access across the 80 and 580 freeways to the South Shoreline area for automobiles, trucks, pedestrians, and bicyclists. As such, they serve as gateways to the South Shoreline from other parts of the City and region. As gateways, these corridors should convey a positive first impression and establish a distinctive sense of place. The design concept for these corridors draws upon the South Shoreline's maritime and industrial heritage, with a particular emphasis on creating a strong visual and physical linkage to the waterfront. The following streetscape elements are recommended to help achieve this goal:

- A consistent, evenly spaced street tree palette that includes tall, narrow-canopy sidewalk and median trees interspersed with palm trees;
- A planting palette that features coastal-tolerant species commonly found along the Richmond waterfront and around San Pablo Bay;
- Prominently featured lighting fixtures with a design that draws strongly from industrial and maritime influences and reinforces the formal sense of entry;
- Prominent, consistently-designed wayfinding signage that directs visitors to key South Shoreline destinations; and
- Overpass and underpass crossing enhancements that create a more welcoming entry experience to the South Shoreline area and reflect the local community and heritage.

Since each of the Shoreline Connectors traverse multiple neighborhoods with varying land use patterns, their design must be flexible enough to allow for practical considerations of local context. For example, designs for Harbour Way must be sensitive to the surrounding Port and industrial uses that rely on heavy truck traffic for their operations.



## Boulevard Connectors

### Cutting Boulevard, Carlson Boulevard, Regatta Boulevard

The Boulevard Connector corridors provide critical access across the plan area, connecting the Shoreline Connector corridors to regional transit (BART) and to neighborhoods throughout Richmond and beyond. The Boulevard Connector corridors are wide thoroughfares that carry relatively large traffic volumes, typically at higher speeds than local/residential streets. Currently, these predominantly auto-dominated corridors provide few streetscape amenities and lack a positive identity. The urban design concept for these corridors focuses on remedying this condition by creating a unified parkway streetscape that provides greater visual consistency across neighborhoods, while also being responsive to changes in neighborhood character. The following streetscape elements are recommended to help achieve this goal:

- A consistent, evenly spaced street tree palette that incorporates tall, wide-canopy trees that provide a sense of enclosure and a parkway identity to the broad corridors;
- A varied planting palette which allows tree species to vary by location in response to the character of the surrounding neighborhood;
- Consistent lighting fixtures.
- Prominent, consistently-designed wayfinding signage that directs visitors to key destinations; and
- Overpass and underpass crossing enhancements that create a more welcoming entry experience to the South Shoreline area and reflect the local community and heritage.



## Neighborhood Streets

### Potrero Avenue and 47<sup>th</sup> Street

These two corridors are important secondary streets that have the potential to provide local access to the South Shoreline with recommended linkages across I-580. The design concept for these streets focuses on enhancing the pedestrian experience while reinforcing the identity and residential character of the surrounding neighborhood by adding lighting and street trees. The following streetscape elements are recommended to help achieve this goal:

- A select palette of street trees for each corridor from which residents can choose;
- A varied planting pattern of street trees that reflects the individual preferences of neighborhood residents; and
- Consistently-spaced, pedestrian-scale lighting standards and fixtures that reflect the residential character of the neighborhood.



## Industrial Bypass Streets

### Hoffman Boulevard, Juliga Woods Street and Spring Street

The Industrial Bypass Streets serve as important links between Boulevard and Shoreline Connector corridors, but are distinguished by the fact that they traverse industrial areas and therefore carry significant truck traffic. The design focus for these corridors is to improve multi-modal transportation options with a particular emphasis on improving pedestrian and bicycle access while maintaining truck access for the surrounding industrial uses. The urban design concept for these streets focuses on giving structure and definition to the right-of-way and providing streetscape improvements that make the corridor more comfortable for non-motorized movement. The following streetscape elements are recommended to help achieve this goal:

- On Hoffman Blvd and Spring Streets, a consistent, evenly spaced planting of street trees that incorporates tall, narrow-canopy trees that does not interfere with truck traffic;
- On Hoffman Blvd and Spring Streets, a varied and highly durable planting palette; and
- Consistent lighting fixtures.

## STREETSCAPE ELEMENTS

This section describes the streetscape elements and associated concepts that should be considered in the design of South Richmond streets.

### Street Trees & Planting

Trees and landscaping are vital elements of the public realm, providing numerous community benefits, including:

- Shade and protection from the elements;
- Reducing urban heat island effect;
- Sense of scale and enclosure;
- Community character and identity; and
- Beauty and aesthetics.

The diverse character of the plan area's streets and corridors requires a fine-grain approach that designs the landscaping of the South Shoreline's streets to respond to their specific function and context. The selection of plant species should be geared to creating a distinctive character for the South Shoreline and its neighborhoods. Landscape designs should account for the life cycle and replacement of existing street trees as necessary and, to the greatest extent possible, use tree and plant species that do not require intensive irrigation in order to preserve water resources.

Figure 8-2 provides a list of recommended species to guide street tree selection in the future design of individual corridors. The list of recommended tree species draws from the City of Richmond's suggested street tree list, supplemented with additional species that are known to perform well in Richmond, particularly in waterfront environments.

Shrubs, grasses, and groundcovers used as understory planting should draw from the native coastal flora palette of the San Francisco Bay, with an emphasis hardy species that perform well in streetscape environments. For examples of understory planting types that draw from Bay Area waterfront influences, see page 9-10.

Figure 9-2 Recommended Street Tree Palette

Sidewalks		
<p><b><i>Quillaja sponaria</i></b>  <b>Soapbark tree</b>                      Height: 30-45 ft.                      Canopy Width: 15-25 ft.                      Corridors: Boulevard Connectors</p> 	<p><b><i>Fraxinus angustifolio 'Raywood'</i></b>  <b>Raywood ash</b>                      Height: 35 ft.                      Canopy Width: 25                      Streets &amp; Corridors: Shoreline Connectors</p> 	<p><b><i>Trisaniopsis laurina</i></b>  <b>Water gum tree</b>                      Height: 35 ft.                      Canopy Width: 30 ft.                      Streets &amp; Corridors: Shoreline Connectors &amp; Boulevard Connectors</p> 
<p><b><i>Nyssa sylvatica</i></b>  <b>Sour gum tree</b>                      Height: 30-50 ft.                      Canopy Width: 20-30 ft.                      Streets &amp; Corridors: Shoreline Connectors &amp; Neighborhood Streets</p> 	<p><b><i>Tristania conferta (Lophostemon)</i></b>  <b>Brisbane box tree</b>                      Height: 40 ft.                      Canopy Width: 25 ft.                      Streets &amp; Corridors: Shoreline Connectors</p> 	<p><b><i>Quercus shumardii</i></b>  <b>Shumard red oak</b>                      Height: 40-60 ft.                      Canopy Width: 30-40 ft.                      Streets &amp; Corridors: Neighborhood Streets</p> 

<p><b>Ginkgo biloba 'autumn gold'</b> <b>Autumn gold maidenhair tree</b> Height: 50 ft. Canopy Width: 25-35 ft. Streets &amp; Corridors: Boulevard Connectors &amp; Neighborhood Streets</p> 	<p><b>Ulmus parvifolia</b> <b>Chinese elm</b> Height: 50 ft. Canopy Width: 25-40 ft. Streets &amp; Corridors: Boulevard Connectors &amp; Neighborhood Streets</p> 	<p><b>Acer rubrum</b> <b>Red maple</b> Height: 50-65 ft. Canopy Width: 40 ft. Streets &amp; Corridors: Boulevard Connectors</p> 
<p><b>Platanus acerifolia 'Columbia'</b> <b>Columbia plane tree</b> Height: 60-90 ft. Canopy Width: 30-70 ft. Streets &amp; Corridors: Boulevard Connectors</p> 	<p align="center"><b>Small Accent</b></p>	
<p><b>Malus 'Robinson'</b> <b>Robinson flowering crabapple</b> Height: 15-25 ft. Canopy Width: 15-25 ft. Streets &amp; Corridors: Shoreline Connectors</p> 	<p><b>Lagerstromia 'Natchez'</b> <b>Natchez crape myrtle</b> Height: 25 ft. Canopy Width: 20 ft. Streets &amp; Corridors: Shoreline Connectors &amp; Neighborhood Streets</p> 	

Medians/Parkways		
<p><b>Trisaniopsis laurina</b>  <b>Water gum tree</b>                      Height: 35 ft.                      Canopy Width: 30 ft.                      Streets &amp; Corridors: Shoreline                      Connectors &amp; Boulevard                      Connectors</p> 	<p><b>Cupressus macrocarpa</b>  <b>Monterey cypress</b>                      Height: 40-65 ft.                      Canopy Width: 15-30 ft.                      Streets &amp; Corridors: Shoreline                      Connectors &amp; Boulevard                      Connectors</p> 	<p><b>Quercus agrifolia</b>  <b>Coast live oak</b>                      Height: 65 ft.                      Canopy Width: 70 ft.                      Streets &amp; Corridors: Boulevard                      Connectors</p> 
Accent Palms		
<p><b>Phoenix canariensis</b>  <b>Canary date palm</b>                      Height: 65 ft.                      Canopy Width: 30 ft.                      Streets &amp; Corridors: Shoreline                      Connectors</p> 	<p><b>Brahae edulis</b>  <b>Guadalupe palm</b>                      Height: 35 ft.                      Canopy Width: 15 ft.                      Streets &amp; Corridors: Shoreline                      Connectors</p> 	

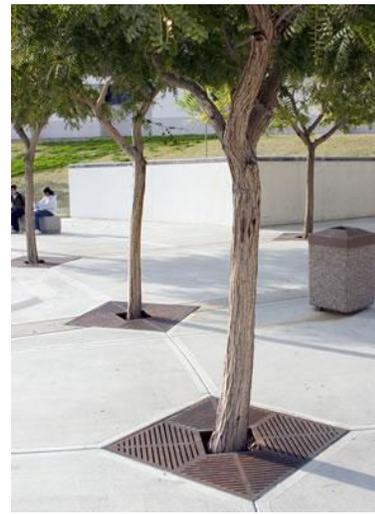
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Example understory planting types

## Tree Grates

Tree grates are important design elements in areas with a high volume of pedestrian traffic as they prevent tree root damage and eliminate roots as tripping hazards for pedestrians. With the intensification of mixed-use land uses at a number of key nodes in South Richmond as called for in the General Plan and Richmond Bay Specific Plan, installation of tree grids over uncovered planting strips will be necessary at certain locations where pedestrian volumes are sufficiently high. Likely locations for tree grates include the mixed-use neighborhoods flanking the RBC, at the intersection of Marina Way and Regatta Boulevard, and commercial/mixed-use nodes at major intersections along Cutting and Carlson Boulevards. The design of tree grates should complement and reference the South Richmond maritime/industrial heritage as well as street furniture designs selected for specific neighborhoods (see Street Furniture section on page 9-17).



## Green Infrastructure

Green infrastructure has an important urban design role to play in South Richmond, providing both environmental and aesthetic benefits. Best management practices such as flow-through planters, bio-retention basins, vegetated swales, permeable paving, and Filterra and Vortechs systems reduce non-point source stormwater pollution from flowing into San Francisco Bay and the South Shoreline's creeks and marshes. They can also reduce the risk of local flooding during large precipitation events by slowing runoff and delaying peak loads on the City's storm drainage system. From a design perspective, green infrastructure improvements can help beautify city streets by adding low maintenance vegetation that greens and softens predominantly paved streetscape environments.

Installation of green infrastructure improvements is recommended on all plan area corridors identified for improvements. To the extent feasible, water-quality treatment will follow the guidelines and standards as required by Contra Costa County, described in the *Stormwater C.3 Guidebook*. Reference to urban standards for other communities should also be consulted, including *The Stormwater Guidelines for Green, Dense Redevelopment*, produced for the City of Emeryville (Adopted 12/06/2005).



## Lighting

Public realm lighting contributes to a safe nighttime environment for pedestrians, bicyclists, and drivers. It also serves an important urban design function, providing illumination that creates attractive nighttime environments and, during the daytime, serving as distinctive design elements that help define community character and contribute to a unique sense of place. South Richmond has a variety of planned public spaces that will require nighttime illumination including streets, alleys, sidewalks, plazas, parks, and trails.

### Pedestrian Lighting

Nighttime illumination of the public realm is a key ingredient of good urban design. It improves safety, wayfinding, and aesthetics, contributes to pedestrian scale, and promotes active use of the public realm. The South Richmond community identified safety as a particular concern, and expressed a desire to see night lighting improved along corridors with high levels of existing or anticipated pedestrian activity. In order to enhance the street corridors for pedestrians, it is recommended that pedestrian-scaled lighting fixtures be installed along corridor segments adjacent to parks, schools, and commercial land uses, in areas that connect to the waterfront and major transit hubs (e.g. BART), and in other locations likely to see considerable pedestrian activity. Nodes such as bus stops and bicycle storage facilities should also have ample pedestrian lighting. Currently, few areas in the plan area have pedestrian-scaled lighting installed.

Other areas in need of improved lighting are the plan area's five freeway underpasses (four under I-80 and one under the BNSF freight tracks), as shown in Figure 8-1. It is recommended that, at a minimum, these areas have pedestrian lighting installed, although recommendations for potential public art installations (including illumination) are included below on page 9-24.

### Fixture Design

Cobra-head lighting fixtures, which are currently utilized throughout the planning area for illumination of both roadway and pedestrian areas, should be phased out of use as resources permit in order to enhance South Richmond's unique identity. A palette of lighting fixture designs that should be considered during detailed design development along the subject corridors is provided on page 9-14. These fixtures are examples that meet the functional lighting requirements while also referencing South Richmond's industrial and maritime history. Fixture designs may vary depending on the specific neighborhood. In addition to neighborhood context, when selecting fixtures, consideration should also be given to their durability in a waterfront environment and the cost and ease of maintenance.

**Recommended Lighting Palette**



Philips Domus Series



Philips Domus 55 Series



Philips Transit Series



Philips Candella Series



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Hess Pollux Series



Neri Heka Series



Neri Rigel Series



Selux Beta Series



Selux Arc Series

## Street Furniture

Street furniture provides an important public amenity that invites people to visit, linger, and enjoy public spaces in South Richmond. Street furniture may include seating/benches, picnic tables, bike racks and lockers, bike sharing stations, drinking fountains, and trash receptacles. In general, street furniture should be installed at parks and plazas, vista points, tourist sites (e.g. Rosie the Riveter National Historic Park), major transit hubs (e.g. BART stations, Ferry Terminal), and locations with concentrations of retail and employment uses.

Bus stops are also critical locations where minimum street furniture standards should be adopted. All bus stops should include the following elements:

- Seating
- Shelter from the elements
- Lighting
- Trash receptacles
- Route map and schedule
- ADA accessibility

Street furniture design may vary by location, reflecting neighborhood preferences and specific site needs. In general, however, a consistent use of a single design throughout a single corridor and between corridors is preferred in order to reinforce the area's identity. The design of street furniture should complement and reference the South Richmond maritime/industrial heritage. Street furniture design should also be highly durable and as vandal resistant as possible. Page 9-18 shows examples of potential street furniture designs.



Bus Stops

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Bike Racks





Seating



Drinking Fountain



Trash Receptacles



## Wayfinding

Wayfinding signage can be an important contributor to urban identity while also serving its primary function of providing directions. It is recommended that a wayfinding signage program be established for South Richmond. This could be specific to the South Richmond area alone, or be part of a larger citywide program. Since the RBC is designed as an open campus, such a program should be coordinated closely with UC Berkeley to facilitate wayfinding across the RBC and to bridge the various neighborhoods and open spaces flanking the campus.

Important local and regional destinations to be included as part of a wayfinding signage program should include the Rosie the Riveter Museum, Ford Point, the Ferry Terminal, RBC, Richmond marina, waterfront parks, Bay Trail, BART, and Downtown Richmond.



San Francisco Bay Trail, Richmond South Shoreline



Ford Point, Richmond South Shoreline



## Tactical Urbanism

Tactical urbanism is a strategy for providing public realm amenities on a temporary or interim basis at low cost. Typically focused on bike and pedestrian infrastructure and traffic calming, tactical urbanism interventions are intended to offer rapid solutions to challenging conditions found in the urban environment, particularly when funding for permanent interventions is not currently available. Interventions such as lane striping, soft hit posts, movable bollards, movable planters, and others are recommended along numerous corridors throughout South Richmond to provide protected bike lanes, protected bike turns, bulbouts, and pedestrian islands. The temporary, flexible nature of these interventions allows the City to cost-effectively test multiple solutions while evaluating opportunities for permanent interventions at a later date when funding is available.

While this Plan focuses primarily on tactical urbanism interventions within the street right of way that protect bicyclists and pedestrians from traffic, many opportunities exist in South Richmond for interventions that focus on creating new public spaces that activate and enliven the public realm. These include temporary plazas, parklets, urban gardens, art installations, movable furniture, open streets, pop-up commerce and food trucks, intersection repair, and many others. Most of these interventions can be implemented in virtually any location and can be great opportunities to engage local communities in shaping their streets and neighborhoods through a hands-on, context-specific design process.



Soft Hit Posts



Parklet



Temporary Plaza



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Sidewalk Extension



Temporary Planters



Shared Street



Street Repair



Food Truck Plaza



Pop-Up Businesses

## Utilities

Utility poles and above-ground lines contribute to a visually cluttered streetscape and are more difficult to maintain over the long-term. It is recommended that utility lines be undergrounded on all primary corridors in the Plan Area to the greatest extent feasible. Ideally, undergrounding activities should be implemented in conjunction with other streetscape improvements.

## OVERPASS/UNDERPASS TREATMENTS

The plan area includes nine overpasses (including one recommended overpass) and five underpasses at the following locations (see Figure 8-1):

- Overpasses
  - Cutting @ I-580
  - Harbour @ I-580
  - Marina Way @ I-580
  - Marina Bay Parkway/S. 23<sup>rd</sup> Street @ I-580
  - Regatta @ I-580
  - 47th Street @ I-580 (recommended)
  - Bayview @ I-580
  - Sacramento @ I-80 (pedestrian bridge)
  - Central @ I-580
- Underpasses
  - Central @ I-80
  - Carlson @ I-80
  - Potrero @ I-80
  - Cutting @ I-80
  - Marina Bay Parkway @ BNSF RR Tracks (Moody Underpass, under construction)

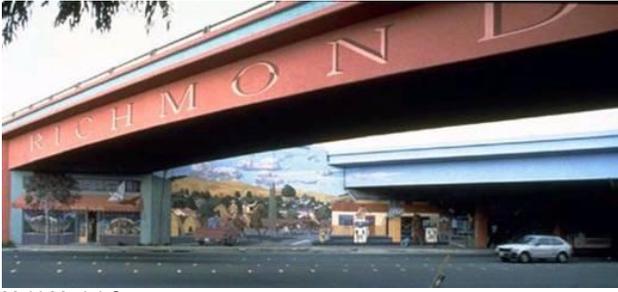
In most cases, these overpasses and underpasses are at strategic locations on the planning area's primary corridors and function as de facto gateways to South Richmond or the South Shoreline area. They generally represent extremely challenging environments for pedestrians and bicyclists. The highest priority for improving safety/accessibility at these gateways is providing bicycle and pedestrian facilities such as sidewalks, bike lanes or separated bikeways, and lighting that provide dedicated space and protection.

The visual character at over- and underpasses should also be improved in order to create a more welcoming experience for all modes of travel at these gateways. Given the South Shoreline's existing and future role as a regional employment and open space destination, the six existing (and one conceptual) I-580 gateway overpasses represent particularly important opportunities for aesthetic improvements that reflect local character. Public art is one type of improvement that can be particularly effective and can help build the sense of community by involving community stakeholders in the design process. Richmond already has a tradition of using public art in its underpasses and this practice should be extended to the five plan area underpasses. Due to engineering requirements, large-scale installations on overpasses may be challenging, and in some cases, infeasible. Nevertheless, at a minimum, basic infrastructure such as sidewalks,

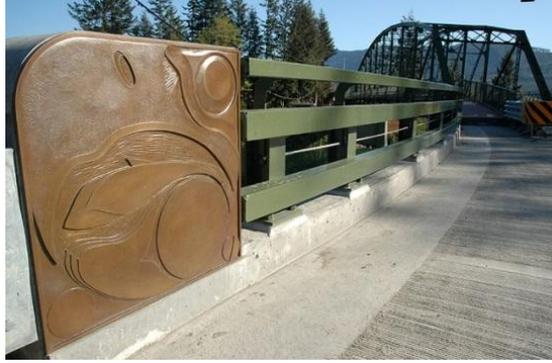
bikeways, and lighting should be installed on all overpasses to ensure multi-modal access. Numerous examples of creative, visually stunning under- and overpass installations exist from all over the world, some of which can be seen on page 9-23.

With the exception of the Moody Underpass (Marina Bay Parkway @ BNSF RR), all under- and overpasses in the plan area are under Caltrans jurisdiction, and as such, any improvements will have to be closely coordinated with this agency.





Multi-Modal Overpass



Pedestrian bridges offer examples of artistic installations that could be applied to freeway overpasses

## URBAN DESIGN & LAND USE

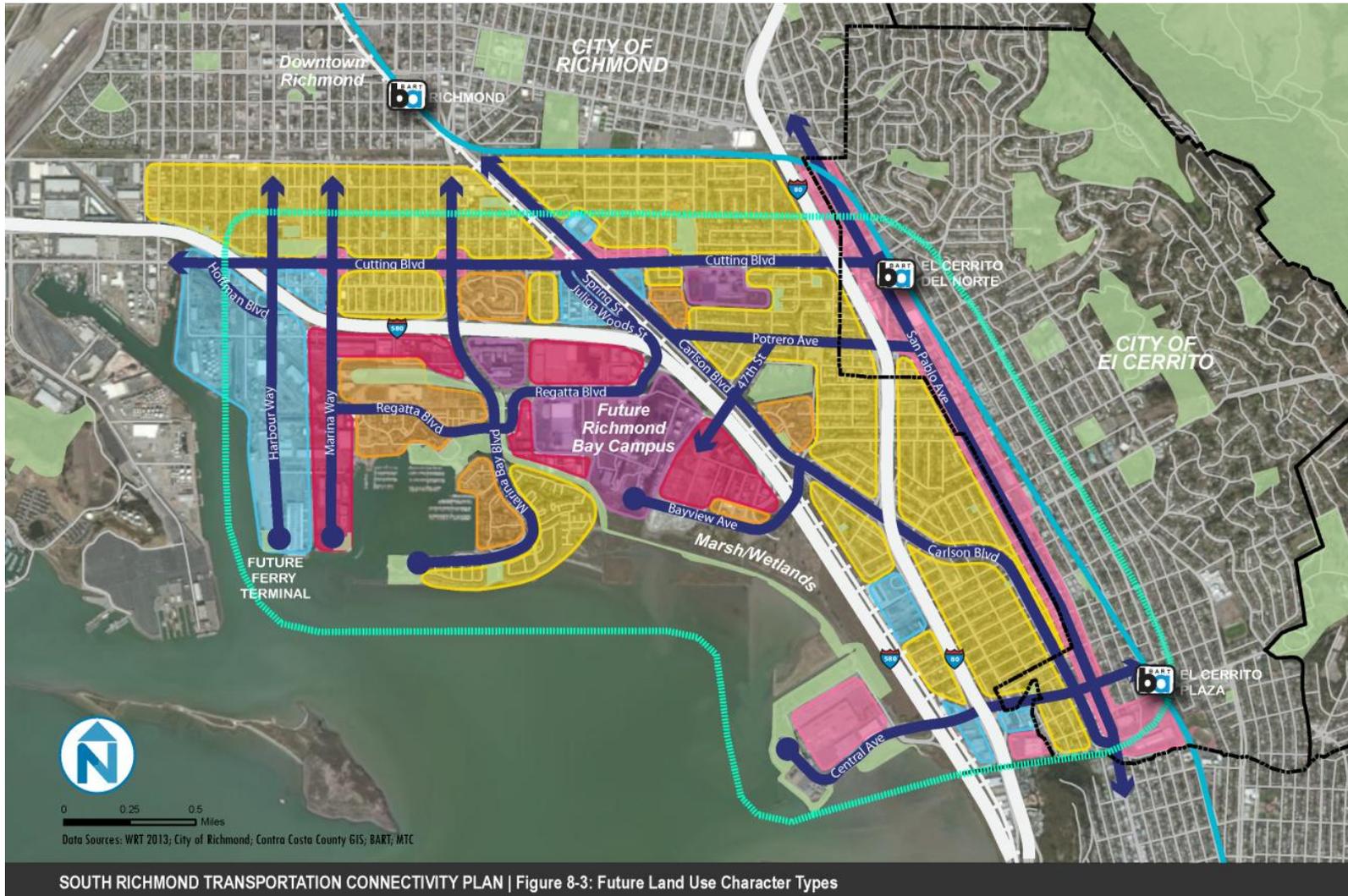
The majority of the plan area is already fully built out and has well-established land use patterns that will not be significantly or directly affected by the recommendations in this plan. The likely effects of the recommended corridor improvements will be more subtle and incremental. Richmond's development patterns are dictated by the General Plan and Zoning Code (see Figure 8-3 and the General Plan Map in Appendix XX). Ideally, the corridor design improvements recommended in this plan will influence the character and quality of future development by creating a more attractive context for development that is founded on a public realm of complete streets that are less automobile dominated, and more pedestrian and bicycle friendly.

For example, in areas identified in the General Plan for intensification of development (e.g., a priority development area), investment in a street corridor designed with generous sidewalks, lush street trees and landscaping, ample lighting, and context-specific street furnishings and light fixtures, is likely to serve as a catalyst for reinvestment and new development on adjacent properties. New development along such corridors is more likely to leverage this investment by creating buildings that directly address and interact with the street and public environment and contribute to a more vibrant and vital public realm.

There are numerous nodes and sections along South Richmond's key corridors where urban design improvements in the public realm will help encourage and reinforce land use changes envisioned in the General Plan. In particular, mixed use areas west of the BGC and key commercial intersections along Cutting Boulevard are anticipated to benefit greatly from a more pedestrian-focused streetscape environment, although most redevelopment in these areas will likely occur in the medium or long term. Most existing residential areas along South Richmond's key corridors are relatively stable and are not likely to see major land use changes in the foreseeable future.

This section describes the existing and designated land uses along the key corridors in South Richmond and discusses how urban design improvements may influence land use and development over the course of the plan horizon.

Figure 9-3 Future Land Use Character Types



0 0.25 0.5 Miles  
 Data Sources: WRT 2013; City of Richmond; Contra Costa County GIS; BART; MTC

SOUTH RICHMOND TRANSPORTATION CONNECTIVITY PLAN | Figure 8-3: Future Land Use Character Types



## Shoreline Connectors

### Harbour Way

- Existing Uses: port, light industrial, heavy industrial, warehousing, office, residential, institutional, parks/open space
- General Plan Designation:
  - Port: port terminals, warehousing, commercial fishing, ship repair and related office uses
  - Business/Light Industrial: R&D Campus, Light industrial, industrially-related storage and distribution, office
  - Live/Work: lofts and apartments connected to small-scale production spaces, office, storefront retail; 15-50 du/ac, up to 55 ft.
  - Medium Intensity Mixed Use (Residential Emphasis): mixed-use development with commercial or office/light industrial uses encouraged at street-level, residential, no commercial-only development; 15 to 50 du/ac, up to 45 ft.
  - Medium Intensity Mixed Use (Gateway and/or community node): mixed use, residential and ground floor commercial; up to 75 du/ac, 15-55 ft.
  - Public, Cultural, Institutional: Nystrom Elementary School
  - Parks and Recreation: Martin Luther King Memorial Park
- In business/light industrial zoned areas south of I-580, it is anticipated that recommended public realm urban design improvements will encourage land uses and development patterns that are focused more toward street-oriented uses such as R&D and office than toward heavy industrial uses, which are currently prevalent. North of I-580, much of the existing residential development will likely remain stable in the medium- to long-term, but it is anticipated that streetscape improvements on the corridor will encourage conversion of underutilized parcels at the intersection with Cutting Boulevard to mixed-use development that is more pedestrian-oriented and contributes to a more active and safe street environment.

### Marina Way

- Existing Uses: light industrial, warehousing, office, residential, commercial/retail
- General Plan Designation:
  - Medium Intensity Mixed Use (Residential Emphasis): mixed-use development with commercial or office/light industrial uses encouraged at street-level, residential, no commercial-only development; 15 to 50 du/ac, up to 45 ft.
  - Medium Intensity Mixed Use (Commercial Emphasis): mixed-use development with commercial or office/light industrial uses encouraged at street-level, residential; up to 50 du/ac, 15-55 ft.
  - Medium Intensity Mixed Use (Gateway and/or community node): mixed use, residential and ground floor commercial; up to 75 du/ac, 15-55 ft.
  - High Intensity Mixed Use (Major Activity Center): Office, retail, entertainment and residential; up to 125 du/ac, 15-135 ft.
  - Public, Cultural, Institutional

- Parks and Recreation: Martin Luther King Memorial Park
- It is anticipated that the area south of I-580 will to see significant change in the coming years, converting from a primarily office/industrial environment to a mixed use, pedestrian-oriented environment that includes residential and retail in addition to employment uses. Investment in pedestrian-oriented design improvements will be extremely important in fostering this kind of development in the medium- and long-term. North of I-580, much of the existing residential development will likely remain stable in the medium- to long-term, but it is anticipated that streetscape improvements on the corridor will encourage conversion of underutilized parcels at the intersection with Cutting Boulevard to mixed-use development that is more pedestrian-oriented and contributes to a more active and safe street environment.

### **Marina Bay Parkway/S. 23<sup>rd</sup> Street**

- Existing Uses: residential, institutional, commercial/retail, office, light industrial, warehousing
- General Plan Designation:
  - Low density residential: 5-15 du/ac, up to 35 ft.
  - Medium Density Residential: 10-40 du/ac, up to 35 ft
  - Business/Light Industrial: R&D Campus, Light industrial, industrially-related storage and distribution, office
  - Medium Intensity Mixed Use (Commercial Emphasis): mixed-use development with commercial or office/light industrial uses encouraged at street-level, residential; up to 50 du/ac, 15-55 ft.
  - Parks and Recreation: Marina Park
- The existing interior-oriented residential developments along Marina Bay Parkway south of I-580 are anticipated to remain stable in the long term, although streetscape improvements may encourage these communities to provide greater pedestrian permeability to the corridor. Recommended improvements will also contribute significantly to accessibility and character of the Richmond Bay Campus and help catalyze redevelopment of the area east of Marina Bay Parkway, as called for in the South Richmond Shoreline Specific Plan. Land uses will include a mix of office, retail, residential, R&D, and open space. North of I-580, existing residential development will likely remain stable in the medium- to long-term, but it is anticipated that streetscape improvements on the corridor will encourage conversion of the underutilized parcels between I-580 and Cutting Boulevard to mixed-use development that is more pedestrian-oriented and contributes to a more active and safe street environment.

### **Bayview Avenue**

- Existing Uses: light industrial, open space
- General Plan Designation:
  - Business/Light industrial: R&D Campus, Light industrial, industrially-related storage and distribution, office
  - Open Space

- Streetscape improvements on Bayview Avenue will contribute significantly to the accessibility and character of open space resources along the shoreline, the Richmond Bay Campus, and adjacent development, and help catalyze redevelopment of the area, as called for in the South Richmond Shoreline Specific Plan. Land uses here will include office, mixed use, R&D, and open space. In particular, Bayview Avenue will play an important role as the primary point of access for the proposed Shoreline Promenade, which will parallel the southern edge of the street and offer spectacular views of San Francisco Bay and the adjacent marshlands.

### **Central Avenue**

- Existing Uses: residential, institutional, commercial/retail, office, light industrial, warehousing
- General Plan Designation:
  - Low density residential: 5-15 du/ac, up to 35 ft.
  - Medium Density Residential: 10-40 du/ac, up to 35 ft
  - Business/Light Industrial: R&D Campus, Light industrial, industrially-related storage and distribution, office
  - Regional Commercial Mixed Use (Commercial Emphasis): mixed-use development with commercial or office/light industrial uses encouraged at street-level, residential; up to 50 du/ac, 15-55 ft.
  - Public, Cultural, Institutional: East Bay Municipal Utility District
  - Open Space: Point Isabel Regional Shoreline
  - Parks and Recreation: Central Park
- West of I-580, land uses along Central Avenue are anticipated to remain stable over the long term, with streetscape improvements providing bicyclists and pedestrians a safer and more attractive route to the Bay Trail and open space resources. East of I-580, commercial and retail uses along Central Avenue may redevelop to include higher-intensity, regional-serving mixed use development. Recommended streetscape improvements will encourage walkable, pedestrian-oriented development that is easy and safe to access by foot and bicycle from the surrounding residential neighborhoods.

### **Boulevard Connectors**

#### **Regatta Boulevard**

- Existing Uses: institutional, light industrial, warehousing, open space
- General Plan Designation:
  - Low density residential: 5-15 du/ac, up to 35 ft.
  - Medium Density Residential: 10-40 du/ac, up to 35 ft
  - Business/Light Industrial: R&D Campus, Light industrial, industrially-related storage and distribution, office
  - Medium Intensity Mixed Use (Commercial Emphasis): mixed-use development with commercial or office/light industrial uses encouraged at street-level, residential; up to 50 du/ac, 15-55 ft.

- High Intensity Mixed Use (Major Activity Center): Office, retail, entertainment and residential; up to 125 du/ac, 15-135 ft.
- Parks and Recreation
- The existing interior-oriented residential developments along Regatta Boulevard west of Marina Bay Parkway are anticipated to remain stable in the long term, although streetscape improvements may encourage these communities to provide greater pedestrian permeability to Regatta. Improvements on the corridor are likely to encourage new mixed use development on the western end near the intersection with Marina Way to provide a primary address on Regatta Boulevard, thereby creating a more active pedestrian environment. On Regatta Boulevard east of Marina Bay Parkway, streetscape improvements will contribute significantly to accessibility and character of the Richmond Bay Campus and adjacent development, and help catalyze redevelopment of the area, as called for in the South Richmond Shoreline Specific Plan. In particular, pedestrian and bike improvements on Regatta Boulevard will be critical in providing connectivity to the office and R&D uses planned between Regatta and I-580, which will remain behind the existing railroad freight tracks for the foreseeable future.

### **Cutting Boulevard**

- Existing Uses: institutional, light industrial, warehousing, residential, commercial/retail, park
- General Plan Designation:
  - Medium Intensity Mixed Use (Residential Emphasis): mixed-use development with commercial or office/light industrial uses encouraged at street-level, residential, no commercial-only development; 15 to 50 du/ac, up to 45 ft.
  - Medium Intensity Mixed Use (Commercial Emphasis): mixed-use development with commercial or office/light industrial uses encouraged at street-level, residential; up to 50 du/ac, 15-55 ft.
  - Medium Intensity Mixed Use (Gateway and/or community node): mixed use, residential and ground floor commercial; up to 75 du/ac, 15-55 ft.
  - Business/Light Industrial: R&D Campus, Light industrial, industrially-related storage and distribution, office
  - Public, Cultural, Institutional: John F. Kennedy High School
  - Parks and Recreation: John F. Kennedy Park
- Cutting Boulevard’s low/medium density housing pattern is anticipated to remain stable in the long term. Streetscape improvements will provide for safer street crossings and a more pleasant environment for pedestrians and cyclists. Underutilized commercial and retail parcels at key nodes along Cutting—in particular at the intersections of Harbour Way, Marina Way, 23<sup>rd</sup> Street, and Carlson Boulevard — represent redevelopment opportunities to convert existing auto-oriented uses, such as gas stations and convenience stores, to pedestrian-oriented mixed-use development that utilizes recommended streetscape elements.

## Carlson Blvd

- Existing Uses: institutional, light industrial, warehousing, residential, commercial/retail, park
- General Plan Designation:
  - Low density residential: 5-15 du/ac, up to 35 ft.
  - Medium Density Residential: 10-40 du/ac, up to 35 ft
  - Medium Intensity Mixed Use (Residential Emphasis): mixed-use development with commercial or office/light industrial uses encouraged at street-level, residential, no commercial-only development; 15 to 50 du/ac, up to 45 ft.
  - Medium Intensity Mixed Use (Commercial Emphasis): mixed-use development with commercial or office/light industrial uses encouraged at street-level, residential; up to 50 du/ac, 15-55 ft.
  - Medium Intensity Mixed Use (Gateway and/or community node): mixed use, residential and ground floor commercial; up to 75 du/ac, 15-55 ft.
  - Business/Light Industrial: R&D Campus, Light industrial, industrially-related storage and distribution, office
  - Public, Cultural, Institutional: Fire Department
  - Parks and Recreation: Crescent Park
- Carlson Boulevard’s low/medium density housing pattern is anticipated to remain stable in the long term. Streetscape improvements will provide for safer street crossings and a more pleasant environment for pedestrians and cyclists. Underutilized commercial and retail parcels at the Cutting Boulevard intersection represent redevelopment opportunities to convert existing auto-oriented uses, such as gas stations and convenience stores, to pedestrian-oriented mixed-use development that utilizes recommended streetscape elements.

## Neighborhood Streets

### Potrero Avenue & 47<sup>th</sup> Street

- Existing Uses: residential, institutional
- General Plan Designation:
  - Low density residential: 5-15 du/ac, up to 35 ft.
  - Medium Density Residential: 10-40 du/ac, up to 35 ft
  - Medium Intensity Mixed Use (Residential Emphasis): mixed-use development with commercial or office/light industrial uses encouraged at street-level, residential, no commercial-only development; 15 to 50 du/ac, up to 45 ft.
  - Public, Cultural, Institutional: Stege Elementary School
  - Parks and Recreation: Booker T. Anderson Park
- The low/medium density housing pattern along Potrero Avenue and 47<sup>th</sup> Street is anticipated to remain stable in the long term. Streetscape improvements will provide for safer street crossings, a more pleasant environment for pedestrians and cyclists, and promote reinvestment in existing residential properties.

## Industrial Bypass Streets

### Potrero Avenue & 47<sup>th</sup> Street

- Existing Uses: light industrial
- General Plan Designation:
  - Business/Light Industrial: R&D Campus, Light industrial, industrially-related storage and distribution, office
- The industrial uses along Juliga Woods Street and Hoffman Boulevard are anticipated to remain stable in the long term. Streetscape improvements will provide for a safer and more pleasant environment for pedestrians and cyclists.

### Spring Street

- Existing Uses: light industrial
- General Plan Designation:
  - Business/Light Industrial: R&D Campus, Light industrial, industrially-related storage and distribution, office
- By formalizing and defining the right of way on Spring Street and converting it to a major bike and pedestrian access route, parcels along Spring Street could see a long-term conversion from industrial to more street-oriented uses such as office, R&D, and even commercial retail near the intersection with Cutting Boulevard.

# 10 CORRIDOR PROFILES

## Overview

For each of the key corridors identified in the SRTCP, this chapter provides a detailed overview of existing conditions, planned improvements – including projects recommended in the City’s Pedestrian Plan, Bicycle Master Plan, and the Richmond General Plan (2030) – future planning considerations, and operational requirements. For each corridor this background information is followed by conceptual recommendations for streetscape and transportation improvements for both the near-term (2015-2024) and long-term (2030+).

Key corridors profiled in this chapter include:

- Cutting Boulevard
- South 23rd Street/ Marina Bay Parkway
- Harbour Way S/ Marina Way S
- Hoffman Boulevard
- Carlson Boulevard
- Central Avenue
- Bayview Avenue
- Juliga Woods Street/ Spring Street
- South 47th Street/ Potrero Avenue





# CUTTING BOULEVARD

## CORRIDOR OVERVIEW

Cutting Boulevard is the longest east-west corridor in the study area. It extends approximately 2.5 miles from I-580 in the west to the Ohlone Greenway in the east, where it connects to the El Cerrito del Norte BART Station.

**I-580 to Ohlone Greenway and El Cerrito Del Norte BART Station**

## EXISTING CONDITIONS

The following issues and opportunities are present on Cutting Boulevard:

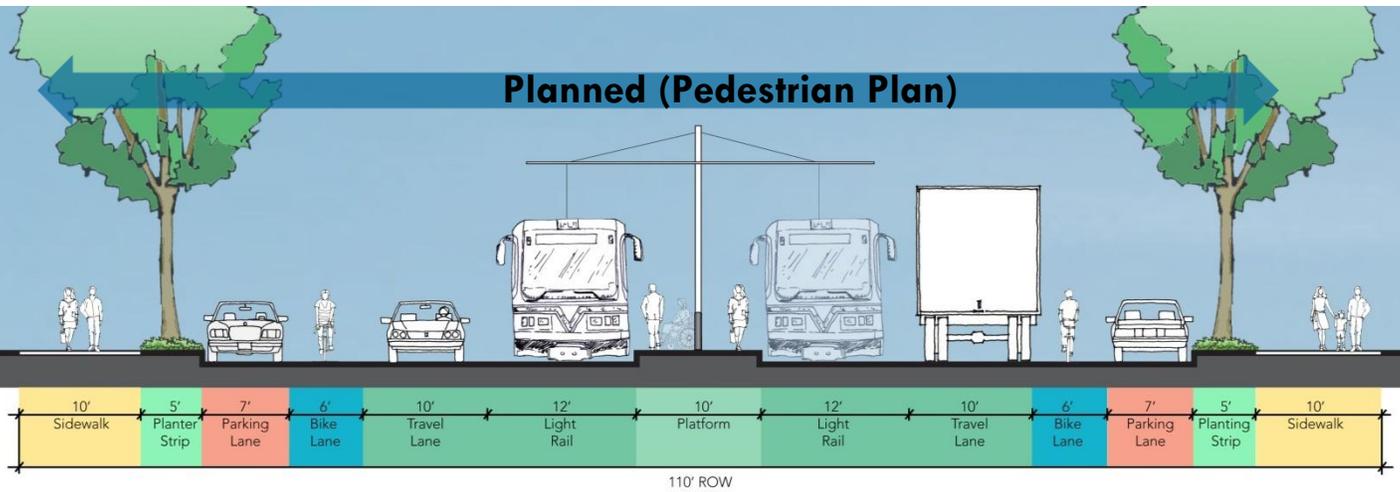
- Cutting Boulevard crosses I-580 via an overpass and also provides regional highway access to I-580
- The Cutting Boulevard overpass over I-580 poses significant challenges for bicycle and pedestrian access to South Richmond as a result of the interchange and wide multilane roadway
- Cutting Boulevard intersects two at-grade railroad crossings west of I-580 and at Carlson Boulevard, which pose difficult crossings for pedestrians and bicyclists
- Signalized intersections along Cutting Boulevard are located typically 700 feet apart, which can create long walking distances and delay for pedestrians trying to cross the multi-lane roadway at controlled locations
- Many corners along Cutting Boulevard lack ADA accessible curb ramps
- For most of its length, Cutting Boulevard forms the short end of blocks with intersections every 275 feet, allowing for a high degree of permeability into surrounding neighborhoods



Typical Cutting Boulevard cross-section west of 23<sup>rd</sup> Street



# CUTTING BOULEVARD



Street and right-of-way dimensions in the corridor, as reported by the City, referencing ArcGIS are generally as shown in the table below.

Segment of Cutting Boulevard	Curb-to-Curb Distance	Full Right-of-Way Width
West of Harbour Way South	~ 91'	~114'
Harbour Way S to S. 23 <sup>rd</sup> St	~70'	~110'
S. 23 <sup>rd</sup> to E. 41 <sup>st</sup> St.	~75' (includes 14' center median/ turn lane)	~100'
S. 41s St to S. 49 <sup>th</sup> St.	~115 (includes 11' center median + two 8' planter strips between the roadway and outside access/parking lanes)	~125'

## PLANNED IMPROVEMENTS

The Richmond Pedestrian Plan and Bicycle Master Plan propose several improvements to Cutting Boulevard, as detailed below:

- Class II Bicycle Lanes
  - Hoffman Boulevard to San Pablo Avenue
  - Completed Carlson Boulevard to I-80
- Median-Running Transit-Way (Long-Term)
  - Four- to two-lane reduction would be one alternative
  - On West Cutting Boulevard, Median-running transit could be accommodated without the lane reduction
  - Reduce oversized planter strip between sidewalk and curb
  - Design also accommodates 7' parking, 6' bicycle lane, and 10' travel lanes on West Cutting Boulevard (with striped existing two-way left-turn lane)
  - East Cutting Boulevard (with existing raised median) could accommodate transit only under a four- to two-lane reduction
    - Bicycle lanes could be striped on the one-way frontage roads

# CUTTING BOULEVARD

Additionally, the following intersection and spot treatments are recommended:

- Intersection Improvements at Harbor Way, Marina Way, and South 23<sup>rd</sup> Street
  - Curb extensions, directional ramps, high-visibility crosswalk striping, and median refuges
  - Tree plantings and landscape maintenance west of South 23<sup>rd</sup> Street

## PLANNING CONSIDERATIONS/ OPERATIONAL REQUIREMENTS

- Recent traffic volumes on Cutting Boulevard (15,900 vehicles/day) between South 23<sup>rd</sup> Street and Carlson Boulevard are less than half the capacity of the facility (38,200 vehicles/day) as currently operated.
- The character and form of Cutting Boulevard changes significantly from east to west along the corridor. For planning and design purposes, the team has separately evaluated the segments east and west of Carlson Boulevard.
- In the near term (through 2024), traffic volumes on Cutting Boulevard are expected to remain low enough to support right sizing the roadway with a reduction in general purpose travel lanes. In the longer-term (2030 and beyond), full-buildout of the Richmond Bay Campus and the South Shoreline Specific Plan area may generate enough traffic to warrant consideration of reverting to current capacity in the corridor.
- From Eastshore Boulevard in the east to Harbour Way in the west, Cutting Boulevard can be designed to accommodate and support high frequent transit service on a combination of local transit lines and shuttle services.
- Cutting Boulevard is a designated truck route west of Harbour Way, but not for the majority of its length within the SRTCP Study Area.
- Cutting Boulevard provides a continuous east-west connection through the length of Richmond, connecting Point Richmond with El Cerrito Del Norte BART Station

## CONCEPTUAL RECOMMENDATIONS: NEAR-TERM (2015-2024)

Building-off of previous recommendations for these two corridors, the SRTCP proposes near-term bicycle multimodal connectivity improvements for the Cutting Boulevard corridor. The intent of the near-term preliminary recommendations is to provide cost-effective, readily-implementable access improvements using low-cost materials, such as paint, soft-hit posts, and planter boxes.

### PROPOSED TRUCK ROUTE

West of Harbour Way South

The following segment improvements are proposed:

- West of Harbour Way S:
  - Maintain as a key segment of the citywide Truck Route network
  - Maintain five general purpose travel lanes, including two lanes in each direction and a single, continuous two-way center turn lane.
  - Add buffered bike lanes (6' bike lane + 3' striped buffer) at the curb on both sides of the street (requires removal of limited existing parking).

# CUTTING BOULEVARD

- Harbour Way S to S. 23<sup>rd</sup> Street:
  - Right-size street by reducing from five to three general purpose travel lanes; adding buffered bicycle lanes (3' buffer, 6' bicycle lane) and wide landscaped median with turn pockets (10' turn lane, plus 6' median refuge) with curb extensions. Maintain on-street parking at the curb.
  - Without lane reduction, bike lanes can only be accommodated by eliminating median, or removing on-street parking, although a substantial rebuilding of the street may be necessary to accommodate bicycle lanes at the curb, given the steep cross-slope of the street in some segments.

**Figure 10-1** Cutting Boulevard at I-580 Overpass, Proposed for Near-Term (2024)

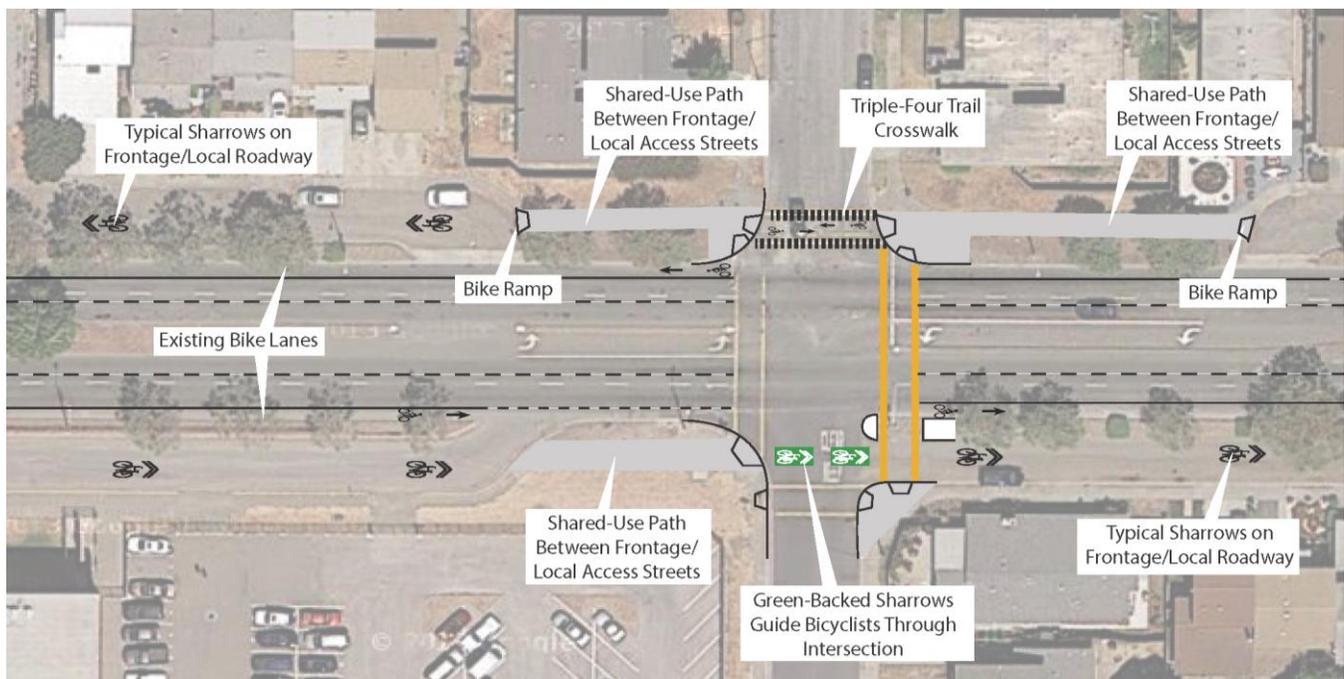


**Figure 10-2** Cutting Boulevard at Harbour Way, Proposed for Near-Term (2024)



# CUTTING BOULEVARD

Figure 10-3 Cutting Boulevard: S. 41<sup>st</sup> to S. 49<sup>th</sup> Streets: Proposed Bicycle Facilities and Crossings, Near-Term (2024)



East Cutting, between S. 41<sup>st</sup> and S. 49<sup>th</sup>: Provide two types of bicycle facilities to accommodate cyclists of different ages and abilities:

- Stencil sharrows along the frontage/local access streets on both the North and South sides of Cutting Boulevard. At intersections, provide a ramp up to allow cyclists to transition from frontage/local access streets to a new triple-four crossing (in alignment of existing cross-walk) via a widened sidewalk with dedicated one-way bicycle path markings.
- Maintain existing Class II bike lanes on Cutting Boulevard

East Cutting, S. 49<sup>th</sup> to San Pablo Avenue:

- Maintain existing lane configuration
- In collaboration with Caltrans, conduct further detailed planning and traffic analysis of options for improving safety and connectivity for all users at the intersection of Cutting Blvd., and I-80. Solutions may include changes to signalization and realignment of on-, and off-ramps, and pedestrian crossings, to slow motor vehicle travel speeds – particularly for turning movements – and reduce potential conflicts.

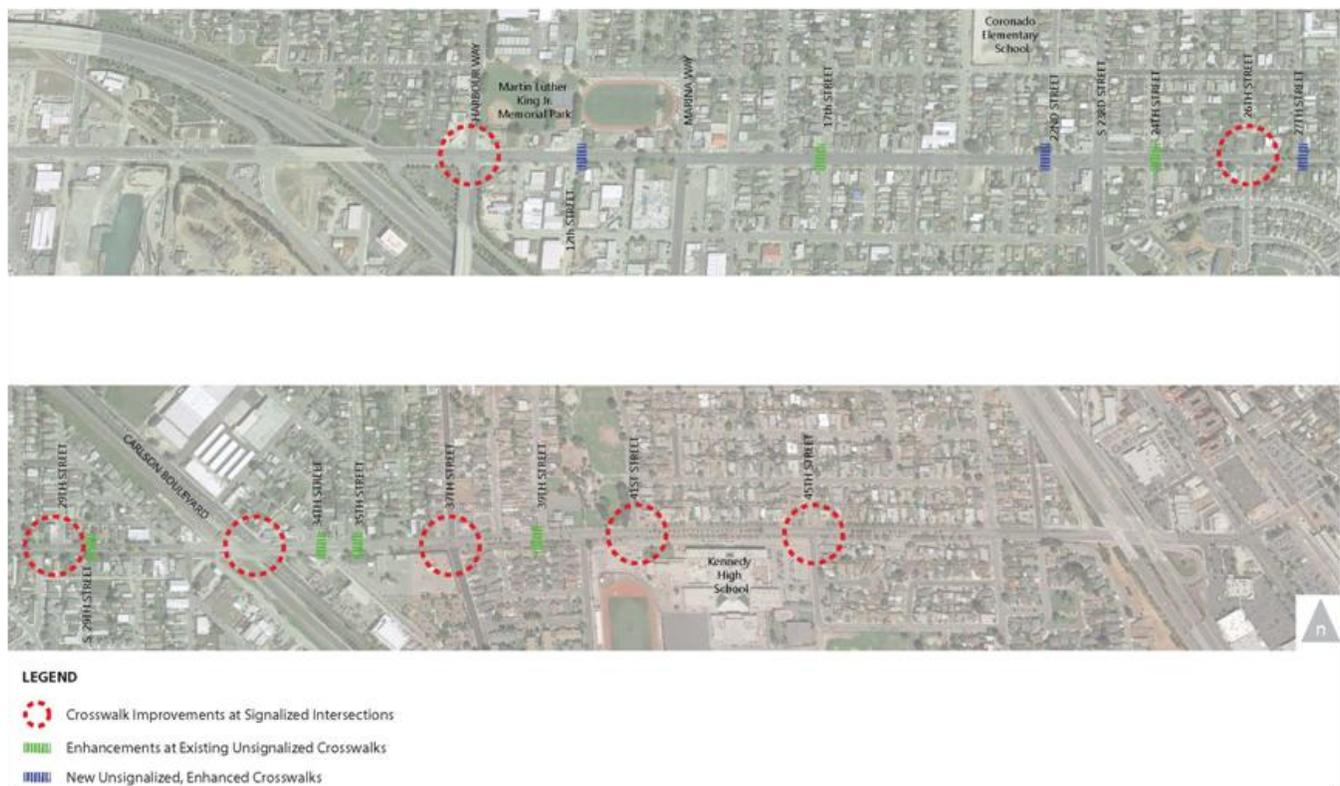
Additionally, the following intersection treatments are recommended:

- Stripe high-visibility crosswalks with median refuges (striped or, preferably, raised median) at priority crossing locations and enhance existing marked crosswalks:
  - Without lane reduction, additional crosswalks need to be marked on a case-by-case basis, as each will require an RRFB, which may be cost prohibitive
  - Consider RRFBs where pedestrian demand is highest
  - Enhance existing unsignalized marked crossings with high-visibility striping and, as appropriate, RRFBs

# CUTTING BOULEVARD

- Mark all four crosswalks at signalized intersections
- Mark with yellow school zone markings, as appropriate
- While the proposed cross-section and median refuges would allow all legal crossing to be striped, consider initial new crosswalks and enhanced crosswalks per figure below
- Cutting Boulevard/I-580 interchange improvements
  - Square up on-ramp, remove one travel lane in each direction if feasible
    - o If lane reduction is not feasible, narrow lanes and remove striped median to accommodate 6' bicycle lanes
- Install bicycle signal detection at signalized intersections

Figure 10-4 Cutting Boulevard, Cross-Walks Proposed for Enhancement, Near-term (2024)



## CONCEPTUAL RECOMMENDATIONS: LONG-RANGE (2030+)

The long-range recommendations for the Cutting Boulevard Corridor include making major changes to the roadway, such as adjusting curb and gutter locations, and providing raised and separated bikeways. Some of these improvements may be funded through development.

The following segment improvements are recommended for the long-term:

- **East Cutting, S. 23<sup>rd</sup> to San Pablo Avenue:** Rebalance street uses, with three general purpose travel lanes (including a center turn lane and one travel lane in each direction), two lanes dedicated to transit, or more broadly to high occupancy vehicles (HOV), and separated bikeways on each side, as detailed below. Note that decisions about the alignment of any future dedicated transit only or HOV lanes will be made based on further planning and evaluation of corridor constraints, travel demand,

# CUTTING BOULEVARD

and transit service plans. Should demand, funding availability and political support warrant, grade separated transit may be accommodated in a median alignment.

- **East Cutting, between S. 41<sup>st</sup> and S. 49<sup>th</sup>:** Provide two types of bicycle facilities to accommodate cyclists of different ages and abilities:
  - o Stencil sharrows along the frontage/local access streets on both the North and South sides of Cutting Boulevard. At intersections, provide a ramp up to allow cyclists to transition from frontage/local access streets to a new triple-four crossing (in alignment of existing cross-walk) via a widened sidewalk with dedicated one-way bicycle path markings. .
  - o Maintain existing Class II bike lanes on Cutting Boulevard,
- **East Cutting, between S. 23<sup>rd</sup> and S. 41<sup>st</sup>:** Accommodate raised one-way separated bikeway (cycle track) on both sides of Cutting Boulevard (6.5' wide + 1' sloped buffer), with removal of parking lanes, reduction in travel lanes, or removal of center median. Appropriate accommodation will depend upon the final alignment for transit and transit lane restrictions.
- **West Cutting, S. Harbour Way to S. 23<sup>rd</sup> Street:** Providing three general purpose travel lanes, including a striped center left turn lane and one travel lane in each direction. Accommodate a one-way, parking separated bikeway in each direction (Note: Given the steep cross-slope of the outside travel and parking lanes along this segment of Cutting, the provision of parking protected, separated bike lanes may only be appropriate with a raised bike lane, or a complete reconstruction of the street).
- West Cutting Boulevard, West of Hoffman Boulevard:
  - Close Class II bicycle lane gap through either:
    - o Reduction of median
    - o Reduction of sidewalk extension on north side
    - o Removal of crossing arm in median and lengthen existing crossing arm on the roadway edge
  - Accommodate transit in mixed-traffic within the general purpose travel lanes, with service to Point Richmond and points west, including Marin County.

Additionally, the following intersection and spot treatments are recommended:

- Stripe high-visibility crosswalks with median refuges (striped or, preferably, raised median) at each legal crossing
  - Without lane reduction, additional crosswalks need to be marked on a case-by-case basis, as each will require an RRFB, which may be cost prohibitive
  - Consider RRFBs where pedestrian demand is highest
  - Mark all four crosswalks at signalized intersections and install related improvements such as ADA curb ramps, pedestrian push buttons, and countdown pedestrian heads if not present
  - Mark with yellow school zone markings, as appropriate
- Cutting Boulevard/Carlson Boulevard
  - Define roadway edge with curb and gutter on northwest and southwest corners with curb extensions and squaring up crosswalks
  - Close sidewalk gap on north and south sides of Cutting Boulevard
    - o Widen sidewalk on south side to provide shared-use path connecting intersection to Spring Street two-way cycle track

# CUTTING BOULEVARD

## Transit

In both the near-term (through 2024) and long-term (2030 and beyond), the entire Cutting Boulevard corridor, from El Cerrito Del Norte BART to Harbour Way, is designated as a Primary Transit Corridor, with service on a combination of transit and shuttle lines meeting frequent service standards (service every 15 minutes or better, at least 18 hours per day). Transit demand and service frequency is expected to be highest in the eastern half of the corridor, from South 23<sup>rd</sup> Street to El Cerrito Del Norte BART. In the long-term, with higher frequency transit service and potentially higher traffic volumes, this segment will be appropriate for more substantial transit priority measures, including a lane dedicated to transit or more broadly to high occupancy vehicles (HOV). Transit service in such a dedicated right-of-way could take the form of a median bus-way, streetcar, or other surface or elevated rail transit facilities, as illustrated in the Richmond Pedestrian Plan (2011), or enhanced bus service in the lane nearest to the curbs. With an outside lane alignment, such lanes would need to be dedicated to business access and transit (BAT). Bus stops would be provided in the pedestrian realm of the sidewalk, or – between S. 41<sup>st</sup> and S. 49<sup>th</sup> Street – along an expanded median strip between Cutting Boulevard and adjacent frontage / local access streets.

## KEY OUTCOMES

The following key outcomes are anticipated as a result of the near-term and long-term recommendations:

- Enhanced north-south pedestrian connectivity across Cutting Boulevard
- Enhanced pedestrian safety at Cutting Boulevard crossings
- Eliminate critical sidewalk gap west of Cutting Boulevard/Carlson Boulevard
- One direction at a time crossings at unsignalized crosswalks with median refuges
- Dedicated space for bicyclists/ separation of modes offering safety benefits and predictability for all road users including freight operators.
- Enhanced multi-modal access from Central and South Richmond to El Cerrito Del Norte BART Station

# SOUTH 23<sup>RD</sup> ST/ MARINA BAY PARKWAY

## CORRIDOR OVERVIEW

South 23<sup>rd</sup> Street, which becomes Marina Bay Parkway south of I-580, is the primary North-South travel corridor through Central and South Richmond providing direct access from the Shoreline area to Richmond BART, the Richmond Civic Center and business establishments along the 23<sup>rd</sup> Street, Cutting Boulevard and MacDonald Avenue corridors.

According to the community survey conducted in November 2013 by Richmond High School Students (Y-Plan Program), South 23<sup>rd</sup>/Marina Bay Parkway is currently the primary route of access to the Shoreline/Marina Bay area for Central Richmond residents. It is also the primary point of access to Central and South Richmond from the regional highway network, with exit and entrance ramps to I-580 in both directions, and the only crossing of I-580 currently served by AC Transit (Line 74).

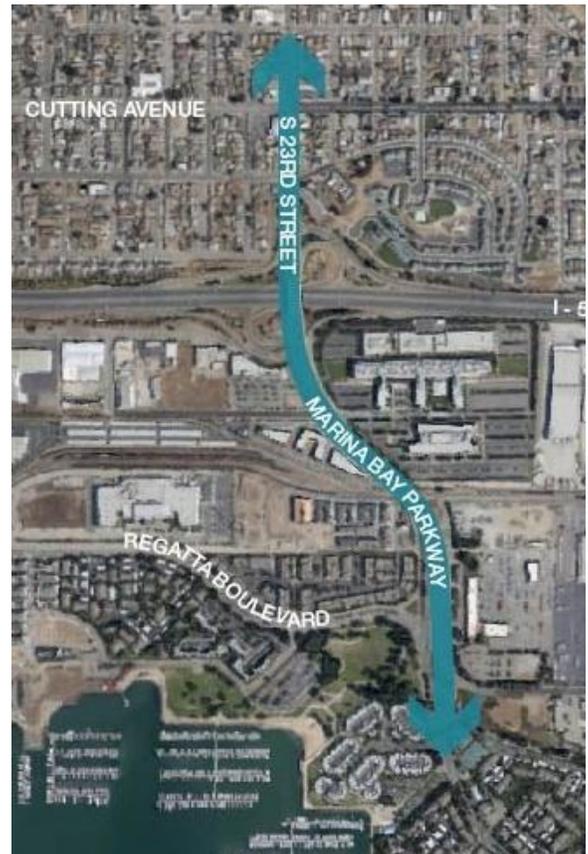
As the most heavily traveled of a limited number of multimodal crossings of I-580, South 23<sup>rd</sup>/Marina Bay Parkway will continue to be a key connection in South Richmond; its importance heightened by the planned development of the Richmond Bay Campus and other parts of the Shoreline area.

## EXISTING CONDITIONS

Although it carries more vehicle traffic each day than any of the other north-south travel corridors in the South Richmond Study Area, average daily volumes of 11,400 vehicles per day on Marina Bay Parkway (Meeker to Marina) and 17,400 vehicles per day on more the more heavily traveled segment of South 23<sup>rd</sup> between Bissel & Cutting, were substantially below the estimated daily capacity of South 23<sup>rd</sup>/Marina Bay Parkway (38,200) as it is currently designed and operated<sup>1</sup>.

Currently, the corridor operates south of Cutting Boulevard with a minimum of two general purpose travel lanes in each direction, with dedicated left turn lanes and dedicated right turn lanes at selected intersections. The width of the street (curb face to curb face) varies from 72' at Cutting Blvd., to ~95' from Potrero to the existing rail crossing south of Meeker Avenue. South of Regatta Blvd, the street width narrows from 76', including an 18'

Central Richmond to Marina Bay,  
Richmond Bay Campus and  
Ferry Terminal



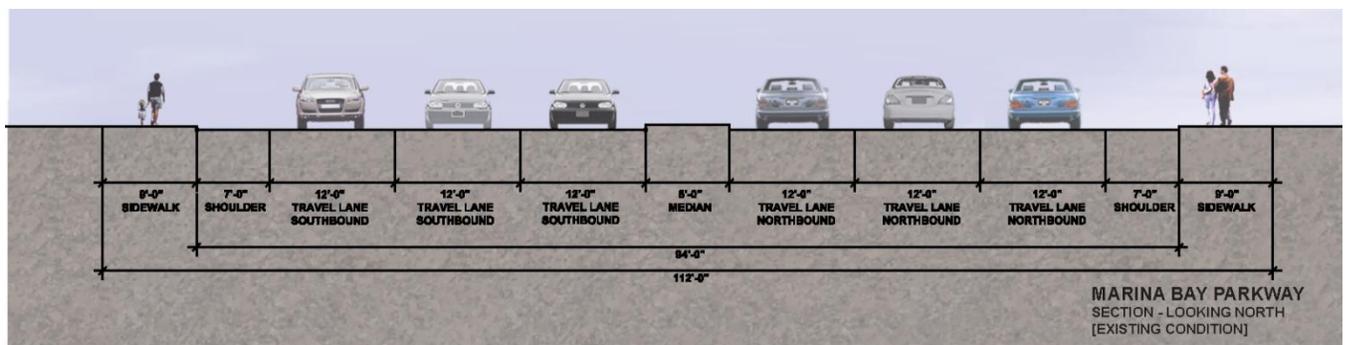
<sup>1</sup> Source: Richmond General Plan 2030 Draft Environmental Impact Report (DEIR) (based on corridor traffic counts conducted in 2007)

# SOUTH 23<sup>RD</sup> STREET/MARINA BAY PARKWAY

median to 52' (with an 8' median) near its southern terminus. The public right of way for Marina Bay Parkway is substantially wider, varying from 116,' just south of I-580 to 70' at the southern end.

Challenges for multimodal access and connectivity include the following:

- Very wide crossing distances (72'-120') at intersections throughout the corridor make it difficult and uninviting to walk (Seniors and persons with limited mobility may not be able to cross such distances during current signal phases). *(See top photo at right.)*
- Wide travel lanes (11'-14') and wide turning radii can encourage high speed motor vehicle travel. *(See middle photo at right.)*
- Sidewalks are discontinuous (no sidewalk is present on the east side of Marina Bay Parkway south of Meeker Avenue).
- Throughout most of the corridor, existing sidewalks are located directly adjacent to high speed travel lanes, with no buffer.
- AC Transit Line 74 provides service from Central Richmond to the Ford Building/Ferry Terminal via South 23<sup>rd</sup> Street/Marina Bay Parkway, Regatta Blvd., Marina Way, Hall Ave and Harbour Way), but service is infrequent (every 40 minutes).
- The Marina Bay Shuttle, provides a direct connection between Marina Bay and the El Cerrito Del Norte BART Station, but no intermediate stops in the corridor between Marina Bay Parkway/Regatta Blvd., limiting access to other neighborhoods.
- Selected bus stops lack shelters, or schedule information, or are inaccessible to persons with limited mobility. *(See bottom photo at right.)*
- The current design of the Marina Bay Parkway overpass and interchange with I-580 facilitates free right turns to and from the expressway, encouraging high speed turning movements, making travel by walking and cycling hazardous.





# SOUTH 23<sup>RD</sup> STREET/MARINA BAY PARKWAY

- The Richmond Pedestrian Plan (2011) identified Marina Bay Parkway as an “Under-used right of way,” one of several “overly wide and redundant connector streets... with excessive right of way [that] provides many immediate opportunities to enhance the pedestrian and bicycle realm by expanding sidewalks, installing bike lanes and creating inviting public spaces.” (See photo at right.)



- The Richmond Livable Corridors Form-based Code called for the establishment of a gateway to Central Richmond at South 23<sup>rd</sup> and Cutting Boulevard, including a node of mixed-use development on corner parcels. Key transportation recommendations for South 23<sup>rd</sup> Street included right-sizing of the roadway, with conversion of four-lane cross-sections to three lanes, with a center turn lane to enhance safety and improve vehicle throughput (center turn lane replaced by landscaped median between intersections), enhanced signage and wayfinding information, traffic signal coordination, bike lanes, and installation of in-road loop detection for bicycles, accessible curb ramps, bus bulbs, and enhanced lighting.
- The Richmond General Plan for 2030 identifies South 23<sup>rd</sup> Street as a Community Activity Street, which should “accommodate all types of travel including public transit, bicycling and walking [and] serve as destinations and [be one of the] City’s ‘main streets’”... “parking lanes, wide sidewalks, large street trees and traffic signals may buffer pedestrians and bicyclists from automobiles, trucks and transit vehicles. Traffic typically moves slowly...”

## PLANNING CONSIDERATIONS/ OPERATIONAL REQUIREMENTS

- Based on preliminary trip generation estimates prepared for the Richmond South Shoreline Specific Plan, the Marina Bay Parkway/ South 23<sup>rd</sup> Street can accommodate planned growth in the near term (through 2024 with a reduction in the total number of through travel lanes and selected turn lanes.
- In the long-term – 2030 and beyond – the total number of travel lanes needed to accommodate travel demand associated with full build-out of the Long Range Development Plan (LRDP) for the Richmond Bay Campus and elsewhere in the Shoreline may revert to the current capacity through much of the corridor (two lanes in each direction plus left turn lanes). Future monitoring, data collection and analysis will be required to identify any changes to travel demand and travel patterns in the corridor, and to define alternative solutions to maintain acceptable levels of multimodal access and connectivity.
- With transit and shuttle service planned for every 10-15 minutes, but no significant congestion, there is no expected need to dedicate one or more lanes exclusively to transit in the near-term. To provide reliable service for transit and to encourage ridesharing, vanpooling and other forms of high occupancy vehicle (HOV) travel, the City may consider dedicating one or more lanes of Marina Bay Parkway for use by HOV (arterial HOV lanes).
- North of Regatta Boulevard, Marina Bay Parkway / South 23<sup>rd</sup> Street is a designated truck route. The corridor can be expected to continue to serve as a key route for goods movement and is planned as such.
- The City is considering installing a channelized traffic island (also known as a “pork chop” pedestrian refuge island) on the northwest corner of the intersection of Meeker Ave and Marina Bay Parkway to

# SOUTH 23<sup>RD</sup> STREET/MARINA BAY PARKWAY

channelize auto turning movements with a wide turning radius, while still reducing pedestrian crossing distance. This proposal is not included in and would be an add-on to the Moody Underpass project, which is currently installing crosswalks in all directions at the intersection of Meeker Avenue and Marina Bay Parkway (Adopted plans, including the Richmond Bicycle Master Plan and the Richmond Pedestrian Plan, recommended long-term installation of a “roundabout” at this intersection. Note that the recommendations for the SRTCP and the associated South Shoreline Specific Plan neither include nor preclude installation of a roundabout at this location).

## CONCEPTUAL RECOMMENDATIONS FOR NEAR TERM (2015-2024)

Consistent with the General Plan 2030 definition of the South 23<sup>rd</sup> Street as a Community Activity Street, the wide right of way throughout the corridor, and low-traffic volumes relative to capacity, the near-term recommendations for South 23<sup>rd</sup> Street/Marina Bay Parkway call for limiting the number and width of travel lanes and embracing the complete streets

philosophy by expanding and where feasible providing dedicated facilities in the corridor for pedestrians, bicyclists, and transit riders. This program carries the footprint of recently completed improvements to South 23<sup>rd</sup> Street in Central Richmond south to Marina Bay Parkway, providing similar benefits to area travelers, residents and business owners and patrons. Preliminary near-term recommendations are as follows:

### PROPOSED TRUCK ROUTE

North of Regatta Boulevard

- Cutting to Potrero: (ROW 72'): Re-stripe with bike lanes as per Richmond Livable Corridors Form Based Code<sup>2</sup>.
- I-580 Overpass (Potrero to southern most ramps): Build modified version of interchange layout recommended in Bicycle Master Plan and Pedestrian Plan:
  - Square-off and narrow intersections with on and off-ramps.
  - Reduce the number of travel lanes from six to four (Note: this is still more capacity than likely needed through 2024).
  - Provide separated bikeways (one-way on each side).
- Preliminary recommendation for accommodation of bikeways in this segment is to modify the BMP recommendation for buffered bike lanes, to provide for curb or temporary barrier separated on-street cycle tracks, with option for cyclists to ramp up to wide sidewalk in advance of merge zones at crossings of I-580 on and off-ramps.
- I-580 to Meeker (right-of-way width: 116, curb-curb width: 95'): Narrow from 6-7 lanes to 4 lanes (One SB Lane (11') + 2 NB Lanes (11' each)) + one center turn lane (11') within the alignment of a 16' painted median. Accommodate bicycles in this corridor segment in two one-way separated bikeways, one on each side of the street, buffered from moving traffic by temporary barriers/bollards and new transit stop/pedestrian refuge islands.
- Meeker Ave to Regatta Blvd: Complete Moody Underpass Project, which is incorporating two general travel lanes, plus a grade and barrier-separated 9' bike/ped paths on each side (via underpass). Note: Moody underpass project carries the path on the east side of Marina Bay Parkway as a separated facility from Jetty Drive to Regatta. On the West side, the separated bikeway/walkway ends at Jetty Drive (Note: the City is building a one-way buffered bike lane on-street from Jetty Drive to Regatta Blvd).

<sup>2</sup> Note: This is a slight variation from the sections recommended in the Livable Corridors Form-Based Code: see. pg. 49 of 75, Rich Livable Corridors Presentation, Aug. 12, 2012.

# SOUTH 23<sup>RD</sup> STREET/MARINA BAY PARKWAY

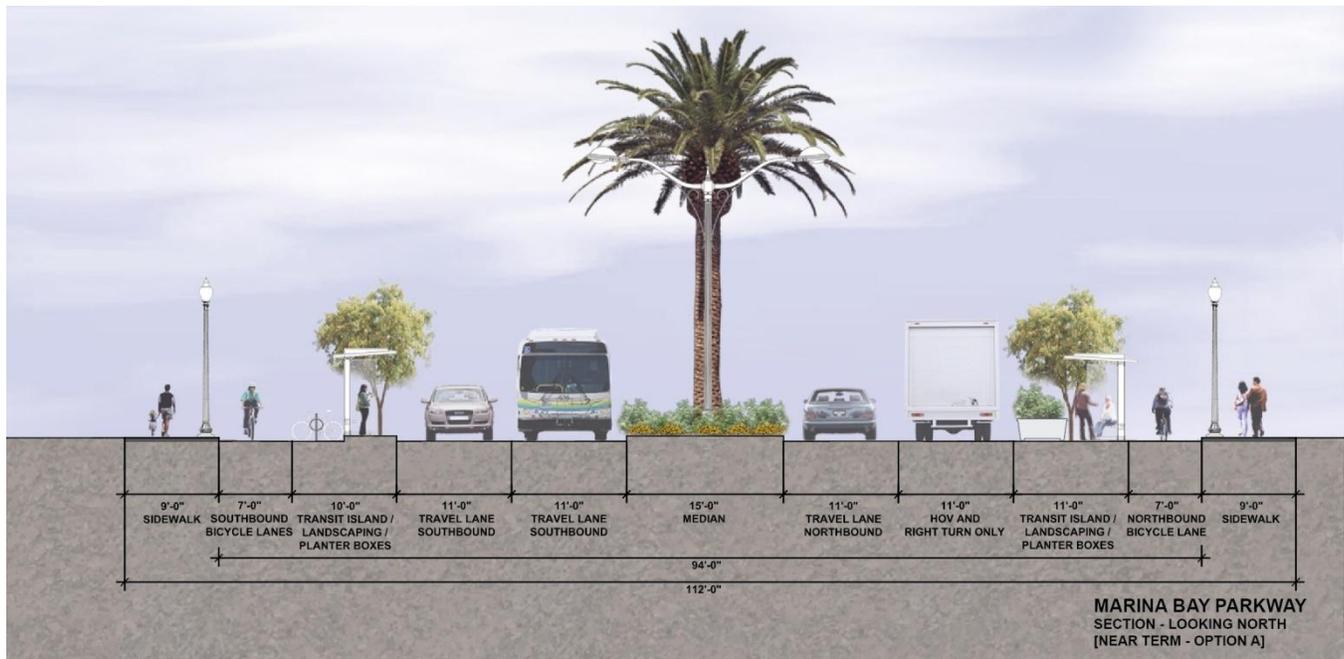
- Regatta Boulevard to Shimada Park: Add class II bike lanes, as recommended in the Bicycle Master Plan (2011)
- At intersections throughout the corridor:
  - Define tighter turning radii by striping and/or installing temporary barriers in the near-term to reduce pedestrian crossing distances and slow vehicular turning movements (Note that at the intersection of Marina Bay Parkway and Regatta Boulevard – turning radii will be slightly wider, consistent with the status of both streets as key links in the proposed truck and transit networks).
  - Upgrade signalization to detect cyclists in on-street facilities

Figure 10-5 Marina Bay Parkway at I-580, Near-Term (2014-2023)



# SOUTH 23<sup>RD</sup> STREET/MARINA BAY PARKWAY

Figure 10-6 Marina Bay Parkway, North of Meeker Ave, Near-Term (2015-2024), Potential Cross-Section



## Transit

- In the near-term, upgrade the entire corridor, from MacDonald Ave to Regatta Boulevard as a primary transit corridor, served by a new frequent transit route linking Richmond BART with El Cerrito BART via Marina Bay Parkway, Regatta Boulevard, the Richmond Bay Campus (recommended via Lark Drive), Bayview Avenue and Carlson Boulevard.
- The new route would be operated by AC Transit, but planned and funded in collaboration with primary tenants of the Berkeley Global Campus.
- Service frequency planned for every 15 minutes all-day.
- Shift bus stop locations to far side of intersections where feasible. At key stop locations, including Marina Bay Parkway at Meeker Avenue, construct new 8'-12' wide transit stop islands, with transit shelters (with separated bike lanes routed between the transit stop island and the sidewalk).
- The City shall monitor transit travel times in this and other corridors in the Plan Area. If peak-hour traffic congestion begins to substantially degrade transit speeds and travel time reliability in the corridor, the City can install arterial High Occupancy Vehicle (HOV) lanes, as necessary.

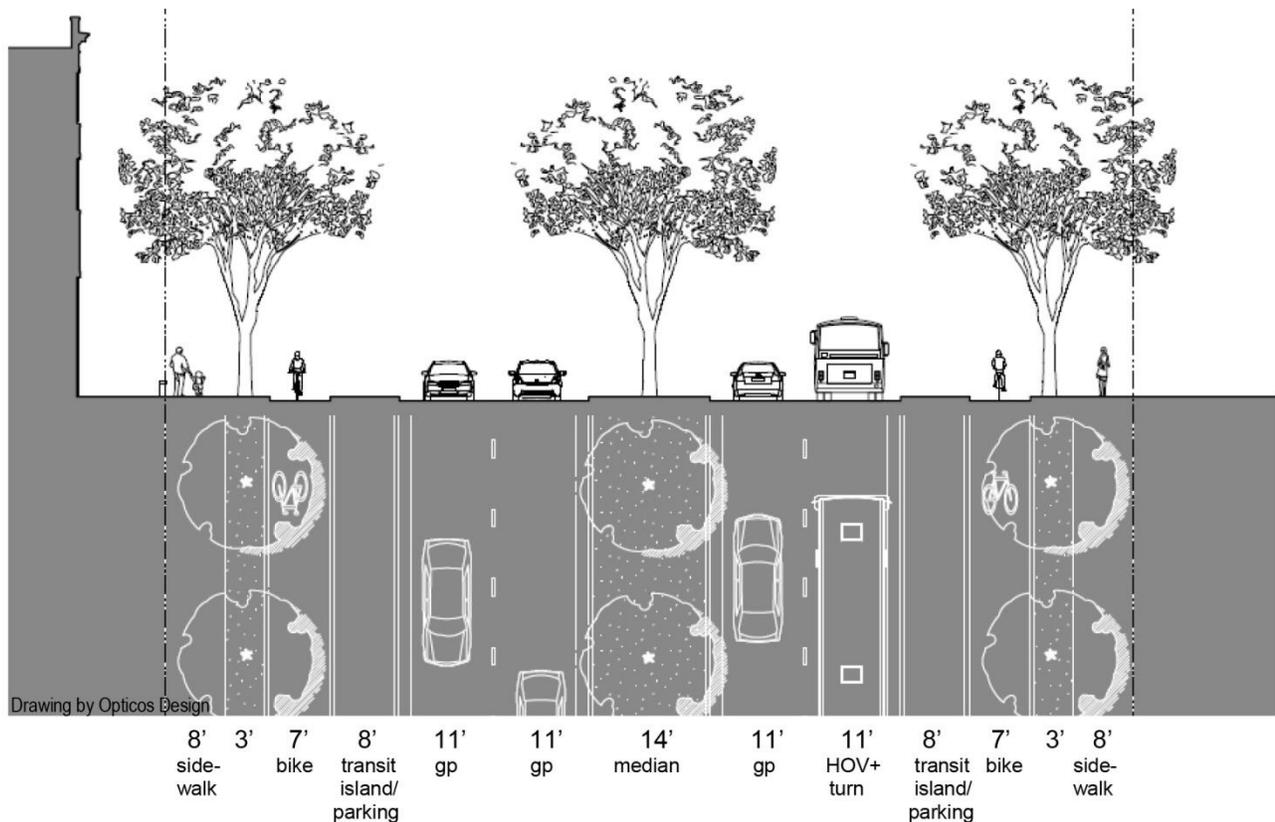
## CONCEPTUAL RECOMMENDATIONS: LONG-RANGE (2030 +)

The long-term (2030+) vision for the South 23<sup>rd</sup>/Marina Bay Parkway corridor includes the following:

- Cutting to Potrero: (Curb to curb width is 72'): two thru lanes (11'), one center turn lane (10'), parking on both sides (7'), parking buffered one-way cycle tracks on both sides (5' cycle track + 3' buffer zone on each side), plus extension of sidewalks by 4' on each side through the length of the segment (where full curb to curb width is 72').
- I-580 Overpass (ramps to ramps): Consider full interchange redesign options, including rebuilding the interchange as a classic "urban diamond." This rebuild would provide access to WB I-580 from NB Marina Bay Parkway and to EB I-580 from SB 23<sup>rd</sup> Street with installation of left turn lanes that intersect with the I-580 on/off-ramps at two signalized four-way intersections. By reducing the frequency of right turn movements from the arterial roadway (S. 23<sup>rd</sup> Street/Marina Bay Parkway) on to I-580 on-ramps, this long-term vision would reduce potential conflicts between right turning motor vehicles and vulnerable users, including bicyclists, pedestrians. It is also consistent with the proposed near-term recommendation for cycle tracks or other facilities appropriate for users of all ages and abilities.
- I-580 ramps to Meeker Ave: Provide for two travel lanes in each direction (11' GP/Truck lane inside+ 11' HOV/Transit/Turn lane on outside), plus a 16' center median, containing an 11' center turn lane on approaches to intersections. Full street dimensions include:
  - East side: northbound bike lane (7') + buffer/transit island (8') + 11' HOV/transit/turn lane + 11' general-purpose/truck lane.
  - West side: Expanded sidewalk with planter strip (11' total), southbound bike lane (7'), plus buffer/transit island (8') + 11' HOV/transit/turn lane + 11' general purpose/truck lane.
  - Within the east side of existing right of way on Marina Bay Parkway, add 12' class I path.
- Regatta Blvd: Re-design this intersection, which currently has very long pedestrian crossing distances and wide turning radii for some movements that are not designated truck routes. As envisioned in the South Shoreline Specific Plan, Regatta Blvd/Marina Bay Parkway may be realigned to form two proximate, but not adjacent, "T" intersections, with eastbound through traffic on Regatta Boulevard forced to turn south before heading back to the east towards the Richmond Bay Campus.
- Formalize curb extensions and other near-term interventions identified in the forthcoming intersection analysis to slow vehicular traffic, reduce pedestrian crossing distance, and reduce potential conflicts for all road users.

# SOUTH 23<sup>RD</sup> STREET/MARINA BAY PARKWAY

Figure 10-7 Marina Bay Parkway (N of Meeker Ave), Looking North, Recommended Long-term Cross-Section (2030+)



## Transit

Maintain near-term recommendations, with improved service frequency on route from Richmond BART to El Cerrito Plaza BART, consistent with growth in demand as development occurs at the BGC, surrounding sub-areas in the South Shoreline Specific Plan Area, and at mixed-use/ commercial nodes along the corridor. Consider establishment of lane use restrictions – arterial HOV, or transit only lanes – in the long-term, as necessary to maintain transit travel time and reliability. Maintain a portion of street right of way (East side and/or Median) for possible future use for high frequency transit service, including elevated rail.

## BENEFITS

- Enhances pedestrian safety at key intersections, including Potrero Ave, I-580 ramps, Meeker Avenue, Jetty Drive, and Regatta Boulevard.
- Provides new dedicated pedestrian and bicycle facilities throughout the corridor (Long term plan provides for a “Low-stress” separated, or off-street travel option for cyclists of all ages and abilities).
- Provides expanded and higher frequency transit connections from Marina Bay, the Richmond Bay Campus and the Shoreline area to the Cutting Boulevard and MacDonald Avenue retail districts and San Pablo Avenue (including the El Cerrito Del Norte BART Station).
- Accommodates potential future high capacity and/or high frequency transit facilities within public right of way (in the median, or on the east side of the public right of way, south of I-580).



# HARBOUR WAY/MARINA WAY

## CORRIDOR OVERVIEW

**Ferry Terminal to  
Central Richmond**

Harbour Way South and Marina Way South are arterial streets that serve as important north-south links on the western side of the study area. These parallel streets provide important connections across I-580, linking the new Ferry Terminal, the Port of Richmond, and other parts of the Shoreline area with Central Richmond neighborhoods, including the Nystrom and Iron Triangle neighborhoods and Richmond BART. Both terminate at the Bay shore, near the Ford Peninsula with direct connections to the Bay Trail. Harbour Way terminates at the tip of the Ford Peninsula, where it provides direct access to the planned Richmond Ferry Terminal (service to San Francisco is planned to start in 2015). Harbour Way also provides regional access to the study area via the I-580 interchange.

## EXISTING CONDITIONS

The following issues and opportunities are present on Harbour Way and Marina Way:

- Harbour Way and Marina Way both cross I-580 via overpasses
- The Harbour Way I-580 interchange poses significant challenges for bicycle and pedestrian access to South Richmond as a result of the free-right turns on the on- and off-ramps and the wide, multi-lane roadway
- Both roadways are intersected by two at-grade railroad crossings serving local freight lines, which represent significant access issues for all transportation modes
- As an overpass with no access to I-580, Marina Way provides an important low-traffic alternative to Harbour Way for north-south travel within the corridor, without conflicts with high speed vehicles entering or exiting the expressway.
- Marina Way has an existing raised median that limits the ability to provide bicycle lanes within the existing curb-to-curb dimension in the near-term without the removal of auto travel lanes south of Wright Avenue
- The primary land uses along Marina and Harbour are industrial and office/commercial. There is also a considerable amount of undeveloped/vacant land throughout the Ford Peninsula, which creates long walking distances between destinations



Typical Marina Way cross-section with raised median, south of I-580:

# HARBOUR WAY/MARINA WAY

Figure 10-8 Harbour Way South, Existing Conditions

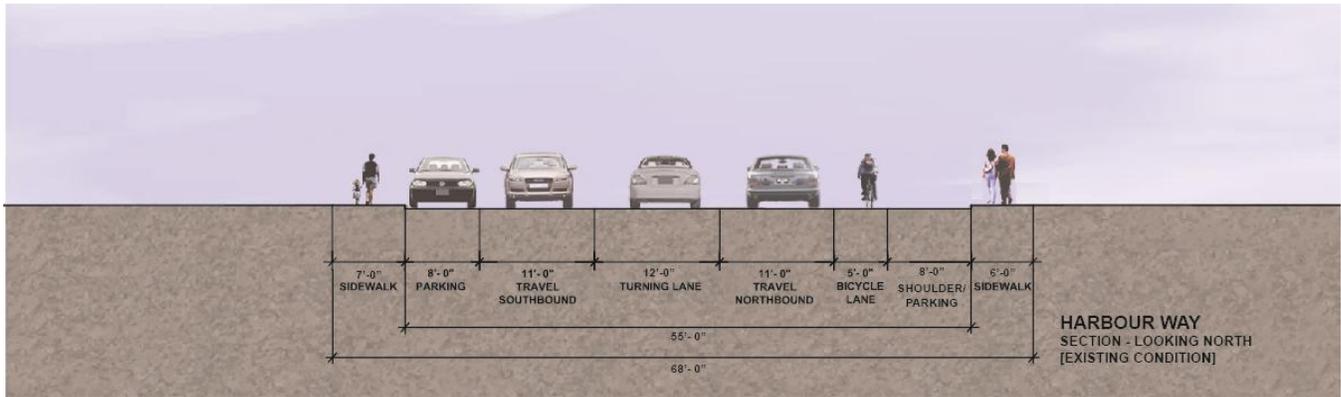
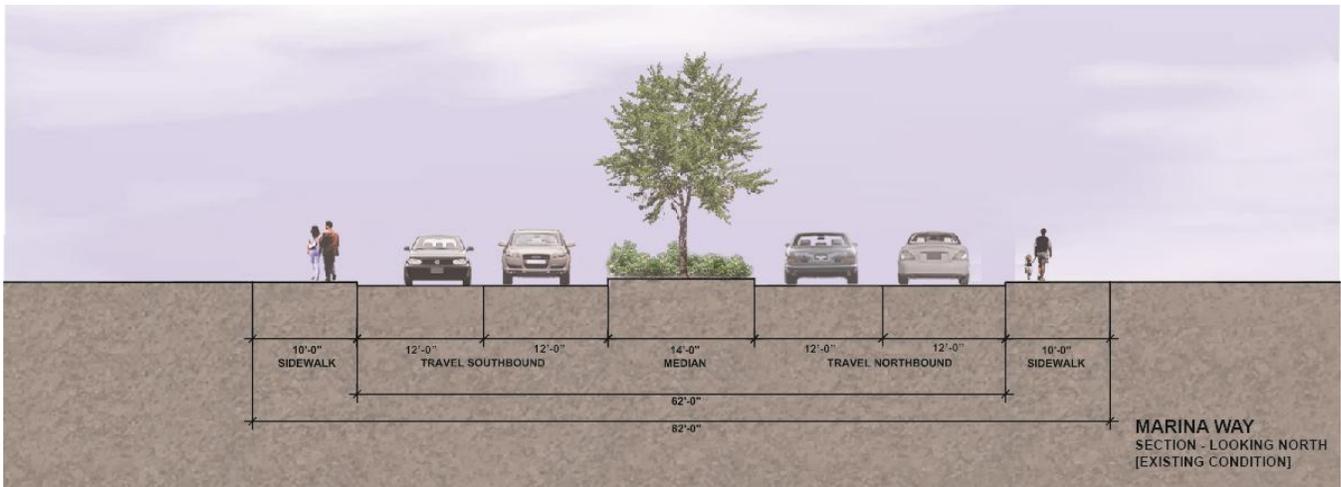
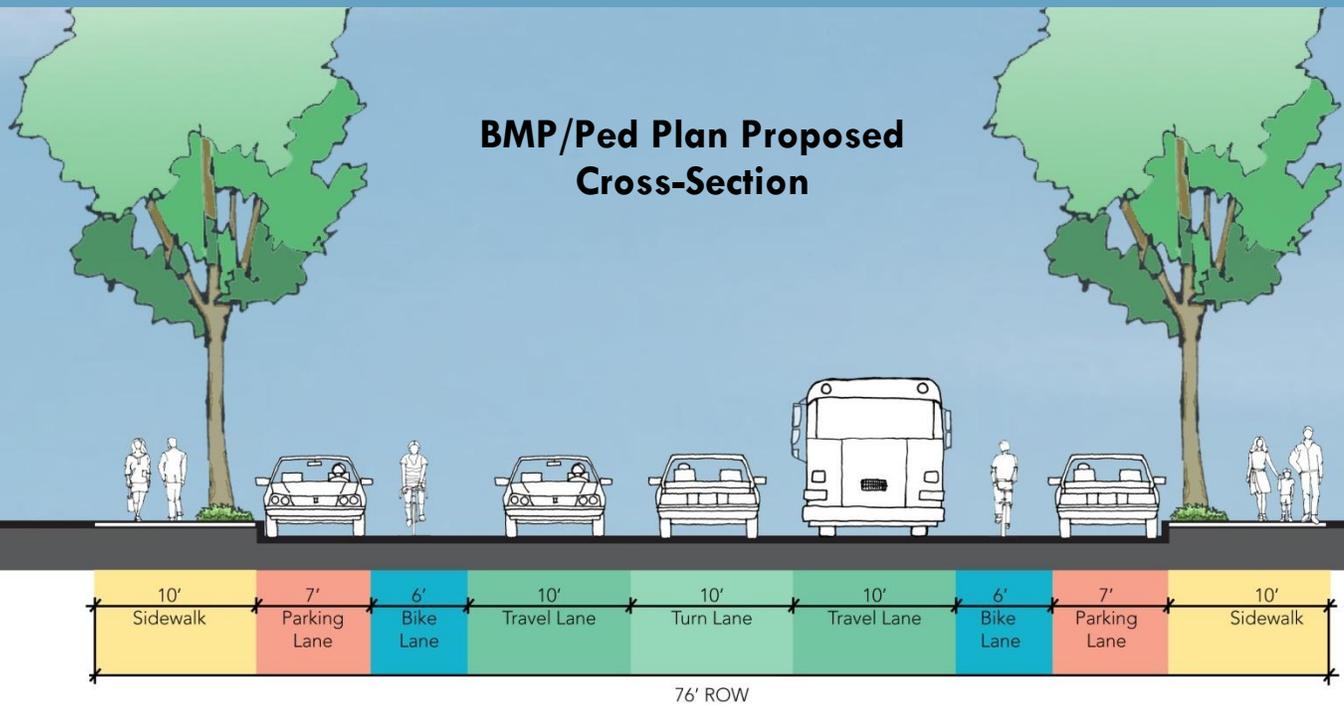


Figure 10-9 Marina Way South, Existing Conditions



# HARBOUR WAY/MARINA WAY

## BMP/Ped Plan Proposed Cross-Section



## PROPOSED IMPROVEMENTS

The Richmond Pedestrian Plan and Bicycle Master Plan propose several improvements to Harbour Way and Marina Way, as detailed below.

### Harbour Way

- Class II Bicycle Lanes
  - Virginia Avenue to Hoffman Boulevard
- Harbour Way/I-580 Interchange Improvements
  - Stripe high-visibility crosswalks and refuge islands at Cutting Boulevard
  - Add curb extensions and directional ramps at Cutting Boulevard
  - Widen sidewalks on Cutting Boulevard
  - Tighten corner curb radii and add crosswalks at I-580 Ramps
- Realign I-580 Ramps to intersect at 90-degrees
- Harbour Way/Wright Avenue
  - BNSF rail line crosses at-grade through at unsignalized intersections with no warning lights or gates. Need to coordinate traffic signals and gates

### Marina Way

- Class II Bicycle Lanes
  - Richmond Greenway to Wright Avenue
- Class III Bicycle Route
  - Wright Avenue to Hall Avenue
- Corridor streetscape improvements and Class II bicycle lanes between Hoffman Boulevard and Macdonald Avenue

# HARBOUR WAY/MARINA WAY

- Stripe 6' Class II Bicycle lanes and 7' Parking Lane
- Stripe 10-11' center median and 10-11' travel lanes
- Add pedestrian-scale lighting (long-term)
- Build 8-10' landscaped median
- Marina Way South Rail Crossing
  - Creates a barrier to proposed South Shoreline and Ferry Terminal development

## PLANNING CONSIDERATIONS/ OPERATIONAL REQUIREMENTS

- Long-range: In the near-term (through 2023), only one general purpose travel lane in each direction is necessary on both Harbour Way and Marina Way South to accommodate anticipated traffic volumes. In the long-term, with increasing traffic associated with full build-out of the Richmond Bay Campus and the South Shoreline area, demand for travel on Harbour Way may necessitate reverting to two lanes in each direction for road segments between I-580 and Hall Avenue.
- Both Harbour Way South and Marina Way South should be designed with 11' travel lanes to accommodate trucks and buses. In the near-term, Marina Way South will be the primary north-south transit route between Cutting Boulevard and Hall Avenue.
- Both Harbour Way South and Marina Way South are designated truck routes, and as such truck turning movements need to be accommodated
- Harbour Way provides access between the Bay Trail and future WETA Terminal to the south and Richmond Transit Station (Richmond BART) on the north.
- Harbour Way is a truck route, which provides truck access to the Ford Plant and the Port of Richmond.
- The General Plan envisions Marina Way and Harbour Boulevard as important industrial corridors in the Port Priority Use Area. As such, they are expected to maintain their strong working waterfront character, although enhancements are planned to improve safety for bicyclists and pedestrians
- The City of Richmond recently approved a development application for 1140 Harbour Way South, which would include a widening of the existing 5' sidewalk to create a 12' bicycle path with a 2' shoulder
- The proposed location for the two-way separated bikeway on Harbour Way seeks to minimize conflict with existing heavy truck movements and driveway traffic based on current industrial truck operations in the area. Additionally, this location is consistent with the Bay Trail planning efforts. Should truck traffic operations change in the future, an alignment on the west side could be considered if it minimizes conflict between trucks and bicyclists.
- The South Shoreline Specific Plan proposes realigning the Marina Way/Regatta Boulevard intersection so that Marina Way intersects Regatta Boulevard at 90 degrees, routing East-West "through" traffic via Regatta Boulevard.

## CONCEPTUAL RECOMMENDATIONS: NEAR-TERM (2015-2024)

Building off of previous recommendations for these two corridors, the SRTCP proposes near-term bicycle and pedestrian improvements. The intent of the near-term preliminary recommendations is to provide cost-effective, readily-implementable access improvements using low-cost materials, such as paint, safe-hit posts, and planter boxes.

# HARBOUR WAY/MARINA WAY

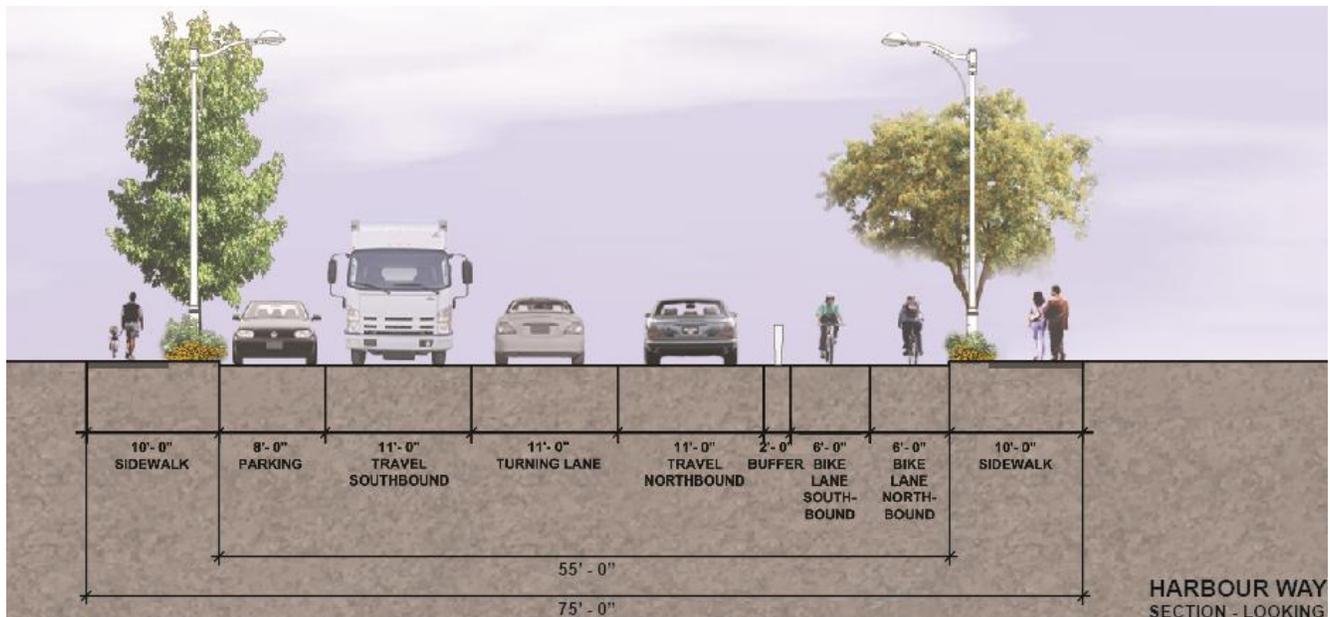
## Harbour Way

The following segment improvements are proposed:

### PROPOSED TRUCK ROUTE

- Bay Trail to Hoffman Boulevard:
  - Two-way separated bikeway, located on the east side with striped buffer and vertical separation, such as landscaped planter boxes or rubber curb. The bikeway should connect to the planned bicycle path in front of 1140 Harbour Way South.
  - Maintain parking on west side of roadway. Deploy signs and paint curbs to establish no parking zones within 20' of intersections and driveways to provide clear sightlines for trucks and other vehicles turning in and out of Port facilities and private properties along Harbour Way South.
  - More than 100' away from street intersections, permit temporary, short-term parking in the center turn lane to facilitate commercial vehicle loading, unloading, and staging.

Figure 10-10 Harbour Way S., Ford Building to Hoffman Boulevard, Preliminary Recommendation, Near Term (2015-2024)



- Hoffman Boulevard to Cutting Boulevard
  - One-way separated bikeways through Interchange
  - Square up on- and off ramps with striped curb extensions and soft-hit posts
  - Stripe large sidewalk extension with soft-hit posts in the northbound direction, north of off-ramp
- North of Cutting Boulevard
  - Bicycle lanes (partially existing)

Additionally, the following intersection and spot treatments are recommended:

- North rail spur (BNSF) crossing at the intersection of Harbour Way S and Wright Avenue.
  - Add warning lights, gates and traffic signals to this key railroad/arterial street crossing
- Hoffman Boulevard/Harbour Way Intersection
  - Stripe triple-four trail crossings on east and north side of intersection

# HARBOUR WAY/MARINA WAY

- Stripe large corner bulb/queue both on southeast and south west corners of the intersection to allow cyclists to make two-stage left turn crossings.
- Stripe curb extension on southeast corner to slow/improve safety of auto turning movements.
- Existing Angled Parking Adjacent to the Ford Plant
  - Convert angled parking to back-in angled parking adjacent to proposed bicycle lanes
- Harbour Way/Wright Avenue Rail Crossing
  - Install auto and pedestrian railroad crossing gates
  - Provide ADA accessible pedestrian accommodation through intersection
  - Install curb and sidewalk on southeast corner of the intersection
- All Intersections
  - Provide bicycle signal detection



(Left) Stripe triple-four trail crossing in Albany, California.



Two-way separated bikeway 10th Street Atlanta, Georgia.



Striped Curb extension/queue box in Montreal, Canada.

## Marina Way

The following segment improvements are proposed:

- Cutting Boulevard to Bay Trail Class I Path

**PROPOSED TRUCK ROUTE**

**South of Wright Avenue**

# HARBOUR WAY/MARINA WAY

- Maintain existing planted median strip throughout the corridor, with the exception of gaps to accommodate left-turn pockets at intersections, as necessary. Upon final design of the roadway, consideration should be given to allowance for a gap in the median to accommodate left turn movements by trucks and trailers from the unnamed Marina access road onto Southbound Marina Way South. This would allow vehicles leaving the boat launch and other parts of the Marina to exit via either Marina Way South, Marina Bay Parkway (via Regatta Boulevard), or Harbour Way South (via Hall Avenue).
- Re-balance street use, converting existing curb to curb width from four 12' general purpose vehicular travel lanes – with a 14' center median – to a profile with:
  - o One 11' vehicular travel lane in each direction, with buffer separated one-way bike lanes (7' in each direction, separated by a 6' buffer zone striped adjacent to the travel lane.
  - o At key intersections, transit stops will be provided on Marina Way South on the far-side of the intersection, within a new curb separated transit stop island (7'6") wide, with a basic bench and/or bus stop shelter. Where transit islands are present, the bike lane would be reduced in width to 5'6" and located between the island and the curb.
- The following treatments are recommended for all intersections in the corridor:
  - o Bicycle signal detection.

## Transit Service

In the near-term, the primary north-south transit service in the western half of the plan area will be routed along Marina Way South from Cutting Boulevard to Hall Ave. North of Cutting Boulevard and South of Hall Avenue, transit service will be routed on Harbour Way South. Service along this entire corridor will achieve frequent service standards in the near-term (at least one bus every 15 minutes, 18-20 hours per day), with a combination of routes. Proposed service changes for 2015-2024 include:

- Reroute AC Transit Line 74 south of the Richmond BART Station, providing direct access to the WETA Ferry Terminal and Shoreline activities via MacDonald-Harbour Way S.-Cutting Boulevard-Marina Way S.-Hall Ave.-Harbour Way S. Increase service frequency to 30 minutes all day (18-20 hours/day).
- A new AC Transit line is proposed to connect El Cerrito Del Norte BART to the WETA Ferry Terminal via Cutting Boulevard-Marina Way S.-Hall Ave.-Harbour Way S (30-min. frequency, 18-20 hours/day).
- Expand service on AC Transit Line 76, connecting El Cerrito Del Norte BART with Richmond BART via Cutting Boulevard-Harbour Way South-MacDonald Ave, with buses running every 30 minutes, 18-20 hours/day.

If Lark Drive were to be opened to public transit vehicles through the Berkeley Global Campus, the southern-most portion of this corridor, from the Ford Peninsula to Marina Way South and Regatta Boulevard, would also be served by the tail end of a new AC Transit route connecting El Cerrito Del Norte BART to the WETA Ferry Terminal via Potrero Avenue, the BGC, and Regatta Boulevard.

## CONCEPTUAL RECOMMENDATIONS: LONG-RANGE (2030 +)

Long-range solutions are also proposed, as anticipated development from the South Shoreline area and the Lawrence Berkeley National Lab Richmond Bay Campus take shape. The long-range recommendations include making major changes to the roadway, such as adjusting curb and gutter and providing raised cycletracks, some of which may be funded through development.

### Harbour Way

The following segment improvements are proposed:

- Bay Trail Class I Path to Hoffman Boulevard
  - Raised two-way cycletrack on the east side of the roadway
  - Integrate the planned bicycle path in front of 1140 Harbour Way South into the raised cycletrack design
- Hoffman Boulevard to Cutting Boulevard
  - Raised one-way cycletracks through I-580 interchange
  - Square up On- and Off Ramps per Pedestrian Plan with hardscape curb extensions
  - Stripe large sidewalk extension with soft-hit posts in the northbound direction, north of off-ramp

Additionally, the following intersection treatments are recommended:

- Hoffman Boulevard/Harbour Way Intersection
  - Modify signal to allow bike phase concurrent with northbound protected left-turn
  - Formalize curb extensions with curb and gutter

# HARBOUR WAY/MARINA WAY

Figure 10-11 Harbour Way and Hoffman Boulevard, Long Range (2030+) Plan



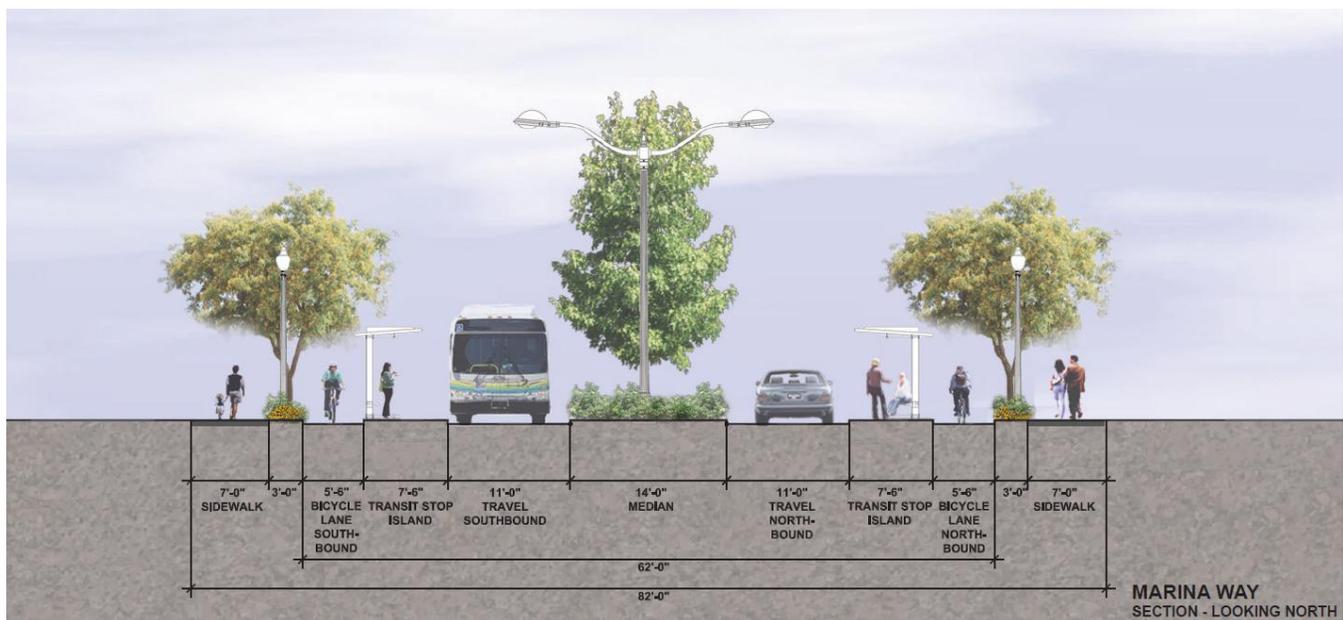
# HARBOUR WAY/MARINA WAY

## Marina Way

The following segment improvements are proposed:

- Formalize Marina Way South street allocation between transit stops, establishing a 4' wide rolled curb adjacent to a 3' striped buffer zone separating the bike lane (6') from the general travel lane (11').
- At transit stops, the curb to curb cross-section includes one 5'6" separated bike lane + 7'6" transit stop island with shelter + one general travel lane (11') in each direction, in addition to the existing 14' planted median island.
- Consider realigning Marina Way to intersect with Regatta Boulevard at 90 degrees, allowing traffic to proceed from Regatta Boulevard to Marina Way South (south of Regatta) as a primary "through" traffic movement rather than a turn.

Figure 10-12 Marina Way S., Bay Trail to Cutting Blvd, Preliminary Recommendations, Long-Term (through 2030)



## Transit Service

In the long-term, additional transit service is proposed along the same corridors, linking the WETA Ferry Terminal with the Richmond BART Station and other destinations in Central Richmond, and El Cerrito Del Norte BART via both Cutting Boulevard and a new route via the Berkeley Global Campus. With full buildout of commercial, institutional and residential development in the area, as planned for in the Richmond General Plan, the Richmond South Shoreline Specific Plan, and the Long Range Development Plan (LRDP) for the Berkeley Global Campus, demand for local circulation and regional connectivity will increase. New demand will likely warrant increased service frequency for all routes using this corridor, transit speed and reliability enhancements, such as in-lane stops, signal queue jumps and potentially grade separation for transit.

## BENEFITS

The following key outcomes are anticipated as a result of the near-term and long-term recommendations

# HARBOUR WAY/MARINA WAY

- Separation of pedestrian and bicycle traffic from motor vehicle traffic in long-range plan provides greater predictability for goods movement
- Direct transit connections from the Ford Peninsula, including the planned Ferry terminal and Central Richmond neighborhoods via expanded service via Marina Way South corridor.
- Enhanced pedestrian and bicyclist safety through I-580 Harbour Way interchange, including reduced crossing distances for pedestrians and reduced speeds of vehicles turning onto and off of the I-580 Ramps
- Enhanced bicyclist safety and wayfinding as Bay Trail proceeds to the north and west along Harbour Way and Hoffman Boulevard
- Introduction of low-stress bicycle facility for bicyclists of all ages as on-street extension of the Bay Trail
- Dedicated space for bicyclists and enhanced safety for all users through separation of modes on both Marina Way South and Harbour Way South.



# HOFFMAN BOULEVARD

## CORRIDOR OVERVIEW

Hoffman Boulevard is a short, diagonal street connecting Cutting Boulevard to Harbour Way (traveling NW to SE). This short corridor provides an important connection from Harbor Way and the larger South Shoreline Area (including the Richmond Ferry Terminal) to Point Richmond and segments of the San Francisco Bay Trail located to the East of the Santa Fe Channel. It provides the on-street continuation of the Bay Trail and is the primary route of access to the Shoreline area for traffic coming from Marin County via eastbound I-580.

## EXISTING CONDITIONS



### Cutting Boulevard to Harbour Way



The following issues and opportunities are present on Cutting Boulevard:

- Hoffman Boulevard has a constrained right-of-way relative to accommodating bicycle facilities without removing parking and/or a travel lane
- Hoffman Boulevard terminates at I-580 on and off ramps, which create challenges for bicyclists and pedestrians

## PLANNED IMPROVEMENTS

The Bicycle Master Plan proposes either Class II bicycle lanes or a Class I path on Hoffman Boulevard:

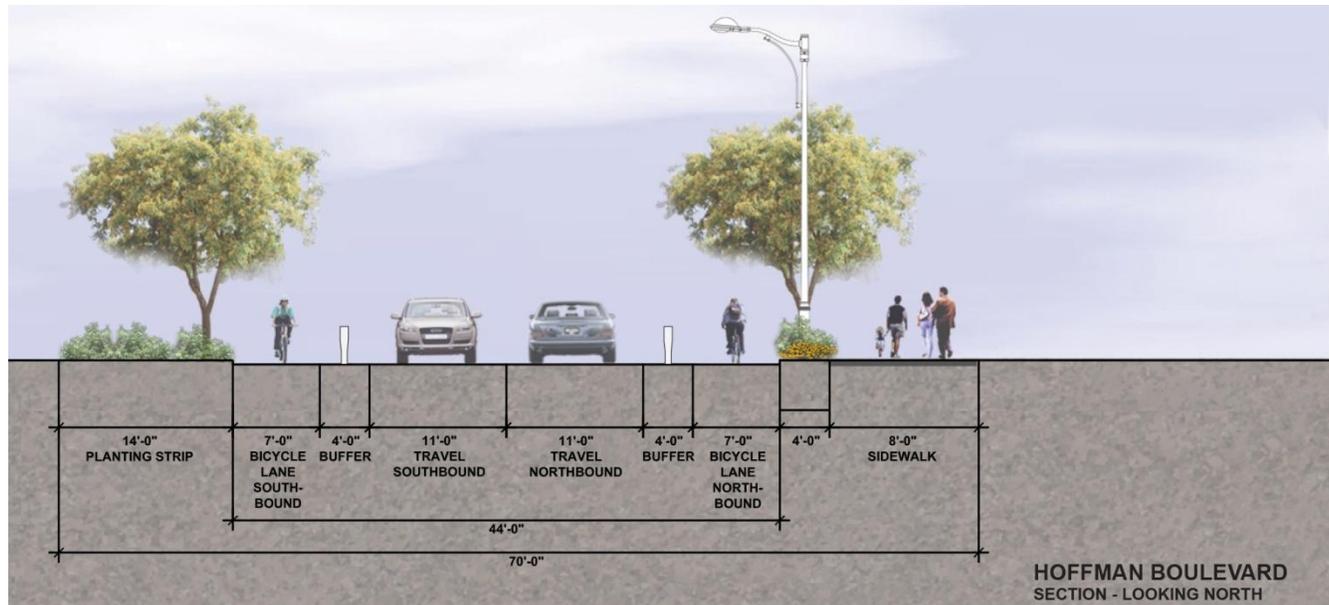
- Class II Bicycle Lanes
  - May require three- to two-lane reduction through parking removal on west side of the roadway and removing one turn pocket at the Cutting Boulevard and Harbour Way approaches
- Class I Shared-Use Path
  - Parallel to roadway

# HOFFMAN BOULEVARD

## PLANNING CONSIDERATIONS/ OPERATIONAL REQUIREMENTS

- In the long-range, only general purpose travel lane in each direction is assumed to be necessary to accommodate projected traffic volumes in this corridor.
- Transit service is not planned for this corridor.
- Hoffman Boulevard is not a designated truck route, although trucks do frequently use the facility.
- Hoffman Boulevard represents the on-street alignment of the Bay Trail

## CONCEPTUAL RECOMMENDATIONS: NEAR-TERM (2015-2024)



Building off of previous recommendations for these two corridors, the SRTCP proposes near-term bicycle and pedestrian improvements. The intent of the near-term preliminary recommendations is to provide cost-effective, readily-implementable access improvements using low-cost materials, such as paint, soft-hit posts, and planter boxes

**PROPOSED TRUCK ROUTE**

The following segment improvements are proposed:

- Cutting Boulevard to Harbour Way
  - Lane reduction/parking removal in the southbound direction and removal of left-turn pocket at Harbour Way intersection
  - Stripe continuous bicycle lanes through each intersection approach
  - Consider two-way cycletrack on west side of Hoffman as an alternative, depending on City and community support

Additionally, the following intersection treatments are recommended:

- Hoffman Boulevard/Harbour Way
  - Stripe triple-four trail crossings on east and south sides of intersection
  - Stripe corner queue boxes on southeast and southwest corners to allow queuing space for northbound and southbound cyclists, including those making two stage turns.

# HOFFMAN BOULEVARD

- Stripe two-stage queue box on the southwest corner, to allow queuing space for southbound bicyclists to cross from southbound Harbour Way (in a west side single lane bikeway) in two stages to travel southbound on a two-way separated bikeway on the east side of Harbour Way (south of Hoffman).
- Maintain space for a left turn lane at the western approach to the intersection of Hoffman Boulevard and Harbour Way South. Stripe curb extension on southeast corner to reduce speed of turning vehicle traffic.

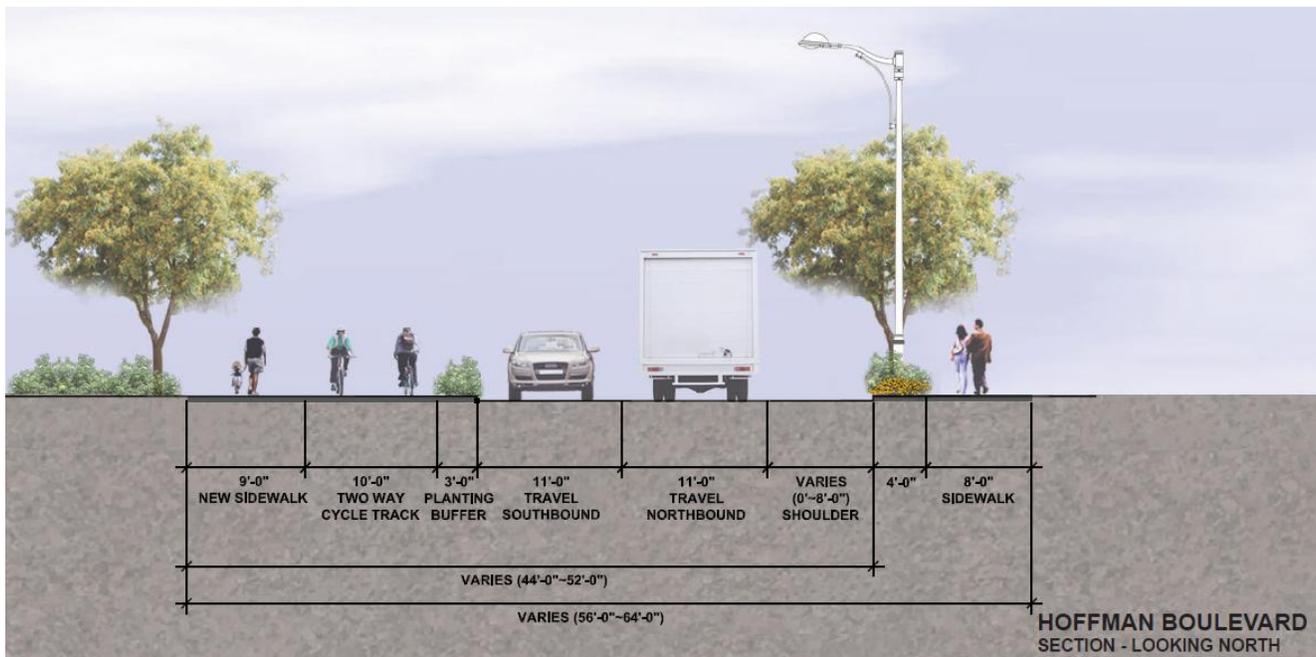
## CONCEPTUAL RECOMMENDATIONS: LONG-RANGE (2030 +)

Long-range solutions are also proposed, as anticipated development from the South Shoreline area and the Berkeley Global Campus at Richmond Bay take shape. The long-range recommendations include making major changes to the roadway, such as adjusting curb and gutter and providing raised cycletracks, some of which may be funded through development.

The following segment improvements are proposed:

- Cutting Boulevard to Harbour Way
  - Conduct a feasibility study for a “Rail with trail” Class I shared-use path parallel to the railroad alignment just west of the roadway, including a study of existing property lines
  - As an alternative to developing a parallel Class I path, develop a barrier separated, two-way bikeway on the southwest side of Hoffman.
  - Maintain space for a left turn lane at the western approach to the intersection of Hoffman Boulevard and Harbour Way South.

Figure 10-13 Hoffman Boulevard, Recommended Long-Term (2030+) Cross Section



# HOFFMAN BOULEVARD

The following intersection and spot treatments are recommended:

- Cutting Boulevard/Hoffman Boulevard
  - Bicycle signal or similar accommodation for bicyclist transitioning between the Class I path (southeast corner of the intersection) and the Class II bicycle lanes on Cutting Boulevard
- Hoffman Boulevard/Harbour Way Intersection
  - Realign the intersection of the eastbound I-580 on-ramp with Harbour Way South, enhancing safety for all users by forcing I-580 bound traffic to make a slower, right angle turn onto the on-ramp from southbound Harbour Way South.
  - Modify signal to allow bike phase concurrent with northbound protected left-turn
  - Formalize curb extensions with curb and gutter
- All signalized intersections
  - Install bicycle signal detection

**Figure 10-14 Hoffman Boulevard at Harbour Way, Recommended Long-Term (2030+) Plan**



# HOFFMAN BOULEVARD

Figure 10-15 Hoffman Boulevard and Cutting Boulevard, Recommended Long-Term (2030+) Plan



## KEY OUTCOMES

The following key outcomes are anticipated as a result of the near-term and long-term recommendations:

- Dedicated bicycle facilities for the on-street continuation of the Bay Trail
- Enhanced and intuitive transition for bicyclists between the Hoffman Boulevard proposed bicycle lanes and the two-way cycletrack proposed on Harbour Way



# CARLSON BOULEVARD

## CORRIDOR OVERVIEW

The portion of Carlson Boulevard within the study area stretches approximately 3.25 miles north to south from Maine Avenue to the El Cerrito Plaza BART Station area near San Pablo Avenue. Carlson intersects with several major corridors including Cutting Boulevard, Bayview Avenue, I-80, Central Avenue, and San Pablo Avenue.

**Maine Avenue to El Cerrito Plaza BART Station**

## EXISTING CONDITIONS

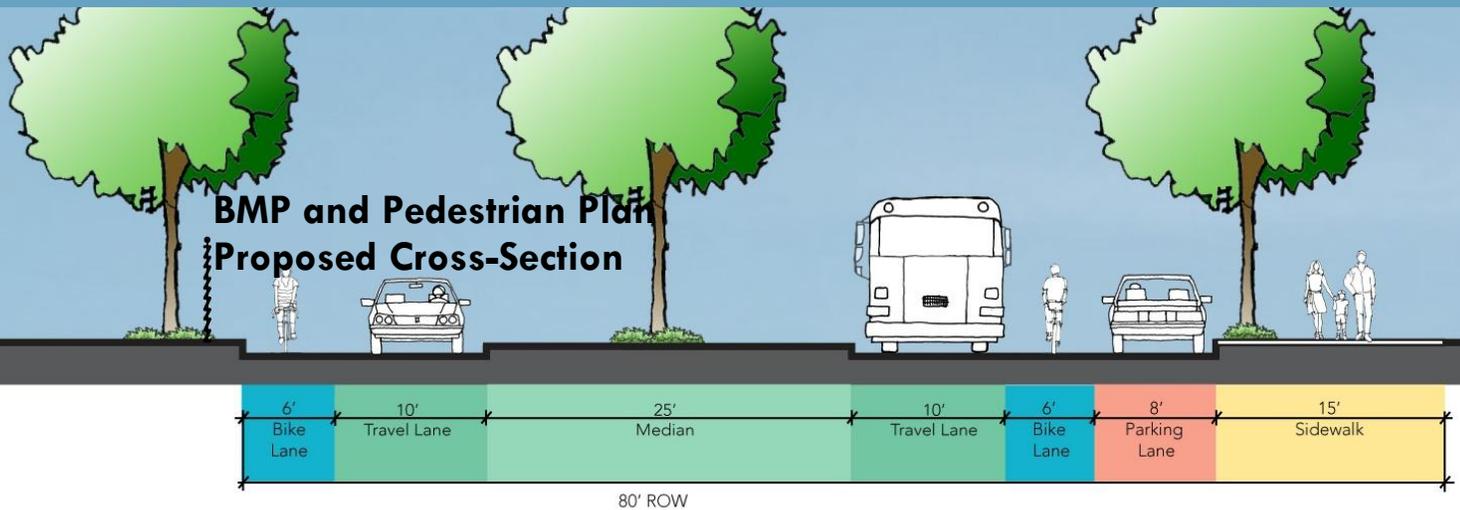
The following issues and opportunities are present on Carlson Boulevard:

- Carlson runs directly parallel to the Amtrak train tracks and I-580, and as a result, there are no activated land uses on the west side of the street north of Monterey Street.
- Carlson Boulevard passes under I-80, which poses significant challenges for bicycle and pedestrian access as a result of multi-lane on and off ramps. The skew of the interchange encourages high-speed right-turn movements at the on-ramps.
- Access to neighborhoods on the west side of the railroad is limited to three locations at Cutting Boulevard, Bayview Avenue, and Central Avenue.
- On the east side, the City's regular block pattern continues, although a number of large developments reduce overall permeability.
- UPRR rail lines create one of the most dangerous intersections in the state at Carlson Boulevard/Cutting Boulevard, according to the California Public Utilities Commission despite proximity to schools and residences.



Typical Carlson Boulevard cross-section north of Bayview Avenue.

# CARLSON BOULEVARD



## PLANNED IMPROVEMENTS

The Richmond Pedestrian Plan and Bicycle Master Plan propose several improvements to Carlson Boulevard:

- Buffered Bicycle Lanes
  - South 23<sup>rd</sup> Street to Bayview Avenue
- Class II Bicycle Lanes
  - Bayview Avenue to Tehama Avenue
  - Existing bicycle lanes south of Tehama Avenue (completed in 2013)
- Consider grade separation or roundabout
  - Carlson Boulevard/Cutting Boulevard intersection
- Bicycle and Pedestrian Access Improvements to Richmond Greenway at Carlson Boulevard
  - Short-Term: Connect north of Broadway to 23<sup>rd</sup> Street to provide an on-street continuation of the Richmond Greenway as a temporary gap closure
    - Install two-way cycletrack adjacent to southbound 23<sup>rd</sup> Street
    - Stripe bike lane on part of 22<sup>nd</sup> Street bridging 23<sup>rd</sup> Street
    - Class I spur path on the east side of Carlson Boulevard between the Richmond Greenway and Broadway, which may require right-of-way acquisition
    - Install two-way cycletrack on Carlson Boulevard between Broadway and 23<sup>rd</sup> Street
    - Install bicycle signal at Carlson Boulevard/Broadway to accommodate transition between Richmond Greenway and two-way cycletracks on Carlson Boulevard and 22<sup>nd</sup> Street
  - Long-Term: Staggered mid-block crosswalk across Carlson Boulevard north of Ohio Avenue
    - Close Richmond Greenway gap across 23<sup>rd</sup> Street with a bicycle/pedestrian bridge and provide a crossing at the railroad tracks



## PLANNING CONSIDERATIONS/ OPERATIONAL REQUIREMENTS

- In the near-term (through 2023), traffic volumes on Carlson Boulevard are not expected to require more than one general purpose travel lane in each direction throughout most of the corridor, with center left turn lanes in place of a median in advance of selected intersections.
- In the near-term, Carlson Boulevard will continue to be served by AC Transit local service (Route 71 linking Richmond BART with El Cerrito Plaza BART via Carlson Blvd and Central Avenue), with additional routes and shuttles using the corridor south of Bayview Avenue, as development of the Richmond Bay Campus and Shoreline area proceed.
- Carlson Boulevard is not part of the City of Richmond network of truck routes.
- In the long-term (2030 and beyond), traffic associated with full build-out of the Richmond Bay Campus and other parts of the South Shoreline Specific Plan area may increase pressure to expand the peak hour vehicle movement capacity of this and/or other key crossings of I-580. It is quite difficult to predict 20-year forecasts even in time periods over which conditions are expected to be relatively stable. At present, changes in vehicle miles of travel (VMT) per capita, which peaked in 2004 and continues to be in decline even after the recession; vehicle technology, and generational shifts in the preference for driving, make reliable prediction of 20-year forecasts exceedingly difficult. For planning purposes, two options have been considered for Carlson Boulevard and Cutting Boulevard (one of the two may need to revert to the current number of travel lanes (two through lanes in each direction) to accommodate traffic between South Richmond and the I-80 and I-580 corridors).
- Carlson Boulevard provides a long, continuous, north-south link in the bicycle network, linking Central Richmond to El Cerrito and the El Cerrito Plaza BART Station. It also connects with a proposed bike boulevard in Albany that connects to Berkeley's 9<sup>th</sup> Street bike boulevard and continues on other streets through Emeryville and Oakland to the West Oakland BART Station
- With enhanced east-west connections between South Richmond and Carlson Boulevard, Carlson Boulevard would provide an important bicycle route to transit
- Carlson Boulevard provides access to the Richmond Greenway, which connects to the Ohlone Greenway and El Cerrito Del Norte BART Station to the east.
- Sidewalk gap closure and improvements are being considered for the north and south sides of Cutting Boulevard just west of the intersection at Carlson Boulevard. Through this project, intersection improvements at the Cutting Boulevard/Carlson Boulevard may also be made. As a result, any near-term planning and investments should consider the long-term recommendation for a roundabout at this location.
- Through previous planning efforts, grade-separation of Cutting Boulevard over the railroad track, just west of the Cutting Boulevard/Carlson Boulevard intersection, has been considered but not included in planning documents due to concerns from adjacent businesses.

## CONCEPTUAL RECOMMENDATIONS: NEAR TERM (2015-2024)

Building-off of previous recommendations for these two corridors, the SRTCP proposes near-term bicycle and pedestrian improvements. The intent of the near-term preliminary recommendations is to provide cost-effective, readily-implementable access improvements using low-cost materials, such as paint, safe-hit posts, and planter boxes

The following segment improvements are proposed:

# CARLSON BOULEVARD

- Broadway to Bayview Avenue
  - Four-lane to two-lane reduction (one in each direction)
  - Stripe typical buffered bicycle lanes (11' travel lane, 4' buffer, 7' bike lane)
- Bayview Avenue to Tehama Avenue
  - Bicycle lanes (70' cross section: 8' parking, 6' bicycle lanes, 11' outside travel lanes, and 10' inside travel lanes)

Figure 10-16 Carlson Boulevard, North of Bayview, Conceptual Recommendation, Near-Term (2015-2024)



Additionally, the following intersection treatments are recommended:

- Carlson Boulevard/Richmond Greenway
  - Install two-way cycletrack adjacent to southbound 23rd Street
  - Stripe bike lane on part of 22<sup>nd</sup> Street bridging 23<sup>rd</sup> Street
  - Class I spur path on the east side of Carlson Boulevard between the Richmond Greenway and Broadway, which may require right-of-way acquisition

# CARLSON BOULEVARD

- Install two-way cycletrack on Carlson Boulevard between Broadway and 23<sup>rd</sup> Street
- Install bicycle signal at Carlson Boulevard/Broadway to accommodate transition between Richmond Greenway and two-way cycletracks on Carlson Boulevard and 22<sup>nd</sup> Street
- Carlson Boulevard/Bayview Avenue
  - Eliminate turn pockets where required, stripe curb extensions, stripe median nose, and accommodate bikeways and “protected intersection” feature (see the Bayview Avenue Corridor Profile on Page 10-49 for an illustration of conceptual recommendations for this intersection).
- Mark and Enhance Crosswalk approximately every 500’ (every two blocks) between Tehama Avenue and Central Avenue
  - Stripe median refuge with planters and safe-hit posts at SB off-ramp
  - Narrow on-ramp to have on receiving lane
  - Stripe curb extension with planters and safe-hit posts at southwest corner of SB on-ramp
  - To support frequent crosswalks, consider marking crosswalks at:
    - Carl Avenue
    - Placer Street
    - Plumas Avenue
    - Sutter Avenue
    - Sacramento Avenue
    - Panama Avenue
    - El Dorado Street
- Carlson Boulevard/I-80 WB Ramps
  - Stripe median refuge with planters and safe-hit posts at SB off-ramp
  - Narrow on-ramp to have on receiving lane
  - Stripe curb extension with planters and safe-hit posts at southwest corner of WB on-ramp
  - Complete a signal warrant analysis to consider implementation of a traffic signal to support northbound left-turns onto I-80 EB Ramp and left-turns off of the I-80 WB ramp
  - Coordinate with existing I-80 EB Ramps signal and a potential signal at Tehama Avenue/San Luis Avenue
- Carlson Boulevard/I-80 EB Ramps
  - Narrow on-ramp to have one receiving lane
  - Stripe curb extension with planters and safe-hit posts at northeast corner of EB on-ramp
  - Modify signal and intersection geometry to remove right-turn slip lane
- Carlson Boulevard/Tehama Avenue/San Luis Avenue
  - Complete a signal warrant analysis to consider implementation of a traffic signal to sup
  - Coordinate with existing I-80 EB Ramps signal and a potential signal at I-80 WB Ramps
  - Relocate bus stops to far-side of intersection if signal is implemented
- Carlson Boulevard/Columbia Avenue and Carlson Boulevard/Sacramento Ave
  - Complete a signal warrant analysis to consider implementation of traffic controls to support safe routes to school at Fairmount Elementary School and destinations on San Pablo Avenue.

# CARLSON BOULEVARD

Conceptual recommendation is for installation of RRFB and in-street lighting for the pedestrian crossing at Sacramento and full signalization for the crossing at Columbia Avenue.

- Relocate bus stops to be at the far side of all signalized intersections, where supported by existing crosswalks and land uses

As detailed above, south of Tehama Avenue, it is recommended the enhanced crosswalks be marked and installed with pedestrian-activated beacons approximately every 500 feet (approximately every two blocks through the Richmond Annex). The intent is to improve pedestrian access through the neighborhood, particularly where Carlson still have a four-lane cross section. The crosswalk enhancements listed above assume the 500 foot spacing.

## Transit

In the near-term Carlson Boulevard will continue to be served by AC Transit Local Line 71 (Richmond BART-El Cerrito Plaza BART), with service frequency increasing over time south of South 47<sup>th</sup> Street, as demand increases in association with development at the Berkeley Global Campus (BGC) and within the South Shoreline area. Future transit connections and service frequency along Carlson Boulevard depend in part on route options for serving the new BGC as it develops.

South of Bayview, combined transit service frequency on Carlson Boulevard will be one bus every 10-15 minutes, as a result of routing a new direct service from Richmond BART to El Cerrito Plaza BART via Marina Bay Parkway/South 23<sup>rd</sup>, Regatta Boulevard, Meade Street, Bayview Avenue, Carlson Boulevard, and Central Avenue. This level of service and estimated future traffic volumes on Carlson Boulevard do not necessitate lane dedication for transit or HOV in the near-term.

All existing bus stops in the corridor would need to be made fully accessible for people with limited mobility and where necessary, upgraded with shelters, benches and schedule information.

## CONCEPTUAL RECOMMENDATIONS: LONG-RANGE (2030 +)

Long-range solutions are all also proposed, as anticipated development from the South Shoreline area and the Lawrence Berkeley National Lab Richmond Bay Campus take shape. The long-range recommendations include making major changes to the roadway, such as adjusting curb and gutter and providing raised cycletracks, some of which may be funded through development.

The following segment improvements are proposed:

- Broadway to Bayview Avenue
  - Four- to two-lane reduction (one lane in each direction)
  - Two-way cycletrack on the west side of the street (10' bikeway, 3' minimum buffer; install soft-hit posts, rumble strips separating buffer and travel lane)
  - Narrow travel lanes to 10' southbound to accommodate wider bikeway
  - Northbound, assign additional roadway space from lane reduction to a widening the landscaped median
    - Consider widening the sidewalk (instead of widening the median) in the future if land uses with higher pedestrian demand redevelop
- Bayview Avenue to Tehama Avenue

# CARLSON BOULEVARD

- Maintain Class II bicycle lanes within existing right-of-way, as proposed under the near-term improvements (70' cross section: 8' parking, 6' bicycle lanes, 11' outside travel lanes, and 10' inside travel lanes)
- Consider a four- to three-lane reduction with additional roadway space used to provide parking-separated directional cycletracks (6' bicycle lanes, 3' buffers, 8' parking, 11' travel lanes, and 10' two-way left-turn lane). Provide 6' raised median refuge at unsignalized crosswalks.
- All locations
  - Pedestrian-scale lighting corridor-wide on Carlson
  - Bicycle and pedestrian wayfinding signs

Figure 10-17 Carlson Blvd. at Cutting Blvd., Preliminary Recommendation, Long-Term (2030+)



# CARLSON BOULEVARD

Additionally, the following intersection treatments are recommended:

- Cutting Boulevard/Carlson Boulevard
  - Consider implementing a roundabout instead of a signal at this location pending future feasibility analysis building on the work completed for the Pedestrian Plan and City support
  - Define roadway edge with curb and gutter on northwest and southwest corners with curb extensions and squaring up crosswalks
  - Close sidewalk gap on north and south sides of Cutting Boulevard
  - Provide extra wide sidewalk on the south side of Cutting with space marked for travel by bicycles, linking the proposed Spring Street bikeway to a wide crosswalk connection to the Carlson Boulevard cycle track.
  - Widen southbound Carlson Boulevard approach to accommodate right-turn pocket
  - Install separate bike phase or protected turn phasing across cycletrack
  - Consider grade separation of the railroad tracks in the longer term, depending on City and community support
- Carlson Boulevard/Bayview Avenue and Carlson Boulevard/Broadway
  - Install separate bike phase or protected turn phasing across cycletrack
- All Intersections
  - Bicycle Signal Detection

## Transit

In the long-term (2030 and beyond), the following transit enhancements are proposed for the Carlson Boulevard corridor:

- Service along the entire corridor, from El Cerrito Plaza BART to Richmond BART would be upgraded to meet frequent service standards (service every 15 minutes or better at least 18 hours per day on weekdays).
- Service frequency would be best (every 7-15 minutes) south of Bayview Avenue, with the addition of a new frequent service route connecting Richmond BART with El Cerrito Plaza BART, via Marina Bay Parkway/South 23<sup>rd</sup>, Regatta Boulevard, Meade Street, the SE edge of the Berkeley Global Campus, Bayview Avenue, Carlson Boulevard and Central Avenue.
- A new rail transit station along the UPRR corridor at or near the proposed South 47<sup>th</sup> Street overpass of I-580 would provide regional transit connections for residents of the Carlson Corridor, employees of the Richmond Bay Campus, and other Shoreline area residents, employees and visitors. The station would be contingent upon the development of an Eastshore transit line (similar in frequency, capacity and function to the eBART line currently under construction in East Contra Costa County, as envisioned in the San Francisco Bay Area Regional Rail Plan and the draft BART Metro Vision plan). The new service would be provided on or adjacent to the existing Union Pacific main line, connecting Hercules and Richmond to San Leandro, with stops in Berkeley, Emeryville, West Oakland (with a potential direct connection to BART) among others.
- All existing bus stops in the corridor would need to be made fully accessible for people with limited mobility and where necessary, upgraded with shelters, benches and schedule information.

# CARLSON BOULEVARD

This level of service and estimated future traffic volumes on Carlson Boulevard do not necessitate lane dedication for transit or HOV in the near-term, although the City of Richmond and AC Transit should carefully monitor transit and vehicle traffic patterns over time and adjust lane restrictions and corridor travel priority accordingly.

## KEY OUTCOMES

The following key outcomes are anticipated as a result of the near-term and long-term recommendations:

- Reduced pedestrian crossing distances at signalized and unsignalized intersections
- Provides low-stress bike connections between Richmond Greenway/Central Richmond and El Cerrito Plaza BART Station area
- Access to Shoreline and Richmond Bay Campus for residents of Eastshore, Parkview, Pandhandle Annex, and Richmond Annex residents



# CENTRAL AVENUE

## CORRIDOR OVERVIEW

Central Avenue is a key east-west corridor connecting Point Isabel and the Bay Trail to the El Cerrito Plaza BART Station. It crosses I-580 via an overpass and I-80 via an underpass. Central Avenue provides a direct connection between the South Shoreline Area, Richmond Bay Campus, Bay Trail, and El Cerrito Plaza BART Station. Central Avenue east of San Mateo Street is located within the City of El Cerrito.

**Point Isabel to  
El Cerrito Plaza  
BART Station**

## EXISTING CONDITIONS

The following issues and opportunities are present on Central Avenue:

- Multiple highway interchanges in close proximity where Central Avenue intersects I-580 and I-80
- Highly congested interchange with I-80 due to close signal spacing results in driver inattention to pedestrians and bicyclists
- On and off-ramps from freeway interchanges along the Central Avenue pose significant challenges for bicycle and pedestrians
- Poor pavement conditions through the Central Avenue interchanges create difficult riding conditions for bicyclists
- The Bay Trail drops just north of the Central Avenue/Rydin Road/I-580 On-Ramp intersection and continues at the southwest corner of the intersection, requiring bicyclist and pedestrian to navigate two legs of a multi-lane all-way stop intersection
- Traffic volumes on Central Avenue are high, which creates a higher-stress environment for bicyclists and pedestrians



## PLANNED IMPROVEMENTS

The draft City of El Cerrito Active Transportation Plan proposes several improvements to Central Avenue, as described below:

- Class I Path on south side of Central Avenue between Jacuzzi Street and Pierce Street
- Upgrade existing edge line striping on Central Avenue over bridge with Class II pavement legends and signage
- Two-way separated bikeway on the west-side of Pierce Street
- Class I Path between Pierce Street and Belmont Avenue, parallel to Creekside Park, to provide a connection to the El Cerrito Plaza BART Station area

## PLANNING CONSIDERATIONS/ OPERATIONAL REQUIREMENTS

- The Central Avenue corridor will continue to be used in the near-term for limited service by AC Transit on Line 25
- Central Avenue is a designated truck route.
- East of Central Park, Central Avenue is located within the jurisdiction of the City of El Cerrito
- As part of the Central Avenue and Liberty Street Streetscape improvements project, the City is scheduled to make improvements to Central Avenue from San Pablo Avenue, east to the Ohlone Greenway. Improvements will include sidewalk replacement, and installation of decorative concrete on median noses, pedestrian-level lighting, curb bulb-outs, curb ramps, high-visibility crosswalk signage and striping, bike route signage and striping, street trees, and street furniture. This project will improve multimodal connections from the Richmond Annex, in the South Richmond Study Area to the El Cerrito Plaza BART Station and surrounding land uses and activities
- Central Avenue is part of the City of Richmond’s network of major truck routes.
- CCTA is considering reconstructing the Central Avenue/I-80 Interchange to:
  - Realign Pierce Street with San Mateo Street, removing the existing signal at Central Avenue/San Luis Street/Pierce Street and installing a new signal at San Mateo Street/Central Avenue
  - Replace existing all-way STOP control at Central Avenue/I-80 EB Ramps with a signal
  - Replace existing all-way STOP control at Central Avenue/Rydin Avenue/I-580 EB Ramps with a signal



*Two-way separated*

## CONCEPTUAL RECOMMENDATIONS: NEAR TERM (2015-2024)

Building-off of previous recommendations for these two corridors, the SRTCP proposes near-term bicycle and pedestrian improvements. The intent of the near-term preliminary recommendations is to provide cost-effective, readily-implementable access improvements using low-cost materials, such as paint, safe-hit posts, and planter boxes.

**PROPOSED TRUCK ROUTE**  
**El Cerrito to SF Bay Shore**

The following segment improvements are proposed:

- Bay Trail to Central Avenue (northeast corner of intersection at Rydin Avenue)
  - Extend Class I Shared-Use Path (Bay Trail) to intersection at Central Avenue
- Rydin Road to Jacuzzi Street
  - Add Bicycle Lane Legends and Refresh Striping
- Jacuzzi Street to Pierce Road
  - Class I Shared-Use Path on the south side

# CENTRAL AVENUE

- 300' east of Rydin Road north to Existing Bay Trail Path
  - Class I Shared-Use Path following existing “goat tracks” through vacant parcel
- Pierce Street
  - Two-Way Separated Bikeway to Cerrito Creek
- Sacramento Avenue, San Luis Street, and San Joaquin Street
  - Designate Sacramento Avenue and San Joaquin Street as bicycle boulevards, install wayfinding, and consider traffic calming improvements to provide a low stress alternative for east-west travel
  - Widen sidewalk and existing ramps to access the bridge to enhance bicycle and pedestrian access
  - Stripe sharrows to direct bicyclists onto and off of the bridge
  - Consider traffic calming devices on San Joaquin Street and San Luis Street to increase comfort of these roadways for bicyclists and pedestrians
- Extend curbs to narrow the pedestrian crossing of San Joaquin on the north side of Central Ave. Reduce radius of the NW curb to reduce the speed of vehicles turning right from southbound San Joaquin onto westbound Central Avenue.

**Figure 10-18 Central Avenue at Rydin, Conceptual Recommendation, Near-Term (2015-2024)**



Additionally, the following intersection and spot treatments are recommended

- Central Avenue and Rydin Road
  - Stripe “triple-four” trail crossings on the north and west sides of the intersection to facilitate Bay Trail connectivity through the intersection. These crossing markings include two rows of high-visibility continental striping (approximately 4’ in width) from curb to curb, separated by an 8’ unstriped crossing zone in which bicycle lane legends with arrows are typically painted. These markings are intended to alert all road users to look for people riding bicycles through the crossing. The bike lane legends also provide wayfinding guidance to and along recommended trail user crossings.
  - Restripe the east and south sides of the intersection with standard high-visibility crosswalks, supporting pedestrians in making long crossings. The recommended design includes continental striping similar to the “triple four” crossings to the north and west, but without an gap, or bike lane markings in the middle. Wayfinding signage should be installed at the northeast and southwest corners of the intersection to guide trail users to destinations such as the City of El Cerrito, and El Cerrito Plaza BART, via the planned Central Avenue bicycle facilities.
  - A protected area shall be established within striping and delineator pylons on the northwest corner of the intersection, enabling cyclists and other trail users to wait safely for the light to change to enable a two-stage Bay Trail crossing connection between the northeast and southwest corners.
- San Joaquin Street and Sacramento Avenue, San Luis Street and Sacramento Avenue at I-80 Bicycle and Pedestrian Bridge
  - Restripe existing crosswalks with high-visibility ladder striping, or triple four trail crossing. Consider use of raised crossing/speed table to facilitate access to the Sacramento Avenue bridge over I-80.
  - If feasible, construct sidewalk extensions on the Path-side of both roadways to increase visibility of bicyclists and pedestrians crossing the street and provide more waiting space for bicyclists and pedestrians
  - Align travel way so that cyclists and pedestrians coming off of the bridge, at both landings, are required to look straight towards oncoming traffic before entering the intersection (there is no need for signage or street design to abruptly stop all people on bikes after crossing a major highway).
  - Stripe sharrows to direct bicyclists onto and off of the bridge



## CONCEPTUAL RECOMMENDATIONS: LONG-RANGE (2030 +)

Long-range solutions are also proposed, as anticipated development from the South Shoreline area and the Lawrence Berkeley National Lab Richmond Bay Campus take shape. The long-range recommendations include making major changes to the roadway, such as adjusting curb and gutter and providing raised cycletracks, some of which may be funded through development.

The following segment improvements are proposed:

- Formalize Two-Way Separated Bikeway with CCTA Central Avenue Interchange Realignment
  - Construct two-way separated bikeway as a raised two-way cycletrack

Additionally, the following intersection and spot treatments are recommended

- Rydin Road/Central Avenue/I-580 On-Ramp
  - Signalize intersection with a bike phase to support diagonal crossing of Bay Trail
- Central Avenue/Jacuzzi Street and Central Avenue/I-80 Ramps
  - Consider bicycle signal phasing to control movement on the Class I Path
- All Intersections
  - Bicycle Signal Detection

## Transit

Additional service on AC Transit Line 71 and a potential new line connecting the Richmond Bay Campus and Richmond's South Shoreline area with the El Cerrito Plaza BART Station via Carlson Boulevard and Central Avenue would result in higher frequency service on Central Avenue in El Cerrito. No expansion of transit service is proposed for the portion of Central Avenue located within the City of Richmond, which is currently served by limited trips on AC Transit Line 25.

## KEY OUTCOMES

The following key outcomes are anticipated as a result of the near-term and long-term recommendations:

- Enhanced pedestrian and bicycle safety through I-580 and I-80 interchanges
- Provide dedicated bicycle facilities between the Bay Trail and El Cerrito Plaza area
- New connections between South Richmond, the Bay Trail, and the El Cerrito Plaza BART Station area



# BAYVIEW AVENUE

## CORRIDOR OVERVIEW

Bayview Avenue is currently the primary multimodal connection to the South Shoreline Area (including the future site of the Richmond Bay Campus) from El Cerrito, including El Cerrito Del Norte BART and El Cerrito Plaza BART, and Richmond neighborhoods located east of I-580, including Eastshore, Park View, Richmond Annex, Southwest Annex, and the Panhandle Annex. To the west, Bayview Avenue originates immediately west of I-580 at the intersection of Seaport Avenue, South 51<sup>st</sup> Street and on/off-ramps to/from eastbound I-580. A direct connection to the Bay Trail can be made from a path extension of South 51<sup>st</sup> Street, starting one block south of Bayview. On the northeast side of the Bayview interchange, the primary auto, truck, and transit connections to El Cerrito and regional destinations to the south and east of South Richmond can be made via Carlson Boulevard (These connections are discussed further in the associated Carlson Boulevard Corridor Profile). The focus of this corridor profile is on the Bayview overpass of I-580, and existing and potential pedestrian, bicycle and transit connections to the El Cerrito Del Norte BART Station.

**Bay Trail,  
Richmond Bay  
Campus to  
El Cerrito Del  
Norte BART**



## EXISTING CONDITION

### Bayview Overpass

From South 51<sup>st</sup> Street and Seaport Avenue, Bayview Avenue rises to the south, then loops back to the northeast, as it crosses I-580 and the UPRR tracks to an intersection with Carlson Boulevard. The center of the overpass includes a signalized intersection with on and off-ramps from westbound I-580. The width of usable space on the overpass is approximately 85.’ This space is currently allocated – in typical cross-section – to two general purpose travel lanes in each direction, a center left turn lane in advance of the intersections with I-580 exit/entrance ramps (away from intersections, the center left turn lane is replaced by an unplanted median), wide shoulders (striped), and a narrow (~4’) sidewalk on the southeast side. New ADA accessible curb ramps have been installed at selected corners.

# BAYVIEW AVENUE

At the southwestern approach to the intersection of Bayview Avenue and Carlson Boulevard, Bayview has a wider profile, with two southbound lanes and three northbound lanes, including dedicated right turn and left turn lanes, on either side of a lane marked with straight and left turn arrows.

Challenges with the Bayview overpass and its intersection with Carlson Boulevard include:

- Wide lanes and wide corner turning radii encourage high speed through travel and turning movements in this corridor (Note: the wide angle of the southwest corner of Carlson Boulevard and Bayview Avenue encourages high speed turns causing potential conflicts with the through movements of bicyclists and pedestrians along Carlson Boulevard).
- Sidewalks are only present on the southeast side of the Bayview overpass and are in a state of disrepair.
- There are no dedicated bicycle facilities on the Bayview overpass or on Bayview Avenue east of Carlson Boulevard.
- The design of the on-ramp to westbound I-580 from south/west bound Bayview Avenue facilitates free right turns at high speeds. This puts motor vehicles in potential high speed conflict with pedestrians and cyclists who may be encouraged to use the wide shoulder present on that side of the overpass, despite the lack of a sidewalk or dedicated bike lane.
- The location of a fire station on the northwest corner of the intersection of Bayview Avenue and Carlson Boulevard (with driveway access via Bayview Avenue) necessitates wider clearance and careful design of any intersection modifications.

## Transit

Transit and shuttle services using segments of Bayview Avenue in this corridor include:

- AC Transit Line 71, which deviates from the Carlson Blvd corridor, traveling on Bayview Ave for one block east to Hartnett Ave. From there, Line 71 follows Hartnett north and west to another intersection with Carlson Boulevard.

**Bayview Avenue and Carlson Boulevard:  
Curb ramps with tactile warning strip**



**Bayview Avenue and Carlson Boulevard:  
Wide turning radius and sidewalk in disrepair**



# BAYVIEW AVENUE

- The UC Berkeley Richmond Field Station Shuttle uses the Bayview Ave overpass to connect the Field Station to the main campus of UC Berkeley (via the I-580 on/off-ramps at Bayview), and to El Cerrito Plaza BART Station, via Bayview Ave, Carlson Boulevard, and Central Avenue.

## Auto connections to El Cerrito

The primary alternative routes from the Bayview interchange to El Cerrito Del Norte BART are:

- Carlson Boulevard to South 47<sup>th</sup> Street to Potrero Avenue (existing conditions and potential improvements for this corridor are covered in separate corridor profile sheets for Carlson, and South 47<sup>th</sup>-Potrero Ave), and
- Bayview Avenue to South 55<sup>th</sup> Street (running north-south directly adjacent to I-80), to Potrero Avenue.

No transit or shuttle service currently makes this connection between the South Shoreline area and El Cerrito Del Norte BART Station.

## Walking and bicycling via Ellis Lane and the Cypress Path

From Bayview Avenue and Carlson, the most direct, low-stress option for walking or cycling to San Pablo Avenue and the El Cerrito Del Norte BART Station is to proceed two blocks northeast on Bayview Avenue, turn left on Ellis Lane, proceeding for two blocks north to Fleming Avenue. Across Fleming Ellis Lane continues as an off-street path, for 950 ft. north along the east side of Booker T. Anderson Park to Cypress Ave. The Cypress Path begins just 60 ft. to the east on the north side of Cypress Avenue and proceeds another 130 ft north to Potrero Avenue, along the east side of the Stege Elementary School campus. From there, bicyclists and pedestrians can reach El Cerrito Del Norte BART by following Potrero Avenue to the east, under I-80, to Eastshore Boulevard, then turning left to travel one block north to reach the station.

The Ellis Lane and Cypress Paths are good short-cuts within the neighborhood, presenting opportunities for low-stress bicycle and pedestrian access to Stege Elementary School, Booker T. Anderson Park and the Shoreline area, via Bayview. However, these paths are narrow in places (6'-8'), and do not meet standards for ADA access or class I path status. The route also lacks wayfinding signage or pavement markings that might encourage its use for through transportation, rather than exclusively for internal neighborhood circulation.

**Entrance to Ellis Lane Path from Ellis and Fleming**



**Missing curb ramps and wide corner turning radii, Bayview and Ellis**



## PLANNED IMPROVEMENTS

Currently adopted plans call for the following improvements to Bayview Avenue:

- The Bicycle Master Plan (2011) proposed:
  - Development of Class II bicycle lanes on Bayview Avenue from Carlson Boulevard to the west, continuing through the I-580 interchange and on to the Regatta Blvd interchange via South 51<sup>st</sup> Street and Meade Street.
  - A Class 3 Bicycle route is proposed for Bayview Avenue northeast of Carlson Boulevard, to Ellis Street (connecting to the Ellis Lane and Cypress paths), and South 55<sup>th</sup> Street, which are both designated as Class 3 routes.
- The Pedestrian Master Plan does not call out specific improvements to Bayview Avenue, or other streets and paths in this corridor.

## PLANNING CONSIDERATIONS/ OPERATIONAL REQUIREMENTS

- In the near-term (through 2023), traffic volumes on Bayview Avenue are expected to remain low enough to support a reduction in the total number of motor vehicle travel lanes on the Bayview overpass without substantially increasing at nearby intersections. In the long-term (2030 and beyond), full build-out of the Richmond Bay Campus and the South Shoreline Specific Plan area may increase traffic volumes at the limited points of entry to the Shoreline area including Bayview Avenue. The City and Caltrans are thus encouraged to maintain some flexibility in the allocation of street right of way on the Bayview Overpass and approaches to accommodate future changes in travel patterns for all modes.
- That portion of the Bayview Avenue overpass south and west of the westbound I-580 on/off-ramps is a designated truck route (Note: the intersection of Bayview Avenue and Carlson Boulevard is not part of the truck route network).
- New transit service and additional shuttle service is anticipated to use the Bayview Avenue overpass to reach the Richmond Bay Campus as it begins to develop (potentially in the near-term, through 2023).
- In the near-term – prior to construction of any new overpass/bridge over I-580 and the UPRR, Bayview Avenue is anticipated to remain the shortest bicycle and pedestrian connection from the Richmond Bay Campus to BART (El Cerrito Plaza or El Cerrito Del Norte Stations).

## CONCEPTUAL RECOMMENDATIONS: NEAR TERM (2014-2023)

Bayview Overpass:

- Repair and extend sidewalk on the southeast side.
- If funding is available, and Caltrans approves, replace existing 4' sidewalk on SE side of the overpass with a new 10' sidewalk. If a sidewalk replacement and widening is not feasible in the near-term, repair existing sidewalk and add a 6' striped buffer zone that can serve as an extension of the existing sidewalk.
- Add 10', temporary barrier separated two-way separated bikeway to the southeast side of overpass, adjacent to the new sidewalk, or newly striped pedestrian zone. The bikeway would extend to the southeast corner of S 51st Street and Seaport Avenue, at the west side of the southwestern landing of the

**PROPOSED TRUCK ROUTE**

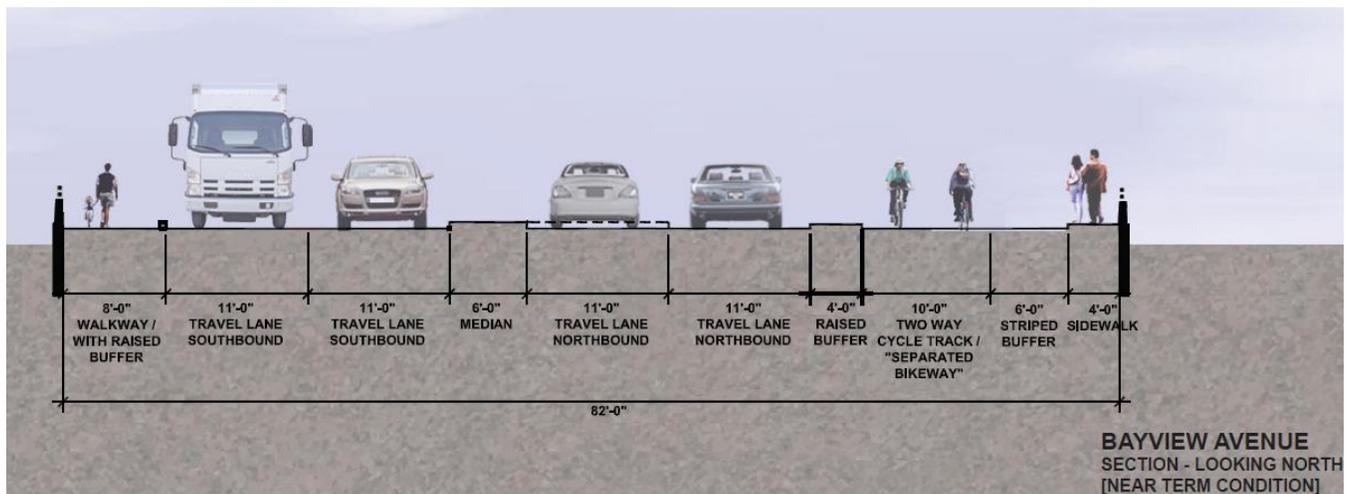
**I-580 to Seaport Ave/S. 51 st**

# BAYVIEW AVENUE

Bayview overpass, connecting to the Bay Trail via a bikeway on South 51st Street. On the northeast side of the overpass, the Bayview bikeway would connect with planned bicycle lanes on Carlson Boulevard).

- Reduce the number of travel lanes on the Bayview overpass to two lanes southbound and two lanes northbound, including a dedicated turn lane. Note: Immediately south of the intersection of Carlson Boulevard and Bayview Avenue, only one southbound lane is needed to accommodate traffic coming from a single left turn lane on northbound Carlson Blvd., right turns from the right lane of southbound Carlson Blvd., and southwest bound through movements from a single lane on Bayview Avenue east of Carlson. A second southbound lane is proposed for Bayview Ave as it approaches the I-580 westbound on-ramp from the north.
- Add a temporary barrier or curb protected pedestrian walkway to the northwest side of the Bayview overpass, with new crosswalk striping, signage and actuated pedestrian crossing signals at the west bound on-ramp to I-580.
- Stripe/paint an 11'-17' median/center turn lane.

Figure 10-19 Bayview Overpass, Near-Term (2015-2024) Concept



## Bayview/Carlson:

- Use temporary barriers and/or soft-hit posts and paint to extend curbs on all four corners of the intersection, to reduce crossing distances, eliminate or reduce turning radius (and resulting travel speeds) for right turns, and provide a protected space for pedestrians and cyclists to wait at crossings.
- Modify signal systems to provide pedestrian and bicycle detection and signal phasing to facilitate bicycle and pedestrian movements, including through movements on Bayview and Carlson and left turns without requiring bikes to cross general travel lanes to reach left turn pockets (i.e. Permitting two stage left-turns).

# BAYVIEW AVENUE

Figure 10-20 Protected Intersection Design, Bayview Avenue and Carlson Boulevard



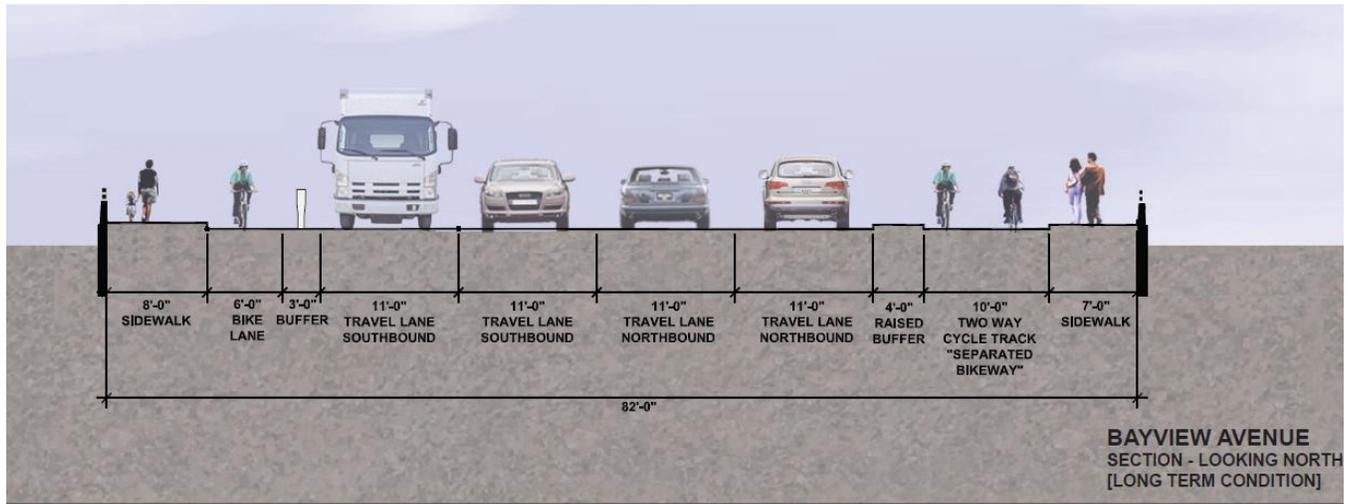
Bayview and Carlson to Potrero via Ellis/Cypress Greenway:

- Formalize the route from Potrero Avenue to the Bayview Avenue overpass and South 51<sup>st</sup> Street (access to the Bay Trail), by installing wayfinding signage and pavement markings that identify the route as a bicycle boulevard or “neighborhood greenway,” and provide directional and distance information .
- Repair path/ repave path surface where necessary.
- Widen paths to Class I standards, where necessary and feasible given right of way.
- Add curb ramps with tactile warning strips where feasible.

# BAYVIEW AVENUE

## CONCEPTUAL RECOMMENDATIONS: LONG-RANGE (2030 +)

Figure 10-21 Recommended Cross-Section of Bayview Avenue at I-580, SW of Carlson Boulevard (2030+)



Long-range design concepts of the Bayview Avenue overpass of I-580 and its intersection with Carlson Boulevard:

- Consider potential reconstruction of Bayview Avenue interchange with I-580, reconfiguring the entrance and exit ramps to/from eastbound I-580 to meet Bayview at an elevated intersection, directly adjacent to the expressway (ramping down to the southwest), with accommodation for truck turning movements and full integration of separated bicycle and pedestrian facilities.
- If the current configuration of the Bayview Avenue interchange remains the same, changes to the allocation of right-of-way and dedicated pedestrian and bicycle facilities on Bayview Avenue would be formalized, with full curb extensions at Carlson Boulevard, installation of a raised sidewalk with curb and controlled crossings of the westbound I-580 on-ramps on the northwest side of the overpass, and installation of a raised two-way cycle track and fully extended sidewalk on the southeast side.

Under both long-range interchange design concepts, the Bayview overpass would have the same number and width of travel lanes as proposed in the near term concept.

# BAYVIEW AVENUE

Figure 10-22 South Shoreline Specific Plan Concept for New I-580 Exit/Entrance Ramps at Bayview Avenue



## Transit

Under both long-term transit network options, Bayview Avenue and Carlson Boulevard to the south of Bayview would be served by frequent transit service operating along a new Primary Transit Corridor connecting El Cerrito Plaza BART Station with Richmond BART via the Berkeley Global Campus (BGC) (Service via Carlson-Bayview-Meade, Regatta and Marina Bay Parkway/S. 23<sup>rd</sup>).

## KEY OUTCOMES

- Provides a pedestrian connection, and low-stress bikeway link from the Panhandle Annex, Eastshore, and Parkview neighborhoods to the Bay Trail and the South Shoreline area appropriate for riders of all ages and abilities.
- Enhances freight/truck connectivity by separating bikes from vehicular traffic through the interchange.
- Enhances safety for non-motorized travelers at intersections by reducing turning radii for right turning vehicles, narrowing crossing distances, and providing option for cyclists to make two stage left turns.
- Connects residents and visitors to established parks and schools.
- Flexible design accommodates potential future changes in travel patterns and changing facility and system needs.



## JULIGA WOODS/SPRING STREET

### CORRIDOR OVERVIEW

Juliga Woods Street is a minor arterial street running parallel to the Union Pacific Railroad (UPRR) between Regatta Boulevard and Cutting Boulevard, providing an important multimodal connection from the future site of the Richmond Bay Campus and the larger South Shoreline area to other neighborhoods of South and Central Richmond. The full corridor connection from south to north crosses I-580 on Regatta Boulevard, which becomes Juliga Woods Street (formerly Erlandson); proceeds three blocks to the northwest, then one block north on South 31<sup>st</sup> Street to reach an intersection with Cutting Boulevard. Spring Street, located parallel to and between Juliga Woods and the UPRR, is a dead-end street at its southern end, near the Regatta Boulevard Overpass. However, public right-of-way exists to make a new connection, presenting the opportunity to make a new low-stress connection from the Richmond Bay Campus to the Cutting Boulevard Corridor.

**Shoreline/Berkeley  
Global Campus at  
Rich. Bay to Cutting  
Boulevard and Central  
Richmond**



### EXISTING CONDITIONS

The Regatta Boulevard overpass of I-580 is approximately 50' wide, and currently with one travel lane in each direction, with a narrow sidewalk on the east side.

North of I-580, where Regatta Boulevard becomes Juliga Woods, the street widens to accommodate a left turn lane to the on-ramp for westbound I-580.

All lanes entering and exiting from westbound I-580 intersect with Juliga Woods Street from the southwest at this location, making the northeast side of the Regatta Boulevard/Juliga Woods overpass more attractive for the development of dedicated bicycle and pedestrian facilities.

From the I-580 interchange to South 31<sup>st</sup> Street, Juliga Woods Street currently operates as a two lane road, with parking on both sides, within a 50' public right-of-way. The current cross-section of Juliga Woods, from southwest to northeast includes a sidewalk (8.5'), parking (7'), two travel lanes (11' each), parking (7'), and a narrow sidewalk (5.5').

South 31<sup>st</sup> Street similarly operates within a 50' public right-of-way, with sidewalks on both sides, and a 34' curb to curb width, including parking on both sides (~7'), and two 10' travel lanes.

Spring Street, includes a 30' roadway, within a 50' public right of way directly southwest of the UPRR corridor. It has a sidewalk on the southwest side a 30' paved, unmarked street, and a gravel and grass shoulder to the northeast, abutting the rail corridor. Vehicles park on-street parallel to the

# JULIGA WOODS STREET/SPRING STREET

southwest curb and perpendicular to the street on the northeast side, mostly within the unpaved portion of the right of way.

## PLANNED IMPROVEMENTS

The Richmond Bicycle Master Plan (2011) designates Juliga Woods Street, between Regatta Boulevard and South South 31<sup>st</sup> Street/Cutting Boulevard as a proposed Class 3 bicycle route, meaning the street would have sharrow markings and would be signed as part of the citywide bike network, but would not have dedicated bike lanes.

## PLANNING CONSIDERATIONS/ OPERATIONAL REQUIREMENTS

- In the near-term (through 2023), traffic volumes on Regatta Boulevard / Juliga Woods may increase slightly, due to growth and development at the Richmond Bay Campus and elsewhere in the South Shoreline Specific Plan area. The extent of any potential change to travel patterns is difficult to predict, given shifting travel patterns in the larger Bay Area and nationwide.
- There is no current transit service on Juliga Woods/Regatta Boulevard, and no new service is proposed for the near term or long-term in this or other plans.
- Neither Juliga Woods Street, nor Spring Street are part of the City of Richmond Truck Route Network, however trucks commonly use both streets to access local industrial, light industrial and warehouse land uses in the area (a key link in the corridor, the Regatta Boulevard overpass of I-580 is a designated truck route, as it provides access to entrance/exit ramps for westbound I-580).
- More investigation is necessary to determine if Spring Street is appropriate for designation as a bikeway and through street in light of concerns about public safety and security in areas adjacent to the UPRR.

### PROPOSED TRUCK ROUTE

**Regatta Boulevard from Meade Street to I-580 WB ramps**

## CONCEPTUAL RECOMMENDATIONS: LONG-TERM (2030+)

Juliga Woods-South 31<sup>st</sup> Street:

- Add wayfinding signage and in-lane sharrow markings to indicate that Juliga Woods Street and South 31<sup>st</sup> From Woods to Cutting Boulevard are a designated bicycle route (Neighborhood Greenway or Bicycle Boulevard).
- In the long-term, in concert with the development of a new connection from Regatta Boulevard to Spring Street, consider development of a two-way cycle track on the northeast side of the Regatta Boulevard overpass of I-580, keeping bicyclists separated from potential conflict with turning movements between Regatta Boulevard/Juliga Woods Street and the on/off-ramps to westbound I-580.

# JULIGA WOODS STREET / SPRING STREET

Figure 10-23 Juliga Woods Street, Existing Cross-Section, with planned Bicycle Boulevard/shared-use concept

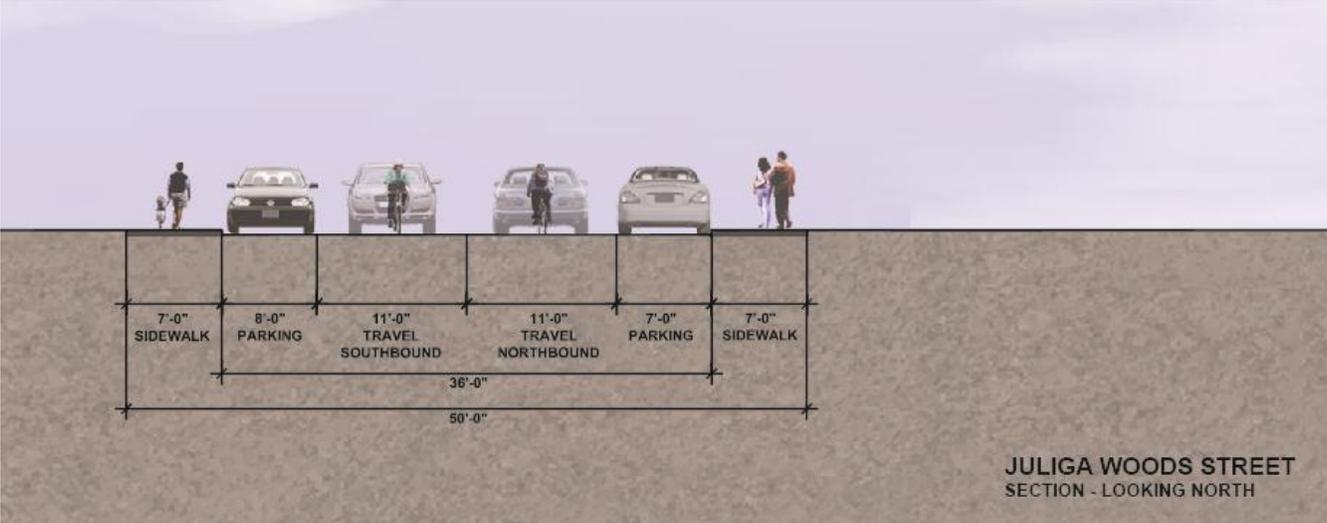


Figure 10-24 Spring Street Right-of-Way



Source: City of Richmond, CA

### Spring Street:

- Consider the opportunity to establish a new and direct pedestrian and bicycle connection from the Regatta Boulevard overpass to Cutting Boulevard via the Spring Street right-of-way. Although Spring

# JULIGA WOODS STREET/SPRING STREET

Street currently dead-ends prior to intersecting with Regatta Boulevard/Juliga Woods Street at the south end, the public right-of-way for Spring Street extends south through the interchange. In the near-term, the City could make a simple connection by developing a short segment of shared-use path through this undeveloped right-of-way, designating Spring Street as a Neighborhood Greenway/Bicycle Boulevard.

- In the near-term – assuming that a new connection to Regatta/Juliga Woods can be made through the unused Spring Street right-of-way – upgrade Spring Street to a bicycle boulevard/shared use roadway. This includes re-paving Spring Street, and installing wayfinding signage and in-street sharrow markings to indicate bicycle route.
- In the long-term (2030 and beyond), the City could consider development of a two-way cycle track on Spring Street from Regatta Boulevard to Cutting Boulevard, with provision for access to/from bikeways in both directions on Cutting Boulevard and Carlson Boulevard via an extended sidewalk on the south side of Cutting Boulevard from Spring to Carlson Boulevard.
- Near-term or long-term improvements to Spring Street may be considered in addition to the designation of Juliga Woods Street as a Neighborhood Greenway/Bicycle Boulevard.

**Figure 10-25 Southern Terminus of Spring Street** (*Regatta Boulevard visible in the distance*)



## OUTCOMES

Development and signage of new pedestrian and bicycle connections via Juliga Woods Street and/or Spring Street offer the potential to:

- Increase non-motorized access to the Richmond Bay Campus and the larger South Shoreline area from neighborhoods across Central Richmond.
- In the long-term, the Spring Street option in particular presents an opportunity to establish a low-stress bicycle connection from Regatta Boulevard at the north end of the Richmond Bay Campus and the Pullman, Laurel Park and Eastshore neighborhoods, via an extended sidewalk on Cutting Boulevard to Carlson Boulevard, and the cycle track concept proposed for Carlson Boulevard.



## SOUTH 47<sup>TH</sup> STREET-POTRERO AVE

### CORRIDOR OVERVIEW

If the barrier formed by I-580 and the Union Pacific Railroad (UPRR) can be crossed, South 47<sup>th</sup> Street and Potrero Avenue would represent the most direct route of connection from the Richmond Bay Campus and the larger Shoreline area to Richmond’s Eastshore, Panhandle Annex, Parkview and Laurel Park neighborhoods and on to the El Cerrito Del Norte BART Station. Existing connections via Bayview Avenue and Juliga Woods are indirect, have discontinuous bicycle and pedestrian facilities, minimal signage, and lack transit service. Potential improvements to these existing connections and the opportunity to construct a new multimodal link between the Richmond Bay Campus and S. 47<sup>th</sup> Street near Booker T. Anderson Park, are important considerations for this plan, given the opportunity to more directly connect the Study Area’s largest planned employment site with it’s most heavily used regional transit station (El Cerrito Del Norte BART).

**Berkeley Global  
Campus at Rich. Bay  
to El Cerrito Del  
Norte BART**

### EXISTING CONDITIONS

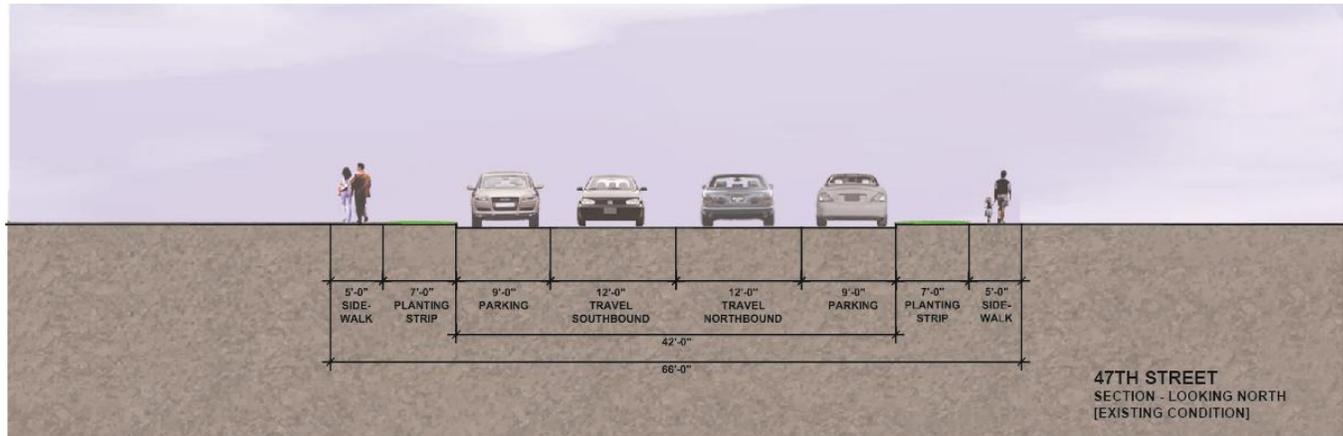
#### South 47<sup>th</sup> Street, North of I-580/UPRR

On the northeast side of I-580 and the UPRR corridor, South 47<sup>th</sup> begins at Carlson Boulevard. From Carlson, South 47<sup>th</sup> travels northeast for three long blocks – just over one quarter mile – to Potrero Avenue, which provides the primary east-west connection through Parkview and Laurel Park. From South 47<sup>th</sup> St., Potrero provides a connection to El Cerrito Del Norte BART Station by traveling east, under I-80, then north along Eastshore Boulevard and Hill Street.



# SOUTH 47<sup>TH</sup> ST-POTRERO AVE

Figure 10-26 South 47<sup>th</sup> Street – Existing Condition



Between Carlson Boulevard and Potrero Avenue, South 47<sup>th</sup> street currently operates as a local street, with one lane travel lane in each direction and parking on both sides. From Carlson to Cypress Ave (160 meters south of Potrero) South 47<sup>th</sup> forms the western boundary of Booker T. Anderson Park, which includes a Community Center, ballfields, tennis courts and a network of off-street paths.

## Potrero Avenue

From Carlson Boulevard to San Pablo Avenue, Potrero Avenue currently operates as a minor arterial street, with parking on both sides and one travel lane in each direction. The width of the street varies from 44'-46' through most of the corridor, widening to the east of South 55<sup>th</sup> street to accommodate turn lanes at the on/off-ramps to I-80 and nearby intersections with Eastshore Boulevard and San Pablo Avenue. East of South 47<sup>th</sup> Street, the typical curb to curb cross-section for Potrero Avenue includes, from north to south: parking (~8') + one westbound travel lane (14') + one eastbound travel lane (14') + parking/school loading (8').

# SOUTH 47<sup>TH</sup> ST-POTRERO AVE

Figure 10-27 Potrero Avenue, Existing Condition



Key Access and Connectivity Issues on South 47<sup>th</sup> and Potrero include:

- With few sightline obstructions, the wide travel lanes (12') and curbside parking lanes that are often empty can facilitate and encourage motorists to travel at high speeds.
- Existing sidewalks are narrow and in a state of disrepair in many places.



- Crosswalks are not provided at all major intersections, including the intersection of South 47<sup>th</sup> and Potrero Avenue.
- Many corners lack ADA accessible curb ramps.
- Although El Cerrito Del Norte BART is the closest BART Station to the RBC and the larger Shoreline Area, it is largely inaccessible by walking, cycling or taking public transit, because of the existing rail and highway barrier.

## South 46<sup>th</sup> and South 47<sup>th</sup> Streets, Southwest of I-580/UPRR

On the southwest side of I-580, S 47<sup>th</sup> Street (which merges with S. 46<sup>th</sup> Street) continues in a southwesterly direction towards the Bay. Together, these streets form the southeastern boundary of the existing Richmond Field Station (UC) and the future Richmond Bay Campus (RBC).

# SOUTH 47<sup>TH</sup> ST-POTRERO AVE

Any future connection between South 47<sup>th</sup> Street and Carlson Boulevard and the Richmond Bay Campus would most likely land in the current alignment of South 46<sup>th</sup> Street near the northeastern boundary of the Campus. As it is external to campus, South 46<sup>th</sup> Street is over-grown in places and in a general state of disrepair.

Currently, a boot beaten path extends from the southern terminus of South 46<sup>th</sup>/47<sup>th</sup> Street to the Bay Trail, however, fencing/gates prevent direct, legal access to the Bay Trail from the southeast corner of the Richmond Field Station, or the South 46<sup>th</sup>/47<sup>th</sup> Street right-of-way.

## PLANNED IMPROVEMENTS

According to the Richmond Bay Campus Long Range Development Plan (LRDP), South 46<sup>th</sup> Street is due to be reconstructed as part of the development of the campus and it will serve as a “minor street,” providing service access to buildings on the east side of campus (including access to three major parking facilities located at the edge of campus. To the south, South 46<sup>th</sup>/47<sup>th</sup> Street will connect with a trail providing direct access for non-motorized travelers to the San Francisco Bay Shoreline, including the Eastshore State Park and the San Francisco Bay Trail.

The Bicycle Master Plan identifies South 47<sup>th</sup> as a proposed Class 3 bike route, with signage and on-street markings (Sharrows), but without dedicated bike lanes (Potrero Avenue from Carlson Boulevard to San Pablo Avenue is currently designated as a Class 3 bike route).

## PLANNING CONSIDERATIONS/ OPERATIONAL REQUIREMENTS

- Traffic volumes on both South 47<sup>th</sup> and Potrero Ave can be expected to rise as development in the Richmond Bay Campus and the larger South Shoreline area continues.
- AC Transit line 71 currently operates on Potrero Avenue (Carlson to South 47<sup>th</sup> Street) and South 47<sup>th</sup> Street (Potrero to Carlson) as a minor deviation from its primary alignment on Carlson Boulevard between Richmond BART and El Cerrito Plaza BART.
- Opening a two lane connection to the south side of the I-580/UPRR corridor would be expected to increase the volume of private vehicles, transit and shuttle buses, bicyclists and pedestrians using South 47<sup>th</sup> Street and Potrero Avenue to travel between El Cerrito and the surrounding Richmond neighborhoods and the Shoreline area.
- Neither South 47<sup>th</sup> Street, nor Potrero Avenue is a designated truck route; goods movement volumes are expected to remain low.
- Booker T. Anderson Park (bordered by South 47<sup>th</sup> Street), and Stege Elementary School (on Potrero Ave) increase demand for bicycle and pedestrian facilities designed to serve users of all ages and abilities.

## CONCEPTUAL RECOMMENDATIONS: NEAR-TERM (2015-2024)

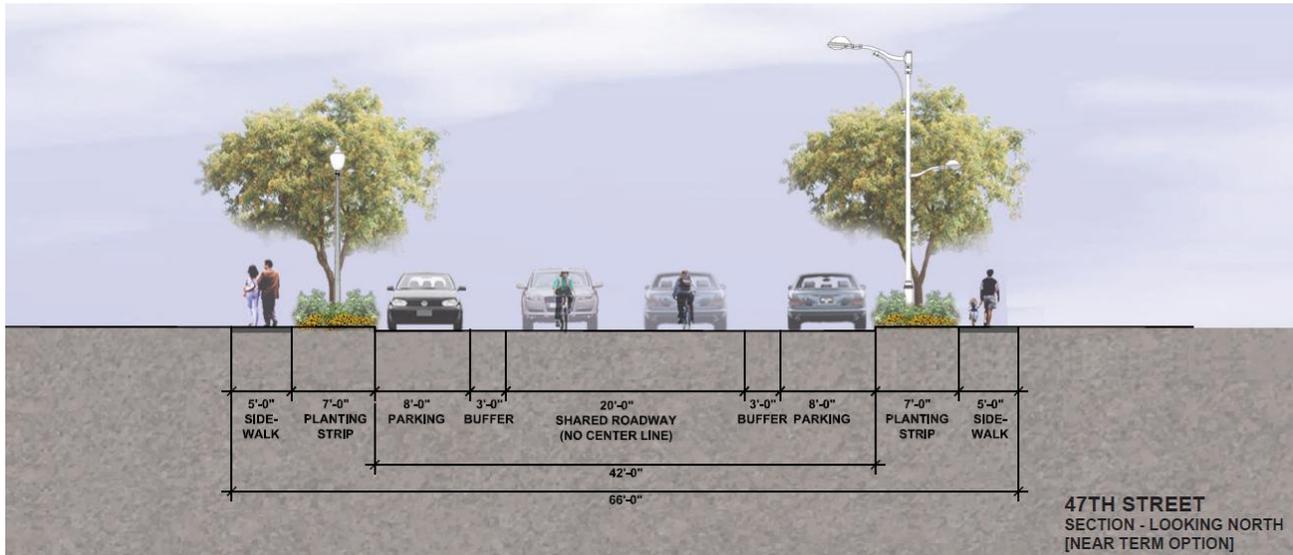
In the near-term, the corridor from Carlson Boulevard to San Pablo Ave via South 47<sup>th</sup> Street and Potrero Avenue will remain an important route for multimodal circulation and access to schools, parks and the El Cerrito Del Norte BART Station. To enhance pedestrian and bicycle safety in this corridor, preliminary recommendations include:

- S. 47th St, from Carlson Blvd to Potrero Avenue:
  - Maintain existing curb lines with parking on both sides (7') + 4' buffer zone (with fog line 11' from curb on each side). This leaves a 20' shared roadway in the middle (This shared roadway can be

# SOUTH 47<sup>TH</sup> ST-POTRERO AVE

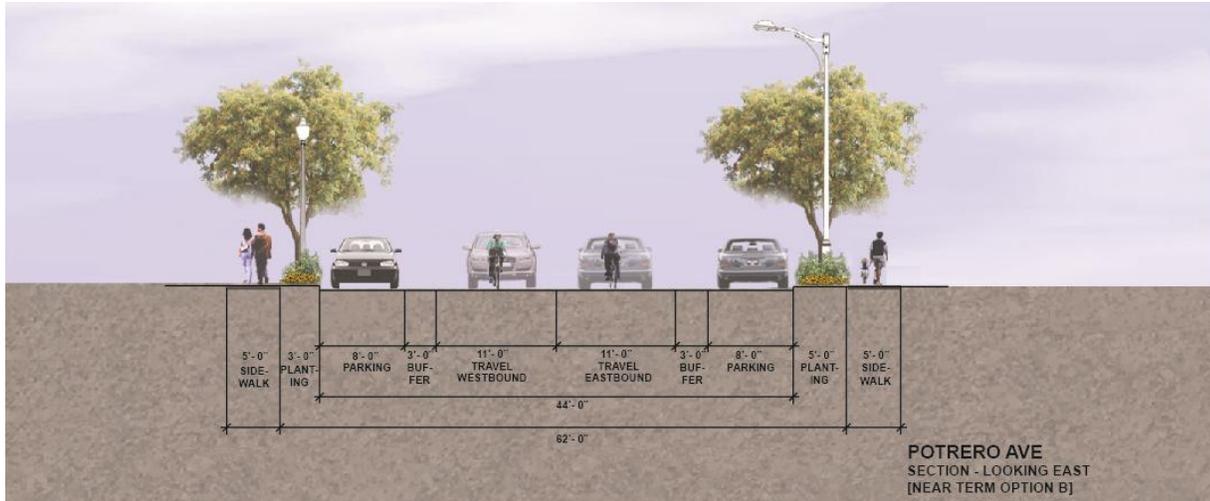
operated with no center line to accommodate transit and other wider vehicles while encouraging lower speed travel.

- Add “sharrows” indicating that bicycles should travel in the shared space in the center of the street, and signage to indicate that this is a “neighborhood greenway” or “bicycle boulevard”.
- Add up to ~ 10' curb extensions on each side at intersections to narrow pedestrian crossing distances (temporary curb extensions can be employed in the near-term where funding is limited).



- Potrero Avenue, from South 47<sup>th</sup> Street to San Pablo Avenue:
  - Consider two options for multimodal accommodation, depending on the width of the right-of-way, analysis of local parking patterns and community priorities:
    - Option A: Where curb to curb width is a minimum of 46', keep existing curb lines, stripe parking lanes (7') on both sides, and add bike lanes (6') on both sides, with two general purpose travel lanes (10') in the center of the roadway.
    - Option B: Where curb to curb width is a minimum of 44', keep existing curb lines, stripe parking lanes (8') on both sides, add a buffer zone (3'), with two shared general purpose travel lanes (11'), with in-lane sharrows and paint indicating that cyclists should take the full lane.

# SOUTH 47<sup>TH</sup> ST-POTRERO AVE



## Transit

In the near-term, two options for enhanced transit service are recommended for consideration.

- Option A would make South 47<sup>th</sup> Street a primary transit corridor with frequent service on a combination of routes. This option assumes that a new local transit route and shuttles would be aligned to connect the Richmond Bay Campus and the larger Shoreline area with the El Cerrito Del Norte BART Station via Bayview Avenue, Hartnett or Carlson Blvd., South 47<sup>th</sup> Street, Potrero Avenue and Eastshore Boulevard.
- Option B would route local service from the Richmond Bay Campus to El Cerrito Plaza BART Station via Bayview Ave, Carlson Boulevard and Central Avenue, with no new AC Transit service proposed for South 47<sup>th</sup> or Potrero Avenue.

Under both options, AC Transit Line 71 would continue to serve the Carlson Blvd corridor between El Cerrito Plaza BART and Richmond BART, with a deviation to serve the Eastshore, Park View and Laurel Park neighborhoods via South 47<sup>th</sup> Street and Potrero Avenue. This route would have increased service frequency, but may not achieve frequent service standards (every 15 minutes or better, at least 18 hours per day) in the near-term.

## CONCEPTUAL RECOMMENDATIONS: LONG-TERM (2030+)

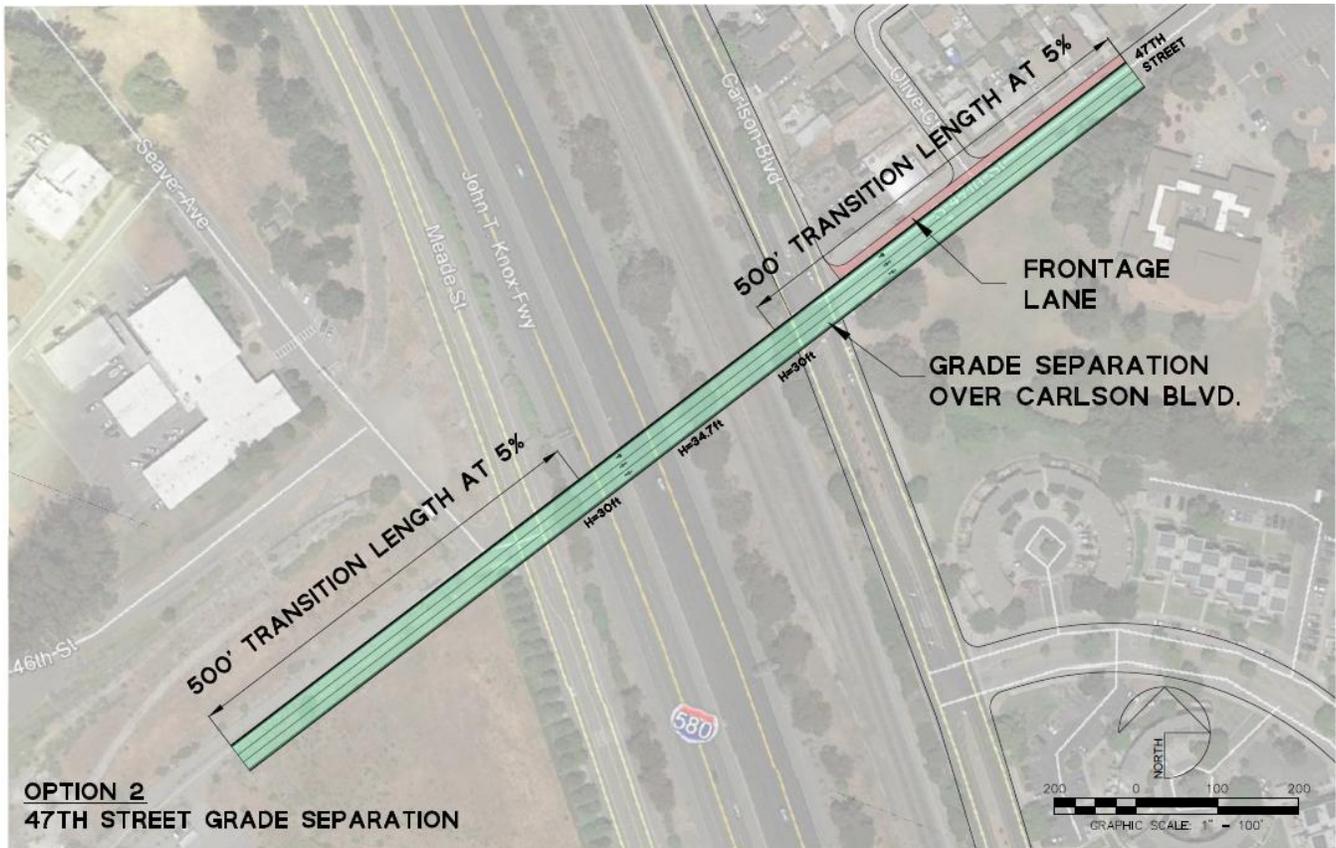
Defining recommendations for the long-term for this corridor include (1) the potential construction of a new overpass/bridge structure over I-580, the UPRR, and Carlson Boulevard to provide a multimodal connection between the Richmond Bay Campus and the Eastshore, Park View and Panhandle Annex Neighborhoods (as well as El Cerrito Del Norte BART, farther to the Northeast), and (2) development of a new rail transit station on or adjacent to the UPRR line, at or near the location of the proposed highway/railway overpass. These major concepts are described in more detail below.

### South 47<sup>th</sup> Street Overpass

Construct a new multimodal bridge over I-580, the UPRR Main Line and Carlson Blvd, connecting the northeast corner of the Richmond Bay Campus, with a landing on the north side of Carlson Boulevard (Note: there are several options for the north landing of such a structure. Further planning and analysis is required to determine the feasibility and potential costs, benefits and impacts of such an addition to the local transportation network). The structure would include no more than two travel lanes, one 11' lane in each direction and a 12' raised separated shared-use path/extended sidewalk on one side.

# SOUTH 47<sup>TH</sup> ST-POTRERO AVE

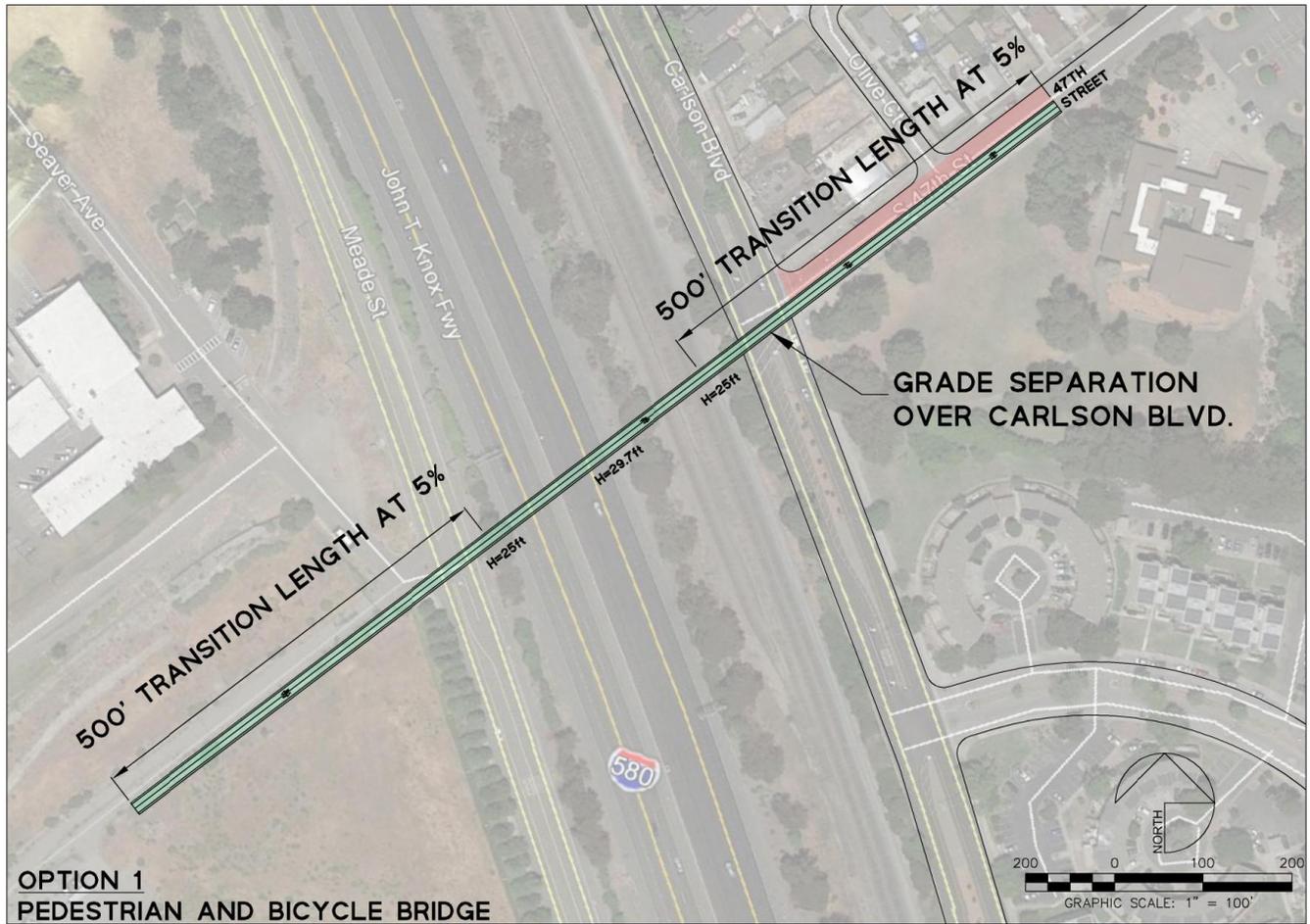
Figure 10-28 New Connection Concepts: South 47<sup>th</sup> Street Overpass – Multimodal Bridge Option



Source: BKF Engineers

# SOUTH 47<sup>TH</sup> ST-POTRERO AVE

Figure 10-29 New Connection Concepts: South 47th Street Overpass – Pedestrian and Bicycle Bridge Option



Source: BKF Engineers

Conceptual recommendations for the corridor north of Carlson Boulevard in the long-term (2030 and beyond) are as follows:

- S. 47th St., Carlson Blvd to Potrero Ave: Maintain existing curbs, preserve parking (7') on northwest side, two general purpose travel lanes (11' each, with striped center line), a buffer zone (3') with temporary barrier separation, and two-way cycle track (10') on the southeast edge of roadway. The South 47th Street cycle track would connect directly to the cycle tracks planned for Carlson Boulevard, the shared-use pedestrian and bicycle facility on the proposed S. 47th Street overpass, and the planned bike lanes or shared street on Potrero Avenue (Note: Additional analysis is necessary in the next phase of the project to confirm the feasibility of a two-way cycle track at intersections and in the segment between Cypress and Potrero Avenue).
- Potrero Ave, Carlson Blvd to San Pablo Avenue: Carlson Blvd to San Pablo Avenue: (Assumes more limited 44' right of way). Maintain existing curb lines, with parking on one side and buffered bike lanes. The cross-section from north to south would be: bike lane (5') + buffer (2') + two travel lanes (11' each with centerline) + bike lane (5') + buffer (3') + parking lane (7').
- Along the entire corridor, add high visibility crosswalks and curb extensions where feasible (pending further detailed analysis in the next phase of planning).

# SOUTH 47<sup>TH</sup> ST-POTRERO AVE

Figure 10-30 South 47<sup>th</sup> Street, Preliminary Concepts, Long-Term (2030 + )

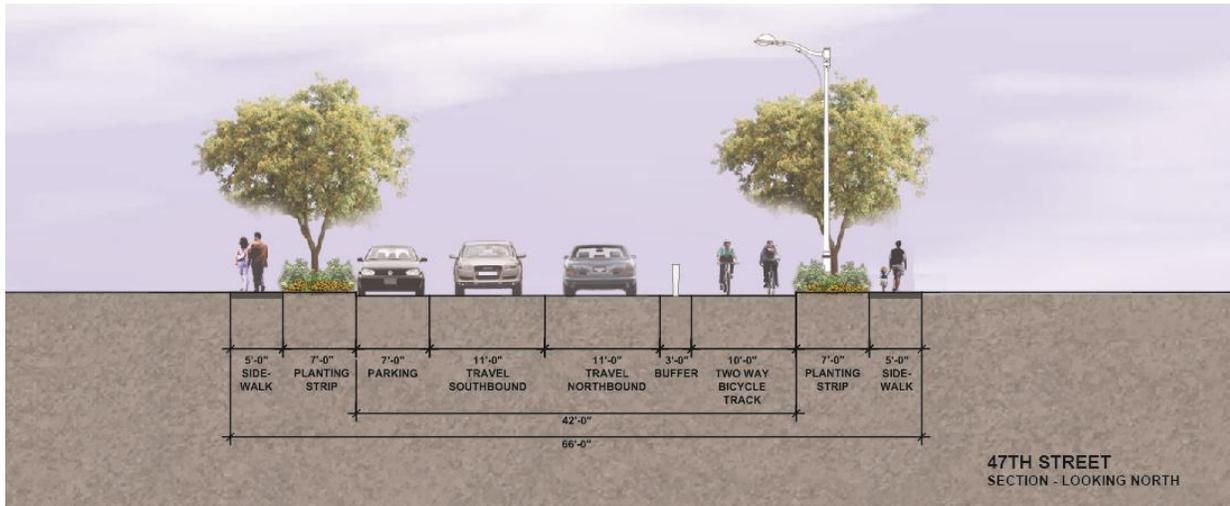
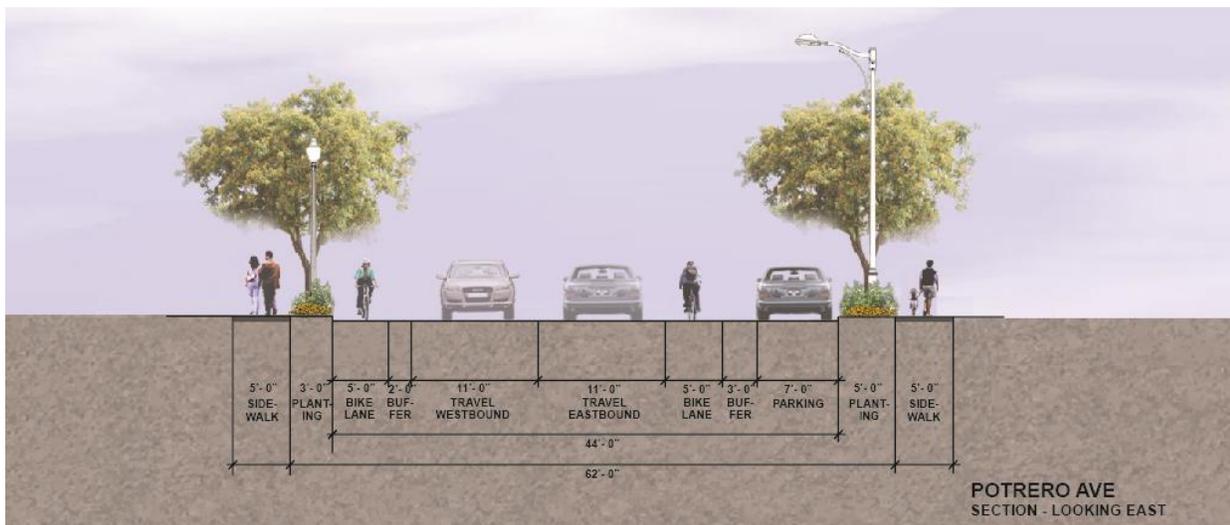


Figure 10-31 Potrero Avenue, Preliminary Concepts, Long-Term (2030+)



## Transit

In the long-term (2030 and beyond), demand for transit service to and through the South 47<sup>th</sup> Street-Potrero Avenue Corridor is likely to be significantly higher than the near-term.

- With further growth and development in Central Richmond and the Cutting Boulevard corridor, service along Carlson Boulevard (now served by AC Transit Line 71) would likely need to be upgraded to frequent service standards (every 15 minutes or better at least 18 hours per day).
- With full build out of the Richmond Bay Campus and the South Shoreline Specific Plan area, demand for access by residents and commuters will necessitate development of additional transit services connecting the area directly through parts of this corridor with both the El Cerrito Del Norte BART Station and the El Cerrito Plaza BART station.
- As part its Metro Vision plan, BART is considering long-term options to provide rail transit services in the Eastshore Corridor. One plan under consideration would provide overlay service along the existing

# SOUTH 47<sup>TH</sup> ST-POTRERO AVE

Capitol Corridor line, from Hercules to San Leandro, with diesel multiple unit (DMU) rail cars, similar to the system under development for the eBART line in East Contra Costa County, operating at more frequent headways. This new BART Metro DMU line would serve established Capital Corridor stations, as well as several new “infill” stations, including a station in the vicinity of the Richmond Bay Campus.

- UC Berkeley and the City of Richmond could work with regional transit agencies currently serving the I-80 Corridor (FAST, SolTrans, WestCat, and NapaVine), which currently terminate service at El Cerrito Del Norte BART Station to investigate the demand for and feasibility of extending some or all service runs from Del Norte BART to the Richmond Bay Campus, via Eastshore Boulevard, Potrero Ave, and South 47<sup>th</sup> Street. This would provide direct service to the Richmond Bay Campus and other destinations in the Shoreline for commuters from the I-80 corridor. It also presents opportunities for a direct connection to service on the proposed BART Metro DMU line from a station at South 47<sup>th</sup> Street (referred to in this plan as Eastshore Station).

## KEY OUTCOMES

The benefits of these potential improvements to the South 47<sup>th</sup> – Potrero Avenue corridor include:

- Enhanced pedestrian safety at intersections throughout the corridor (where curb extensions are provided and crossing distances narrowed).
- Direct access to the Richmond Bay Campus and other opportunities and amenities in the larger South Shoreline area (including Eastshore State Park and Marina Park) for residents of the Eastshore, Parkview, Laurel Park, Panhandle Annex, and Park Plaza neighborhoods.
- Walkways and low-stress bikeways linking these neighborhoods with the Shoreline area, and providing for enhanced circulation within the neighborhoods, including access to the Booker T. Anderson Park and Community Center and Stege School for bicyclists of all ages and abilities.

# 11 FUNDING AND IMPLEMENTATION

A key objective of the SRTCP is to facilitate implementation of transportation projects and programs that improve the safety, accessibility, and connectivity of travel options in South Richmond. This chapter provides an overview of criteria used for prioritization of recommended transportation improvements, and an evaluation based ranking/prioritization of near-term (2015-2024) improvement projects by corridor segment. This is followed by a summary of cost estimates for near-term concepts by corridor, and a description of potential local, regional, state and federal funding opportunities.

Many of the streetscape enhancement concepts recommended for key corridors in this SRTCP are intended to be flexible, in order to accommodate changes in the scale, pace and type of development in the area, and associated changes in demand for travel to and within the area. As such, this chapter focuses primarily on prioritization of and cost estimates for those concepts recommended for the near-term (2015-2024), with the assumption that detailed planning and funding for the long-term improvements will happen in the future, with the City making updates to concept designs, and programmatic recommendations, based on new information, changes to local conditions or projected travel patterns in the area, and/or changes to professional best practices in transportation planning and urban design.

## PROJECT PRIORITIZATION

This section presented the prioritization criteria and assessment of multi-modal roadway improvements projects proposed in this Plan.

### Prioritization Criteria

Project prioritization is used as a basis to demonstrate to decision makers the level of necessity of a project based on predetermined factors. These factors include those which City staff have identified as specific to community needs and desires as well as best practice prioritization measures for projects of this nature.

The following criteria have been used to prioritize streetscape enhancements and multi-modal improvement within key corridors in South Richmond:

- Connecting South Richmond
- Access to Regional Transit Hubs
- Transit service enhancement
- Proximity to Key Destinations
- Multimodal Safety
- Relative Ability to Implement

For each criterion, a letter grade from “A” to “F” will be assigned based on how the project meets the criterion. The letter grade methodology allows for flexibility in the City’s use of the project prioritization and serves as a general guide for the level of priority associated with each project. Projects will not be scored and ranked against one another, as it is understood that project implementation will most likely occur as opportunities arise. As such, as project opportunities develop, the City can understand the relative priority of the project. The proposed criteria reflect similar criteria used in the City of Richmond Bicycle Master Plan and have been contextualized for the purpose and goals of this plan.

These criteria were developed in coordination with City staff and will be used by City staff as one input to the prioritization of projects and programs for funding and implementation, accordance with the goals of the Plan. Subsequently, the City may adjust expenditure of existing funds and grant funding pursuits accordingly.

As many of the identified projects have proposed short-term and long-term improvements, the projects will receive a letter grade for both the short-term and long-term proposal, where appropriate.

The proposed prioritization methodology is described below.

## **Connecting South Richmond**

This criterion evaluates the ability of a multi-modal project to improve bicycle, pedestrian, and/or transit connectivity between South Richmond and adjacent Richmond and El Cerrito neighborhoods. Major barriers to connectivity include I-580 and its overcrossings. Connectivity to/from South Richmond will be evaluating as follows:

**“A”**: A proposed project that meets one of the following conditions:

- connects to existing bikeways, pedestrian or transit facilities on both ends
- bridges a gap in an existing "crucial" bicycle, pedestrian, or transit gap (defined as a project that provides convenient, comfortable cross-town access on the most direct route)

**“B”**: A proposed bikeway, pedestrian or transit facility that meets the following conditions:

- does not qualify for “A”, but
- connects to existing bicycle, pedestrian or transit facilities on one end
- serves as a more comfortable route and bypasses busy arterial streets

**“C”**: An existing or proposed bikeway or pedestrian facility that meets the following conditions:

- does not qualify for “A” or “B”, but
- connects to a proposed bicycle, pedestrian, or transit facility on one or both ends

## **Regional Transit Access to/from South Richmond**

This criterion addresses the importance of connecting Richmond to key regional transit hubs, particularly the Richmond BART Station and Amtrak Intermodal Facility, the proposed WETA ferry, and the local BART Stations (Richmond, El Cerrito Del Norte, El Cerrito Plaza). The methodology for assessing access to regional transit hubs for each project is as follows:

- **“A”**: Projects that provide direct bicycle, pedestrian, or transit access to BART, Amtrak, proposed WETA ferry service, or a bus stop/station with frequent transit service.

- **“C”**: All other projects that do not meet the above criterion.

## Transit Service Enhancement

This criterion evaluates the extent to which the proposed investments in transportation services and facilities within a given corridor segment enhance transit speed, reliability, connectivity and/or frequency. For purposes of prioritization, transit service enhancement was assessed for each corridor segment according to the following scoring:

- **“A”**: Projects that enable the upgrade of an existing transit line to the Primary Transit Network, with frequent service (every 15 minutes or better, all day), or which establishes a new frequent service connection.
- **“B”**: Projects that enable the upgrade of an existing local transit line on the proposed Secondary Transit Network, with service every 30 minutes or better, all day, or which support development of a new secondary transit route.
- **“C”**: Projects/ corridor segments that include a spot improvement to enhance transit and/or shuttle speed and reliability, or which accommodate potential future transit or shuttle service.

## Safety

This criterion evaluates the ability to improve bicycle and pedestrian safety with the proposed project. Two sets of scoring criteria are proposed related to (1) street design and operational considerations, reflecting the impact of changes to design speeds, and the safety of crossings and turning movements, and (2) for path and trail projects, frequency of uncontrolled conflicts at driveways and side-streets and frequency of signalized or enhanced trail crossings at major roadways are the primary metrics. In the corridor-level evaluation that follows this section, the score for the “safety” of each segment reflects an average of their scores for each of these safety-related criteria.

### Street design and operation

The following scores were used to assess the general impact of streetscape improvements, right-sizing, restriping, and other corridor segment changes affecting the safety of all users – including the safety of people driving cars and trucks:

- **“A”**: Projects that:
  - eliminate “free right” turns or “unprotected” left turns for motor vehicles,
  - reduce the crossing distance for pedestrians (through lane reduction, curb extensions, or median installation), and/or
  - reduce the number of potentially conflicting movements of motor vehicles, and other users at key intersections.
- **“B”**: Projects that do not meet the conditions of “A,” but which:
  - slow vehicle turning speeds by reducing the curb radius at corridor intersections that do not require turning movements per the SRTCP proposed Truck Route Network, or

- Incorporate other traffic calming measures intended to reduce vehicle traffic speeds and the severity of potential collisions.

### **Bicycle & Pedestrian Path/Trail Projects**

The methodology for assessing the safety of off-street bicycle trails is based on the potential for conflicts with motor vehicles at crossings of major roadways and uncontrolled crossings at driveways and/or side streets:

**“A”**: A proposed off-street path or trail that meets the following conditions:

- Trail and path projects that cross roads and driveways fewer than one time per mile AND
- 1. All crossings of multi-lane roadways are signalized or enhanced with Pedestrian Hybrid Beacons (PHBs) or Rectangular Rapid Flashing Beacons (RRFBs),

**“B”**: A proposed off-street path or trail that meets the following conditions:

- Trail and path projects that cross roads and driveways fewer than two times per mile AND
- One or more crossings of multi-lane roadways are signalized or enhanced with Pedestrian Hybrid Beacons (PHBs) or Rectangular Rapid Flashing Beacons (RRFBs),

**“C”**: A proposed off-street path or trail that meets the following conditions:

- Trails and path projects that cross roads and driveways fewer than three times per mile OR
- Crossings of multi-lane roadways are uncontrolled with limited or no enhancements

### **Feasibility**

Three distinct criteria of feasibility are assessed for each roadway project:

- Community and agency priority
- Ease of implementation

Scoring criteria for each are presented in the sections below.

#### **Community & Agency Priority**

Community and agency priority for a project is a critical element for determining the feasibility of a proposed project. The methodology for assessing the support for each project is as follows:

**“A”**: A proposed project that meets both of the following conditions:

- the project is identified in an adopted plan
- there is community and agency support for the project

**“B”**: A proposed project that meets one of the following conditions:

- the project is identified in an adopted plan
- there is community and agency support for the project

OR

- Agency representatives on the SRTCP TAC have expressed support for the concept/proposed near-term improvement

**“C”**: A proposed project does not meet community and agency priority conditions:

## Ease of Implementation

Funding is a key factor in implementation. This criterion takes into account three specific considerations:

- **Pavement Condition Index (PCI) Score** –The pavement condition of a roadway is an important element of determining the potential cost of a project and how soon the roadway is likely to be reconstructed or overlaid through the City’s pavement maintenance program. This metric indicates the PCI score for a segment of roadway, so that the project’s ability to be integrated into the City’s roadway repaving program can be assessed. The Pavement Condition Index (PCI) is a composite value from 0, the worst quality, to 100, the best condition.
- **Grant Funding** – The City routinely applies for grant funding for projects; however, an important factor in securing funding is how well-suited a project is to a particular grant-source. As a result, this criterion assesses how competitive a project would be for grant funding.
- **Project Cost** – The total cost of a project can be an influencing factor. Lower cost projects may be integrated into other improvement projects already planned or incorporated into the City’s existing work plan for street signage and striping. Higher cost projects may only be implemented after new funding sources are secured.

The following scoring criteria are used:

**“A”**: A proposed project that meets all of the following conditions:

- The roadway has a PCI of –50-59 (“At Risk Streets”) OR
- The project is a strong candidate for grant funding OR
- The project consists of low-cost improvements only, such as signing and striping only

**“B”**: A proposed project that meets all of the following conditions:

- “ The roadway has a PCI of 60 – 79 or less than 50 (Either “Fair to Good” or “Failed”)\_ OR
- The project is a strong candidate for grant funding OR
- The project consists of signing and striping with some curb work or parking restrictions

**C”**: A proposed project that meets all of the following conditions:

- The roadway has a PCI of 79 or more (“Very Good Condition”) OR
- The project is not a strong candidate for grant funding OR
- The project consists of high-cost improvements, such as significant curb work

## Evaluation-Based Priority Ranking

Based on criteria, each identified project was given a letter grade. The grades “A” through “F” were assigned based on each criterion and averaged for a cumulative grade that serves as a general guide for the level of priority associated with each project. One score is presented for the full package of multi-modal improvements proposed on South Richmond roadways. The intent of this list of projects is to provide flexible guidance for selecting projects rather than a strict ranking of “high”, “medium”, or “low” priority. Figure 11-2 presents the letter grade ranking of each identified project.

**Figure 11-1 Composite SRTCP Corridor Evaluation and Prioritization**

Corridor	Location	Prioritization Criteria						Composite Corridor Segment Priority
		Non-Motorized Connectivity		Safety	Transit Service	Feasibility		
		to/from South Richmond	to Regional Transit			Community & Agency Priority	Ease of Implementation	
Carlson Boulevard	Broadway to Bayview Avenue	A	A	A	B	A	B	A
	Bayview Avenue to Tehama Avenue	A	A	A	A	A	B	A
Central Avenue	Bay Trail to Central Avenue	A	A	A	C	B	A	B
	Rydin Road to Jacuzzi Street	A	A	A	C	B	A	B
	Jacuzzi Street to Pierce Road	A	A	A	C	B	A	B
	300' east of Rydin Road north to Existing Bay Trail Path	A	C	A	C	B	A	B
	Pierce Street	A	A	B	C	B	A	B
	Sacramento Avenue	A	B	C	C	B	B	B
	San Luis Street	A	C	B	C	B	B	B
	San Joaquin Street	A	C	A	C	B	B	C

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City of Richmond, CA

Corridor	Location	Connect to S. Rich.	Connect to Transit	Safety	Transit Service	Comm./ Agency Priority	Ease of Implementation	Composite Priority Score
Harbour Way	North of Cutting Boulevard	A	A	B	A	A	C	A
	Cutting Boulevard to Hoffman Boulevard	A	A	B	C	A	C	B
	Hoffman Boulevard to Hall Ave	A	A	B	C	A	B	B
	Hall Ave to Ford Point	A	A	B	A	A	B	A
Hoffman Boulevard	Cutting Boulevard to Harbour Way	A	A	B	C	A	B	B
Marina Way	Maine Street to Cutting Boulevard	A	A	B	C	A	A	B
	Cutting Boulevard to Ford Point	A	A	A	B	B	B	B
Marina Bay Parkway	Maine Street to Potrero Ave	B	A	B	A	A	B	B
	Potrero Avenue to Regatta Boulevard	A	A	A	A	B	B	A
Bayview Avenue	S. 51 <sup>st</sup> Street/Meade Street to Carlson Blvd.	A	A	A	A	B	B	A

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City of Richmond, CA

Corridor	Location	Connect to S. Rich.	Connect to Transit	Safety	Transit Service	Comm./ Agency Priority	Ease of Implementation	Composite Priority Score
S. 47 <sup>th</sup> Street/ Potrero Ave	S. 47 <sup>th</sup> Street from Carlson Boulevard to Potrero Avenue	B	A	B	C	C	A	B
	Potrero Avenue from S. 47 <sup>th</sup> Street to Eastshore	B	A	B	C	C	A	B
Juliga Woods	Meade St./Regatta Boulevard to Cutting Boulevard	B	C	B	C	B	A	B
Spring Street	Regatta Boulevard/I-580 to Cutting Boulevard	A	C	B	C	C	A	C
Cutting Boulevard	S. 4 <sup>th</sup> Street to Harbour Way S	A	A	B	B	B	A	B
	Harbour Way S to S. 23 <sup>rd</sup>	A	A	A	A	B	A	A
	S. 23 <sup>rd</sup> Street to S. 41 <sup>st</sup> Street	A	A	A	A	A	B	A
	S. 41 <sup>st</sup> Street to I-80	C	A	B	A	A	B	B

## PROJECT COST ESTIMATES

To inform project prioritization, and requests for funding, BKF Engineers prepared cost estimates for implementation of near-term capital improvement projects recommended for each key corridor identified in the SRTCP. This section provides an overview of key assumptions made in cost estimation.

- Labor costs were estimated using either Richmond’s graphical information system or the consultant team’s internal records. Thus, these values are approximate and will need to be confirmed and updated during the detailed project design phase of implementation.
- A contingency factor of 10 to 25% is added to each line item, which varies based on the complexity of the scope of work, or potential cost fluctuation due to market conditions.
- Recommendations related to street pavement re-surfacing were based upon City records of the Pavement Condition Index (PCI) as of 2014. If street improvements are not implemented in a timely manner, pavement will deteriorate and repair costs, as well as total project costs will increase. PCI was assumed to influence project scope and costs as follows:
  - Streets in Good Condition (PCI of 100-70), will have up to 10% of their surface area repaired using a full depth restoration topped with a slurry seal.
  - Streets in Fair Condition (PCI of 69-50) will received a 2 inch mill and 3 inch overlay, this assumes 20% of the surface area receives a full depth restoration.
  - Streets in Poor Condition (PCI 50 or below) will be replaced with a new structural section of 4 inches of asphalt atop 10 inches of aggregate base.
- Costs for contractor mobilization, traffic control and storm water pollution plan implementation were included, based on typical values for projects of similar scale in the San Francisco Bay Area.
- Unit costs are based on bid results from previous projects of comparable size and geographic location. These unit cost estimates are valid through 2015. An inflation factor of 4% per year is recommended for future project budget planning, to account for potential cost increases beyond 2015 (Nevertheless, a careful review of local economic conditions should be conducted when forecasting future costs for corridor improvements or individual projects.
- All streets receiving new pavement will have new curb ramps installed that are compliant with current accessibility standards.
- Slurry sealing is assumed for all streets receiving new striping.
- Cost estimates for bicycle and regulatory legends are based upon information provided in the Manual of Uniform Traffic Control Devices (MUTCD).
- Wayfinding signage will be placed at the beginning and ending of bicycle routes and at key intersections along each corridor.
- All Class I Shared-use paths are assumed to be a minimum of 10 feet in width and constructed of 3 inches of asphalt and 8 inches of aggregate base.
- Cost estimates do not include design and construction management fees, materials testing, right-of-way acquisition, or permits.

In addition to the previously stated assumptions, long-term cost estimates for the two options for a bridge/overpass at S. 47<sup>th</sup> Street/UPRR/I-580 – presented in Appendix C – are based on the following assumptions:

- Only the crossings of the I-580, the UPRR tracks, Meade Street, and Carlson Boulevard will be by a bridge span. Other segments will be a roadway placed on fill with mechanically stabilized earth retaining walls.
- All bridge spans are assumed to be constructed from concrete box girders.
- Bridge piers are assumed to be cast concrete in a drilled hole of 36 inch in diameter and placed to a depth of 50 feet.
- Cost estimates assume that there is no Young Bay Mud or compressible soil with the project limits. If these soils are present, the construction costs will increase.
- Pedestrian lights are assumed to be placed at 100-foot intervals.
- This estimate assumes that public utilities will relocate their facilities at no cost to the City as required by the Public Utilities Code.
- Union Pacific permit and encroachment fees are excluded from the cost estimate.
- The multimodal bridge could potentially have a large right-of-way acquisition cost, which is not included in this cost estimate.
- Cost analysis includes modifications to the City’s sanitary sewer, storm drain, and telecommunications infrastructure. However, the estimate does not include costs that might be required to construct a new pump station.

Figure 11-1, provides a summary of construction cost estimates for the near-term capital improvement projects recommended for each corridor profiled in the SRTCP. In addition to the project descriptions provided for each corridor in Chapter 10 (Corridor Profiles), detailed information about project components, including unit costs for each element of project construction and implementation, are provided in Appendix C.

**Figure 11-2 BKF Construction Cost Estimates for Near-Term (2015-2024) Projects by Corridor**

Corridor	Total Cost Estimate
Harbour Way	\$1,133,200
Marina Way	\$556,961
Hoffman Boulevard	\$158,352
Juliga Woods	\$949,719
Bayview	\$956,613
Marina Bay Parkway/South 23 <sup>rd</sup>	\$1,169,842
Cutting Boulevard	\$2,052,594
47 <sup>th</sup> Street (Excludes bridge costs)	\$964,169
Carlson Boulevard	\$1,935,318
Central Avenue	\$890,973
Potrero Avenue	\$135,216
I-580 ramps at MBP/S. 23 <sup>rd</sup>	\$3,269,082
I-580 ramps at Harbour Way S	\$2,033,240

## POTENTIAL FUNDING SOURCES

In order to implement the projects identified in the South Richmond Transportation Connectivity Plan, careful consideration will need to be given to identify the best funding source for each project. For example, grants have differing requirements for local fiscal match, level of project development, documented safety need, and cost-benefit ratios. The City should consider targeting the following grant funding sources for the highest priority connectivity projects and services:

- Active Transportation Program
- Highway Safety Improvement Program
- One Bay Area Grant (OBAG)
- Transportation Development Act (TDA), Article 3
- Measure J
- Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant program
- Impact Fees
- Federal funding options
- State funding options

For each funding source, key metrics and evaluation criteria are highlighted in addition to information on the next call for projects, where available.

### Active Transportation Program

**Key Metrics:** Cost-benefit ratio based on a variety of benefit metrics; increase in walking and biking trips

**Other Considerations:** Grant for design and construction

**Next Call for Projects:** Late 2014, after that approximately two-year cycle until the next reauthorization of the federal transportation bill.

**Eligible Projects:** Bicycle and pedestrian projects

The Active Transportation Program was created by SB 99/ Assembly Bill 101 to encourage increased use of active modes of transportation such as biking and walking. The program consolidates five existing state funded programs: Transportation Alternatives Program, Recreational Trails program, Safe Routes to Schools, Environmental Enhancement and Mitigation Program and the Bicycle Transportation Account. It provides a comprehensive program that improves program planning and flexibility and is more efficient than multiple programs. Another benefit is that funds can be directed to multi-year projects to make greater long-term improvements to active transportation.

The ATP mixes state and federal funds and provides approximately \$130 million annually, with a focus on implementing active transportation improvements to support the goals of local SB 375 sustainable community strategies. This program is funded from a combination of federal and state funds from appropriations in the annual state budget act. Forty percent of the funding will go toward metropolitan planning organizations in urban areas. Ten percent of the funds go to

small urban and rural regions. The remaining funds will go to the California Transportation Commission for statewide projects. The ATP ensures that disadvantaged communities fully share in the benefits of the program by requiring that a minimum of 25% of fund be distributed to disadvantaged communities.

In order to maximize the effectiveness of program funds and to encourage the aggregation of small projects into a comprehensive bundle of projects, the minimum request for Active Transportation Program funds that will be considered is \$250,000. This minimum does not apply to non-infrastructure projects, Safe Routes to Schools projects, and Recreational Trails projects.

Project types allowed under the ATP include: new bikeways serving major transportation corridors, new bikeways to improve bicycle commuting options, bicycle parking at transit and employment centers, traffic control devices to improve pedestrian and bicycle safety, improving and maintaining safety on existing bikeways, recreational facilities, Safe Routes to School projects, Safe Routes To Transit projects, education programs, and other improvements to bicycle-transit connections and urban environments.

For a project to contribute toward the Safe Routes to School funding requirement, the project must directly increase safety and convenience for public school students to walk and/or bike to school. Safe Routes to Schools infrastructure projects must be located within two miles of a public school or within the vicinity of a public school bus stop. Other than traffic education and enforcement activities, non-infrastructure projects do not have a location restriction.

## **Highway Safety Improvement Program**

**Key Metric(s):** Cost-benefit ratio based on collision history and severity

**Other Considerations:** Grant for design and construction

**Next Call for Projects:** Spring 2015 (Cycle 7)

**Eligible Projects:** Complete Streets infrastructural improvements that correct injury collisions

Caltrans administers the Highway Safety Improvement Program (HSIP) which uses a cost-benefit ratio as a primary factor in the awarding of applications. Because both of these programs focus on roadway safety, projects with documented collision history – through frequency of collision but particularly collision severity – are ranked higher. Roadways with documented bicycle and pedestrian collision history, may be well-qualified for HSIP applications, particularly since many of the proposed projects would improve bicyclist and pedestrian safety at a lower cost than many of the highway projects also eligible under this funding source.

In its most recent grant cycle (November 2013), Caltrans awarded \$150 million to 231 projects. While this funding source is often used for major roadway improvement projects, installation of traffic signals, and most other cost-intensive projects, funding has routinely been awarded to bicycle and pedestrian projects. Successful projects have included:

- Median refuges and curb extensions
- Curb, gutter, and sidewalk
- Paved shoulders
- Upgraded traffic signals with pedestrian countdown signals and pedestrian-scale lighting
- Bicycle lane striping
- Crosswalk striping

- In-pavement flashers and rectangular rapid flashing beacon (RRFB) at crossings

Many of these projects were applied for as standalone bicycle and pedestrian improvement projects; some bicycle and pedestrian improvements were included with a broader package of roadway improvement projects. The average programmed federal funding amount was \$400,000. The next call for projects is anticipated in Spring 2015.

More information is available online: <http://www.dot.ca.gov/hq/LocalPrograms/hsip.htm>

## One Bay Area Grant

**Key Metrics:** Location in Priority Development Area (PDA) and/or Community of Concern; Increase in walking and biking trips (and VMT reduction)

**Other Considerations:** Grant for design and construction

**Next Call for Projects:** Unknown (existing Cycle goes through FY 2015-16)

**Eligible Projects:** Compete streets projects and roadway rehabilitation

One Bay Area Grant Program (OBAG) is now an umbrella for the previous MTC grant programs. It combines funding for Transportation for Livable Communities, Bicycle, Local Streets and Roads Rehabilitation, and Safe Routes to School for the FY 2012-13 through 2015-16 funding cycles. This program is administered by MTC through CCTA and awards funding to counties based on progress toward achieving local land-use and housing policies. Cities and counties can still use OBAG funds for projects described under these programs. Many of the projects proposed in this plan are located in the South Richmond Priority Development Area (PDA), which would make them eligible and competitive for OBAG funding.

MTC and CCTA OBAG program information:

<http://www.mtc.ca.gov/funding/onebayarea/>

<http://www.ccta.net/resources/detail/18/1>

## Transportation Development Act, Article 3

**Next Call for Projects:** Application Available, Anticipated awards June 2015

**Eligible Projects:** Most bicycle and pedestrian projects

Transportation Development Act (TDA), Article 3 funds statewide funds for planning and construction of pedestrian and bicycle facilities administered locally through MTC. TDA, Article 3 funds are allocated based on population and may be used for engineering, right of way, construction, retrofitting, route improvements, and an assortment of bicycle facilities.

## Measure J

**Time Line:** Possible development of expenditure list in 2015

Measure J is a half-cent transportation sales tax in Contra Costa County. In 2004, voters approved the sales tax for 25 years beyond the original expiration date of 2009. The majority of the funding is reserved for large ticket infrastructure and transit projects; however, bicycle, pedestrian, trail, and safe routes to school projects are also programmed into the expenditure project. It is anticipated that the Contra Costa Transportation Authority (CCTA) will put Measure

J before the voters again in 2015, which would likely increase the tax to provide more money for transportation projects. The City of Richmond should coordinate closely with CCTA and WCCTAC to potentially include projects identified in this plan in the proposed Expenditure Plan. If Measure J does go to the ballot in 2015, it is anticipated that the Expenditure Plan would be developed the year before that, and at that point the City should coordinate with CCTA to include projects identified in this Plan, as appropriate.

## **TIGER Grants**

**Key Metrics:** Demonstration of benefits (safety, economic, competitiveness, maintenance, livability, and environmental sustainability); emphasis on innovative projects

**Next Call for Projects:** Unknown, previously annual funding cycles

**Eligible Projects:** Multi-modal and/or multi-jurisdictional projects

The Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant program funds rail, transit, port, and active transportation projects, that have a variety of benefits, including economic competitiveness and livability. As this is a national call-for-projects, competition is very strong. Emphasis is on projects that are multi-modal, multi-jurisdictional, and/or difficult to fund through traditional funding sources.

## **Transportation Impact Fee Program**

The South Richmond Priority Development Area (PDA) is located within the boundaries of this project's study area. The area was awarded a PDA grant from the Metropolitan Transportation Commission (MTC) in 2012 in order to develop the *South Shoreline Specific Plan (SSSP)*. An environmental impact report is now being prepared to identify any potential impacts of land use proposals. The residential development that accompanies this plan necessitates the active transportation projects and presents a potential funding opportunity.

As the *South Richmond Transportation Connectivity Plan* is coordinated with the SSSP, which proposes significant development in the South Richmond area, another possible funding source is a transportation impact fee program for the area. Should such a program be developed through the SSSP, Connectivity Plan projects that provide an appropriate nexus to the proposed development could be considered for inclusion in the project list. Given that the projects identified in the Connectivity Plan typically have short-term and long-term phasing, inclusion of the long-term project vision on such an Impact Fee project list would be recommended so that lower-cost short-term solutions can be implemented sooner.

## **Federal Programs**

The majority of public funds for bicycle, pedestrian, and trails projects are derived through a core group of federal and state programs. Federal funding is authorized through the Surface Transportation Program (STP). STP provides flexible funding that may be used by States and localities for projects on any Federal-aid highway. In the past this funding was authorized by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Funding for STP is now authorized through MAP-21, with the same structure and goals of STP funding.

The Transportation Enhancements (TE) under SAFETEA-LU is now the Transportation Alternatives Program (TAP). TAP, authorized through MAP-21, consolidates TE, Safe Routes to School, and Recreational Trails and provides funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, transit access, mobility, and recreation trails program. TAP broadens eligibility and flexibility for state allocation of TAP funds. Safe Routes to School programs, including infrastructure, encouragement, campaigns, education, outreach and a Safe Routes coordinator, are eligible under TAP, though no funds are dedicated for this.

The Congestion Mitigation and Air Quality Improvement Program (CMAQ) also authorizes federal funds, including education programs. MAP-21 maintains the existing CMAQ program and broadens eligibility for transit operations.

Federal funds from STP, TAP and CMAQ programs are allocated to MTC and distributed in Alameda County through Alameda CTC. Distribution is allocated either competitively or proportionally according to jurisdiction population.

Other recent policies at the federal level have resulted in a series of programs that promise to provide increased funding in the coming years for bicycle projects. The HUD-DOT-EPA Interagency Partnership for Sustainable Communities has generated a series of new grant programs to-date, including Urban Circulator grants, TIGER grants, and Sustainable Communities Planning grants. The Department of Transportation recently announced a new DOT policy initiative, indicating “well-connected walking and bicycling networks [are] an important component for livable communities.”

## **State Programs**

There are a number of state-wide funding sources and regionally administered funds.

### **Other Statewide Funding Programs**

Caltrans Transportation Planning Grants are available to jurisdictions and can be used for planning or feasibility studies. The Division will award approximately \$5.3 million in funding through three Grant Programs for Fiscal Year 2014-15. The maximum funding available per project is \$300,000.

Limited amounts from the Local Transportation Fund (LTF), which is derived from a ¼ cent of the general sales tax collected statewide, can be used for bicycle and pedestrian facilities.

The California State Parks administers the state’s Recreational Trails Program (RTP). RTP provides funds annually for recreational trails and trails-related projects. Cities are eligible applicants for the approximately \$5.3 million available annually. The program requires an applicant match of 12 percent of the total project cost.

The National Park Service and California State Parks administer the Land and Water Conservation Fund (LWCF). The LWCF Program provides matching grants to states and local governments for the acquisition and development of public outdoor recreation areas and facilities. Cities are eligible applicants. Approximately \$1.74 million is available annually; grants require a 50 percent local match.

Some of these programs will no longer be funded under proposed and current federal and state funding plans, and may only be short-term funding resources for the current schedule of projects. See below for proposed funding structures related to some of these programs.

## **Surface Transportation Program**

The Surface Transportation Program (STP) block grant provides SAFETEA and MAP-21 funding for transportation projects, including pedestrian and bicycle projects (see above discussion about Federal programs for details). This program is administered by MTC, which can prioritize projects for RSTP funding.

MTC STP program information: <http://www.mtc.ca.gov/funding/STPCMAQ/>

## **BAAQMD Transportation Fund for Clean Air (TFCA)**

Transportation Fund for Clean Air (TCFA) is a grant program administered by the Bay Area Air Quality Management District (BAAQMD). The purpose of the program, which is funded through a \$4 surcharge on motor vehicles registered in the Bay Area, is to fund projects and programs that will reduce air pollution from motor vehicles. Grant awards are generally made on a first-come, first-served basis to qualified projects. A portion of TFCA revenues collected in each Bay Area county is returned to that county's congestion management agency (CMA) for allocation (Alameda County Transportation Commission in Alameda County). Applications are made from local agencies directly to the CMAs, but must also be approved by the BAAQMD.

TFCA County Program Manager Fund: <http://www.baaqmd.gov/Divisions/Strategic-Incentives/Funding-Sources/TFCA/County-Program-Manager-Fund.aspx>

## **SUMMARY OF IMPLEMENTATION ACTIONS**

In order to achieve the projects and vision set forth in this Plan, close coordination between City agencies, private developers and businesses of the South Shoreline area, the Bay Trail Project, AC Transit, WETA, BART, and the community is required. Figure 11-3 provides an action plan in order to prioritize and organize implementation efforts.

**Figure 11-3 Short-Range and Long-Range Action Plan for South Richmond**

Task	Staff	Cost	Timeline	Next Steps
<b>Short Range Action Plan</b>				
Complete Environmental Review	Staff to identify remaining steps for successful environmental review	SS	2015-2016	Prepare initial environmental study
Integrate SRTCP Project List into Relevant Planning Documents	Staff to coordinate with necessary staff to enable integration of projects	\$	2015-2016	
Identify Preferred Funding Sources	-Identify preferred funding source for each project -Designate which improvements are “low-hanging fruit” and/or could be completed with temporary pilot projects or integrated into other planned projects/programs	\$\$	2015-2016	1. Integrate key projects into necessary planning documents such as CCTA Action Plan, CCTA Countywide Bicycle and Pedestrian Master Plan  2. Prepare and submit grant applications
Secure Funding Sources	-Prepare grant applications	\$\$	2015-2018	After identifying appropriate funding sources, identify staff resources to complete grant applications
Implement/Construct Projects	Develop process to facilitate installation of prioritized and funded projects	\$\$	2015-2020	Use available funding to facilitate the design and construction of prioritized projects
Support Maintenance and Ongoing Operations	-Develop a maintenance plan -Identify staff to perform maintenance and respond to maintenance requests	\$\$	2015-2016	Coordinate process for maintenance of facilities on a set schedule in accordance with existing street maintenance schedules.

Task	Staff	Cost	Timeline	Next Steps
<b>Long Range Action Plan</b>				
Identify Preferred Funding Sources	-Develop Transportation Impact Fees (TIF) to fund projects near incoming developments in South Richmond -Measure J funding may become available for long-range more costly projects infrastructure and transit projects pending voter approval in 2015	\$\$\$	2015-2016	-Coordinate closely with CCTA and WCCTAC to include projects identified in this plan in the proposed Measure J Expenditure Plan
Secure Funding Sources	-Staff to review available funding sources and submit required applications	\$\$	2015-2017	Identify long term projects requiring more focused grant application efforts

### **Phasing: Expediting Near-Term and Long-Term Improvements**

Projects have been identified with varying priority levels; however, varying circumstances may cause projects to be completed at rates differing from their assigned priority levels. As a result, the SRTCP has taken a phased approach to planning and implementation, recommending short-term and long-term improvements that can be implemented as opportunity arises. Scheduled maintenance, repair or restriping on streets may present opportunities to expedite implementation of some projects in order to use resources most efficiently. Similarly, new developments can spur development of projects in the surrounding area. Other triggers for project implementation can include newly available project specific funding, grant funding, and other funding measures. Phasing of projects should take in to consideration these triggers to development.

Projects with few barriers to interim design and implementation should be fast-tracked for temporary application while grant-funding is being applied for. In most cases, “long-range” projects, are categorized as such because they require extensive changes to infrastructure. Although such projects may not be implemented for 5-15 years the City can take early actions – such as application for grant funding -- to speed their completion. It is also important to consider prioritization of projects triggered by planned developments, such as proposed projects in the South Shoreline Specific Plan Area. It may be preferable to develop transportation facilities supporting development in this area prior to other projects with higher priority levels.

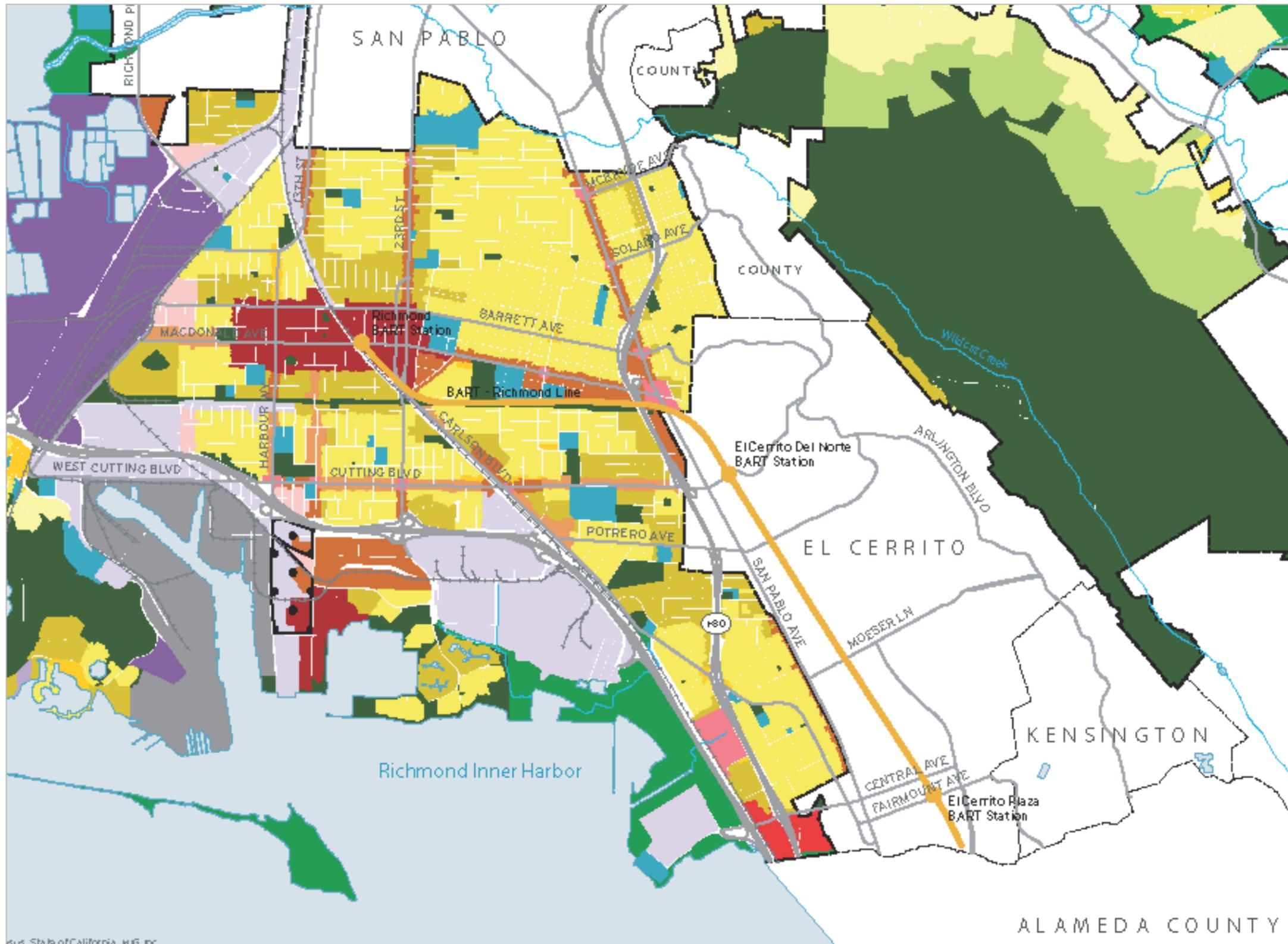
## **APPENDIX A**

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### General Plan Land Use Map



# Appendix A General Plan Land Use Map



**Map 3.14**  
**Land Use Designations**  
 Citywide

- City of Richmond
- Residential Neighborhoods**
  - Hillside Residential
  - Low-Density Residential
  - Medium Density Residential
  - Neighborhood Mixed-Use
- Key Corridors**
  - Medium Density Mixed-Use (Residential Emphasis)
  - Medium Intensity Mixed-Use (Commercial Emphasis)
- Activity Centers**
  - Medium Intensity Mixed-Use (Gateway and/or Community Node)
  - High Intensity Mixed-Use (Major Activity Center)
  - Regional Commercial Mixed-Use
- Business and Industry**
  - Live/Work
  - Business/Light Industrial
  - Low Intensity Business/Light Industrial
  - Marine and Waterfront Commercial
  - Industrial
  - Port
- Community**
  - Agriculture
  - Open Space
  - Parks and Recreation
  - Public, Cultural, and Institutional
- Overlay Zones**
  - Transition Zone Overlay District (TZOD)  
 Pursuant to Ordinance No. 1808, residential uses are prohibited within this zone

Scale: 0 to 2 Miles  
 0, 0.5, 1, 2 MILES

Source: State of California, MGIS, Inc.

## **APPENDIX B**

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### Cost Analysis for Near-term Projects



**SRTCP | APPENDIX B: COST ANALYSIS FOR NEAR-TERM PROJECTS | FINAL**  
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## CUTTING BOULEVARD

<i>PROJECT COMMENCEMENT</i>			PRELIMINARY RECOMMENDATIONS			
			Hoffman Blvd. to San Pablo ave.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
100	CONTRACTOR MOBILIZATION	\$ 186,599	1	LS	0%	\$ 186,599
101	TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS	\$ 40,000	1	LS	10%	\$ 44,000
102	STORM WATER POLLUTION AND PREVENTION PLAN IMPLEMENTAION	\$ 10,000	1	LS	10%	\$ 11,000
PROJECT COMMENCEMENT SUBTOTAL:			\$ 241,599			
<i>DEMOLITION/REMOVAL</i>			Hoffman Blvd. to San Pablo ave.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
200	PAVEMENT REMOVAL	\$ 5.00	4,135	SF	25%	\$ 25,844
201	REMOVE TRAFFIC STRIPING AND PAVEMENT MARKINGS	\$ 50,000.00	1	LS	25%	\$ 62,500
DEMOLITON/REMOVAL SUBTOTAL:			\$ 88,344			
<i>HARDSCAPE IMPROVEMENTS</i>			Hoffman Blvd. to San Pablo ave.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
300	SLURRY SEAL - (HOFFMAN BLVD. TO S. 23RD ST.)	\$ 0.40	353,000	SF	10%	\$ 155,320
301	BASE PAVEMENT REPAIR	\$ 13.00	35,300	SF	20%	\$ 550,680
302	MEDIAN CURB -(HOFFMAN BLVD. TO S. 23RD ST.)	\$ 50.00	1,285	SF	20%	\$ 77,100
303	MEDIAN CONCRETE - (HOFMAN BLVD. TO S. 23RD ST.)	\$ 50.00	608	SF	20%	\$ 36,480
HARDSCAPE IMPROVEMENTS SUBTOTAL:			\$ 819,580			
<i>SIGNAGE/STRIPING</i>			Hoffman Blvd. to San Pablo ave.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	15	AMOUNT
400	BIKE LANE BUFFER - SPECIAL STRIPING	\$ 3.00	8,156	LF	20%	\$ 29,362
401	PAVEMENT MARKING (BICYCLE LANE SYMBOL AND TEXT)	\$ 500.00	36	EA	15%	\$ 20,700
402	VEHICLE LANE STRIPING	\$ 5.00	17,187	LF	25%	\$ 107,419
403	STRIPING - CROSSWALK	\$ 4.00	7,468	LF	25%	\$ 37,340
404	BICYCLE LANE SIGN	\$ 500.00	36	EA	10%	\$ 19,800
405	PAVEMENT MARKING -ARROW TYPE	\$ 250.00	108	EA	10%	\$ 29,700
SIGNAGE/STRIPING SUBTOTAL:			\$ 244,320			
<i>ELECTRICAL/TRAFFIC SIGNAL IMRROVEMENTS</i>			Hoffman Blvd. to San Pablo ave.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
600	BICYCLE DETECTION AT SIGNALIZED INTERSECTIONS	\$ 15,000.00	17	EA	10%	\$ 280,500
601	RECTANGULAR RAPID FLASHING BEACON	\$ 5,000.00	4	EA	10%	\$ 22,000
ELECTRICAL/TRAFFIC SIGNAL IMPROVEMENTS SUBTOTAL:			\$ 302,500			
<i>LANDSCAPE/IRRIGATION IMPROVEMENTS</i>			Hoffman Blvd. to San Pablo ave.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS		AMOUNT
700	LANDSCAPING AND IRRIGATION	\$ 100.00	2,850	SF	25%	\$ 356,250
LANDSCAPE/IRRIGATION IMPROVEMENTS SUBTOTAL:			\$ 356,250			
PRELIMINARY ITEM SUBTOTAL:			\$ 2,052,594			
PRELIMINARY ITEM SUBTOTAL:			\$ 2,052,594			

## SOUTH 23<sup>RD</sup>/MARINA BAY PARKWAY

<i>PROJECT COMMENCEMENT</i>			PRELIMINARY RECOMMENDATIONS			
			I-580 to Regatta Blvd.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
100	CONTRACTOR MOBILIZATION	\$ 106,349	1	LS	0%	\$ 106,349
101	TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS	\$ 10,000	1	LS	10%	\$ 11,000
102	STORM WATER POLLUTION AND PREVENTION PLAN IMPLEMENTAION	\$ 5,000	1	LS	10%	\$ 5,500
<b>PROJECT COMMENCEMENT SUBTOTAL:</b>						<b>\$ 122,849</b>
<i>DEMOLITION/REMOVAL</i>			I-580 to Regatta Blvd.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
200	MILL ASPHALT PAVEMENT - CUTTING BLVD. TO POTRERO AVE.	\$ 0.80	26,280	SF	25%	\$ 26,280
201	REMOVE TRAFFIC STRIPING AND PAVEMENT MARKINGS	\$ 25,000.00	1	LS	15%	\$ 28,750
<b>DEMOLITON/REMOVAL SUBTOTAL:</b>						<b>\$ 55,030</b>
<i>HARDSCAPE IMPROVEMENTS</i>			I-580 to Regatta Blvd.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
300	ASPHALT CONCRETE - (CUTTING BLVD. TO POTRERO AVE. )	\$ 150.00	329	TON	25%	\$ 61,688
301	PEDESTRIAN ISLAND	\$ 50.00	800	SF	10%	\$ 44,000
302	SLURRY SEAL - (I-580 TO MEEKER AVE. )	\$ 0.80	142,500	SF	25%	\$ 142,500
303	BASE PAVEMENT REPAIR	\$ 13.00	7,125	SF	25%	\$ 115,781
304	BIKE LANE CURB BARRIER	\$ 50.00	600	SF	10%	\$ 33,000
305	BUS SHELTER AND APPURTENANCES	\$ 10,000.00	2	EA	20%	\$ 24,000
306	TRANSIT STOP ISLANDS	\$ 50.00	1,280	SF	10%	\$ 70,400
<b>HARDSCAPE IMPROVEMENTS SUBTOTAL:</b>						<b>\$ 491,369</b>
<i>SIGNAGE/STRIPING</i>			I-580 to Regatta Blvd.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	15	AMOUNT
400	GREEN PAINT - BIKE LANE	\$ 55.00	5,665	LF	25%	\$ 389,469
401	PAVEMENT MARKING (BICYCLE LANE SYMBOL AND TEXT)	\$ 500.00	18	EA	25%	\$ 11,250
402	VEHICLE LANE STRIPING	\$ 4.00	4,200	LF	25%	\$ 21,000
403	STRIPE - CROSSWALK	\$ 5.00	900	LF	25%	\$ 5,625
404	HOV LANE SIGN	\$ 500.00	3	EA	10%	\$ 1,650
405	BICYCLE LANE SIGN	\$ 500.00	18	EA	10%	\$ 9,900
406	PAVEMENT MARKING - ARROW TYPE	\$ 250.00	10	EA	10%	\$ 2,750
407	PAVEMENT MARKING - HOV LANE	\$ 500.00	9	EA	10%	\$ 4,950
<b>SIGNAGE/STRIPING SUBTOTAL:</b>						<b>\$ 446,594</b>
<i>ELECTRICAL/TRAFFIC SIGNAL IMPROVEMENTS</i>			I-580 to Regatta Blvd.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
600	BICYCLE DETECTION	\$ 15,000.00	3	EA	20%	\$ 54,000
<b>ELECTRICAL/TRAFFIC SIGNAL IMPROVEMENTS SUBTOTAL:</b>						<b>\$ 54,000</b>
<b>PRELIMINARY ITEM SUBTOTAL:</b>						<b>\$ 1,169,842</b>
<b>PRELIMINARY ITEM SUBTOTAL:</b>						<b>\$ 1,169,842</b>

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**23<sup>RD</sup> STREET** (Continued)

**I-580 RAMP IMPROVEMENTS**

<b>DEMOLITION/REMOVAL</b>			<b>I-580</b>			
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT COST</b>	<b>QTY.</b>	<b>UNITS</b>	<b>CONT.</b>	<b>AMOUNT</b>
200	CLEARING AND GRUBBING	\$ 5.00	45,000	SF	15%	\$ 258,750
201	SIDEWALK REMOVAL	\$ 20.00	4,500	SF	25%	\$ 112,500
202	PAVEMENT REMOVAL	\$ 5.00	50,000	SF	25%	\$ 312,500
203	FENCE REMOVAL	\$ 20.00	100	LF	25%	\$ 2,500
204	STREETLIGHT RELOCATION	\$ 4,000.00	10	EA	25%	\$ 50,000
206	UTILITY BOX RELOCATION	\$ 10,000.00	1	EA	25%	\$ 12,500
207	CONCRETE BARRIER REMOVAL	\$ 100.00	100	LF	25%	\$ 12,500
209	TREE REMOVAL	\$ 10,000.00	1	LS	25%	\$ 12,500
<b>DEMOLITON/REMOVAL SUBTOTAL:</b>						<b>\$ 773,750</b>

**HARDSCAPE IMPROVEMENTS**

<b>HARDSCAPE IMPROVEMENTS</b>			<b>I-580</b>			
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT COST</b>	<b>QTY.</b>	<b>UNITS</b>	<b>CONT.</b>	<b>AMOUNT</b>
300	ASPHALT CONCRETE	\$ 150.00	2,111	TON	20%	\$ 379,890
301	AGGREGATE BASE	\$ 80.00	3,150	TON	20%	\$ 302,400
302	CONCRETE BARRIER	\$ 600.00	100	LF	20%	\$ 72,000
303	SIDEWALK	\$ 30.00	5,100	SF	20%	\$ 183,600
304	CONCRETE CURB AND GUTTER	\$ 80.00	1,000	LF	10%	\$ 88,000
306	ADA RAMP	\$ 2,000.00	10	EA	10%	\$ 22,000
307	INSTALL FENCE	\$ 20.00	100	LF	10%	\$ 2,200
<b>HARDSCAPE IMPROVEMENTS SUBTOTAL:</b>						<b>\$ 1,050,090</b>

**SIGNAGE/STRIPING**

<b>SIGNAGE/STRIPING</b>			<b>I-580</b>			
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT COST</b>	<b>QTY.</b>	<b>UNITS</b>	<b>CONT.</b>	<b>AMOUNT</b>
400	BIKE LANE BUFFER - SPECIAL STRIPING	\$ 3.00	1,800	LF	10%	\$ 5,940
401	BIKE LANE STRIPE	\$ 2.00	2,000	LF	10%	\$ 4,400
402	12" WIDE WHITE CROSSWALK STRIPE	\$ 5.00	1,500	LF	20%	\$ 9,000
403	STRIPING - PAVEMENT	\$ 4.00	1,400	LF	10%	\$ 6,160
404	PAVEMENT MARKING (BICYCLE LANE SYMBOL AND TEXT)	\$ 500.00	9	EA	10%	\$ 4,950
405	BICYCLE LANE SIGN	\$ 500.00	9	EA	10%	\$ 4,950
<b>SIGNAGE/STRIPING SUBTOTAL:</b>						<b>\$ 35,400</b>

**TRAFFIC SIGNAL IMPROVEMENTS**

<b>TRAFFIC SIGNAL IMPROVEMENTS</b>			<b>I-580</b>			
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>UNIT COST</b>	<b>QTY.</b>	<b>UNITS</b>	<b>CONT.</b>	<b>AMOUNT</b>
401	RELOCATION OF TRAFFIC SIGNAL SYSTEM	\$ 200,000.00	1	LS	20%	\$ 240,000
<b>TRAFFIC SIGNAL IMPROVEMENTS SUBTOTAL:</b>						<b>\$ 240,000</b>
<b>PRELIMINARY ITEM SUBTOTAL:</b>						<b>\$ 2,099,240</b>
<b>TOTAL PROJECT ITEM SUBTOTAL:</b>						<b>\$ 3,269,082</b>

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## HARBOUR WAY / MARINA WAY

<i>PROJECT COMMENCEMENT</i>			Virginia Ave. to Bay Trail			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
100	CONTRACTOR MOBILIZATION	\$ 103,018	1	LS	0%	\$ 103,018
101	TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS	\$ 20,000	1	LS	10%	\$ 22,000
102	STORM WATER POLLUTION AND PREVENTION PLAN IMPLEMENTAION	\$ 5,000	1	LS	10%	\$ 5,500
<b>PROJECT COMMENCEMENT SUBTOTAL:</b>						\$ 130,518
<i>DEMOLITION/REMOVAL</i>			Virginia Ave. to Bay Trail			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
200	ASPHALT COLD MILL	\$ 0.45	182,700	SF	15%	\$ 94,547
201	REMOVE TRAFFIC STRIPING AND PAVEMENT MARKINGS	\$ 5,000.00	1	LS	15%	\$ 5,750
<b>DEMOLITON/REMOVAL SUBTOTAL:</b>						\$ 100,297
<i>HARDSCAPE IMPROVEMENTS</i>			Virginia Ave. to Bay Trail			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
300	ASPHALT CONCRETE - RECONSTRUCTION HOFFMAN BLVD. TO HALL AVE.	\$ 150.00	2,253	TON	20%	\$ 405,594
301	BASE PAVEMENT REPAIR	\$ 8.00	9,135	SF	20%	\$ 87,696
302	SLURRY SEAL	\$ 0.40	121,000	SF	20%	\$ 58,080
303	GRADE PANELS AT RAILROAD CROSSING	\$ 125,000.00	1	ALLOW	10%	\$ 137,500
304	ADA RAMP	\$ 2,500.00	11	EA	10%	\$ 30,250
<b>HARDSCAPE IMPROVEMENTS SUBTOTAL:</b>						\$ 719,120
<i>SIGNAGE/STRIPING</i>			Virginia Ave. to Bay Trail			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
400	CYCLE TRACK STRIPING	\$ 3.25	4,095	LF	10%	\$ 14,640
401	STRIPE- CROSSWALK	\$ 5.00	1,220	LF	10%	\$ 6,710
402	PAVEMENT MARKING (BICYCLE LANE SYMBOL AND TEXT)	\$ 250.00	47	EA	10%	\$ 12,925
403	VEHICLE LANE STRIPING	\$ 2.25	1,200	LF	10%	\$ 2,970
404	10' x 12' BIKE QUEUE BOX	\$ 1,500.00	2	EA	10%	\$ 3,300
405	BICYCLE LANE SIGN	\$ 500.00	21	EA	10%	\$ 11,550
406	PAVEMENT MARKING -ARROW TYPE	\$ 150.00	2	EA	10%	\$ 330
<b>SIGNAGE/STRIPING SUBTOTAL:</b>						\$ 52,425
<i>MISCELLANEOUS</i>			Virginia Ave. to Bay Trail			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
500	SOFT-HIT POSTS	\$ 100.00	239	EA	10%	\$ 26,290
501	RUBBER CURB	\$ 125.00	137	EA	20%	\$ 20,550
<b>UTILITY IMPROVEMENTS/ADJUSTMENTS SUBTOTAL:</b>						\$ 46,840
<i>ELECTRICAL/TRAFFIC SIGNAL IMRROVEMENTS</i>			Virginia Ave. to Bay Trail			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
600	VEHICLE RAILROAD CROSSING	\$ 30,000.00	2	EA	10%	\$ 66,000
601	BICYCLE DETECTION AT HOFFMAN	\$ 15,000.00	1	LS	20%	\$ 18,000
<b>ELECTRICAL/TRAFFIC SIGNAL IMPROVEMENTS SUBTOTAL:</b>						\$ 84,000
<b>PRELIMINARY ITEM SUBTOTAL:</b>						\$ 1,133,200

## HOFFMAN BOULEVARD

			PRELIMINARY RECOMMENDATIONS			
			Cutting Ave. to Harbour Way			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
<b>PROJECT COMMENCEMENT</b>						
100	CONTRACTOR MOBILIZATION	\$ 14,396	1	LS	0%	\$ 14,396
101	TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS	\$ 12,000	1	LS	10%	\$ 13,200
<b>PROJECT COMMENCEMENT SUBTOTAL:</b>						\$ 27,596
<b>DEMOLITION/REMOVAL</b>						
			Cutting Ave. to Harbour Way			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
200	REMOVE TRAFFIC STRIPING AND PAVEMENT MARKINGS	\$ 5,000.00	1	LS	10%	\$ 5,500
<b>DEMOLITON/REMOVAL SUBTOTAL:</b>						\$ 5,500
<b>HARDSCAPE IMPROVEMENTS</b>						
			Cutting Ave. to Harbour Way			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
300	BASE PAVEMENT REPAIR	\$ 13.00	3,520	SF	20%	\$ 54,912
301	SLURRY	\$ 0.40	70,400	SF	20%	\$ 33,792
<b>HARDSCAPE IMPROVEMENTS SUBTOTAL:</b>						\$ 88,704
<b>SIGNAGE/STRIPING</b>						
			Cutting Ave. to Harbour Way			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
400	BIKE LANE STRIPE	\$ 2.00	3,200	LF	10%	\$ 7,040
401	PAVEMENT MARKING (BICYCLE LANE SYMBOL AND TEXT)	\$ 500.00	16	EA	10%	\$ 8,800
402	BICYCLE LANE SIGN	\$ 500.00	16	EA	5%	\$ 8,400
403	PAVEMENT MARKING - ARROW	\$ 250.00	5	EA	5%	\$ 1,313
404	VEHICLE LANE STRIPPING	\$ 5.00	2,000	LF	10%	\$ 11,000
<b>SIGNAGE/STRIPING SUBTOTAL:</b>						\$ 36,553
<b>PRELIMINARY ITEM SUBTOTAL:</b>						\$ 158,352

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**CARLSON BOULEVARD**

			PRELIMINARY RECOMMENDATIONS							
			23rd. To Bayview Ave.				Bayview Ave. to Central Ave.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT	QTY.	UNITS	CONT.	AMOUNT
<b>PROJECT COMMENCEMENT</b>										
100	CONTRACTOR MOBILIZATION	\$ 175,938	1	LS	0%	\$ 175,938				\$ -
101	TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS	\$ 50,000	1	LS	10%	\$ 55,000				\$ -
102	STORM WATER POLLUTION AND PREVENTION PLAN IMPLEMENTATION	\$ 10,000	1	LS	10%	\$ 11,000				\$ -
<b>PROJECT COMMENCEMENT SUBTOTAL:</b>						\$ 241,938	\$ -			
<b>DEMOLITION/REMOVAL</b>										
200	CONCRETE REMOVAL	\$ 9.00				\$ -	836	SF	20%	\$ 9,029
201	PAVEMENT REMOVAL	\$ 12.00				\$ -	2,350	SF	20%	\$ 33,840
202	MILL ASPHALT PAVEMENT	\$ 1.30				\$ -	26,600	SF	20%	\$ 41,496
203	PARTIAL TRAFFIC SIGNAL REMOVAL	\$ 50,000.00				\$ -	1	LS	10%	\$ 55,000
204	STRIPING REMOVAL	\$ 25,000.00	1	LS	10%	\$ 27,500				\$ -
<b>DEMOLITION/REMOVAL SUBTOTAL:</b>						\$ 27,500	\$ 139,365			
<b>HARDSCAPE IMPROVEMENTS</b>										
300	ASPHALT CONCRETE - (TRAIL + SOUTH ST. TO CUTTING BLVD)	\$ 120.00	398	TON	20%	\$ 57,276				\$ -
301	AGGREGATE BASE - (TRAIL)	\$ 60.00	232	TON	20%	\$ 16,699				\$ -
302	BASE PAVEMENT REPAIR	\$ 9.00	17,400	SF	20%	\$ 187,920				\$ -
303	SLURRY SEAL	\$ 0.40	348,000	SF	20%	\$ 167,040				\$ -
304	CONCRETE SIDEWALK WITH CURBS AND GUTTERS - (SOUTH ST. TO CUTTING BLVD)	\$ 10.00				\$ -	4,000	SF	25%	\$ 50,000
305	ADA RAMP	\$ 2,500.00	4	EA	10%	\$ 11,000				\$ -
306	BIKE RAMP	\$ 3,000.00				\$ -	4	EA	10%	\$ 13,200
<b>HARDSCAPE IMPROVEMENTS SUBTOTAL:</b>						\$ 439,935	\$ 63,200			
<b>SIGNAGE/STRIPING</b>										
400	BIKE LANE BUFFER - SPECIAL STRIPING	\$ 1.50	19,530	LF	15%	\$ 33,689				\$ -
401	BIKE LANE STRIPE	\$ 2.00	930	LF	15%	\$ 2,139	4,500	LF	15%	\$ 10,350
402	STRIPE - CROSSWALK	\$ 5.00	140	LF	15%	\$ 805	2,592	LF	15%	\$ 14,904
403	STRIPE - MEDIAN	\$ 2.80	10,000	LF	20%	\$ 33,600				\$ -
404	PAVEMENT MARKING (BICYCLE LANE SYMBOL AND TEXT)	\$ 500.00	102	EA	15%	\$ 58,650	45	EA	15%	\$ 25,875
405	BICYCLE LANE SIGN	\$ 500.00	101	EA	10%	\$ 55,550	45	EA	15%	\$ 25,875
406	PAVEMENT MARKING - ARROW TYPE	\$ 250.00	11	EA	10%	\$ 3,025	1	EA	15%	\$ 288
<b>SIGNAGE/STRIPING SUBTOTAL:</b>						\$ 187,458	\$ 77,292			
<b>MISCELLANEOUS</b>										
500	DRAINAGE SYSTEM MODIFICATION	\$ 45,000.00				\$ -	1	LS	10%	\$ 49,500
501	SOFT-HIT POSTS	\$ 100.00				\$ -	23	EA	10%	\$ 2,530
502	LANDSCAPE PLANTING AND IRRIGATION	\$ 12.00				\$ -	2,000	SF	15%	\$ 27,600
503	RIGHT-OF-WAY ACQUISITION FOR BIKE PATH AT 23RD/BROADWAY	\$ 50,000.00	1	LS	25%	\$ 62,500				\$ -
<b>UTILITY IMPROVEMENTS/ADJUSTMENTS SUBTOTAL:</b>						\$ 62,500	\$ 30,130			
<b>ELECTRICAL/TRAFFIC SIGNAL IMPROVEMENTS</b>										
600	BICYCLE DETECTION	\$ 15,000.00			10%	\$ -	1	EA	20%	\$ 18,000
601	NEW TRAFFIC SIGNAL (IF WARRANTED)	\$ 200,000.00			10%	\$ -	2	EA	20%	\$ 480,000
602	TRAFFIC SIGNAL MODIFICATION AT 180 OFF RAMP	\$ 140,000.00			10%	\$ -	1	EA	20%	\$ 168,000
<b>ELECTRICAL/TRAFFIC SIGNAL IMPROVEMENTS SUBTOTAL:</b>						\$ -	\$ 666,000			
<b>PRELIMINARY ITEM SUBTOTAL:</b>						\$ 959,331	\$ 975,986			
<b>PRELIMINARY ITEM SUBTOTAL:</b>						\$ 959,331	\$ 975,986			
<b>CONSTRUCTION COST TOTAL:</b>						\$ 1,935,318				

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## CENTRAL AVENUE

			PRELIMINARY RECOMMENDATIONS												
			Belmont Ave. to Rydin Rd.				Central Ave. to Cerrito Creek				Sacramento/San Luis St./San Joaquin				
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT	QTY.	UNITS	CONT.	AMOUNT	QTY.	UNITS	CONT.	AMOUNT	
<b>PROJECT COMMENCEMENT</b>															
100	CONTRACTOR MOBILIZATION (LIMIT TO 5% OF TOTAL)	\$ 80,998	1	LS	0%	\$ 80,998				\$ -				\$ -	
101	TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS	\$ 5,000	2	LS	10%	\$ 11,000				\$ -				\$ -	
102	STORM WATER POLLUTION AND PREVENTION PLAN IMPLEMENTAION	\$ 5,000	1	LS	10%	\$ 5,500				\$ -				\$ -	
<b>PROJECT COMMENCEMENT SUBTOTAL:</b>						\$ 97,498					\$ -				
<b>DEMOLITION/REMOVAL</b>															
200	SIDEWALK REMOVAL	\$ 20.00				\$ -				\$ -	920	SF	10%	\$ 20,240	
201	CLEARING AND GRUBBING	\$ 3.00	8,800	SF	10%	\$ 29,040				\$ -				\$ -	
202	PAVEMENT REMOVAL	\$ 5.00				\$ -				\$ -	500	SF	15%	\$ 2,875	
203	MILL ASPHALT PAVEMENT	\$ 0.80				\$ -				\$ -	42,000	SF	10%	\$ 36,960	
<b>DEMOLITON/REMOVAL SUBTOTAL:</b>						\$ 29,040					\$ -				
<b>HARDSCAPE IMPROVEMENTS</b>															
300	ASPHALT CONCRETE - (SAN JOAQUIN STREET)	\$ 150.00				\$ -				\$ -	525	TON	20%	\$ 94,500	
301	SIDEWALK	\$ 30.00				\$ -				\$ -	1,500	SF	10%	\$ 49,500	
302	CONCRETE CURB	\$ 80.00				\$ -				\$ -	200	LF	10%	\$ 17,600	
303	BASE PAVEMENT REPAIR	\$ 6.00	15,400	SF	10%	\$ 101,640	4,800	SF	10%	\$ 31,680	19,110	SF	20%	\$ 137,592	
304	ADA RAMP	\$ 2,500.00				\$ -				\$ -	22	EA	10%	\$ 60,500	
305	SLURRY SEAL	\$ 0.40				\$ -				\$ -	45,600	SF	10%	\$ 20,064	
306	TRAFFIC CIRCLE	\$ 5,000.00				\$ -				\$ -	3	EA	15%	\$ 17,250	
307	ASPHALT CONCRETE - NEW PATH	\$ 150.00	119	TON	10%	\$ 19,635				\$ -				\$ -	
308	AGGREGATE BASE -NEW PATH	\$ 80.00	90	TON	10%	\$ 7,920				\$ -				\$ -	
<b>HARDSCAPE IMPROVEMENTS SUBTOTAL:</b>						\$ 129,195					\$ 31,680				
<b>SIGNAGE / STRIPING</b>															
400	BIKE LANE BUFFER - SPECIAL STRIPING	\$ 3.00				\$ -	2,400	LF	10%	\$ 7,920				\$ -	
401	BIKE LANE STRIPE	\$ 2.00	1,470	LF	10%	\$ 3,234				\$ -				\$ -	
403	STRIPE - CROSSWALK	\$ 5.00				\$ -				\$ -	1,500	LF	10%	\$ 8,250	
404	PAVEMENT MARKING (BICYCLE LANE SYMBOL AND TEXT)	\$ 500.00	15	EA	10%	\$ 8,250	12	EA	5%	\$ 6,300				\$ -	
405	PAVEMENT MARKING - STOP LEGEND	\$ 500.00				\$ -				\$ -	11	EA	5%	\$ 5,775	
406	PAVEMENT MARKING -SHARROW	\$ 500.00				\$ -				\$ -	36	EA	20%	\$ 21,600	
407	PAVEMENT STRIPING	\$ 4.00				\$ -				\$ -	1,500	LF	20%	\$ 7,200	
408	PAVEMENT MARKING - ARROW	\$ 250.00				\$ -				\$ -	2	EA	10%	\$ 550	
409	BICYCLE LANE SIGN	\$ 500.00	14	EA	5%	\$ 7,350	6	EA	5%	\$ 3,150	36	EA	15%	\$ 20,700	
<b>SIGNAGE/STRIPING SUBTOTAL:</b>						\$ 18,834					\$ 17,370				
<b>MISCELLANEOUS</b>															
500	WAYFINDING SIGNAGE	\$ 2,000.00				\$ -				\$ -	6	EA	10%	\$ 13,200	
<b>UTILITY IMPROVEMENTS/ADJUSTMENTS SUBTOTAL:</b>						\$ -					\$ -				
<b>ELECTRICAL/TRAFFIC SIGNAL IMRRVEMENTS</b>															
600	TRAFFIC SIGNAL RELOCATION	\$ 10,000.00				\$ -				\$ -	1	LS	0%	\$ 10,000	
601	BICYCLE DETECTION	\$ 15,000.00	2	EA	10%	\$ 33,000				\$ -				\$ -	
<b>ELECTRICAL/TRAFFIC SIGNAL IMPROVEMENTS SUBTOTAL:</b>						\$ 33,000					\$ -				
<b>PRELIMINARY ITEM SUBTOTAL:</b>						\$ 307,567					\$ 49,050				
<b>CONSTRUCTION COST TOTAL :</b>						\$ 890,973									

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**BAYVIEW AVENUE**

			PRELIMINARY RECOMMENDATIONS							
PROJECT COMMENCEMENT			Seaport Ave. to Carlson Blvd.				Carlson Blvd. to Potrero Ave.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT	QTY.	UNITS	CONT.	AMOUNT
100	CONTRACTOR MOBILIZATION	\$ 86,965	1	LS	0%	\$ 86,965				\$ -
101	TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS	\$ 20,000	1	LS	10%	\$ 22,000				\$ -
102	STORM WATER POLLUTION AND PREVENTION PLAN IMPLEMENTAION	\$ 10,000	1	LS	10%	\$ 11,000				\$ -
<b>PROJECT COMMENCEMENT SUBTOTAL:</b>			\$ 119,965				\$ -			
DEMOLITION/REMOVAL			Seaport Ave. to Carlson Blvd.				Carlson Blvd. to Potrero Ave.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT	QTY.	UNITS	CONT.	AMOUNT
200	SIDEWALK REMOVAL-(I-580 OVERPASS)	\$ 20.00	160	SF	15%	\$ 3,680				\$ -
201	REMOVE TRAFFIC STRIPING AND PAVEMENT MARKINGS	\$ 15,000.00	1	LS	15%	\$ 17,250				\$ -
<b>DEMOLITON/REMOVAL SUBTOTAL:</b>			\$ 20,930				\$ -			
HARDSCAPE IMPROVEMENTS			Seaport Ave. to Carlson Blvd.				Carlson Blvd. to Potrero Ave.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT	QTY.	UNITS	CONT.	AMOUNT
300	BASE PAVEMENT REPAIR	\$ 13.00	10,480	SF	10%	\$ 149,864	4,910	SF	10%	\$ 70,213
301	NEW SIDEWALK- (I-580 OVERPASS)	\$ 6.00	10,560	SF	10%	\$ 69,696				\$ -
302	4' RAISED CONCRETE BUFFER	\$ 50.00	7,800	SF	10%	\$ 429,000				\$ -
303	ADA RAMP- (I-580 OVERPASS)	\$ 2,500.00	1	EA	10%	\$ 2,750				\$ -
<b>HARDSCAPE IMPROVEMENTS SUBTOTAL:</b>			\$ 651,310				\$ 70,213			
SIGNAGE/STRIPING			Seaport Ave. to Carlson Blvd.				Carlson Blvd. to Potrero Ave.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	15	AMOUNT	QTY.	UNITS	CONT.	AMOUNT
400	BIKE LANE - SPECIAL STRIPING	\$ 3.00	3,900	LF	15%	\$ 13,455				\$ -
401	PAVEMENT MARKING (BICYCLE LANE SYMBOL AND TEXT)	\$ 500.00	20	EA	10%	\$ 11,000	14	EA	15%	\$ 8,050
402	STRIPE - MEDIAN	\$ 4.00	2,600	LF	10%	\$ 11,440				\$ -
403	BICYCLE LANE SIGN	\$ 500.00	20	EA	10%	\$ 11,000	14	EA	15%	\$ 8,050
<b>SIGNAGE/STRIPING SUBTOTAL:</b>			\$ 46,895				\$ 16,100			
ELECTRICAL/TRAFFIC SIGNAL IMRROVEMENTS			Seaport Ave. to Carlson Blvd.				Carlson Blvd. to Potrero Ave.			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT	QTY.	UNITS	CONT.	AMOUNT
600	BICYCLE DETECTION	\$ 15,000.00	1	EA	20%	\$ 18,000				\$ -
601	WAYFINDING	\$ 2,000.00				\$ -	6	EA	10%	\$ 13,200
<b>ELECTRICAL/TRAFFIC SIGNAL IMPROVEMENTS SUBTOTAL:</b>			\$ 18,000				\$ 13,200			
<b>PRELIMINARY ITEM SUBTOTAL:</b>			\$ 857,100				\$ 99,513			
<b>CONSTRUCTION COST TOTAL:</b>			\$ 956,613							

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## JULIGA WOODS / SPRING STREET

			PRELIMINARY RECOMMENDATIONS							
			Regatta Blvd. to Cutting Blvd.				Regatta Blvd. to Spring Street			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT	QTY.	UNITS	CONT.	AMOUNT
<b>PROJECT COMMENCEMENT</b>										
100	CONTRACTOR MOBILIZATION	\$ 86,338	1	LS	0%	\$ 86,338				\$ -
101	TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS	\$ 5,000	1	LS	10%	\$ 5,500				\$ -
102	STORM WATER POLLUTION AND PREVENTION PLAN IMPLEMENTAION	\$ 5,000	1	LS	10%	\$ 5,500				\$ -
<b>PROJECT COMMENCEMENT SUBTOTAL:</b>						\$ 97,338	\$ -			
<b>DEMOLITION/REMOVAL</b>										
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT	QTY.	UNITS	CONT.	AMOUNT
200	CLEARING AND GRUBBING	\$ 3.00				\$ -	9,000	SF	10%	\$ 29,700
201	TREE REMOVAL	\$ 1,000.00				\$ -	10	EA	10%	\$ 11,000
202	PAVEMENT REMOVAL	\$ 5.00				\$ -	45,000	SF	20%	\$ 270,000
203	FENCE REMOVAL	\$ 10.00				\$ -	100	LF	10%	\$ 1,100
<b>DEMOLITON/REMOVAL SUBTOTAL:</b>						\$ -	\$ 311,800			
<b>HARDSCAPE IMPROVEMENTS</b>										
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT	QTY.	UNITS	CONT.	AMOUNT
300	ASPHALT CONCRETE - NEW PATH	\$ 150.00				\$ -	66	TON	10%	\$ 10,890
301	AGGREGATE BASE -NEW PATH	\$ 80.00				\$ -	87	TON	10%	\$ 7,656
302	ASPHALT CONCRETE -(SPRING ST. RECONSTRUCTION)	\$ 150.00				\$ -	1,125	TON	10%	\$ 185,625
303	AGGREGATE BASE - (SPRING ST. RECONSTRUCTION)	\$ 80.00				\$ -	1,688	TON	10%	\$ 148,544
304	BASE PAVEMENT REPAIR	\$ 13.00	1,800	SF	5%	\$ 24,570				\$ -
305	ASPHALT CONCRETE - NEW PATH	\$ 150.00				\$ -	66	TON	10%	\$ 10,890
306	AGGREGATE BASE -NEW PATH	\$ 80.00				\$ -	87	TON	10%	\$ 7,656
307	CURB AND GUTTER	\$ 35.00				\$ -	1,500	LF	10%	\$ 57,750
308	NEW SIDEWALK	\$ 6.00				\$ -	3,250	SF	10%	\$ 21,450
309	ADA RAMP	\$ 2,500.00				\$ -	4	EA	10%	\$ 11,000
310	BIKE RAMP	\$ 3,000.00				\$ -	1	EA	10%	\$ 3,300
<b>HARDSCAPE IMPROVEMENTS SUBTOTAL:</b>						\$ 24,570	\$ 464,761			
<b>SIGNAGE/STRIPING</b>										
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	15	AMOUNT	QTY.	UNITS	CONT.	AMOUNT
400	PAVEMENT MARKING (BICYCLE LANE SYMBOL AND TEXT)	\$ 500.00	4	EA	15%	\$ 2,300				\$ -
402	STRIPE - SHARROWS	\$ 500.00	10	EA	10%	\$ 5,500	8	EA	10%	\$ 4,400
403	BICYCLE LANE SIGN	\$ 500.00	4	EA	10%	\$ 2,200	8	EA	10%	\$ 4,400
<b>SIGNAGE/STRIPING SUBTOTAL:</b>						\$ 10,000	\$ 8,800			
<b>MISCELLANEOUS</b>										
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT	QTY.	UNITS	CONT.	AMOUNT
500	WAYFINDING	\$ 2,000.00	6	EA	10%	\$ 13,200				\$ -
501	CHAIN LINK FENCE	\$ 35.00				\$ -	500	LF	10%	\$ 19,250
<b>UTILITY IMPROVEMENTS/ADJUSTMENTS SUBTOTAL:</b>						\$ 13,200	\$ 19,250			
<b>PRELIMINARY ITEM SUBTOTAL:</b>						\$ 145,108	\$ 804,611			
<b>PRELIMINARY ITEM SUBTOTAL:</b>						<b>\$ 145,108</b>	<b>\$ 804,611</b>			

## SOUTH 47<sup>TH</sup> STREET-PORTRERO AVENUE

<i>PROJECT COMMENCEMENT</i>			<b>PRELIMINARY RECOMMENDATIONS</b>			
			<b>Carlson Blvd. to Potrero Ave.</b>			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
100	CONTRACTOR MOBILIZATION	\$ 87,652	1	LS	0%	\$ 87,652
101	TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS	\$ 10,000	1	LS	10%	\$ 11,000
102	STORM WATER POLLUTION AND PREVENTION PLAN IMPLEMENTAION	\$ 5,000	1	LS	10%	\$ 5,500
<b>PROJECT COMMENCEMENT SUBTOTAL:</b>			<b>\$ 104,152</b>			
<i>DEMOLITION/REMOVAL</i>			<b>Carlson Blvd. to Potrero Ave.</b>			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
200	PAVEMENT REMOVAL	\$ 5.00	58,800	LF	10%	\$ 323,400
<b>DEMOLITON/REMOVAL SUBTOTAL:</b>			<b>\$ 323,400</b>			
<i>HARDSCAPE IMPROVEMENTS</i>			<b>Carlson Blvd. to Potrero Ave.</b>			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	CONT.	AMOUNT
300	ASPHALT CONCRETE - RECONSTRUCTION	\$ 150.00	1,470	TON	20%	\$ 264,600
301	AGGREGATE BASE - RECONSTRUCTION	\$ 80.00	2,205	TON	20%	\$ 211,680
302	ADA RAMP	\$ 2,500.00	12	EA	10%	\$ 33,000
<b>HARDSCAPE IMPROVEMENTS SUBTOTAL:</b>			<b>\$ 509,280</b>			
<i>SIGNAGE/STRIPING</i>			<b>Carlson Blvd. to Potrero Ave.</b>			
ITEM	DESCRIPTION	UNIT COST	QTY.	UNITS	15	AMOUNT
400	BIKE LANE BUFFER - SPECIAL STRIPING	\$ 3.00	2,580	LF	15%	\$ 8,901
401	STRIPE - CROSSWALK	\$ 5.00	912	LF	10%	\$ 5,016
403	STRIPE- SCHOOL XING MARKINGS	\$ 500.00	6	EA	10%	\$ 3,300
404	STRIPE - PAVEMENT	\$ 4.00	300	LF	10%	\$ 1,320
405	STRIPE - SHARROW	\$ 500.00	8	EA	10%	\$ 4,400
406	BICYCLE LANE SIGN	\$ 500.00	8	EA	10%	\$ 4,400
<b>SIGNAGE/STRIPING SUBTOTAL:</b>			<b>\$ 27,337</b>			
<b>PRELIMINARY ITEM SUBTOTAL:</b>			<b>\$ 964,169</b>			