

Union Pacific Railroad Oakland Subdivision Corridor Improvement Study

For the:

Alameda County Public Works Agency

Prepared by:

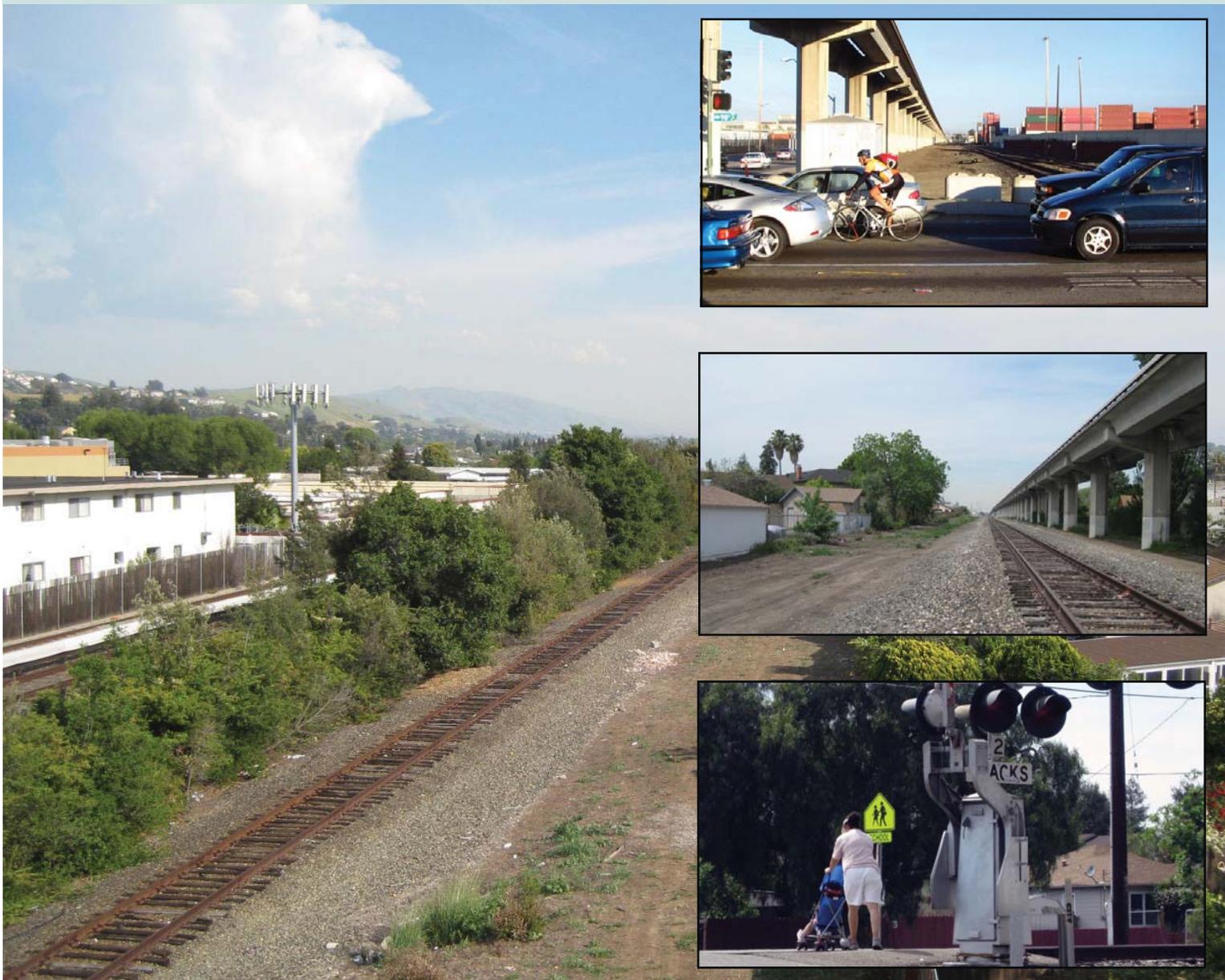
Alta Planning + Design

In Partnership with:

HDR Engineering, Inc. and LSA Associates



January 2010



Funded by:

Alameda County Public Works Agency
Alameda County Transportation Improvement Authority
City of San Leandro



The Union Pacific Railroad Oakland Subdivision Corridor Improvement Study

A Feasibility Study Analyzing the Potential for a Multi-Use Pathway Following the Oakland Subdivision
Including On-Street, Rail-With-Trail and Rail-To-Trail Alternatives

Alameda County Public Works Agency

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Executive Summary

Introduction

This report identifies the opportunity to create nearly 18 miles of multi-use pathway in the heart of the East Bay following the existing Union Pacific Railroad (UPRR) Oakland Subdivision. This multi-use pathway, if constructed, would pass through five cities and unincorporated areas of Alameda County that are home to more than 1.5 million residents. These communities have a great need for increased pedestrian and bicycle transportation options, open space and recreational opportunity, and for improved public safety in the neighborhoods adjacent to the now little used railroad right-of-way.

This report shows clearly that freight rail use on the Oakland Subdivision is waning and that the UPRR is interested in selling some or all of the Oakland Subdivision. Freight can be moved more efficiently if consolidated on the parallel Niles Subdivision. Furthermore, there is a strategic opportunity to align this pedestrian and bicycle project regionally with the Capitol Corridor passenger rail project that is also seeking to purchase the Oakland Subdivision.

The acquisition cost of the Oakland Subdivision is dependent on many factors. It was estimated at \$60 million in 2007 in Regional Rail Plan discussions, but could be far less in an acquisition scheme involving a land swap or other negotiating strategies benefitting both Alameda County as a whole and the UPRR. Construction cost for this regional non-motorized corridor is estimated at approximately \$38 million, an average cost of slightly more than \$2 million per mile. Total cost per mile including acquisition and construction could be as much as \$5.7 million per mile in a cash acquisition, but again could be far less.

While an entirely different type of project, it is instructive to compare this pedestrian and bicycle capital need with the capital requirements for other current planned East Bay transportation projects – the East Bay Bus Rapid Transit project is estimated to cost approximately \$14 Million per mile, the I-880 to Mission Boulevard East-West Connector is estimated to cost approximately \$52 Million per mile. As a matter of public policy, this comparatively small investment in active transportation has the potential to greatly improve quality of life in the East Bay.

Finally, as discussed in this report, this project has the potential to generate extensive and varied community benefits beyond creating infrastructure for pedestrian and bicycle trips including improvements in neighborhood connectivity, improving access to transit, reducing load on parallel congested roadways, supporting community health, reducing greenhouse gas emissions, improving public safety and creating a sense of place along the corridor.

This report was commissioned by Alameda County Public Works Agency to investigate the feasibility of a regional pedestrian and bicycle pathway following the Union Pacific Railroad (UPRR) Oakland Subdivision from Oakland to Fremont. The 18 mile long project study area is shown in **Figure ES-1**. Questions about the future of the Oakland Subdivision have arisen at multiple levels of government over the past thirty years as freight customers diminish and less freight traffic travels along this corridor. Regional rail planning efforts, County elected officials and planners, local government agencies and advocacy groups have all identified the possibility that the Oakland

Subdivision might accommodate a range of transportation and community uses. The presence of an infrequently used and minimally maintained right-of-way in the heart of the East Bay has justifiably attracted a lot of attention. Over the past decade, a multitude of local planning documents have identified the Oakland Subdivision as a potential pedestrian and bicycle pathway.

In response to this growing support, the local advocacy and planning group Urban Ecology developed the East Bay Greenway Concept Plan analyzing the potential for pedestrian and bicycle improvements within the public street rights-of-way and area beneath the elevated BART tracks immediately parallel to the Oakland Subdivision from the Fruitvale BART Station in Oakland to Downtown Hayward. Urban Ecology elected to focus on city streets and BART property based on their assumption the East Bay Greenway could be constructed in tandem with the BART Earthquake Safety Project.

Since the East Bay Greenway Concept Plan was initiated, acquisition of the southern segment of the Oakland Subdivision for regional rail purposes has become a stronger possibility, stimulating interest in analyzing the feasibility of a regional pedestrian and bicycle multi-use pathway for the entirety of the Oakland Subdivision. As a result, this study expands on the support and concept of East Bay Greenway concept and analyzes the feasibility of a multi-use path in the Oakland Subdivision between the Fruitvale and Union City BART stations. This report investigates the feasibility of rail-to-trail and rail-with-trail scenarios in the railroad right-of-way.

In order to analyze the feasibility of rail-to-trail and rail-with-trail scenarios this study attempts to answer several related questions including:

- What is the existing adopted regional and local support for creation of a regional pedestrian and bicycle corridor along the Oakland Subdivision?
- What is the likely future of rail freight service on the Oakland Subdivision within a short-term and mid-term planning horizon?
- What is the future of passenger rail, including BART and Amtrak Capitol Corridor service, on the Oakland Subdivision?
- What is the feasibility of conversion of the Oakland Subdivision to non-motorized pedestrian and bicycle use [Rail-to-Trail]?

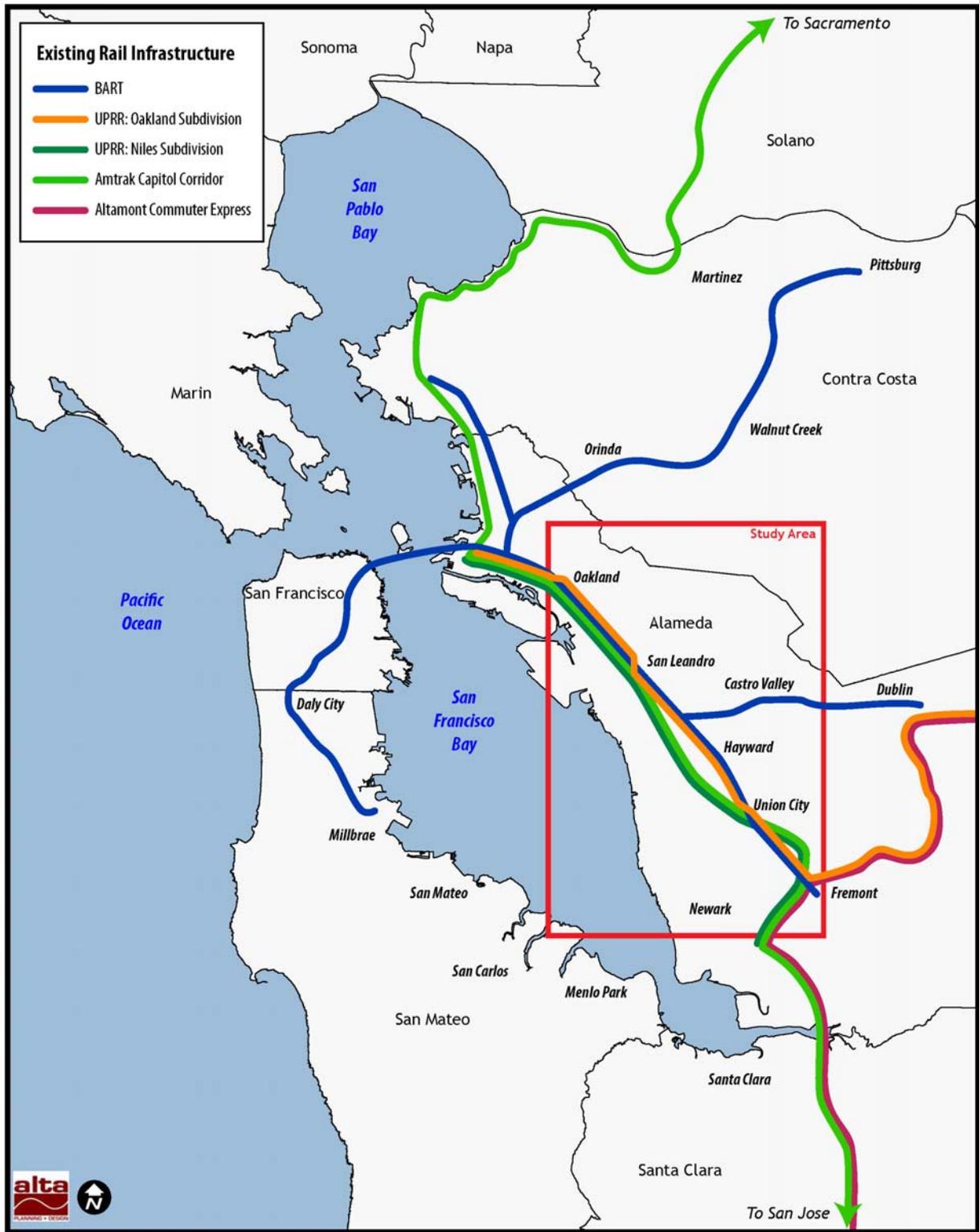


Figure ES-1: Project Study Area

- What is the feasibility of conversion of the Oakland Subdivision to shared pedestrian/bicycle and rail use (including freight and/or passenger service)[Rail-with-Trail]?
- What is the feasibility of parallel on-street pedestrian and bicycle facilities where use of the Oakland Subdivision is not feasible?
- How can the East Bay Greenway recommendations be incorporated in this study so that the two projects are compatible and build upon each other?

Based on the answers to the complex questions posed above, each of which faces a multitude of contingencies, this study addresses these further questions:

- Is the UPRR likely to be a willing seller of the Oakland Subdivision within a short-term and mid-term planning horizon?
- Is the UPRR likely to participate in a land swap for the Oakland Subdivision in the short-term and mid-term planning horizon?
- How might the Oakland Subdivision be acquired and what would it cost?
- What are the estimated costs associated with developing rail-to-trail and rail-with-trail alternatives?
- How might these projects be funded, implemented and maintained?
- Who would lead funding, design, implementation and management of a pedestrian and bicycle facility on the Oakland Subdivision?

Before addressing the major questions outlined above, the Executive Summary first summarizes the value and benefits that would be created through development of regional pedestrian and bicycle infrastructure along the Oakland Subdivision. It is essential to know what the community and environmental benefits are in order to justify the costs associated with acquisition of the Oakland Subdivision and the costs of development of pedestrian and bicycle facilities. Urban Ecology's East Bay Greenway Concept Plan identified environmental justice, community health, sustainable transportation, and public safety benefits that are reiterated here.

Why Create a Regional Bicycle and Pedestrian Corridor?

There are many reasons to improve the Oakland Subdivision for pedestrian and bicycle connectivity. The East Bay Greenway Concept Plan presents extensive documentation summarized here. The chief benefits of a regional non-motorized transportation corridor include environmental justice, community health, sustainable transportation, and public safety benefits.

Environmental and Social Justice

As documented in **Chapter 2** of this study and in the East Bay Greenway report, the communities within a one-mile radius of the Oakland Subdivision are predominately low-income with high

percentages of youth and seniors. Several other regional transportation equity programs, including the Metropolitan Transportation Commission's (MTC) Lifeline Transportation Program and Community-Based Transportation (CBTP) planning program, have identified the low-income neighborhoods in Central and East Oakland, Cherryland (unincorporated Alameda County), and South Hayward as suffering from a variety of transportation inequities. Mapping completed for the East Bay Greenway Concept Plan and **Chapter 2** of this study, clearly illustrates how poverty and low rates of vehicle ownership are concentrated around the Oakland Subdivision corridor. These are standard indicators of transit and walking dependency that begin to demonstrate the value of pedestrian and bicycle access improvements to the population of the study area.

Community Health

Communities within the project study area suffer from a variety of negative health trends coupled with poor access to outdoor recreational opportunity. The East Bay Greenway Concept Plan presents health data related to obesity, diabetes, and coronary heart disease demonstrating that many neighborhoods in close proximity to the Oakland Subdivision are at one and half times the Alameda County rate for each of these three diseases. According to the Centers for Disease Control (CDC), people who live within walking distance of recreation areas are more likely to exercise than those that live further away. Mapping presented in **Chapter 2** of this document illustrates the limited access to open space characterizing the project study area. The creation of a regional pedestrian and bicycle facility providing safe walking and bicycling opportunities for many neighborhoods that currently lack such facilities can begin to combat these trends.

Sustainable Transportation

Creation of improved pedestrian and bicycle connectivity and safety along the Oakland Subdivision corridor has the potential to enhance existing and ongoing public investment in Transit-Oriented Development (TOD), BART station access improvements, and Interstate 880 congestion relief. TODs are being planned and implemented at all of the BART stations along the study corridor including Fruitvale, Oakland Coliseum, San Leandro, Bay Fair, Hayward, South Hayward and Union City. These TOD projects will build nearly 9,000 new residential units, 2.5 Million square feet of commercial lease space, and 360,000 square feet of retail development (Source: respective TOD plans). Development of improved pedestrian and bicycle access between existing neighborhoods near these TOD projects and near existing BART stations has the potential to increase non-motorized travel to retail, jobs, AC Transit and BART. The potential synergy between the East Bay TOD trend and a regional pedestrian/bicycle corridor is significant. The pedestrian/bicycle and transit trip linking options up and down the corridor present a viable alternative to the highly congested Interstate-880 corridor. For example, a Union City Intermodal Station TOD resident working in the Lake Merritt area of Oakland could readily walk or bike to BART at both ends of her commute trip, and vice versa. Likewise, residents in older neighborhoods in Cherryland or Hayward could take advantage of safe pedestrian and bicycle access to BART to reach a variety of employment destinations.

Chapter 5 presents specific strategies for forecasting levels of pedestrian and bicycle traffic and the associated transportation and environmental benefits associated with a regional non-motorized corridor improvement.

Public Safety Benefits

Crime and public safety are a major concern in communities throughout the corridor study area. The East Bay Greenway study presents important data demonstrating why residents would like to see the Oakland Subdivision, BART corridor, and parallel streets more actively managed. The greatest potential of a facilities generating more active use of the corridor is to increase “eyes on the street.” Development of pedestrian and bicycle facilities cannot solve the crime problems but they can bring more law-abiding and caring citizens who can displace unwanted illegal and illicit activities from unmanaged environments. Finally, as discussed in the East Bay Greenway study, residents of the neighborhoods along the Oakland Subdivision frequently use the rail corridor for walking and bicycling, even in its current state. The pedestrian risk at the frequent uncontrolled and unimproved railway crossings can be greatly improved upon with development of facilities meeting current non-motorized facility design standards. BART, through its Bay Fair BART Station Area Improvement Plan and other public agencies are actively addressing public safety in the corridor and any corridor improvements to the Oakland Subdivision should be viewed as having potential to address public safety as well.

Planning Context

Support for a Pedestrian and Bicycle Corridor on the Oakland Subdivision

Decades of observation and interest in the declining use of the Oakland Subdivision have fueled a variety of visions, advance planning, and adopted policies pointing toward a multi-use pathway along this corridor. Elected officials, agency staff, commissions, advisory groups and nonprofit advocacy groups all recognize that there is great potential to create a north-south pedestrian and bicycle corridor along the Oakland Subdivision. This vision has manifested itself in adopted policies and implementation programs in a variety of long-range planning documents including but not limited to General Plan circulation elements, pedestrian plans, bicycle plans, regional parks master plans, local parks master plans and transit station area plans.

The majority of these documents identify the Oakland Subdivision and/or BART right-of-way as a recommended Class I multi-use pathway – a dedicated pedestrian and bicycle facility developed separate from streets that accommodate cars and trucks. **Table ES-1** presents a summary of the facility type recommendations from each major land use jurisdiction along the corridor. Each of the documents referenced in the table is a policy-level or planning level document that references the Oakland Subdivision corridor, and has not specifically analyzed the feasibility of specific alignments or designs within the identified rights-of-way. **Table 2-1** in **Chapter 2** of this study presents additional planning support from a broader cross section of land use and transportation plans.

Table ES-1: Adopted Pedestrian and Bicycle Facility Recommendations for the UPRR Oakland Subdivision/ BART Right-of-Way

Local Agency	Reference Document (Year of Adoption)	Recommended Facility Type for the Oakland Subdivision/BART Right-of- Way	Implementation Priority
Alameda County	Alameda County Bicycle Master Plan for Unincorporated Areas (2007)	Class I Multi-Use Pathway	High Priority Project

Local Agency	Reference Document (Year of Adoption)	Recommended Facility Type for the Oakland Subdivision/BART Right-of- Way	Implementation Priority
Alameda County Transportation Improvement Authority (ACTIA)/ Alameda County Congestion Management Agency (ACCMA)	Alameda Countywide Strategic Pedestrian Plan (2006)	Class I Multi-Use Pathway	Area of Countywide Significance
Alameda County Transportation Improvement Authority (ACTIA)/ Alameda County Congestion Management Agency (ACCMA)	Alameda Countywide Bicycle Plan (2006)	Class I Multi-Use Pathway (portions)	Second High Priority Project (San Leandro only)
East Bay Regional Park District	Regional Parks Master Plan (2007)	Class I Multi-Use Pathway	Potential Trail Project
City of Oakland	Bicycle Master Plan (2007)	Class I Multi-Use Pathway	Priority Project
City of Hayward	Bicycle Master Plan (2007)	Class I Multi-Use Pathway	N/A
City of San Leandro	Bicycle and Pedestrian Master Plan (2004)	Class I Multi-Use Pathway	Priority Project
City of Union City	Bicycle and Pedestrian Master Plan (2006)	No facility recommended; on-street bicycle routes parallel to the UPRR right-of-way on 6 th Street, E Street, and 11 th Street	Priority Project

This widespread support of the Oakland Subdivision as a pedestrian and bicycle corridor must be considered in the context of regional rail planning discussed below.

Future Freight Service on the Oakland Subdivision

This study asks the question, what is the likely future of rail freight service on the Oakland Subdivision within a short-term and mid-term planning horizon? The starting point for this study is MTC’s Regional Rail Plan which assumes that short-haul freight will operate over the Oakland Subdivision to the East Oakland Yard and Port of Oakland through 2015. In the longer term, freight trains will use the Niles Subdivision. This study has added detail about likely future freight service in the short- and mid-term, presented in **Table ES-2** and discussed in the narrative below.

Table ES-2: Future Freight Service on the Oakland Subdivision by Segment

Segment (Length)	Summary Area Description	Future Freight Service
47 th Avenue to 98 th Avenue (3.2 miles)	Central East Oakland; Coliseum BART and TOD	Port of Oakland connection via the Niles Subdivision north of 47 th Avenue; service on the Oakland Subdivision south from 47 th Avenue to 98 th Avenue serving Central Oakland rail freight customers
98 th Avenue to Industrial Parkway (9.5 miles)	East Oakland to South Hayward	Freight service discontinued on the Oakland Subdivision and consolidated on the Niles/Coast Subdivision
Industrial Parkway to Union City Intermodal Station (3.2 miles)	South Hayward to Union City Intermodal Station	Freight service discontinued on the Oakland Subdivision and consolidated on the Niles Subdivision/Coast Subdivision; Planned Capitol Corridor commuter rail service to operate on the Oakland Subdivision

Based on a review of current freight customer demand, the City of Oakland’s desire to maintain green industrial jobs, and current goals of the UPRR and Port of Oakland, it is likely that freight rail service will continue on the Oakland Subdivision between 47th Avenue and 98th Avenue in Oakland for the short-term and mid-term planning horizon.

The same information sources that point to continued freight use of the 47th Avenue to 98th Avenue segment indicate that freight use will likely be discontinued on the segment from 98th Avenue to Industrial Parkway in the short- to mid-term. This conclusion is based on factors including lack of remaining freight customers on this segment and assumed efficiencies of consolidating upgraded passenger and freight with offset peak periods of operation on the Niles Subdivision, located immediately parallel to the Oakland Subdivision.

As discussed below, the UPRR is entertaining sale of the Oakland Subdivision for use by Amtrak Capitol Corridor. This scenario would result in discontinuation of freight service on this segment as well, however, the right-of-way characteristics and operational characteristics of the commuter rail service and BART service make pedestrian and bicycle access along this segment infeasible.

Future Passenger Rail Service on the Oakland Subdivision

This study asks the question, what is the future of passenger rail, including BART and Amtrak Capitol Corridor service, on the Oakland Subdivision? As with freight, the starting point for future rail scenarios is MTC's Regional Rail Plan. The Regional Rail Plan identifies that the Oakland Subdivision will be purchased and passenger services will be shifted to south of Industrial Parkway in Hayward, thus providing new intermodal connectivity with BART and Dumbarton trains at Union City by 2015. This scenario is assumed for purposes of this study based on existing completed preliminary engineering and environmental clearance, Dumbarton Rail Policy Advisory Committee (DRPAC) authorization of Capitol Corridor Joint Powers Authority (CCJPA) to lead property acquisition negotiations with the UPRR, and available funding for exploration of purchase. Expanded BART service in the corridor was considered as well however this study determined that future expansions are too far in the future to enable reasonable documentation of possible location and configuration at this time. As summarized above, passenger rail service on the Oakland Subdivision between Industrial Parkway and Union City Intermodal Station makes pedestrian and bicycle access along this segment infeasible.

Project Design

The planning and policy context, physical conditions, and likely rail scenarios set the stage for the development of a range of pedestrian and bicycle facility design strategies. The complex conditions along the Oakland Subdivision require a broad pedestrian and bicycle facility design toolkit. Depending on the specific segment of the Oakland Subdivision in question on-street facilities, rail-to-trail, and rail-with-trail segments are all necessary to create a continuous regional corridor in the short- to mid-term.

Design Strategies

In order to respond to the diverse range of conditions, four distinct facility types are included in the design toolkit for this project, including on-street bicycle and pedestrian facilities, multi-use pathways immediately adjacent to public street rights-of-way, rail-to-trail, and rail-with-trail. These facility types meet minimum and recommended Caltrans Highway Design Manual standards for Class I multi-paths and Class III signed shared roadway. Basic definitions and operational considerations for each are provided below. A list of facility types and planning level costs assigned to each are presented below in **Table ES-3**.

On-Street Bicycle Facilities

On-street alignments are required for some segments where there is not a feasible alignment option in the Oakland Subdivision railroad right-of-way. These on-street bicycle facilities are consistent with Caltrans Class III bike routes. Class III bike routes have bike route signs where vehicles and bicycles share a travel lane. **Figure ES-2** shows recommended standards for these bikeways. The typical cost for a bicycle route is \$15,000 per mile in an urban setting, as show in **Table ES-3**.

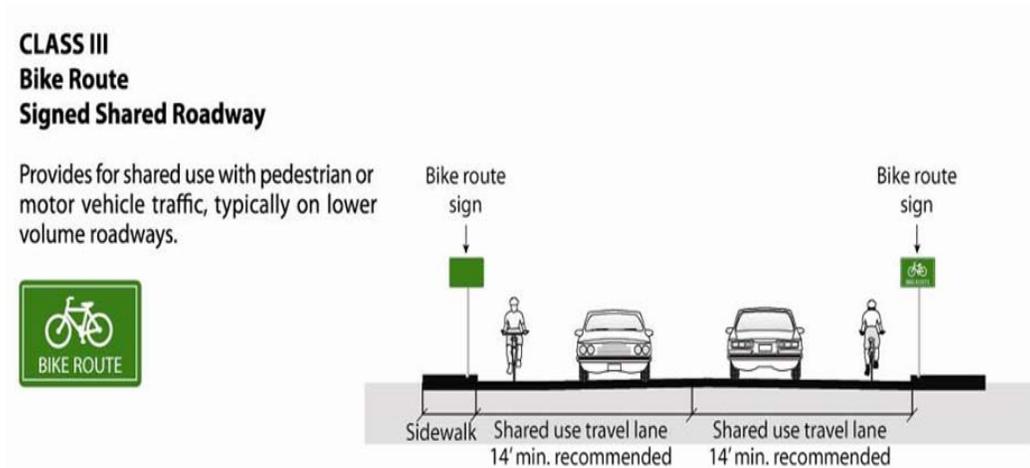


Figure ES-2: Class III Bike Route

Multi-Use Pathway Adjacent to Public Street Right-of-Way

Multi-use pathways adjacent to a public street are an important design option for segments of the Oakland Subdivision corridor where access to the railroad right-of-way is not feasible yet the boundary between the railroad right-of-way and immediately adjacent public street rights-of-way offers some flexibility. This design solution is recommended in the East Bay Greenway study for many segments.

Multi-use pathway facilities immediately adjacent to public streets carrying car traffic have special design and safety concerns including setback from vehicle travel lanes, driveway conflicts, interaction with transit stops and station areas where there is high pedestrian use. Setback from existing roadway travel lanes is an important consideration for this project on these segments. Caltrans specifies that the edge of the paved surface of a Class I facility shall be five feet minimum from the edge of an adjacent paved highway. In an urban street context, a variety of features may mitigate this requirement such as a combination of clear buffer, on-street parking, use of vertical fixed barriers and landscaped buffers. **Figure ES-3** shows recommended standards for these pathways.

The costs associated with constructing multi-use pathways adjacent to public streets can vary tremendously depending on context. This study assumes \$1.2 Million per mile not including major roadway crossing improvements as summarized in **Table ES-3**.

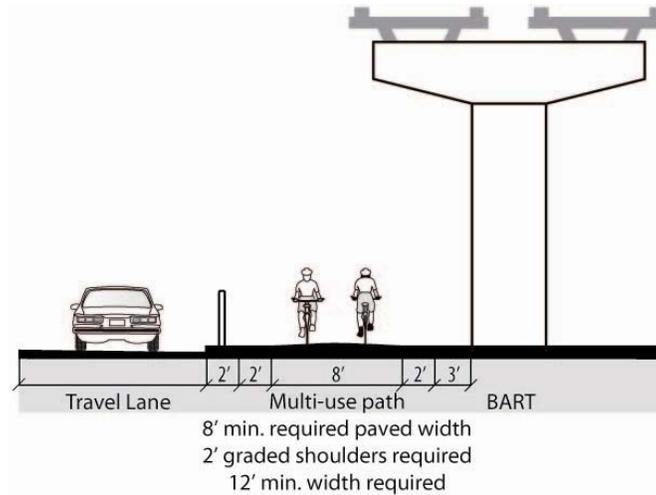


Figure ES-3: Multi-Use Pathway Adjacent to Public Street Right-of-Way

Rail-to-Trail

Rail-to-trail is recommended where it may be feasible to remove the existing rails from the corridor and construct a multi-use pathway in the former railroad corridor. As **Figure ES-4** shows, these paths must be a minimum of eight feet wide with two-foot clear shoulders on each side in order to meet Caltrans standards. A more typical standard width for the Bay Area is 12 to 16 feet wide in order to accommodate higher use levels, emergency vehicles and ease of maintenance access. This study assumes a minimum 12-foot wide facility with a planning level cost of \$1.2 Million per mile.

CLASS I Multi-Use Path

Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow minimized.

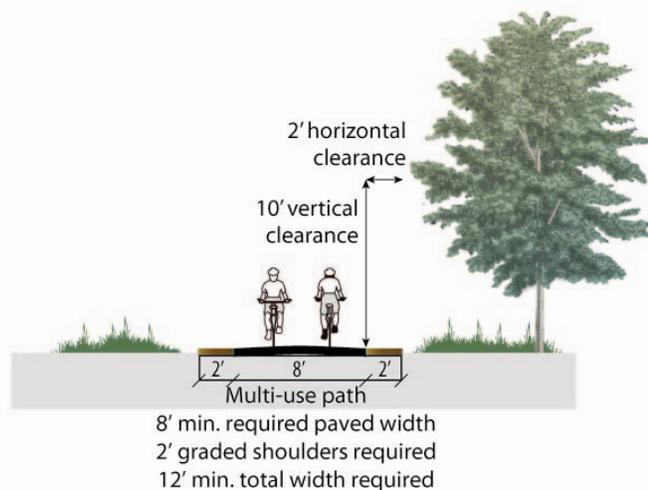


Figure ES-4: Class I Multi-Use Path

Rail-with-Trail

A rail-with-trail (RWT) multi-use path is where rail is likely to remain in place, a multi-use pathway is feasible in conjunction with the operating rail, and alignment options adhere to generally accepted rail-with-trail design guidelines. As with the rail-to-trail, the recommended total width is a minimum of 12 feet paved surface. **Chapter 3** provides detail on primary design characteristics for RWT

facilities including setback distance from the centerline of active railroad tracks, barrier separation requirements, railroad crossing design, and roadway crossing standards. Generally, privately operated freight railroads and high-speed commuter rail have higher setback and separation requirements from 25 feet to as much as 50 feet, as is the case with the UPRR. Low-speed freight spurs and some light-rail and commuter-rail facilities exist with extremely narrow setback (10 feet or less) at constrained segments and roadway crossings. **Figure ES-5** shows a typical rail-with-trail setback. This study assumes a minimum 12-foot wide facility with limited separation fencing at a cost of \$1.2 Million per mile not including major roadway crossing improvements.

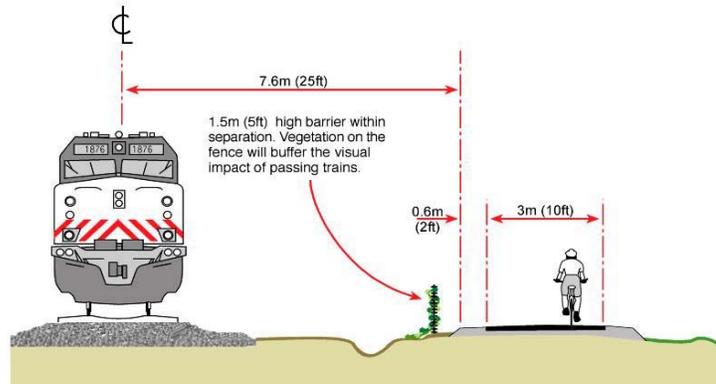


Figure ES-5: Rail-with-Trail Typical Setback

Other Design Elements

Other design elements incorporated in the recommendations and cost estimates include pedestrian crossing safety improvements, retrofit and improvement of existing rail bridges for pedestrian and bicycle use, and major roadway crossings and required traffic controls. These unit costs are incorporated into the recommended segment costs presented in **Table ES-3**. Landscaping and other amenities benefiting trail users including but not limited to benches, water fountains, and public art have not been included in the cost estimates.

Table ES-3: Pedestrian and Bicycle Corridor Improvement Options and Planning Level Cost Estimates

Facility Type/Improvement	Summary Description	Cost
Class I Multi-use Pathway	Twelve foot wide paved surface for shared pedestrian and bicycle use; California MUTCD regulatory and wayfinding signage; minor intersection safety improvements	\$1,200,000 per mile
Class I Multi-use Pathway Barrier Separation	Barrier fencing along multi-use path immediately adjacent to roadway	\$105,000 per mile
Class III Bicycle Route	On-street bicycle wayfinding signage; on-pavement shared-use pavement arrows	\$15,000 per mile
High Visibility Crosswalks	Ladder crosswalks	\$1,000 per crosswalk
One-to-Two Way Conversion	Street restriping, traffic signal improvements	\$150,000 each
Railroad bridge fencing	Fencing along existing rail trestle or bridge	\$50 per linear foot
Rail-to-Trail Multi-use Pathway	Twelve foot wide paved surface for shared pedestrian and bicycle use; California MUTCD regulatory and wayfinding signage; minor intersection safety improvements	\$1,200,000 per mile
Rail-with-Trail Multi-use Pathway	Twelve foot wide paved surface for shared pedestrian and bicycle use; California MUTCD regulatory and wayfinding signage; minor intersection safety improvements; 6-foot fence separation between trail and active rail	\$1,200,000 per mile
N/A	Class I multi-use path annual operation and maintenance costs	\$14,000 per year per mile

Recommended Alignments

This study developed responses to the following key design questions for a regional pedestrian and bicycle corridor along the Oakland Subdivision:

- What is the feasibility of rail-to-trail?
- What is the feasibility of rail-with-trail?
- What is the feasibility of parallel on-street pedestrian and bicycle facilities?
- How can the East Bay Greenway recommendations be incorporated in this study?

As introduced above, the answer to these questions depends greatly on the segment in question, on the future rail scenarios, and on the ability of the region to join forces and collaboratively pursue acquisition of the Oakland Subdivision. Depending on the specific segment of the Oakland Subdivision under discussion, on-street facilities, rail-to-trail, and rail-with-trail segments are all necessary to create a continuous regional corridor in the short- to mid-term.

Project Segments

For the purposes of this study, the corridor is organized into five map areas that generally correspond to jurisdictional boundaries of the City of Oakland, City of San Leandro, Unincorporated Alameda County, City of Hayward and City of Union City. Each of these map areas is further divided into representative segments based on similar right-of-way characteristics, adjacent land use character, and parallel alignment options. This segment framework has been used throughout the feasibility analysis and the segment definitions are the same as those in the appendices which present earlier technical analyses completed for the project.

Summary of Recommended Alignment

Figure ES-6 presents the entire recommended alignment while **Figure ES-7** through **Figure ES-11** present the recommended alignment according to each of the project segments.

The recommended alignment includes facilities in the UPRR Oakland Subdivision, BART, and local jurisdiction rights-of-way can be summarized as follows:

- 37th Avenue to 54th Avenue in Oakland is recommended as on-street Class III bicycle lanes based on the fact that the Oakland Subdivision is either physically occupied by industrial land uses or will likely provide continued freight service to the Port of Oakland. These recommendations are also consistent with City of Oakland circulation and bicycle planning. Neither rail-to-trail nor rail-with-trail are feasible for these segments in the short- to mid-term.
- 54th Avenue in Oakland to Industrial Parkway in Hayward is recommended as Class I multi-use pathway including segments parallel to San Leandro Boulevard from 54th Avenue south to 98th Avenue and rail-to-trail from 98th Avenue south to Industrial Parkway. Freight service is likely to continue north of 98th Avenue and the project recommendations in this

study are consistent with the recommendations in the East Bay Greenway – a multi-use pathway parallel to San Leandro Street/Boulevard. South of 98th Avenue to Industrial Parkway the Oakland Subdivision will not likely have freight or passenger rail service and is prime candidate for acquisition by regional and local government agencies for development of a rail-to-trail.

- Industrial Parkway in Hayward south to the Union City Intermodal Station is recommended as on-street Class III bicycle lanes in response to planned Capitol Corridor commuter rail use of this segment of the Oakland Subdivision, complex grade separation and property access issues, and in response to Union City’s circulation and bicycle planning efforts. Neither rail-to-trail nor rail-with-trail are feasible for these segments in the short- to mid-term.

Cost Summary

The estimated total construction cost for the recommended alignment is \$22,749,000 dollars. The addition of design documents, permitting and environmental clearance, and a 30 percent planning level cost contingency results in a grand total of approximately \$37,536,000 not including corridor acquisition cost.

Table ES-4 presents these summary costs. The basic unit costs incorporated for each segment include the pedestrian-bicycle facility type (bike route, multi-use pathway), minor crossing improvements, major crossing improvements, rail bridge retrofit, and barrier separation where required.

Table ES-4: Recommended 18 Mile Alignment Cost

Description	Cost
Total Construction Cost	\$22,749,000
Design Cost/PS&E (20%)	\$4,550,000
Permitting and Environmental Clearance (15%)	\$3,412,000
Planning Level Cost Contingency (30%)	\$6,825,000
TOTAL	\$37,536,000

Maintenance and operation costs per year per mile for the multi-use path facilities are presented below in **Table ES-5** by corridor segment. The basic unit of cost is an estimate of \$13,900 per year per mile.

Table ES-5: Annual Maintenance and Operation Cost Estimate

Description	Cost
Oakland	\$40,000
San Leandro	\$66,000
Alameda County	\$54,000
Hayward	\$58,000
Union City	\$5,700
TOTAL	\$223,300

Feasibility Findings

Rail-with-Trail

Rail-with-trail has limited potential while the Oakland Subdivision is owned by UPRR due to UPRR's setback requirements. It is not possible to comply with UPRR's stated requirement for 50 foot setbacks between the multi-use pathway and the centerline of the active rail tracks. Under a corridor acquisition scenario, where a public entity owned the Oakland Subdivision, a reduced setback may be negotiated or, as assumed under the recommended alternative, the elimination of approximately 11 miles of rail service between 98th Avenue and Industrial Parkway would lead to a rail-with-trail scenario, discussed below.

An additional factor limiting a rail-with-trail scenario is the engineering and financial feasibility the number of grade separated crossings over major arterials where the right-of-way is occupied by separate BART and UPRR bridges with limited remaining right-of-way. With rail service remaining in place new pedestrian-bicycle bridges would be required. Yet, there is insufficient right-of-way to expand the existing bridge abutments to accommodate a third bridge in these locations. The only alternative in these situations would be to route the multi-use pathway around these grade separated crossings on surface streets. The long block lengths fronting the Oakland Subdivision and lack of neighborhood street connectivity through many of the adjacent neighborhoods means that this routing would result in an indirect facility with no value as a regional bikeway.

Rail-to-Trail

Rail-to-trail has great potential based on the existing policy support, future rail scenarios, and right-of-way physical characteristics. Assuming the elimination of freight service between 98th Avenue in the north and Industrial Parkway in the south and potential public acquisition of the Oakland Subdivision, a 9.5 mile rail-to-trail is a feasible project in the short- to mid-term planning horizon. The average 100-foot wide Oakland Subdivision provides adequate width to provide for multi-use pathway well separated from elevated and at-grade BART structures. The available width also provides room for variation of the pathway placement in the right-of-way where there are utilities, BART structures, and adjacent property separation requirements. In contrast to the rail-with-trail scenario, the rail-to-trail scenario enables use of existing rail bridges over major roadway grade separations, creeks, and drainage channels. Provisions for local access to the regional trail at these major grade-separated roadway crossings will require special attention but the important continuity of the regional pedestrian-bicycle corridor is provided for in this alternative.

On-Street Facilities

The Oakland Subdivision cannot feasibly accommodate a multi-use pathway on either the northernmost or southernmost segments identified for this study area. In Oakland, the expectation that freight service will continue along the rail corridor, the fact that portions of the former railroad right-of-way are occupied by buildings, and the fact that the local industrial serving streets cannot be reapportioned to create the width for a multi-use pathway leads to the need for on-street solutions. The bicycle route segments included in the recommended alignment have been studied by the City of Oakland as a part of their circulation and bicycle planning efforts and are supported by the East Bay Greenway study as well. In South Hayward and Union City, south of Industrial Parkway, the combination of at-grade BART tracks, BART maintenance and layover yards, and planned Capitol Corridor commuter rail service means that the Oakland Subdivision cannot safely accommodate

public access. Existing and planned multi-use pathway segments parallel to Industrial Parkway and Mission Boulevard and existing and planned bicycle routes along neighborhood streets in Union City provide a feasible alternative.

Recommended Alignment Compared to the East Bay Greenway

Direct comparison of the Oakland Subdivision Corridor Improvement Study recommendations with the East Bay Greenway Concept Plan recommendations raises several important points. **Figure 4-2** (Chapter 4) graphically illustrates where the recommendations from the two studies overlap and where they are separate.

From the northern limit of both projects at 35th Avenue in Oakland south to the southern terminus of the East Bay Greenway Concept Plan study area at Hayward BART, there are significant differences in recommended facility types summarized in **Table ES-6**. While this Oakland Subdivision study recommends 9.05 miles of multi-use pathway, the East Bay Greenway recommends 5.85 miles of multi-use pathway. Clearly, acquisition and use of the Oakland Subdivision right-of-way creates far greater opportunity for a separated multi-use pathway than does the BART and public street right-of-way project corridor defined by the East Bay Greenway. **Table ES-7** summarizes and compares the recommended facilities over the entire length of the Oakland Subdivision Corridor Improvement study area illustrating the obvious point that with a longer corridor yet more continuous multi-use pathway mileage can be achieved.

Chapter 5 highlights strategies for integrating analysis of the recommendations of this Oakland Subdivision study into the forthcoming East Bay Greenway environmental analysis to be led ACTIA.

The narrative discussion of each segment includes more detailed discussion of the relationship between this study’s recommendations and the East Bay Greenway Concept Plan.

Table ES-6: Facility Comparison 35th Avenue to Hayward BART

Facility Type	UPRR Oakland Subdivision Recommend Alignment (miles)	East Bay Greenway Preferred Route Alignment (miles)
Class I Multi-use Pathway	9.05	5.85
Class II Bicycle Lane	0.18	3.59
Class III Bicycle Route	1.44	2.14
Total Miles	10.67	11.58

Table ES-7: Facility Comparison 35th Avenue to Union City Intermodal Station

Facility Type	UPRR Oakland Subdivision Recommend Alignment (miles)	East Bay Greenway Preferred Route Alignment (miles)
Class I Multi-use Pathway	16.90	5.85
Class II Bicycle Lane	0.18	3.59
Class III Bicycle Route	1.31	2.14
Total Miles	18.39	11.58

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Figure ES-6: Proposed Alignment

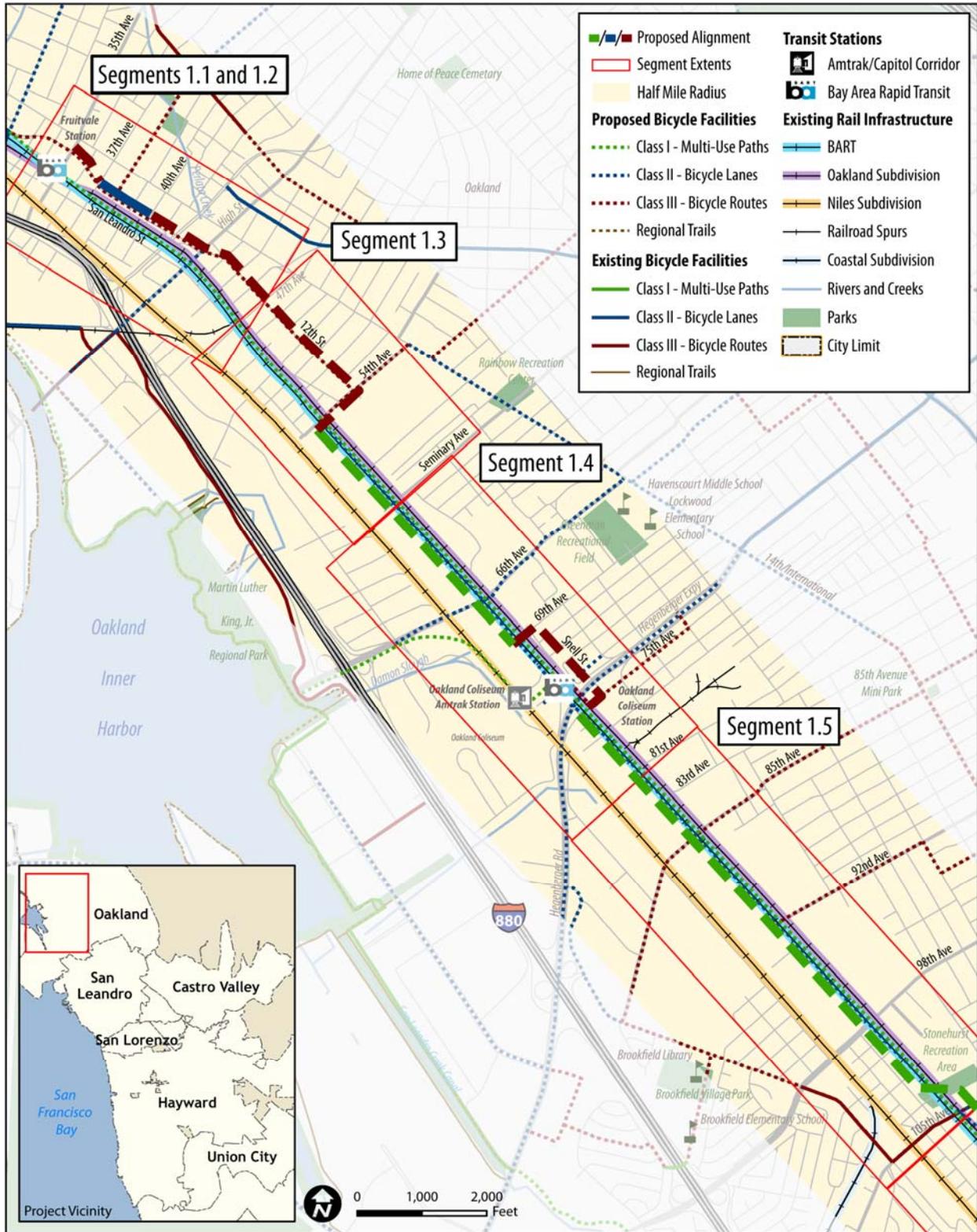


Figure ES-7: Proposed Map 1 Alignment

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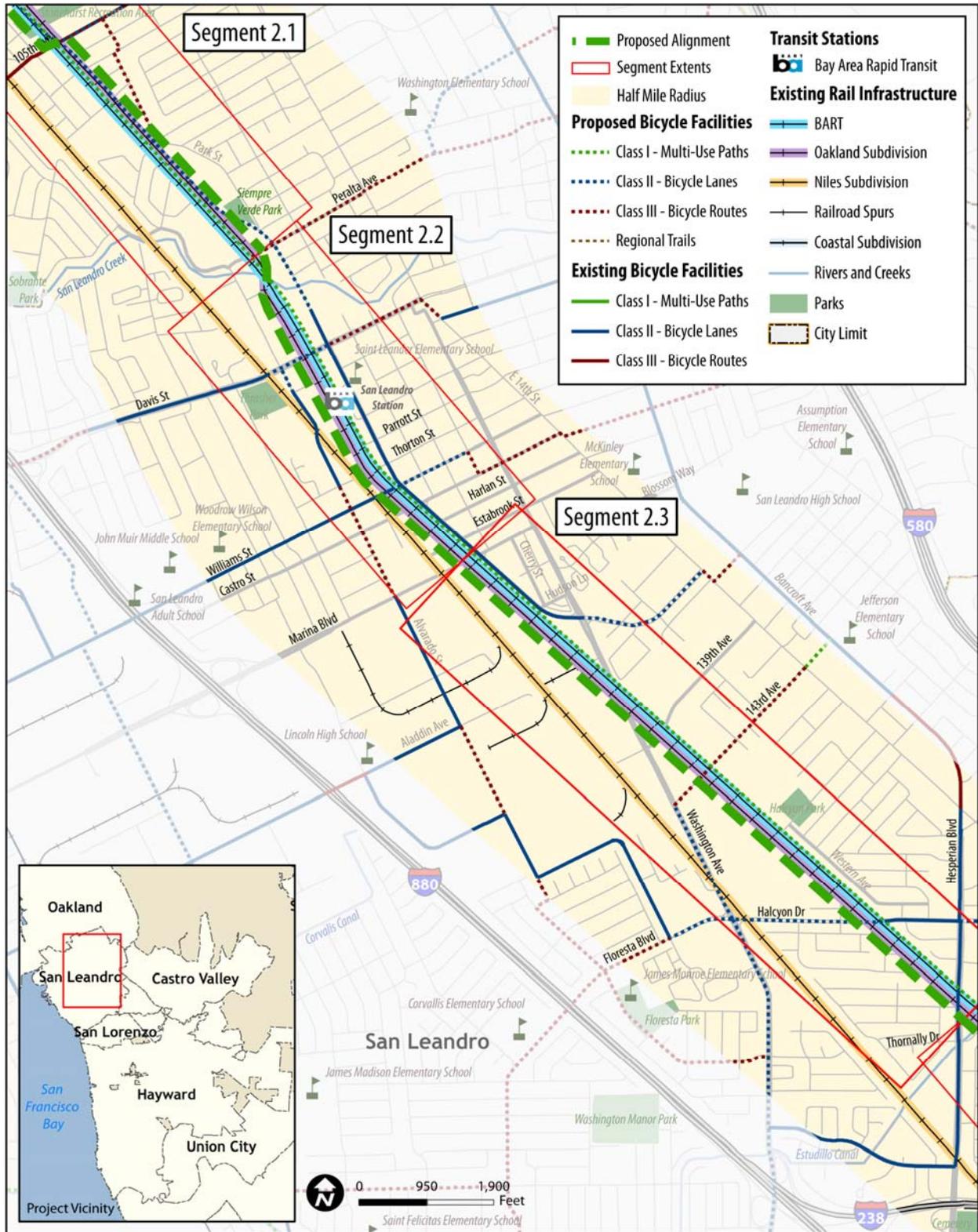


Figure ES-8: Proposed Map 2 Alignment



Figure ES-9: Proposed Map 3 Alignment

UPRR CORRIDOR IMPROVEMENT STUDY
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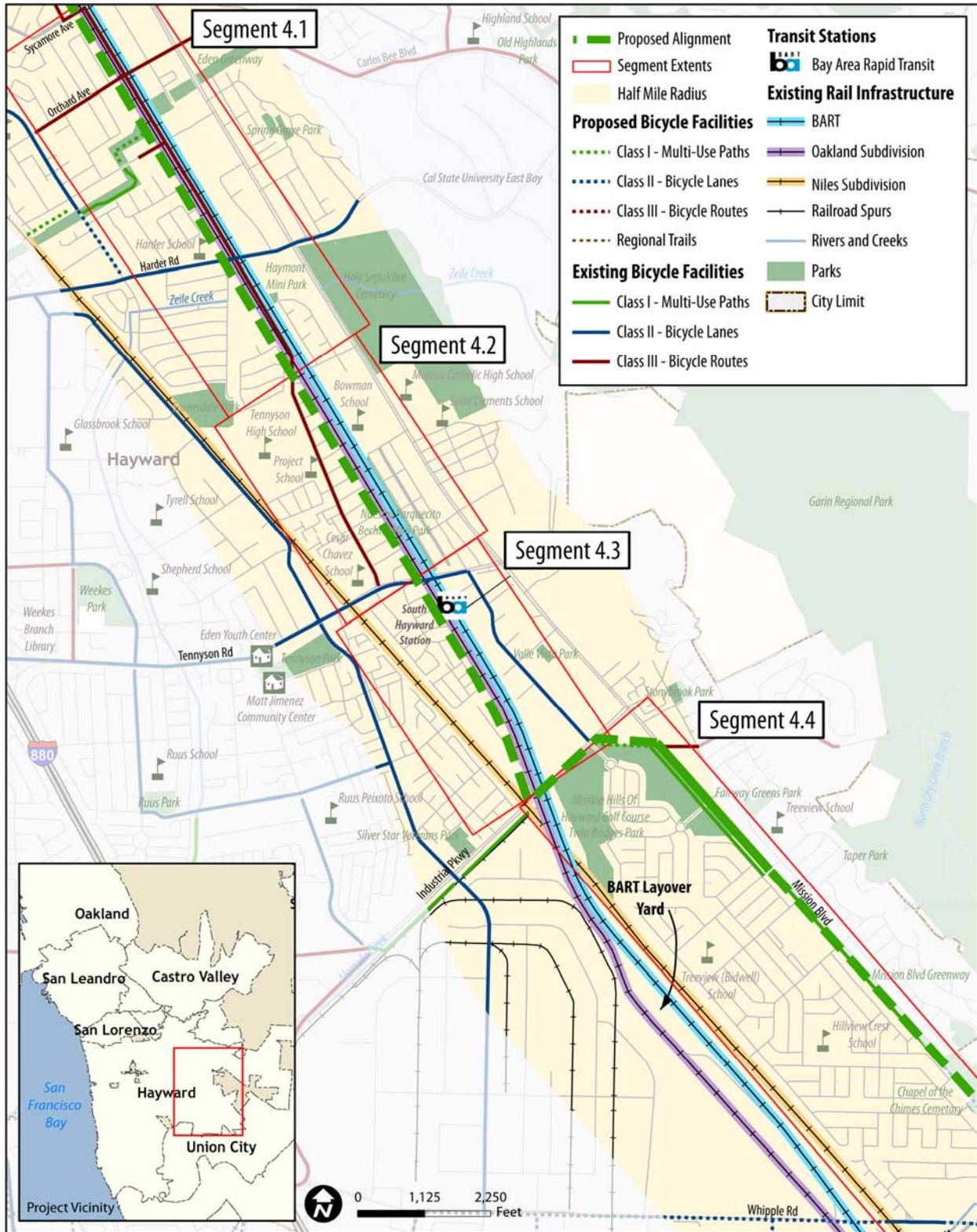


Figure ES-10: Proposed Map 4 Alignment

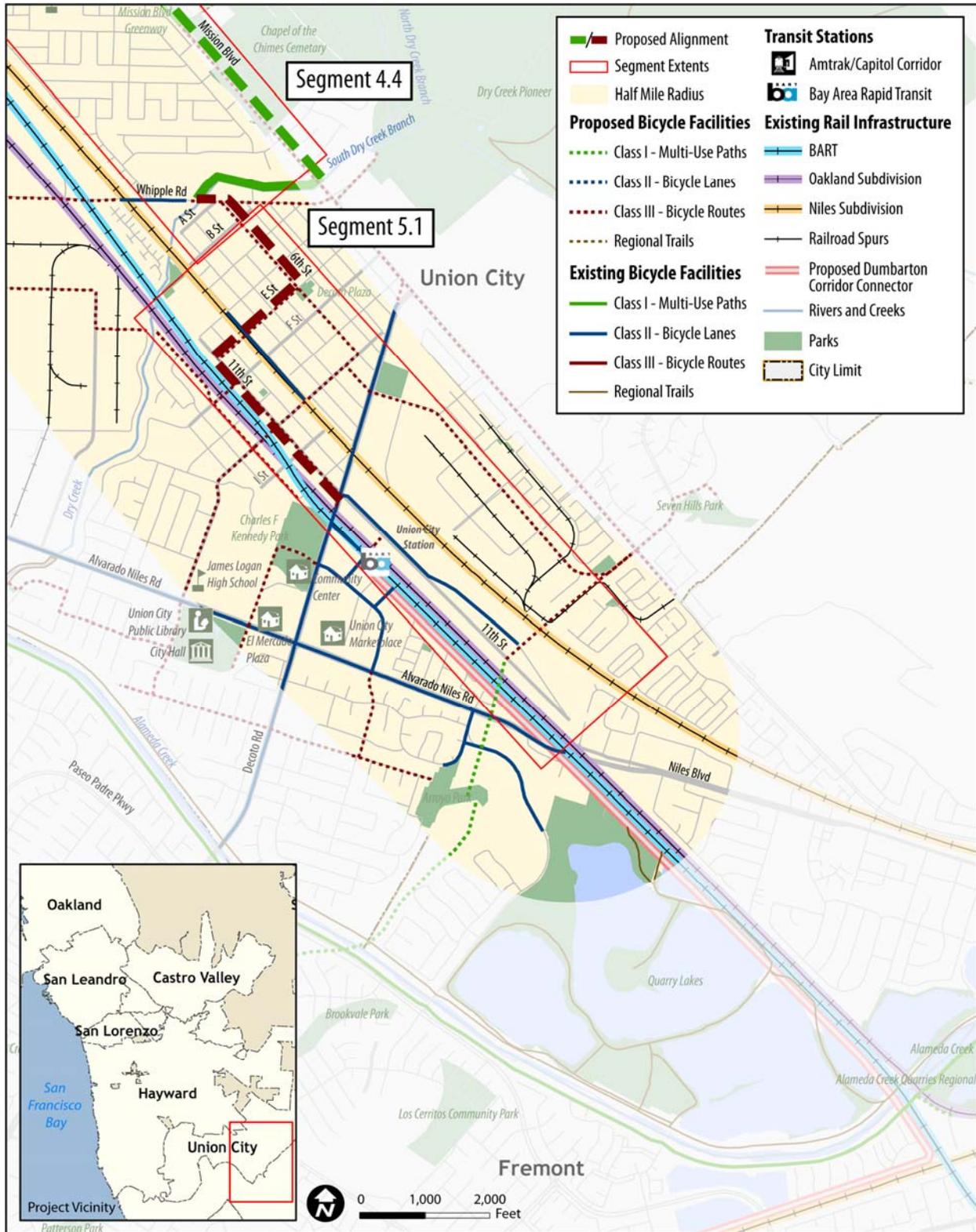


Figure ES-11: Proposed Map 5 Alignment

Action Plan

This section presents that actions that need to be completed, by whom and when in order to create a regional pedestrian and bicycle facility along the Oakland Subdivision in a cost effective and strategic manner.

Short-Term Actions

Lead Agency Commitment

This complex project will require continued leadership on many fronts including ongoing planning and environmental review, coordination of local jurisdictions, monitoring of activities along the corridor, pursuit of major acquisition and capital funding, and other related activities. Alameda County Public Works Agency has provided this leadership over the course of this current study with strong support and direct funding from the Alameda County Transportation Improvement Authority (ACTIA). As of the writing of this report, ACTIA is also determining the scope of its East Bay Greenway planning and environmental review, discussed in greater detail below. Ongoing study and implementation of the East Bay Greenway and Oakland Subdivision Corridor Improvement recommendations concurrently requires policy choices and design decisions that require a regional perspective and expertise in allocating scarce funding among competing projects. ACTIA is one possible agency which could take the lead coordination role. Alameda County and the East Bay Regional Park District could offer direct support to ACTIA in real estate analysis, operations and maintenance expertise, and other critical technical areas. Each of the cities along the corridor will also play a continuing role in identifying local needs and priorities to guide the lead agency.

Corridor Acquisition

Acquisition of the Oakland Subdivision by the local agencies with support from the County and Regional agencies is critical to the implementation of the recommended alignment. Acquisition of the corridor will require identification of a lead agency for negotiation, completion of environmental due diligence, preparation of appraisal, and acquisition negotiation at a minimum. As of the preparation of this study, the Capitol Corridor Joint Powers Authority (CCJPA) is authorized to lead investigation of purchase of Oakland Subdivision. The funding for the investigation and right-of-way (ROW) purchase comes from MTC's Regional Measure 2 Dumbarton Rail Project funding. The project's remaining funding, after \$91 million was redirected to the Warm Springs BART Station, is approximately \$35 million and is currently allocated for securing and purchase of the needed rail rights-of-way along UPRR's Oakland Subdivision for the operation of the Dumbarton trains from Industrial Parkway in Hayward to the Shinn Yard in Fremont.^{ES-1}

Acquisition of the entire Oakland Subdivision may be addressed in this current negotiation if proposed by the UPRR. Any expansion of CCJPA's purpose will be required for consideration by MTC.

The only data available on potential acquisition cost of the Oakland Subdivision from the Port of Oakland to the Shinn Yard in Fremont is from the 2007 MTC Regional Rail Plan supporting

^{ES-1} Capitol Corridor Joint Powers Authority Meeting Minutes
<http://www.capitolcorridor.org/included/docs/board_meetings/ccjpa_agenda_081119.pdf> and Resolution No. 08-15.

documentation when the cost was estimated at \$60 Million. Accounting for inflation this is \$65 Million in 2009 dollars.

Alameda County, ACTIA, ACCMA, and all participating cities will need to work with MTC, BART and CCJPA to demonstrate the interest and value of acquiring this corridor. Corridor acquisition now would create the opportunity for a significant rail-to-trail project from 98th Avenue in the north to Industrial Parkway in the south for a total of 9.5 miles.

Pursue Major Funding for Acquisition

Regional, county and local agencies will need to secure a minimum of \$30 Million in the short term in order to acquire the Oakland Subdivision north of Industrial Parkway in Hayward. This amount greatly exceeds the typical maximum requests associated with competitive grant programs that fund non-motorized transportation projects. Obtaining \$30 Million will require a dedicated legislative campaign such as the Active Transportation legislative effort currently being led by ACTIA, or other strategies that can be accommodated in the 2009 reauthorization of the 6-year federal transportation bill. This will require continued partnership building.

East Bay Greenway and Environmental Documentation

The recommended alignment for this study is largely consistent with the recommended alternatives presented in the East Bay Greenway study from 54th Avenue in Oakland south to Peralta Avenue in San Leandro. The upcoming preparation of environmental documents for the East Bay Greenway project will advance the corridor project from 54th Avenue to Peralta Avenue.

Completion of the East Bay Greenway environmental documentation as proposed by Urban Ecology and funded by ACTIA will provide documentation of key environmental constraints and refine the proposed design strategy for Urban Ecology's recommended alignment. Urban Ecology was awarded \$527,000 of Measure B Bicycle and Pedestrian Countywide Discretionary Program Funding for this project. The grant will fund completion of the environmental documentation for the twelve mile recommended greenway from Oakland to Hayward, and begin developing design documents for part of all of the project.

Further discussion should be conducted regarding which projects should be developed where the East Bay Greenway and this project differ in facility type and alignment. A possible outcome may include developing the on-street East Bay Greenway segments as the first phase in the development of a pathway corridor. Public input and Oakland Subdivision ownership may also influence which proposed alignments are developed.

Local Plan Updates and Projects

Each county and city agency and regional planning agency embarking on local plan updates should clearly include this study's recommended alignment and funding estimates and focus on supplementing and adding to the analysis prepared for this feasibility study. For example, the City of San Leandro intends to update its Bicycle and Pedestrian Master Plan in 2009-2010 and can further investigate design options and provide design development and traffic analysis pursuant to the recommended improvements outlined in this study. TOD and Station Area Plans should also include this study's recommended alignment. The City of Oakland, City of Hayward, Alameda County, City of Union City, MTC and BART can all place a priority on further analysis and priority

implementation of the recommended improvements identified here. Regardless of the ultimate details that are implemented, each of these plan updates and projects needs to focus on assembling and connecting to the East Bay Greenway and Oakland Subdivision corridor improvement concepts.

Develop Detailed Design Guidelines

This study presents a basic design framework that will need to be further developed in order for the project to move forward. In order for a true regional project to take shape, a set of uniform design standards covering pathway design, crossing design, wayfinding signage, site amenities, landscape design standards, and other pathway features is required. This is essential for trail identity and regional function and will effectively guide the work recommended in the actions above.

Develop Management Plan

A management and maintenance plan is critical for the success of a regional multi-use pathway. The County and cities along the corridor will be required to agree to a set of uniform management and maintenance standards. Agencies will also be required to decide whether to manage the corridor using their own public works and parks agencies or if they will partner with the East Bay Regional Park District (EBDRP) to manage this facility and part of the EBRPD Regional Trail system.

Mid-Term Actions

Design Development

The East Bay Greenway environmental documentation will necessarily provide traffic operations analysis and design refinements for key on-street segments and intersections outside of the Oakland Subdivision. The environmental documentation will need to identify a preferred alternative, provide necessary environmental context, and provide appropriate mitigations and design refinements to enable certification by ACTIA. The next logical step in design development will be to seek design and construction funding for the rail-to-trail segment from 98th Avenue south to Industrial Parkway. Design development for this rail-to-trail segment will need to focus on a host of specific rail-to-trail design issues, including but not limited to those topics presented in **Chapter 3** and summarized here:

- Site specific rail-to-trail or rail-with-trail pathway crossing design at minor and major roadways
- Separation and setback from rail activity for both open and constrained areas
- Relocation or removal of above ground and/or overhead utilities potential conflicting with public access
- Overcrossing and bridge design

Project-Specific Environmental Analysis

Program- and project-specific analysis for the recommended alignment segments not covered in the East Bay Greenway environmental documentation will require a primary emphasis on traffic

operations at roadway crossings, air and noise impacts primarily during the construction phase, public services capacity to provide emergency response and safety patrol, and hazardous materials.

First-Phase Construction

First phase construction of the recommended alignment should focus on the highest potential use segments of the proposed rail-to-trail segment from 98th Avenue south to Industrial Parkway. A first phase should be comprised of physical improvements that can be reasonably constructed under assembled competitive grant funding not exceeding approximately \$10 Million in construction budget. Peralta Avenue to Elgin Way in San Leandro is an approximately 3.8 mile segment with an estimated construction budget of \$5.4 Million that passes through downtown San Leandro, expanding Transit-Oriented Development around the San Leandro BART station, existing residential and mixed-use neighborhoods, and connects to the Bay Fair BART station. This segment would attract significant use, be highly visible, and would create significant momentum for the remainder of the corridor. On-street segments in Oakland, Hayward, and Union City could proceed concurrent with this major project.

Long-Term Actions

Second-Phase Construction

Future construction phases would proceed in appropriate-scale project increments in response to available funding. The corridor segment in South San Leandro through Central Hayward from Elgin way to Sycamore Avenue represents a next logical phase followed by the segment from Sycamore Avenue to Industrial Parkway.

Financial Needs

The recommended alignment presented in this study requires significant financial capital to complete. Acquisition of the Oakland Subdivision, environmental analysis, design development, and project specific environmental permitting and clearance costs are presented in **Table ES-8**. The financial needs outlined below estimate a 15 year funding horizon.

Table ES-8 shows how the \$102.5 Million in projected costs may be partially paid for by existing funding sources, in addition to estimating the funding shortfall.

Aside from the money potentially available through the Dumbarton Rail Project, where \$35 Million may be available for Oakland Subdivision acquisition to provide for passenger rail connection to Union City Intermodal Station, much of the funding is expected to come from regional and local sources depending on local agency priorities and ability to support local significant investment in what will become a local and regional facility.

A conservative approach is used in this table to project a reasonable and potentially feasible amount of these sources that could be used on East Bay Greenway/Oakland Subdivision Corridor improvements, since this regional corridor represents only one small part of the bicycle, pedestrian, and trail needs in any community. For example, five percent of the estimated \$80 Million available from Alameda County sales tax measures for local and countywide bicycle and pedestrian projects could be used on Oakland Subdivision corridor segments.

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Regional sources available for bicycle and pedestrian projects such as Safe Routes to Transit, Regional Bikeway Network Program, and other sources including the Climate Action Program, are projected to total \$200 Million over the next five years of which 3.75 percent could be used on the Oakland Subdivision corridor. Based on previous authorizations of these funding sources, it is difficult to determine projected funding levels beyond five years.

State sources available for bicycle and pedestrian projects such as the Bicycle Transportation Account, Safe Routes to Schools, Office of Traffic Safety, and other sources is expected to total \$30 Million of which five percent could be used on the Oakland Subdivision corridor.

The 2010 federal surface transportation act will reauthorize and hopefully expand numerous sources, some of which could be used on the Oakland Subdivision corridor. For estimating purposes, the amounts assume two (2) authorizations over the next 15 years. The Oakland Subdivision corridor could potentially receive five percent of the Bay Area allocation for Transportation, Community, and System Preservation, five percent of the Recreational Trails allocation, five percent of the Congestion Mitigation and Air Quality program, five percent of the Safe Routes to School program, and five percent of the Transportation Enhancements program.

Based on these assumptions, there will be a shortfall of \$36.6 Million to complete the Oakland Subdivision corridor, averaging about \$2.44 Million per year. A dedicated source of funding on the state or regional level for the Oakland Subdivision corridor would be instrumental in ensuring that the system is completed in a 15-year timeframe.

Table ES-8: Oakland Subdivision Corridor Improvement Financial Needs

Projected Costs	
Total Acquisition ¹	\$65,000,000
Total Project Cost ²	\$37,536,000
Total Financial Need	\$102,536,000
Potential Funding Sources	
Active Transportation ³	\$12,500,000
Dumbarton Rail Project ⁴	\$35,000,000
Local Sources	
Sales Tax ⁵	\$4,000,000
Regional Sources ⁶	\$7,500,000
EBRPD Measure WW ⁷	\$400,000
State Sources ⁸	\$1,500,000
Federal Sources ⁹	
TCSP ¹⁰	\$700,000
Recreational Trails ¹¹	\$250,000
CMAQ ¹²	\$1,100,000
Safe Routes to School ¹³	\$800,000
Transportation Enhancements ¹⁴	\$2,200,000
Total Potential Funding	\$65,950,000
Surplus/(Shortfall)	(\$36,586,000)

1 Acquisition cost is based on Regional Rail Plan documentation prepared in 2007 assuming \$60 Million for the Oakland Subdivision from Port of Oakland to Niles Junction. This number was increased based on 2.85% rate of inflation for 2007 and 3.85% rate of inflation for 2008. This acquisition cost could be substantially reduced if Alameda County and the UPRR negotiate a land swap such as currently being explored.

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- 2 Total construction includes construction cost, design (20% of construction cost), environmental permitting and clearance (15% of construction cost), and planning level contingency (30% of construction cost).
- 3 The Alameda County Transportation Improvement (ACTIA) legislative campaign for Active Transportation funding through the federal transportation bill reauthorization could generate up to \$50 Million for Alameda County that would be combined with existing sales tax and other anticipated funding (already accounted for in this table) for a total \$135 Million investment in Active Transportation including transit access, regional greenways, and programs/education. The estimated total financial need for urban greenways is \$57 Million including the East Bay Greenway, Iron Horse Trail and Bay Trail. 25% of the \$50 Million request is assumed.
- 4 \$35 Million is the remaining Regional Measure 2 funds in the Dumbarton Rail Project currently allocated for securing and purchase of the needed rail rights of way (ROW) along UPRR's Oakland Subdivision for the operation of the Dumbarton trains from Industrial Parkway in Hayward to the Shinn Yard in Fremont. This funding may not be available if moved by MTC to other projects from the Dumbarton Rail Project.
- 5 Assumes 5% of Alameda County sales tax measure moneys for bikeways/trails (estimated at \$80 Million) including both non-competitive and competitive shares, subject to variation based on available sales tax revenue, a competitive grant process, and regional and local priorities.
- 6 Assumes 3.75% of regional funding sources including Safe Routes to Transit, Regional Bikeway Network Program, Climate Action Program (estimated at \$200 Million for the Bay Area over the next five years).
- 7 East Bay Regional Park District Measure WW includes \$400,000 specifically to assist local jurisdictions with acquisition of the UPRR Oakland Subdivision for the East Bay Greenway.
- 8 Assumes 5% of state funding in Bay Area from Bicycle Transportation Account, Safe Routes to School, Office of Traffic Safety and other sources.
- 9 Federal funding from the federal surface transportation act is estimated based on state and Bay Area share; assumes two authorizations over the next 15 years.
- 10 Transportation, Community and System Preservation Program, 5% of Bay Area share.
- 11 Recreational Trails program, 5% of Bay Area share.
- 12 Congestion and Mitigation and Air Quality Program, 5% of Bay Area share.
- 13 Safe Routes to School Program, 5% Bay Area share.
- 14 Transportation Enhancements, 5% Bay Area share

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1. Introduction

This report identifies the opportunity to create nearly 18 miles of multi-use pathway in the heart of the East Bay following the existing Union Pacific Railroad (UPRR) Oakland Subdivision. This multi-use pathway, if constructed, would pass through five cities and unincorporated areas of Alameda County that are home to more than 1.5 million residents. These communities have a great need for increased pedestrian and bicycle transportation options, open space and recreational opportunity, and for improved public safety in the neighborhoods adjacent to the now little used railroad right-of-way.

This report shows clearly that freight rail use on the Oakland Subdivision is waning and that the UPRR is interested in selling some or all of the Oakland Subdivision. Freight can be moved more efficiently if consolidated on the parallel Niles Subdivision. Furthermore, there is a strategic opportunity to align this pedestrian and bicycle project regionally with the Capitol Corridor passenger rail project that is also seeking to purchase the Oakland Subdivision.

The acquisition cost of the Oakland Subdivision is dependent on many factors. It was estimated at \$60 million in 2007 in Regional Rail Plan discussions, but could be far less in an acquisition scheme involving a land swap or other negotiating strategies benefitting both Alameda County as a whole and the UPRR. Construction cost for this regional non-motorized corridor is estimated at approximately \$38 million, an average cost of slightly more than \$2 million per mile. Total cost per mile including acquisition and construction could be as much as \$5.7 million per mile in a cash acquisition, but again could be far less.

While an entirely different type of project, it is instructive to compare this pedestrian and bicycle capital need with the capital requirements for other current planned East Bay transportation projects – the East Bay Bus Rapid Transit project is estimated to cost approximately \$14 Million per mile, the I-880 to Mission Boulevard East-West Connector is estimated to cost approximately \$52 Million per mile. As a matter of public policy, this comparatively small investment in active transportation has the potential to greatly improve quality of life in the East Bay.

Finally, as discussed in this report, this project has the potential to generate extensive and varied community benefits beyond creating infrastructure for pedestrian and bicycle trips including improvements in neighborhood connectivity, improving access to transit, reducing load on parallel congested roadways, supporting community health, reducing greenhouse gas emissions, improving public safety and creating a sense of place along the corridor.

This report was commissioned by Alameda County Public Works Agency to investigate the feasibility of a regional pedestrian and bicycle pathway following the Union Pacific Railroad (UPRR) Oakland Subdivision from Oakland to Fremont. The 18 mile long project study area is shown in **Figure 1-1**. Questions about the future of the Oakland Subdivision have arisen at multiple levels of government over the past thirty years as freight customers diminish and less freight traffic travels along this corridor. Regional rail planning efforts, County elected officials and planners, local government agencies and advocacy groups have all identified the possibility that the Oakland Subdivision might accommodate a range of transportation and community uses. The presence of an infrequently used and minimally maintained right-of-way in the heart of the East Bay has justifiably

attracted a lot of attention. Over the past decade, a multitude of local planning documents have identified the Oakland Subdivision as a potential pedestrian and bicycle pathway.

In response to this growing support, the local advocacy and planning group Urban Ecology developed the East Bay Greenway Concept Plan analyzing the potential for pedestrian and bicycle improvements within the public street rights-of-way and area beneath the elevated BART tracks immediately parallel to the Oakland Subdivision from the Fruitvale BART Station in Oakland to Downtown Hayward. Urban Ecology elected to focus on city streets and BART property based on the belief that the UPRR was not a willing seller of the Oakland Subdivision itself.

Since the East Bay Greenway Concept Plan was initiated, acquisition of the southern segment of the Oakland Subdivision for regional rail purposes has become a stronger possibility, stimulating interest in analyzing the feasibility of a regional pedestrian and bicycle multi-use pathway for the entirety of the Oakland Subdivision. As a result, this study expands on the support and concept of East Bay Greenway concept and analyzes the feasibility of a multi-use path in the Oakland Subdivision between the Fruitvale and Union City BART stations. This report investigates the feasibility of rail-to-trail and rail-with-trail scenarios in the railroad right-of-way.

In order to analyze the feasibility of rail-to-trail and rail-with-trail scenarios this study attempts to answer several related questions including:

- What is the existing adopted regional and local support for creation of a regional pedestrian and bicycle corridor along the Oakland Subdivision?
- What is the likely future of rail freight service on the Oakland Subdivision within a short-term and mid-term planning horizon?
- What is the future of passenger rail, including BART and Amtrak Capitol Corridor service, on the Oakland Subdivision?
- What is the feasibility of conversion of the Oakland Subdivision to non-motorized pedestrian and bicycle use [Rail-to-Trail]?
- What is the feasibility of conversion of the Oakland Subdivision to shared pedestrian/bicycle and rail use (including freight and/or commuter service)[Rail-with-Trail]?
- What is the feasibility of parallel on-street pedestrian and bicycle facilities where use of the Oakland Subdivision is not feasible?
- How can the East Bay Greenway recommendations be incorporated in this study so that the two projects are compatible and build upon each other?

Based on the answers to the complex questions posed above, each of which faces a multitude of contingencies, this study addresses these further questions:

- Is the UPRR likely to be a willing seller of the Oakland Subdivision within a short-term and mid-term planning horizon?

- Is the UPRR likely to participate in a land swap for the Oakland Subdivision in the short-term and mid-term planning horizon?
- How might the Oakland Subdivision be acquired and what would it cost?
- What are the estimated costs associated with developing rail-to-trail and rail-with-trail alternatives?
- How might these projects be funded, implemented and maintained?
- Who would lead funding, design, implementation and management of a pedestrian and bicycle facility on the Oakland Subdivision?

Before addressing the major questions outlined above, this introduction first summarizes the value and benefits that would be created through development of regional pedestrian and bicycle infrastructure along the Oakland Subdivision. It is essential to know what the community and environmental benefits are in order to justify the costs associated with acquisition of the Oakland Subdivision and the costs of development of pedestrian and bicycle facilities. Urban Ecology's East Bay Greenway Concept Plan identified environmental justice, community health, sustainable transportation, and public safety benefits that are reiterated here.

Why Create a Regional Bicycle and Pedestrian Corridor?

There are many reasons to improve the Oakland Subdivision for pedestrian and bicycle connectivity. The East Bay Greenway Concept presents extensive documentation summarized here. The chief benefits of a regional non-motorized transportation corridor include environmental justice, community health, sustainable transportation, and public safety benefits.

Environmental and Social Justice

As documented in **Chapter 2** of this study and in the East Bay Greenway report, the communities within a one-mile radius of the Oakland Subdivision are predominately low-income with high percentages of youth and seniors. Several other regional transportation equity programs, including the Metropolitan Transportation Commission's (MTC) Lifeline Transportation Program and Community-Based Transportation (CBTP) planning program, have identified the low-income neighborhoods in Central and East Oakland, Cherryland (unincorporated Alameda County), and South Hayward as suffering from a variety of transportation inequities. Mapping completed for the East Bay Greenway and **Chapter 2** of this study, clearly illustrates how poverty and low rates of vehicle ownership are concentrated around the Oakland Subdivision corridor. These are standard indicators of transit and walking dependency that begin to demonstrate the value of pedestrian and bicycle access improvements to the population of the study area.

Community Health

Communities within the project study area suffer from a variety of negative health trends coupled with poor access to outdoor recreational opportunity. The East Bay Greenway Concept Plan presents health data related to obesity, diabetes, and coronary heart disease demonstrating that many

neighborhoods in close proximity to the Oakland Subdivision are at one and a half times the Alameda County rate for each of these three diseases. According to the Centers for Disease Control (CDC), people who live within walking distance of recreation areas are more likely to exercise than those that live further away. Maps presented in **Chapter 2** of this document illustrate the limited access to open space characterizing the project study area. The creation of a regional pedestrian and bicycle facility providing safe walking and bicycling opportunities for many neighborhoods that currently lack such facilities can begin to combat these trends.

Sustainable Transportation

Creation of improved pedestrian and bicycle connectivity and safety along the Oakland Subdivision corridor has the potential to enhance existing and ongoing public investment in Transit-Oriented Development (TOD), BART station access improvements, and Interstate 880 congestion relief. TODs are being planned and implemented at all of the BART stations along the study corridor including Fruitvale, Oakland Coliseum, San Leandro, Bay Fair, Hayward, South Hayward and Union City. These TOD projects will build nearly 9,000 new residential units, 2.5 million square feet of commercial lease space, and 360,000 square feet of retail development (Source: respective TOD plans). Development of improved pedestrian and bicycle access between existing neighborhoods near these TOD projects and near existing BART stations has the potential to increase non-motorized travel to retail, jobs, and AC Transit and BART. The potential synergy between the East Bay TOD trend and a regional pedestrian/bicycle corridor is significant. The pedestrian/bicycle and transit trip linking options up and down the corridor present a viable alternative to the highly congested Interstate-880 corridor. For example, a Union City Intermodal Station TOD resident working in the Lake Merritt area of Oakland could readily walk or bike to BART at both ends of their commute trip, and vice versa. Likewise, residents in older neighborhoods in Cherryland or Hayward could take advantage of safe pedestrian and bicycle access to BART to reach a variety of employment destinations.

Chapter 5 presents specific strategies for forecasting levels of pedestrian and bicycle traffic and the associated transportation and environmental benefits associated with a regional non-motorized corridor improvement.

Public Safety Benefits

Crime and public safety are a major concern in communities throughout the corridor study area. The East Bay Greenway Concept presents important data demonstrating why residents would like to see the Oakland Subdivision, BART corridor, and parallel streets more actively managed. The greatest potential of facilities generating more active use of the corridor is to increase “eyes on the street.” Development of pedestrian and bicycle facilities cannot solve crime problems but they can bring more law-abiding and caring citizens who can displace unwanted illegal and illicit activities from unmanaged environments. Finally, as discussed in the East Bay Greenway Concept Plan, residents of the neighborhoods along the Oakland Subdivision frequently use the rail corridor for walking and bicycling, despite the fact that it is illegal and dangerous in the current state. The pedestrian risk at the frequent uncontrolled and unimproved railway crossings can be greatly improved with development of facilities meeting current non-motorized facility design standards. BART, through its Bay Fair BART Station Area Improvement Plan, and other public agencies are actively addressing public safety in the corridor and any corridor improvements to the Oakland Subdivision should be viewed as having potential to address public safety as well.

Study Corridor

The Study Corridor is approximately 18 miles of UPRR Oakland Subdivision right-of-way extending from the Fruitvale Bay Area Rapid Transit (BART) Station in the north to the Union City/Fremont boundary in the south. The project study area is illustrated in **Figure 1-1**.

For the purposes of this study, the corridor is organized into five map areas that generally correspond to jurisdictional boundaries of the City of Oakland, City of San Leandro, Unincorporated Alameda County, City of Hayward and City of Union City. The map areas are defined by city administrative boundaries, in order to best respond to the unique needs and interests of each of the city and County areas included in the Study Corridor.



Bicycle access to BART stations along the corridor would be significantly improved with development of a multi-use path on the Oakland subdivision

In **Chapter 4**, each map area is further divided into representative segments based on similar right-of-way characteristics, adjacent land use character, and parallel alignment options. This segment framework has been used throughout the feasibility study and the segment definitions are the same in **Chapter 4** and the appendices presenting earlier technical analyses completed for the project.

Technical Advisory Committee

This study was developed with input from key stakeholders and responsible agencies through a formal technical advisory committee (TAC). This TAC met four times during the development of this study in order to review and develop existing conditions, opportunities and constraints, conceptual alignment alternatives, and the preferred alignment.

TAC members represented the following agencies:

- Alameda County Public Works Agency
- Alameda County Transportation Improvement Authority
- Alameda County Congestion Management Agency
- Bay Area Rapid Transit District
- Capitol Corridor Joint Powers Authority
- City of Oakland
- City of San Leandro
- City of Hayward
- City of Union City
- Urban Ecology



12th Street in Oakland provides an on-street alignment option where the Oakland subdivision is abandoned and occupied by commercial buildings

Additional project stakeholders provided valuable information over the course of the project and will be instrumental in future phases. These agencies and organizations include:

- East Bay Regional Park District
- Port of Oakland

Study Goals

Alameda County Public Works Agency Staff and the Technical Advisory Committee developed study-specific goals in response to the above described context and policy background presented in **Chapter 2**. These goals and objectives served as a project guide and support the specific alignment recommendations in **Chapter 4**.

Specific actions taken by Alameda County and partner agencies pursuant to acquisition of the UPRR Oakland Subdivision must be based upon agreed-upon priorities that reflect the long-term goals and aspirations of the region. The vision and goal statements that follow form the framework for transportation corridor preservation and establish the framework for the alignment recommendations.

Definitions

Vision and goals are defined here to establish the meaning and function of these terms in a planning context.

VISION is an idea of the future; it is an image, a strongly felt wish; it is an aspirational description of what an organization or community would like to achieve or accomplish in the mid-term or long-term future. It is intended to serve as a clear guide for choosing current and future courses of action.

GOALS are broad statements of purpose that reflect the community's collective vision of the future.

Study Vision

Alameda County and its partner city and transportation agencies will determine the feasibility of a multimodal transportation corridor along the UPRR Oakland Subdivision that would create a pedestrian and bicycle multi-use path balanced with regional rail transportation needs from the Fruitvale BART Station to the border of Union City and Fremont.

Study Goals

GOAL 1: PEDESTRIAN AND BICYCLE PATHWAY SYSTEM DEVELOPMENT

Determine feasibility of a continuous public multi-use path with strong connections to transit, bicycle and pedestrian facilities that builds on and enhances the concept of the East Bay Greenway Concept.

GOAL 2: MULTI-MODAL CORRIDOR PRESERVATION

Identify strategies to preserve the UPRR Oakland Subdivision as a continuous multi-modal transportation corridor that will balance the needs of a continuous multi-use path with existing, potential and planned rail operations in the corridor.

GOAL 3: NEIGHBORHOOD OPEN SPACE AND IDENTITY

Identify opportunities to enhance public access to open space and neighborhood assets in close proximity to the Oakland Subdivision.

GOAL 4: IMPLEMENTATION, OPERATION AND MAINTENANCE

Define costs associated with development, operation and maintenance of feasible alignment options for each defined segment of a continuous multi-use path and associated improvements. Identify ongoing operation and management needs and potential responsible parties.

GOAL 5: FUNDING

Identify funding strategies for acquisition, implementation, operation and maintenance.

Report Contents

This report contains the following chapters and appendices:

Chapter 1: Introduction presents the overall study purpose, study corridor, technical advisory committee membership and study specific goals guiding the structure and findings of this planning effort and this document.

Chapter 2: Corridor Planning Context presents the planning context and includes a summary of planned rail operations; regional, County, and local planning studies; transit-oriented development plans; and the community setting.

Chapter 3: Design Approach presents design standards including a discussion of California bikeway and multi-use pathway design standards with rail-with-trail design standards.

Chapter 4: Recommended Alignments

Chapter 4: Recommended Alignments presents conceptual recommended alignments for the Oakland Subdivision responding planning context and design standards. This section presents recommended alignments and planning level cost estimates for each segment.

Chapter 5: Action Plan presents actions contributing to the creation of a regional pedestrian and bicycle facility along the Oakland Subdivision in a cost effective and strategic manner. Short, mid, and long-term actions, roles and responsibilities are discussed.

Chapter 6: Funding Plan presents a summary of the financial need of the recommended project along with existing and potential funding. The summary is followed by a catalog of available and referenced funding sources.

Appendix A: Cost Estimate Matrix

Appendix B: Existing Conditions Memorandum

Appendix C: Opportunities and Constraints Memorandum

Appendix D: Project Alternatives Memorandum

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2. Corridor Planning Context

This chapter summarizes the transportation planning, land use planning and community demographic context that directly influences the need for and feasibility of a multi-use pathway in the Oakland Subdivision.

The primary context presented here includes freight rail service, BART regional rail service, and Capitol Corridor Joint Powers Authority (CCJPA) service. Future rail activity and rail ownership on the Oakland Subdivision as well as UPRR policy fundamentally influences the capacity of this right-of-way to accommodate pedestrian and bicycle use. As of the preparation of this report, the UPRR and CCJPA are actively planning for the Oakland Subdivision. The most current knowledge is presented here.

Planned transit-oriented developments will focus increased population along the corridor with residents likely to use transit, pedestrian and bicycle facilities in close proximity to the corridor. However transit-oriented developments do not fundamentally affect alignment alternatives location within the UPRR Oakland Subdivision right-of-way and adjacent public streets. Land use and development considerations can be more effectively addressed in the next phase of planning and design study since they require analysis at a smaller geographic scale.

This chapter also provides information on existing demographic characteristics including poverty levels, rate of vehicle ownership, and access to public open space. Each of these is an important indicator of the need for transportation options with the project Study Corridor.

Rail Planning Context

The starting point for this study is MTC's Regional Rail Plan which assumes that short-haul freight will operate over the Oakland Subdivision to the East Oakland Yard and Port of Oakland through 2015. In the longer term, freight trains will use the Niles Subdivision. Rail planning for the Oakland Subdivision is directly controlled by the Union Pacific Railroad (UPRR) as they own the right-of-way and BART has an easement and operates in the right-of-way. CCJPA is actively planning for commuter rail use on the Oakland Subdivision south of the Niles Junction (south of Industrial Boulevard in Hayward) with funding from MTC. Information presented in this section comes from the UPRR, BART, and CCJPA. Expanded BART service in the corridor was considered as well however this study determined that future expansions are too far in the future to enable reasonable documentation of possible location and configuration at this time.

There are two primary rail planning scenarios influencing the engineering feasibility of a multi-use pathway in the Oakland Subdivision and use of the right-of-way. These include Capitol Corridor service to Union City Intermodal Station and Port of Oakland freight service.

Capitol Corridor Service

Planning for the Capitol Corridor service to the Union City Intermodal Station (Union City) requires that Capitol Corridor switch from the Niles Subdivision, where it currently operates, to the Oakland Subdivision at Industrial Parkway (Hayward). CCJPA would acquire the entire UPRR Oakland Subdivision. This scenario is assumed to have a high degree of likelihood for purposes of this study

based on existing completed preliminary engineering and environmental clearance, Dumbarton Rail Policy Advisory Committee (DRPAC) authorization of CCJPA to lead property acquisition negotiations with the UPRR, and available funding for exploration of purchase. This service configuration is illustrated in **Figure 2-1**.

Capitol Corridor service from Industrial Parkway in the north to Shinn in Fremont in the south would influence multi-use trail feasibility on the Oakland Subdivision in the following ways:

- South of Industrial Parkway in Hayward, Capitol Corridor service will transition from the Niles Subdivision to the Oakland Subdivision
- Existing UPRR Oakland Subdivision freight tracks would be maintained and provide passenger service between Industrial Parkway and the Shinn connection in Fremont
- Passing and storage tracks would be maintained and expanded along some segments, requiring a two track configuration
- Should the Oakland Subdivision right-of-way be acquired using public funds it will most likely be for rail improvements, making development of a multi-use pathway south of Industrial Parkway unlikely given the right-of-way width required for passenger rail operations.

For planning purposes, it has been assumed there will be Capitol Corridor Service on the Oakland Subdivision between Industrial Parkway in Hayward and the Union City Intermodal Station in Union City.

Port of Oakland Freight Service

Rail freight service to the Port of Oakland provides a critical transportation link, contributing to the overall competitiveness of the Port in national distribution and serving local rail customers in the East Bay. The Oakland Subdivision currently carries limited freight traffic comprised of infrequent runs between remaining freight customers in Oakland north of 98th Street and the Port. The majority of freight containers moved through the East Bay are transported on the Niles Subdivision and Coast Subdivision. This study assumes that the Oakland Subdivision will continue to see limited freight traffic for the foreseeable future.

The most recent public discussions of potential increase in freight service through the East Bay involved plans for a short-haul rail operator that would provide freight service between the Port of Oakland and a planned shipping distribution and logistics center located on the former Crow's Landing Naval Air Station in Stanislaus County, California. Operation of the short-haul freight service on the Oakland Subdivision has two potential scenarios. Current negotiation is focused on use of the Oakland Subdivision from the Central Valley as far north as Industrial Parkway in Hayward. North of Industrial Parkway short-haul freight service would likely be operated on the Niles Subdivision, with offset hours of operation, along with the Capital Corridor passenger service. This scenario is illustrated in **Figure 2-1**.

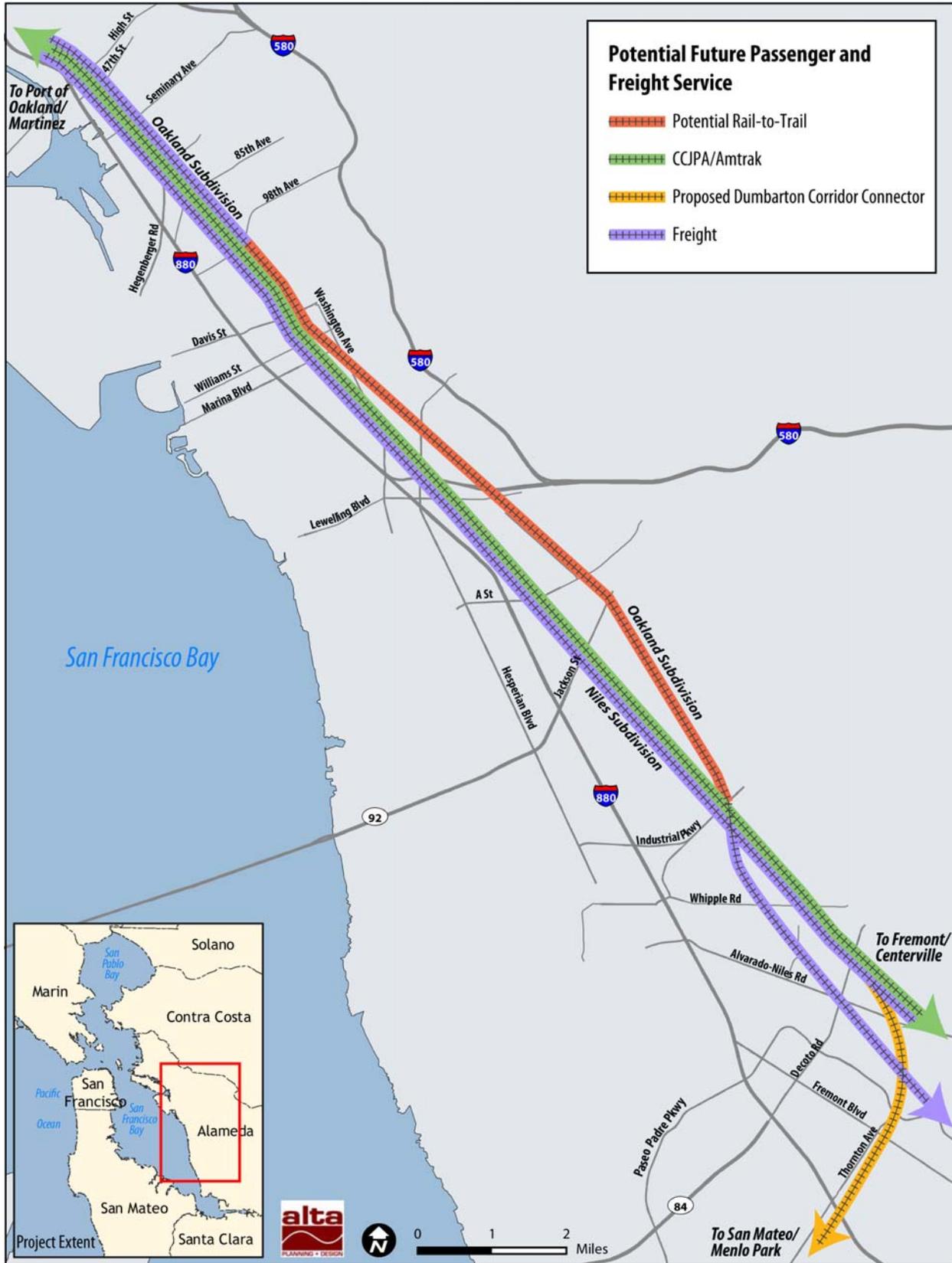


Figure 2-1: Potential Future Passenger and Freight Rail Services on Oakland Subdivision

Freight service from Industrial Parkway in the north to Union City Intermodal Station in the Union City/Fremont boundary in the south would influence multi-use trail pathway feasibility in the following ways:

- Existing UPRR freight tracks on the Oakland Subdivision would be used by a short-haul freight operator during offset peak periods so as to limit conflict with passenger rail use
- Passing and storage tracks would be maintained and expanded along some segments, requiring a two track configuration
- If the Oakland Subdivision is publicly acquired for passenger rail improvements it is possible that freight service would continue south of Industrial Parkway.

Rail Planning Context Conclusion

The consolidation of freight and passenger service on the Niles Subdivision between 98th Avenue in the north and Industrial Parkway in the south would justify greater investment in rail improvements on the Niles Subdivision and free the Oakland Subdivision for other uses.

CCJPA use of the Oakland Subdivision has considerable momentum, as described above, and it is assumed that Capitol Corridor will operate on the Oakland Subdivision south of Industrial. Funding is being investigated.

The UPRR is not currently serving freight customers on the Oakland Subdivision south of Oakland with sufficient frequency to justify maintaining service or retaining this property based on current market demand. This does not diminish the long-term strategic value for the UPRR of retaining ownership of functional right-of-way in a densely populated region and the long-range plans of the UPRR are not publicly disclosed. North of 98th Avenue to 47th Avenue sporadic freight service may continue on the Oakland Subdivision, serving current freight customers in this area. **Table 2-1** outlines likely future freight service on the Oakland Subdivision.

Table 2-1: Future Freight Service on the Oakland Subdivision by Segment

Segment (Length)	Summary Area Description	Future Freight Service
47 th Avenue to 98 th Avenue (3.2 miles)	Central East Oakland; Coliseum BART and TOD	Port of Oakland connection via the Niles Subdivision north of 47th Avenue; service on the Oakland Subdivision south from 47th Avenue to 98th Avenue serving Central Oakland rail freight customers
98th Avenue to Industrial Parkway (9.5 miles)	East Oakland to South Hayward	Freight service discontinued on the Oakland Subdivision and consolidated on the Niles/Coast Subdivision
Industrial Parkway to Union City Intermodal Station (3.2 miles)	South Hayward to Union City Intermodal Station	Freight service discontinued on the Oakland Subdivision and consolidated on the Niles Subdivision/Coast Subdivision; Planned Capitol Corridor commuter rail service to operate on the Oakland Subdivision

Planning Policy Review

There is significant and widespread adopted policy and planning support for a multi-use pathway along the Oakland Subdivision. The majority of these documents identify the Oakland Subdivision

and/or BART right-of-way as a recommended Class I multi-use pathway – a dedicated pedestrian and bicycle facility developed separate from streets that accommodate cars and trucks. **Table 2-2** presents a summary of the facility type recommendations from each major land use jurisdiction along the corridor. Each of the documents referenced in the table is a policy-level or planning level document that references the Oakland Subdivision corridor, and has not specifically analyzed the feasibility of specific alignments or designs within the identified rights-of-way. **Table 2-3** presents additional planning support from a broader cross section of land use and transportation plans.

Table 2-2: Adopted Pedestrian and Bicycle Facility Recommendations for the UPRR Oakland Subdivision/ BART Right-of-Way

Local Agency	Reference Document (Year of Adoption)	Recommended Facility Type for the Oakland Subdivision/BART Right-of- Way	Implementation Priority
Alameda County	Alameda County Bicycle Master Plan for Unincorporated Areas (2007)	Class I Multi-Use Pathway	High Priority Project
Alameda County Transportation Improvement Authority (ACTIA)/ Alameda County Congestion Management Agency (ACCMA)	Alameda Countywide Strategic Pedestrian Plan (2006)	Class I Multi-Use Pathway	Area of Countywide Significance
Alameda County Transportation Improvement Authority (ACTIA)/ Alameda County Congestion Management Agency (ACCMA)	Alameda Countywide Bicycle Plan (2006)	Class I Multi-Use Pathway (portions)	Second High Priority Project (San Leandro only)
East Bay Regional Park District	Regional Parks Master Plan (2007)	Class I Multi-Use Pathway	Potential Trail Project
City of Oakland	Bicycle Master Plan (2007)	Class I Multi-Use Pathway	Priority Project
City of Hayward	Bicycle Master Plan (2007)	Class I Multi-Use Pathway	N/A
City of San Leandro	Bicycle and Pedestrian Master Plan (2004)	Class I Multi-Use Pathway	Priority Project
City of Union City	Bicycle and Pedestrian Master Plan (2006)	No facility recommended; on-street bicycle routes parallel to the UPRR right-of-way on 6 th Street, E Street, and 11 th Street	Priority Project

The importance of this summary is to document that East Bay communities collectively recognize the value of this underutilized property and have in many cases already adopted goals, objectives and implementation policies supporting their respective segments of a future regional facility. There are several important themes identified in the planning documents summarized in **Table 2-3** including:

- The UPRR Oakland Subdivision is identified in regional transportation planning documents as a corridor for potential future rail expansion
- The UPRR Oakland Subdivision is identified in county and regional transportation planning documents as a corridor for a potential greenway or pedestrian and bicycle facility
- Local planning and land use documents consistently support the use of the corridor for a greenway or pedestrian and bicycle facility

UPRR CORRIDOR IMPROVEMENT STUDY
PROJECT RECOMMENDATIONS

Table 2-3: Relevant Policies

Agency/Document	Relevant Recommendations
Metropolitan Transportation Commission (MTC)	
Regional Rail Plan (2007)	Alternative 1: Expansion of the Niles Subdivision providing three tracks for operation of passenger service shared with freight (Preferred Alternative). Alternative 2: Acquisition of the UPRR right-of-way north of Fremont to Oakland. Construction of a new passenger line from Oakland to San José.
Regional Bicycle Plan Update (Finalized 2009)	Policy 2.1: Develop a cohesive system of regional bikeways that provide access to and among major activity centers, public transportation and recreation facilities.
Bay Area Rapid Transit District (BART)	
BART Bicycle Access and Parking Plan (2002)	Recommendation A-1: Work with local jurisdictions to provide direct, safe and well-marked routes to/from the BART station (p. 3-1).
Bay Fair Comprehensive Station Plan (2002)	Recommendation: A station area multi-use path greenway designed to incorporate beauty, comfort, safety, and reduce conflicts.
Bay Fair BART TOD and Access Plan (2007)	Recommendation: Replacement of UPRR with an urban greenway for pedestrians and bicycles.
Coliseum Area Concept Plan (2003)	Recommendations: Creation of a safe walking network to the station. Bikeways along San Leandro Street with consideration for purchase of UPRR right-of-way.
Fruitvale Station Access Plan (2002)	Recommendation: Identification of infrastructure to recreate a network of safe walking and bicycle routes to the station.
San Leandro Station Access Plan (2002)	Recommendations: Bikeways within the station area. Development of a bike route along the Union Pacific right-of-way. Rail crossing improvements.
Alameda County	
Alameda County Bicycle Master Plan for Unincorporated Areas (2007)	Goal 2: Network Provision and Maintenance – Create and maintain an inter-county and intra-county bicycle network that is safe, convenient, and continuous. Recommended Projects: UPRR Corridor (recommends a study to determine the feasibility of a multi-use pathway) and is a high priority project: East Bay Greenway (p. 30).
Alameda County Pedestrian Master Plan for Unincorporated Areas (2006)	Policy 1.5: Pedestrian improvements should be implemented to strengthen connections to transit.
Alameda County Transportation Improvement Authority (ACTIA)/ Alameda County Congestion Management Agency (ACCMA)	
Alameda Countywide Bicycle Plan (2006)	High priority projects include connections to transit, projects with regional transportation significance. Projects 8 and 13 along Corridors 25 and 35 follow a similar alignment to the UPRR corridor.
Alameda Countywide Strategic Pedestrian Plan (2006)	Areas of countywide significance include three priorities: 1: Access to public transit 2: Access to major activity centers 3: Inter-jurisdictional trails The UPRR corridor as an inter-jurisdictional trail that serves populated areas, and provides access to transit and major destinations is an area of countywide significance.

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PROJECT RECOMMENDATIONS

Alameda County Congestion Management Agency	
Central and East Oakland Community-Based Transportation Plan	Priority Project: Class II facility on San Leandro Street between 66 th and 85 th Avenues. This project parallels the study corridor.
San Mateo County Transportation Authority	
Dumbarton Rail Corridor Project Study Report (2004)	The proposed project would extend commuter rail service across the San Francisco Bay at the Dumbarton Bridge through Fremont and north to the proposed Union City Intermodal Station.
Capital Corridor Joint Powers Authority	
Draft Capitol Corridor Business Plan Update FY 2009-10 – FY 2010-11 (January 2009)	Table 4-1: Long-term capital improvement program includes the Union City Intermodal Station.
East Bay Regional Parks District	
East Bay Regional Parks District Master Plan (2007)	Potential Regional Trail Project 2B on the 2007 Master Plan Map follows the UPRR alignment.
Urban Ecology	
East Bay Greenway: Concept Plan for a Bicycle and Pedestrian Path (September 2008)	This report is a concept plan for a greenway predominantly along the BART right-of-way from 19 th Avenue in Oakland to the Hayward BART Station developed by Urban Ecology. The BART right-of-way is generally adjacent or occupies the western boundary of the UPRR Oakland Subdivision right-of-way.
City of Hayward	
Hayward General Plan, Circulation Element (Amended 2006)	Policy 8: Create improved and safer circulation facilities for pedestrians. Policy 9: Provide the opportunity for safe, convenient and pleasant bicycle travel throughout all areas of Hayward.
Hayward Bicycle Plan (2007)	The East Bay Greenway is identified as a proposed facility.
South Hayward BART/Mission Boulevard Concept Design Plan (2006)	Multi-use path recommended along the UPRR right-of-way and is identified as the "Potential U.P. Regional Trail."
City of Oakland	
Oakland General Plan, Land Use and Transportation Element (1998)	Policy T4.7 – Reusing Abandoned Rail Lines: Where rail lines (including siding and spurs) are to be abandoned, first consideration should be given to acquiring the line for transportation and recreational uses, such as bikeways, footpaths, or public transit.
Oakland Bicycle Plan (2007)	Policy Action 1A.12: Regional and Inter-regional Bikeways: Work with partner agencies to support the development of regional and inter-regional bikeways. Policy 1C – Safe Routes to Transit: Improve bicycle access to transit, bicycle parking at transit facilities, and bicycle access on transit vehicles. Policy Action 1C.1 – Bikeways to Transit Stations: Prioritize bicycle access to major transit facilities from four directions, integrating bicycle access into the station design and connecting the station to the surrounding neighborhoods. The East Bay Greenway is a priority project (segment 739).
Oakland Pedestrian Plan (2002)	Goal 2 – Pedestrian Access: Develop an environment throughout the City – prioritizing routes to school and transit – that enables pedestrians to travel safely and freely. Policy 2.1 – Route Network: Create and maintain a pedestrian route network that provides direct connections between activity centers.
Open Space, Conservation, and Recreation Element (1996)	Objective OS-5 – Linear Parks and Trails: To develop a system of linear parks and trails with (a) links existing parks together; (b) provides safe, convenient access to open space from residential areas and employment centers; (c) provides places to hike, bike, and experience Oakland's scenery; and (d) provides a means of moving from one place to another without an automobile. Policy OS-5.2- Joint Use of Rights-of-Way: Promoted the development of linear parks or trails within utility or transportation corridors, including transmission line rights-of-way, abandoned railroad rights-of-way, and areas under the elevated BART tracks. Included in the OS-5.2 policy narrative is a consideration for a trail along BART tracks from Fruitvale Avenue to High Street.

UPRR CORRIDOR IMPROVEMENT STUDY
PROJECT RECOMMENDATIONS

City of San Leandro	
San Leandro General Plan, Transportation Element (2002)	Goal 14.05 – Access to Transit: Promote improvements that encourage walking, cycling and other forms of non-motorized transportation to and from transit facilities such as BART stations and AC transit bus lines. Goal 14.07 – Pedestrian Environment: Strive to achieve a more comfortable environment for pedestrians in all areas of San Leandro with particular emphasis on the BART station areas, Downtown, and major commercial thoroughfares such as East 14 th Street.
San Leandro Bicycle and Pedestrian Plan (2004)	San Leandro and Bay Fair BART Stations identified as key pedestrian locations. A lack of north-south bikeway in western San Leandro is identified. Recommended priority Class I bikeway identified as BART Trail along the study corridor.
Downtown San Leandro Transit-Oriented Development (TOD) Strategy (2007)	Land Use Objectives for Site D (North BART parking lot): Provide for an extension of the proposed East Bay Greenway to the BART station. Land Use Objectives for Site (South BART parking lot): Provide for an extension of the proposed East Bay Greenway to the BART station. Open Space Framework – The East Bay Greenway is described and included as a proposed open space for the TOD study area. (p. 59) The East Bay Greenway along the BART right-of-way is a recommended component of the Circulation and Parking Framework (p 66).
City of Union City	
Union City General Plan, Transportation Element (2002)	Policy TR-C.2.4: The City shall work with BART, AC Transit, and UC Transit to ensure the bicycle route network provides direct and convenient access to local and regional transit lines and that bicycles are provided access to transit vehicles whenever feasible. Policy TR-C.3.2: The City shall support regional efforts to implement trails (such as the Bay Trail and Bay Area Ridge Trail), and shall identify opportunities to connect with local trails with regional trails.
Union City Pedestrian and Bicycle Plan (2006)	Figure 5-3: Recommended bikeway along BART right-of-way to Union City BART Station.
Union City Intermodal Station EIR (2006)	A proposed intermodal transit station is proposed at the Union City BART Station. The station is planned to serve BART, Capitol Corridor, future Dumbarton Rail, and bus service. A majority of the project will involve work in the UPRR right-of-way (FEIR 5-4) as well as potential acquisition of the UPRR right-of-way (FEIR 5-6). One identified impact, IMTC-2, is an increase in bicycle and pedestrian facility demand.
Union City Intermodal Station District and Transit Facility Plan (2002)	Recommendations include three greenways, including the Union Pacific Greenway, a multi-use path along the UPRR rail lines at the heart of the proposed transit facility.

Transit Oriented Development

Transit-oriented development (TOD) plans and strategies establish a framework that encourages a high-density mix of land uses including residential, commercial, office and retail in close proximity to major transit service. TODs have been planned for all the BART stations along the study corridor. At many of the stations including Fruitvale, Hayward, and Union City the first phase of TOD is implemented.

As planned TODs are built, the number of people living, working and visiting the corridor station areas will increase considerably. The planned number of residential units and square footage of commercial and retail space will increase. For example, the Coliseum Station Area Concept Plan (2003) includes 900 residential units, 640,000 square feet of commercial space, and 140,000 of retail space. Similarly, the Downtown San Leandro TOD Strategy includes 3,430 residential units, 718,000 square feet of commercial space and 120,800 square feet of retail space.

Table 2-4 outlines the available information on planned development at or near the stations.

Table 2-4: UPRR Oakland Subdivision Study Corridor Transit-Oriented Development

	Coliseum BART	San Leandro BART	Hayward BART	S. Hayward BART	Union City Intermodal Station	Total
Residential (units)	900	3,430	656	3,225	469	8,680 units
Commercial (s.f.)	640,000	718,200	67,000	30,784	1,100,000	2,555,984 s.f.
Retail (s.f.)	140,000	120,800	N/A	N/A	100,000	360,800 s.f.

Community Setting

The existing demographic characteristics and land use patterns within a half mile radius around the Oakland Subdivision provide additional compelling support for development of regional pedestrian and bicycle access along the corridor. The Study Corridor passes through many distinct neighborhoods from East Oakland to Union City. Though there is great diversity, there are also common themes; for example, high levels of driving to work, lower car ownership, high levels of poverty in many areas, and limited access to parks and open space.

Alameda County is home to many children and seniors. According to the 2006 American Community Survey, 27 percent of the population are children under 20 and 11 percent are seniors over 65. In Alameda County, 11 percent of the population lives in poverty while 14 percent of all children under 18 and 7 percent of seniors live in poverty.¹ **Figure 2-2** shows percent of population living at or below two times the federal poverty level within a half mile radius of the Study Corridor, the standard poverty threshold used by MTC in their Lifeline transportation analysis.² The Study Corridor shows particular concentrations of poverty in Central Oakland and unincorporated Alameda County, in the Ashland and Cherryland neighborhoods. Low-income populations are often transit dependent and can benefit greatly from safe, low-cost non-motorized access to major transit stops such as AC Transit and BART.

Vehicle access is another important indicator of reliance on bicycling and walking to access transit. **Figure 2-3** illustrates the number of households within a half mile radius around the corridor who do not have access to a private vehicle. While many Study Corridor residents do not have access to vehicles, the mode share of those who drive to work is significant. 84 percent of those who live within a half mile of the Study Corridor drive to work. Thus, the provision of a new regional pedestrian and bicycle facility with direct access to the major transit stops along the Oakland Subdivision would also potentially attract a shift in walking, bicycling and taking transit to work.

Local elected officials representing districts along the Study Corridor and local advocacy organizations like Urban Ecology have also pointed out limited access to open space in the less affluent neighborhoods of the East Bay. Development of a pedestrian and bicycle facility along the Oakland Subdivision would directly address this inequity. **Figure 2-4** shows open space and parks in Alameda County within a half mile radius around the project corridor. Within the half mile radius,

¹ U.S. Census, 2006 American Community Survey.

² MTC Lifeline Report.

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there are a limited number of small parks and community centers. Directly related and important, a 2005-2006 public school fitness test found that 30.5 percent of Alameda County students were overweight.³ Additionally, Alameda County has the second highest rate of asthma hospitalization in the state.⁴ Creation of active transportation facilities can directly combat these negative health trends.

³ Youth Health and Wellness in Alameda County, 2006.

⁴ Select Health Indicators for Cities in Alameda County, 2007.

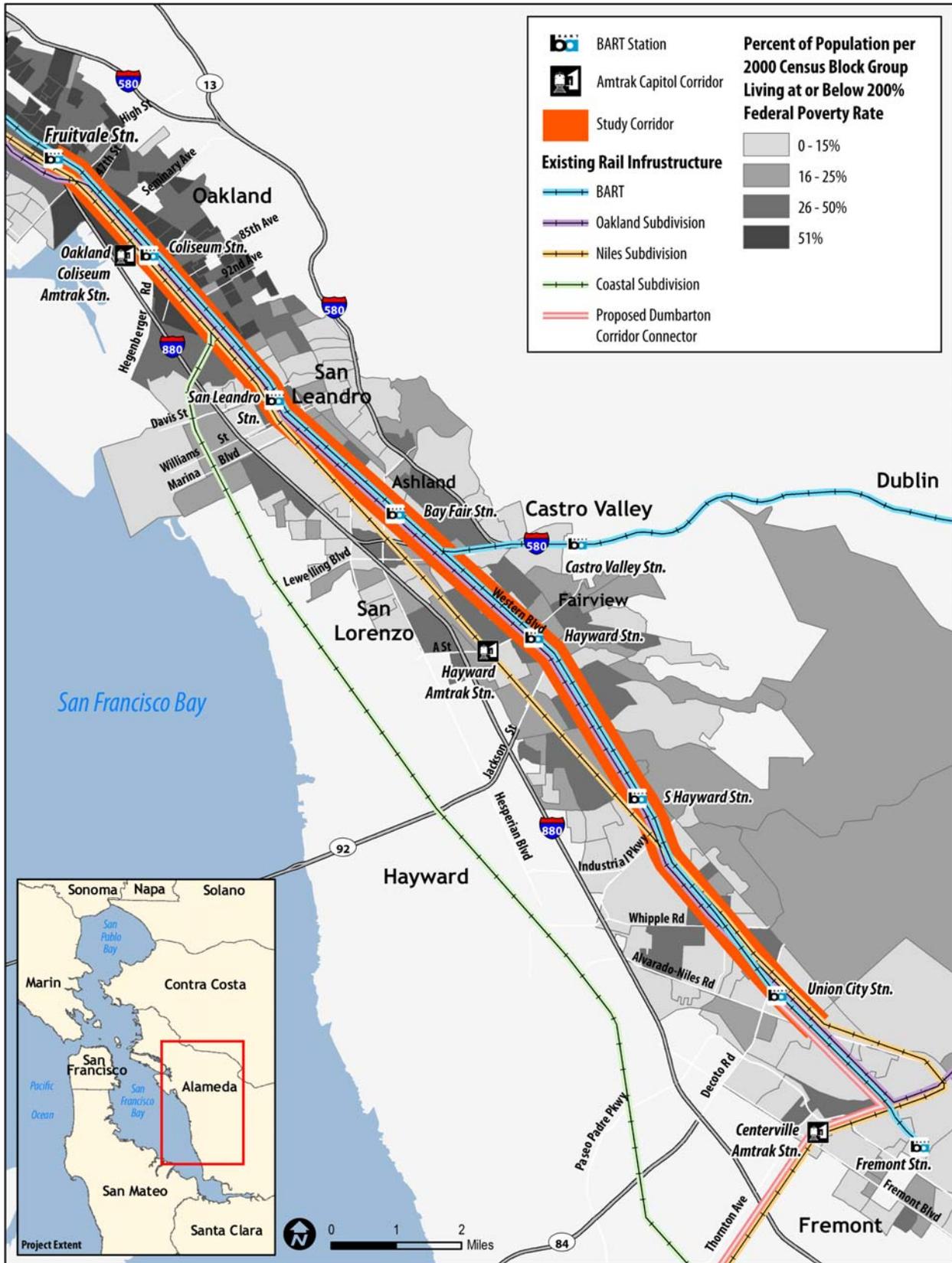


Figure 2-2: Poverty Levels Within a Half Mile Radius of the Study Area

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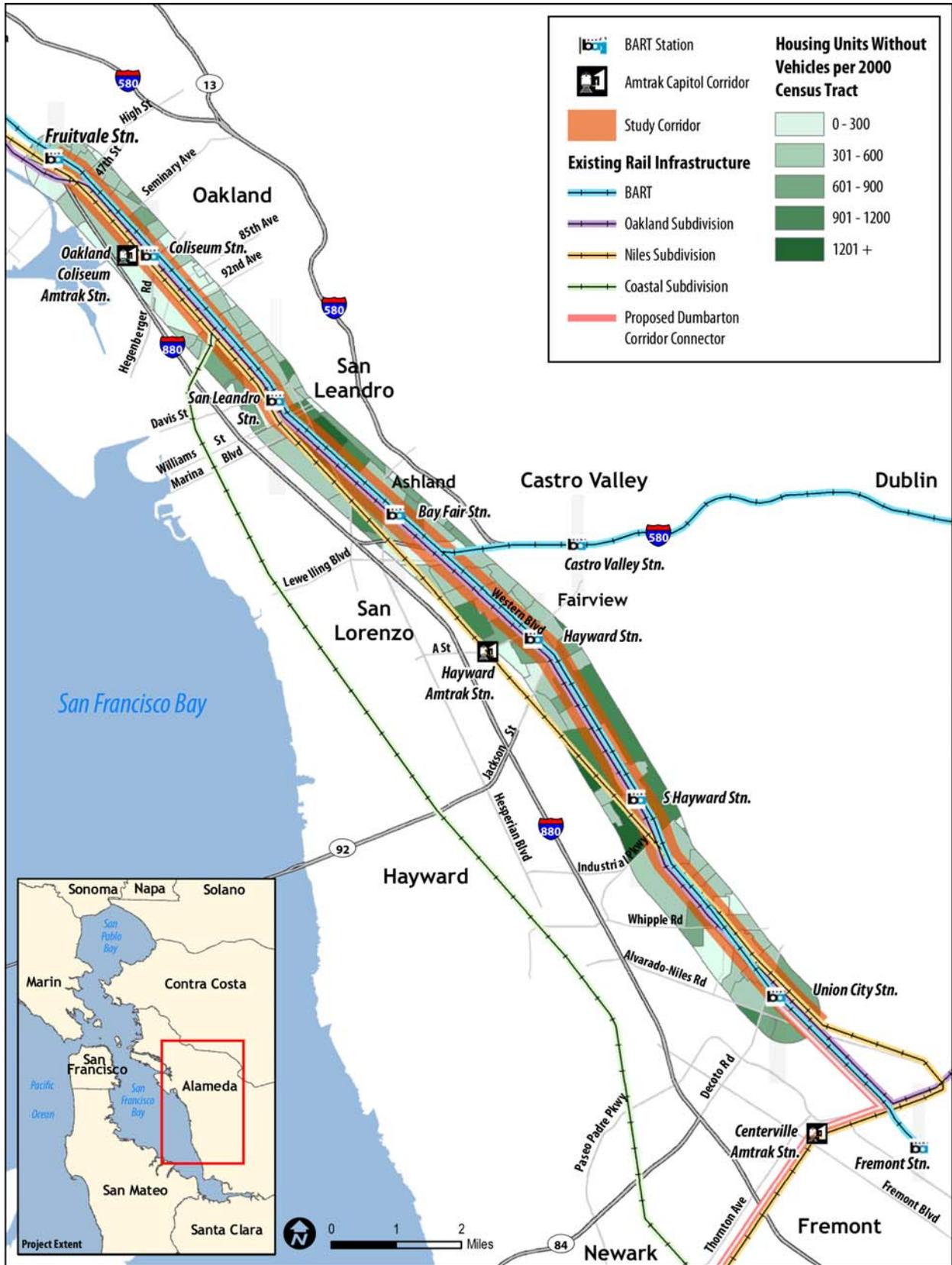


Figure 2-3: Households Without Vehicles Within a Half Mile Radius of the Study Area



Figure 2-4: Parks and Open Space Within a Half Mile Radius of the Study Area

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3. Design Approach

This chapter presents bikeway design standards and guidelines for on-street bikeways, multi-use pathways and rail-with-trail facilities. Each of these facility types are in the recommended alignments presented in **Chapter 4**. The four distinct categories of design guidance featured in this document are as follows:

- On-street bikeway design standards provide important context and guidelines for corridor segments where alignment options take advantage of public streets and sidewalks
- Multi-use pathway adjacent to public street right-of-way is an important design option for segments corridor where access to the railroad right-of-way is not feasible yet the boundary between the railroad right-of-way and immediately adjacent public street offers some flexibility
- Rail-to-trail is important where it may be possible to remove existing rails from the Oakland Subdivision and where sufficient public right-of-way may exist to create a multi-use pathway immediately parallel to the Oakland Subdivision
- Rail-with-trail may be feasible in conjunction with operating rail on some segments following generally accepted rail-with-trail design guidelines and recent California rail-with-trail facilities in UPRR right-of-way.

Each of these bikeway development standards is presented in greater detail below, summarizing key dimensions and operating characteristics.

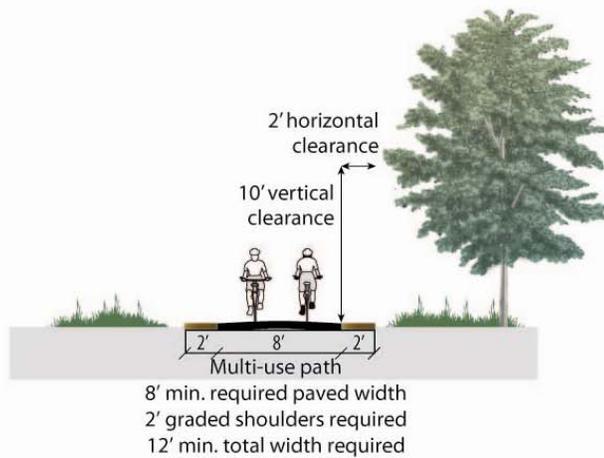
On-Street Bikeway Development Standards

On-street alignments are required for some segments of the corridor where no feasible alignment option can be achieved in the Oakland Subdivision railroad right-of-way. Multi-lane streets along the project corridor such as San Leandro Street (Oakland), San Leandro Boulevard (San Leandro) and narrow neighborhood streets such as Western Boulevard (Hayward) serve a variety of regional, local and truck traffic depending on the segment. In all cases, the site specific traffic operations and safety must be analyzed prior to formal recommendation of any on-street bikeway. **Chapter 4** indicates the appropriate level of study to determine on-street bikeway feasibility for each segment where this alignment is presented. In addition, **Chapter 4** of this document also identifies where on-street bikeways have been studied and/or recommended as a part of the local bikeway plan.

Caltrans has defined three types of bikeways in Chapter 1000 of the Highway Design Manual: Class I, Class II, and Class III. Minimum and recommended standards for each of these bikeway classifications are shown below in **Figure 3-1**.

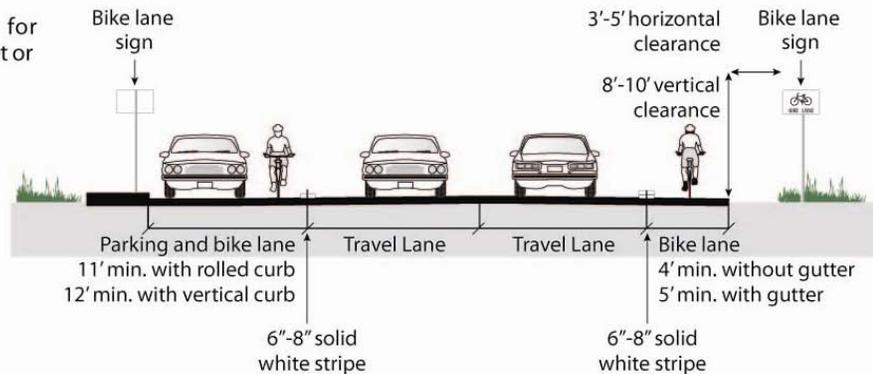
**CLASS I
Multi-Use Path**

Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow minimized.



**CLASS II
Bike Lane**

Provides a striped lane for one-way bike travel on a street or highway.



**CLASS III
Bike Route
Signed Shared Roadway**

Provides for shared use with pedestrian or motor vehicle traffic, typically on lower volume roadways.

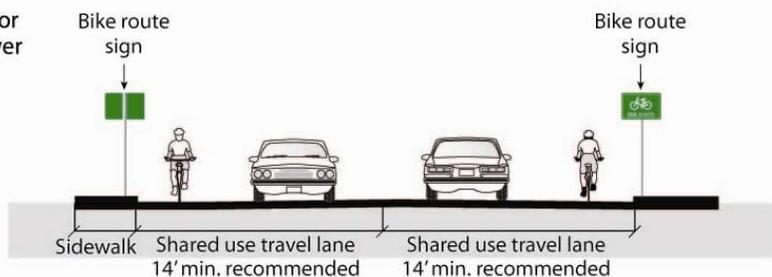


Figure 3-1: Bike Route Classifications

Multi-Use Pathway Adjacent to Public Street Right-of-Way Development Standards

Multi-use pathways adjacent to a public street are an important design option for segments of the Oakland Subdivision corridor where access to the railroad right-of-way is not feasible yet the boundary between the railroad right-of-way and immediately adjacent public street rights-of-way offers some flexibility. This design approach is recommended in the East Bay Greenway study for many segments.

Caltrans Class I standards for a multi-use pathway, as presented in **Figure 3-1**, specify a minimum paved width of eight feet with two-foot wide clear shoulders on each side. Generally, in a potential high use multi-use trail environment with a variety of trail user groups, greater pathway width is preferred. For example, the San Francisco Bay Trail segments in the East Bay are typically 10 to 14 feet wide.

Multi-use pathway facilities immediately adjacent to public streets carrying car traffic have special design and safety concerns including setback from vehicle travel lanes, driveway conflicts, interaction with transit stops and station areas where there is high pedestrian use. Setback from existing roadway travel lanes is an important consideration for this project on these segments. Caltrans specifies that the edge of the paved surface of a Class I facility shall be five feet minimum from the edge of an adjacent paved highway. In an urban street context, a variety of features may mitigate this requirement such as a combination of clear buffer, on-street parking, use of vertical fixed barriers and landscaped buffers. **Figure 3-2** shows a two-foot setback with railing.

The costs associated with constructing multi-use pathways adjacent to public streets can vary tremendously depending on context. This study assumes \$1.2 million per mile not including major roadway crossing improvements.

In general, multi-use pathways should not be located immediately adjacent to roadways where there are frequent driveway crossings, frequent intersecting roadways, or other potential conflicts limiting usability of the pathway by bicyclists.

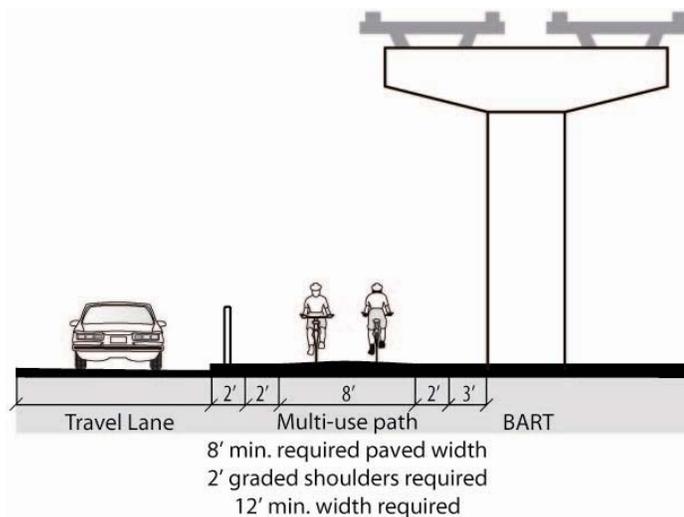


Figure 3-2: Multi-Use Pathway Adjacent to Public Right-of-Way

Rail-to-Trail Development Standards

Rail-to-trail multi-use pathway design standards are similar to multi-use pathway adjacent to a public street right-of-way. Rail to trail facilities are important on segments where it may be feasible to remove existing rails from the Oakland Subdivision.

Caltrans Class I standards for a multi-use pathway, as presented in **Figure 3-1**, specify a minimum paved width of eight feet with two-foot wide clear shoulders on each side. Generally, in a potential high use multi-use trail environment with a variety of trail user groups, greater width is preferred. For example, the San Francisco Bay Trail segments in the East Bay are typically 10 to 14 feet wide.

Rail-with-Trail Development Standards

Where rail is likely to remain in place, and where a multi-use pathway may be feasible in conjunction with operating rail, alignment options adhere to generally accepted rail-with-trail design guidelines.

This section briefly summarizes design guidelines and engineering best practices for rail-with-trail (RWT) facilities. There are four primary design characteristics that are most relevant at this high-level planning analysis to determine potential linear multi-use pathway alignment options for the UPRR Oakland Subdivision, including:

- Setback distance of the trail from the centerline of the active railroad track
- Separation requirements between the pedestrian and bicycle facility and the active railroad, such as fencing, landscape, or berm
- At-grade railroad crossings where the multi-use pathway must cross the railroad tracks
- Roadway crossing standards where the multi-use pathway must cross a roadway serving car and truck traffic, including both at-grade and grade separated considerations.

Each of these design characteristics and associated standards and best practices are summarized in greater detail below.

It is important to acknowledge that RWT design practice is highly contextual and that no uniform adopted standards exist. Site specific design, safety, and operations analysis is required to develop appropriate design for each RWT taking into account rail frequency, rail operating speed, crossing frequency and type, as well as multi-use pathway demand and anticipated user groups. Another important consideration for this project is that privately owned railroad owning/operating entities have generally elected to adhere to more conservative setback and separation requirements than public railroad owner/operators. Where relevant to a specific segment and associated alignment options, this last point is referenced with additional explanation in **Chapter 4**.



The Springwater rail-with-trail in Portland, Oregon is setback less than 10 feet from the centerline of the adjacent low-use and low-speed freight spur. A four foot chain link fence provides separation.

Setback Standards

The following standards are excerpted from *Rails-with-Trails: Lessons Learned Literature Review, Current Practices, Conclusions* (Rails-with-Trails: Lessons Learned Literature Review, Current Practices, Conclusions, Federal Highway Administration. 2002) authored by Alta Planning + Design for the Federal Highway Administration and represent the current engineering best practice for RWT setback. Because of the lack of consensus on acceptable setback distances, the appropriate distance must be determined on a case-by-case basis. Trail planners should incorporate into the feasibility study analysis an analysis of technical factors, including:

- Type, speed, and frequency of trains in the corridor
- Separation technique
- Topography
- Sight distance
- Maintenance requirements, and
- Historical problems.

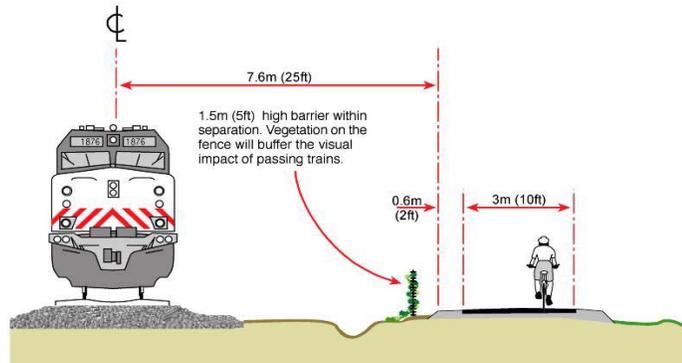


Figure 3-3: Rail-with-Trail Typical Setback

Another determining factor may be corridor ownership. Trails proposed for privately-owned property will have to comply with the railroad’s own standards. Trail planners need to be aware that the risk of injury should a train derail will be high, even for slow-moving trains. Discussions about liability assignment need to factor this into consideration.

In many cases, adequate setback widths, typically 7.6 m (25 ft) or higher (**Figure 3-3**), can be achieved along the majority of the Oakland Subdivision Study corridor. However, certain constrained areas will not allow for the desired setback width. Safety should not be compromised at these pinch points – additional barrier devices should be used, and/or additional right-of-way purchased. In the case of high speed freight or transit lines, RWTs must be located as far from the tracks as possible and are infeasible if adequate setbacks and separation cannot be achieved. At an absolute minimum, trail users must be kept outside the “dynamic envelope” of the track – that is, the space needed for the train to operate.

According to the MUTCD (Section 8), the dynamic envelope is “the clearance required for the train and its cargo overhang due to any combination of loading, lateral motion, or suspension failure.” It includes the area swept by a turning train.

Relatively narrow setback distances of 3 m (10 ft) to 7.6 m (25 ft) may be acceptable to the railroad, RWT agency, and design team in certain situations, such as in constrained areas, along relatively low speed and frequency lines, and in areas with a history of trespassing where a trail might help alleviate a current problem.

Examples of narrow setbacks in California include the following:

- Bob Jones City to Sea Trail, San Luis Obispo: Minimum 8.5 to 12 foot setbacks
- Southern California Regional Rail Authority Trails in the Los Angeles area: Minimum 25 foot setbacks
- SMART (Sonoma-Marin Area Rail Authority): Minimum 15 foot setbacks

The presence of vertical separation or techniques such as fencing or walls also may allow for narrower setback.

Separation Standards

Most railroad companies require a RWT to provide separation between the rail and trail, usually fencing. Typically, railroad companies require 6-foot fences regardless of setback. Where the setback is greater than 25-feet or at constrained points (**Figure 3-4**), other separation types are sometimes used. Vegetation, ditches or berms are common alternative barriers.

Fences and walls are the most common type of physical barrier used in RWT corridors. Most railroads will require or request fencing, for which the trail management agency will be responsible. The height and type of material used on these barriers determines the effectiveness in discouraging trespassing and the resulting impact on required setback distance. A tall wall or fence constructed with materials that are difficult to climb should deter all but the most determined trespasser. From the trail manager's perspective, fencing is a mixed blessing. Installing and maintaining fencing is expensive. Improperly maintained fencing is a higher liability risk than no fencing at all. In all but the most heavily-constructed fencing, vandals find ways to cut, climb, or otherwise overcome fences to reach their destinations. Fencing also detracts from the aesthetic quality of a trail.

The visual quality of fencing materials can have an impact on illegal activities along RWTs. For example, the Canadian Pacific Railway (CPR) Police Service has had dramatic results in reducing crime and trespassing through RWT designs that improved the aesthetic quality of an area. Their approach relies on the concept of "Crime Prevention through Environmental Design (CPTED)," meaning, the proper design and effective use of the built environment can lead to a reduction in the incidence and fear of crime.

Particularly for an urban trail in an area with crime problems, it may be important to maintain visual access to the trail corridor from adjacent land uses, so that portions of the trail do not become isolated from public view. Fence design in these instances should not block visual access to the trail corridor. Tall fences that block views can cause sight distance problems at intersections with roadways—both for motorists who must be able to view approaching trains, and for trail users who need adequate sight lines to view traffic conditions.



Springwater rail-with-trail with narrow setback and fence separator

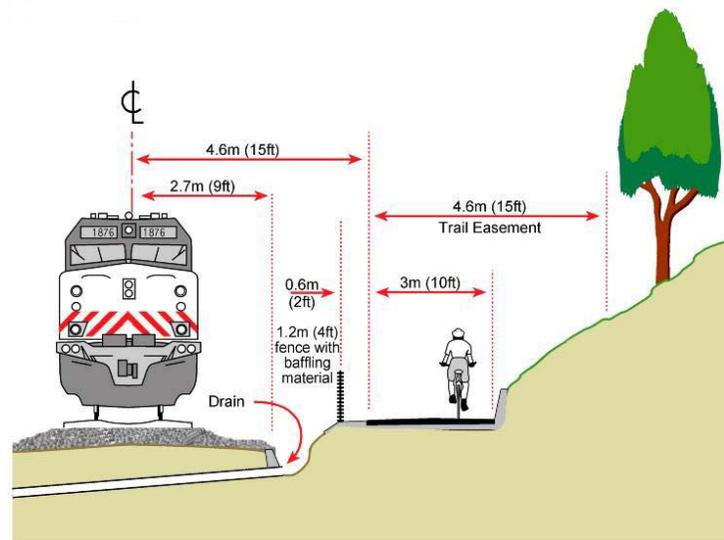


Figure 3-4: Rail-with-Trail Constraints

Railroad Crossing Standards

The point at which trails cross active tracks is the area of greatest concern to railroads, trail planners, and trail users. Railroad owners, the FRA (Federal Railroad Administration), and State DOTs have spent years working to reduce the number of at-grade crossings in order to improve public safety and increase the efficiency of service. RWT design should minimize new at-grade crossings wherever possible.

The California Public Utilities Commission (CPUC) and UPRR have adopted policies of no new at-grade crossings. Using existing crossings or building grade-separated crossings are the only alternative to crossing active rail lines where a multi-use pathway must do so.

Multi-Use Pathway Roadway Crossing Standards

Multi-use pathways including rail-to-trail and rail-with-trail facilities may cross at-grade roadways or grade-separated roadways. Bicycle and pedestrian pathway designers and traffic engineers generally have three basic options for designing multi-use pathway crossings. These include:

- Type 1. Reroute to the nearest at-grade controlled intersection crossing
- Type 2. Create a new at-grade midblock crossing with traffic controls where the pathway intersects with the roadway
- Type 3. Create a new unprotected midblock crossing where the pathway intersects with the roadway
- Grade-separated undercrossing or overcrossing of the roadway where the pathway intersects

The fundamental policy questions and considerations facing each implementing jurisdiction when designing and implementing multi-use pathway crossings of existing roadways are as follows:

- How important is it to provide a direct path of travel for pedestrians and bicyclists using the pathway?
- Routing to the nearest existing intersection can result in significant increase in travel distances and time requirements, thereby limiting the functionality and demand for the pathway.
- What are the potential impacts to local and regional automobile traffic, truck traffic and emergency service vehicles?
- The introduction of new controlled or uncontrolled intersections can have significant impacts on traffic operations and emergency responses times that must be carefully considered.
- What is the experience and expectation of roadway users along the multi-use pathway corridor and what range of crossing designs are they adapted to?

Local experience and expectation can have an impact on the safety of crossing designs. For example, a community that has a network of multi-use pathways with uncontrolled crossings of minor streets where drivers are accustomed to this car-bicycle interaction is different from a community where no such facilities exist.

It is desirable for a regional multi-use pathway to have consistent design standards as it passes through one community to the next, thereby shaping consistent trail user and driver expectations, thus it will be important for the jurisdictions along the Oakland Subdivisions to agree upon uniform policy and design approaches as this project moves forward.

At-Grade Roadway Crossings

At-grade crossings between multi-use pathways and roadways can be complex areas that require the designer to think from the perspective of all types of users who pass through the intersection: trains, motorists, bicyclists, and pedestrians. Trail-roadway intersections are covered in both the AASHTO Bike Guide and the MUTCD. While these manuals do not specifically recommend solutions for RWT crossings, they cover basic safety principles that apply to all trail-roadway crossings. Variables to consider when designing trail-roadway intersections include right-of-way assignment, traffic control devices, sight distances, access control, pavement markings, turning movements, traffic volume, speed, and number of lanes. Refer to the AASHTO Bike Guide for information regarding these design



The existing at-grade rail crossing at Hesperian Boulevard in Oakland is 375 feet from the nearest existing controlled intersection at Ruth Court

factors. All traffic control devices should comply with the MUTCD.

Type 1, 2 and 3 at-grade crossings as developed for *Rails-with-Trails: Lessons Learned Literature Review, Current Practices, Conclusions* are presented in **Figure 3-5**.

Grade-Separated Crossings

There are several types of grade-separated crossings that will be required to accommodate a pedestrian-bicycle multi-use pathway on the Oakland Subdivision. These crossings include:

Existing grade-separated major roadway crossings where embankment grades are too steep to allow pedestrian and bicycle access to the existing street level

Potential new grade separated multi-use pathway crossings where warranted by traffic volumes, speeds, forecasted trail user volumes, sight lines or other safety and operational characteristics

Creek channels including concrete-channelized floodways and natural creek channels

Use of the existing railroad trestle and bridge structures over arterial roadways along the Oakland Subdivision will be feasible only where freight rail service is removed. Discussion of these existing structures and their feasibility for multi-use pathway use is addressed in **Chapter 4**.

Where rail use is likely to persist, the existing rail trestle and bridges will not accommodate pedestrian and bicycle traffic and new structures will be required. This option may be very expensive and may have negative environmental impacts if it requires construction in a riparian or other habitat. Where new pedestrian and bicycle bridges are required over State highways and major arterial roadways along the corridor, the engineering and approval process will be complex and costly.

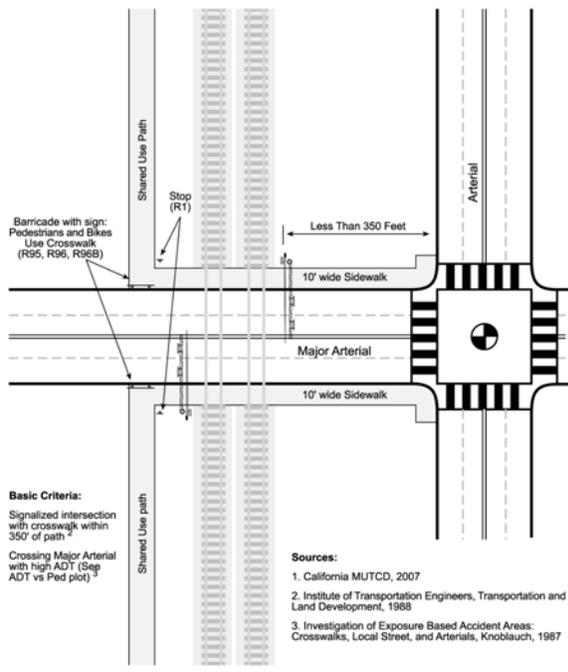


The Whitman Street overcrossing provides an existing grade-separated pedestrian and bicycle crossing of Carlos Bee Boulevard immediately parallel to the Oakland Subdivision. Other arterial grade separations along the corridor do not have such existing facilities.

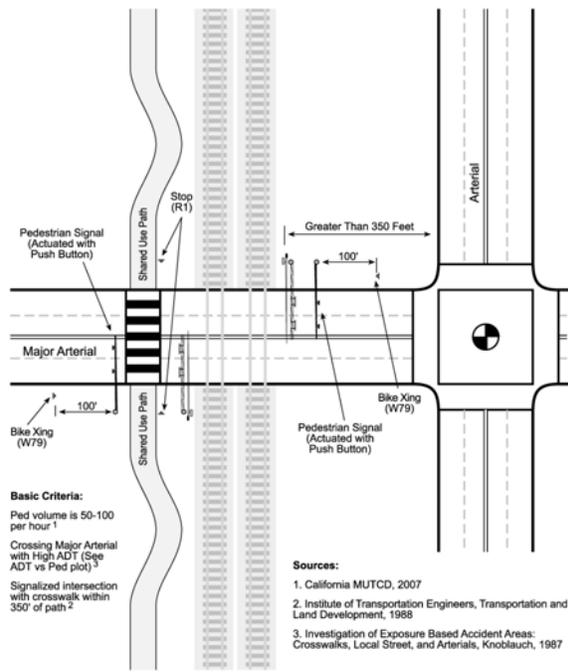


Multi-use pathway alignments along the Oakland Subdivision require grade-separation of many small drainage features.

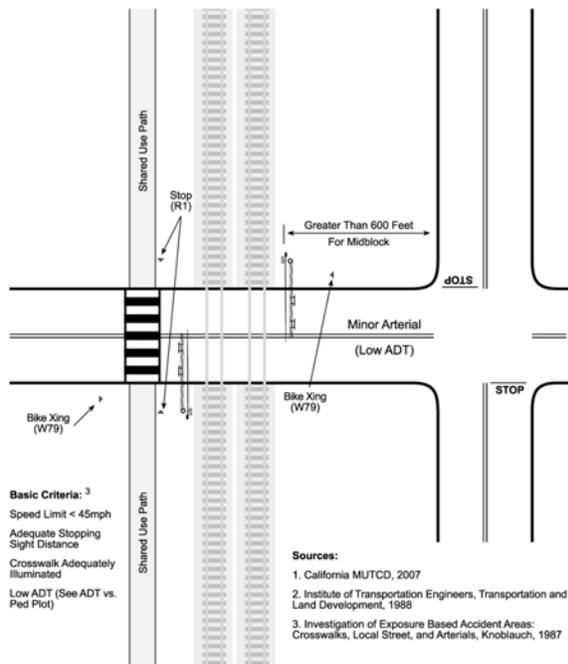
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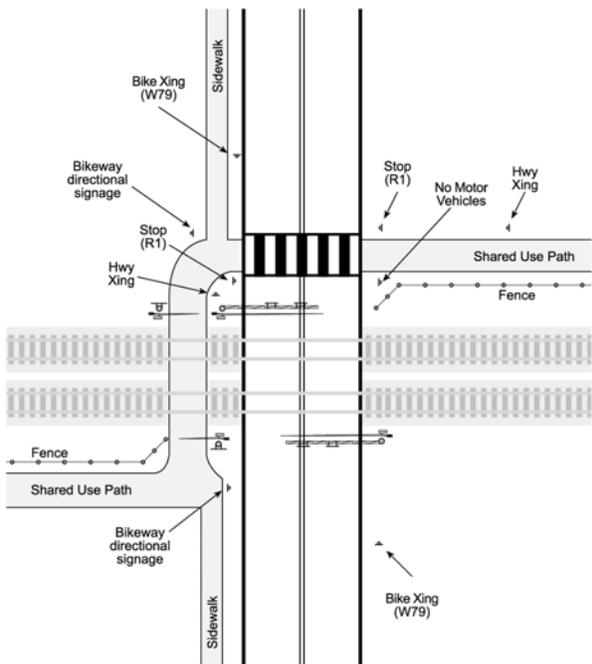
Roadway crossing type 1



Roadway crossing type 2 (new signal)



Roadway crossing type 3 (unprotected crossing)



Roadway and track crossing

Figure 3-5: Crossing Types 1, 2 and 3

4. Recommended Alignments

This chapter presents recommended alignments and improvements for pedestrian and bicycle facility improvements in the Study Corridor. Each of the recommended alignments presented here is drawn from the range of identified project alternatives, presented in **Appendix D**, and has been refined based on technical advisory committee and other stakeholder agency comments. The recommended alignments presented in this chapter respond to the following criteria:

- Right-of-way availability
- Existing and planned freight rail, BART and Capitol Corridor/Amtrak service
- Consistency with design requirements and guidelines presented in **Chapter 3** including multi-use pathway design, rail-with-trail design and on-street bicycle facility design
- Consistency with existing regional and local adopted plans and policies, defined capital projects, and other studies.

The recommended alignments and analysis presented here are also consistent with the study goals presented in **Chapter 1**:

- Identify a continuous multi-use pathway (Goal 1)
- Balance continuous multi-use pathway alignments with existing, potential and planned rail operations in the corridor (Goal 2)
- Identify opportunities to enhance public access to open space and neighborhood assets (Goal 3).

It is important to note that the UPRR Oakland Subdivision Study Corridor is approximately 18-miles long and that this is a high-level feasibility analysis. There are many important design, safety and feasibility issues that cannot be accommodated or thoroughly analyzed in the context of a study of this nature. This chapter presents a conceptual design recommendation for each of the representative segments that may be refined as this project moves forward. There are several significant categories of information that must be addressed in greater detail in subsequent analyses including:

- Survey parcel boundary mapping to identify areas of Union Pacific Railroad ownership, BART Joint-Use Easement area boundaries
- Investigate rights BART can provide within their easement on UPRR property
- BART access to its aerial structures, station and other facilities along the entire Oakland Subdivision corridor

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- Utility easement mapping within the Oakland Subdivision and adjacent public rights-of-way to include gas transmission lines, telecommunications transmission lines, and other utilities
- Traffic operations and safety analysis for multi-use pathway crossings
- Grade-separated crossing site specific civil and structural engineering constraints and cost refinements.

The information presented in this chapter is designed to provide Alameda County, each of the stakeholder agencies involved in the project, and other interested parties with a preliminary feasibility analysis and a framework for understanding what is possible in the UPRR Oakland Subdivision Study Corridor based on the criteria outlined in this document.

The detail provided for each segment below includes:

- **Summary.** A general discussion of the findings from the existing conditions, opportunities and constraints and background policy and plan review investigations completed as a part of this study
- **Alignment Recommendations.** A narrative discussion and typical cross sections including both existing conditions and recommended typical improvements for the subject segment
- **Crossings.** A discussion of the multi-use pathway crossings including at-grade roadway crossings, grade-separated roadway crossings, grade-separated railway crossings, and required bridge drainage channel/creek crossings. Where this study recommends on-street facilities there is no specific crossing discussion provided. This study assumes that implementation of on-street bicycle facilities will incorporate local intersection improvements where required
- **Planning-Level Cost Estimate.** Table summary of major cost items for each segment accompanied by a narrative discussion outlining any special cost considerations for the specific segment.

Feasibility Findings

Rail-with-Trail

Rail-with-trail has limited potential while the Oakland Subdivision is owned by UPRR due to UPRR's setback requirements. It is not possible to comply with UPRR's stated requirement for 50 foot setbacks between the multi-use pathway and the centerline of the active rail tracks. Under a corridor acquisition scenario, where a public entity owned the Subdivision, a reduced setback may be negotiated or, as assumed under the recommended alternative, the elimination of approximately 11 miles of rail service between 98th Avenue and Industrial Parkway would lead to a rail-with-trail scenario, discussed below.

An additional factor limiting a rail-with-trail scenario is the engineering and financial feasibility the number of grade separated crossings over major arterials where the right-of-way is occupied by separate BART and UPRR bridges with limited remaining right-of-way. With rail service remaining

in place new pedestrian-bicycle bridges would be required. Yet, there is insufficient right-of-way to expand the existing bridge abutments to accommodate a third bridge in these locations. The only alternative in these situations would be to route the multi-use pathway around these grade separated crossings on surface streets. The long block lengths fronting the Oakland Subdivision and lack of neighborhood street connectivity through many of the adjacent neighborhoods means that this routing would result in an indirect facility with no value as a regional bikeway.

Rail-to-Trail

Rail-to-trail has great potential based on the existing policy support, future rail scenarios, and right-of-way physical characteristics. Assuming the elimination of freight service between 98th Avenue in the north and Industrial Parkway in the south and potential public acquisition of the Oakland Subdivision, a 9.5 mile rail-to-trail is a feasible project in the short- to mid-term planning horizon. The average 100-foot wide Oakland Subdivision provides adequate width to provide for multi-use pathway well separated from elevated and at-grade BART structures. The available width also provides room for variation of the pathway placement in the right-of-way where there are utilities, BART structures, and adjacent property separation requirements. In contrast to the rail-with-trail scenario, the rail-to-trail scenario enables use of existing rail bridges over major roadway grade separations, creeks, and drainage channels. Provisions for local access to the regional trail at these major grade-separated roadway crossings will require special attention but the important continuity of the regional pedestrian-bicycle corridor is provided for in this alternative.

On-Street Facilities

The Oakland Subdivision cannot feasibly accommodate a multi-use pathway on either the northernmost or southernmost segments identified for this study area. In Oakland the expectation that freight service will continue along the rail corridor, the fact that portions of the former railroad right-of-way are occupied by buildings, and the fact that the local industrial serving streets cannot be reapportioned to create the width for a multi-use pathway leads to the need for on-street solutions. The bicycle route segments included in the recommended alignment have been studied by the City of Oakland as a part of their circulation and bicycle planning efforts and are supported by the East Bay Greenway study as well. In South Hayward and Union City, south of Industrial Parkway, the combination of at-grade BART tracks, BART maintenance and layover yards, and planned Capitol Corridor commuter rail service means that the Oakland Subdivision cannot safely accommodate public access. Existing and planned multi-use pathway segments parallel to Industrial Parkway and Mission Boulevard and existing and planned bicycle routes along neighborhood streets in Union City provide a feasible alternative.

Summary of Recommended Alignment and Costs

The recommended alignment includes facilities in the UPRR Oakland Subdivision, BART, and local jurisdiction rights-of-way can be summarized as follows:

- 37th Avenue to 54th Avenue in Oakland is recommended as on-street Class III bicycle lanes based on the fact that the Oakland Subdivision is either physically occupied by industrial land uses or will likely provide continued freight service to the Port of Oakland. These recommendations are also consistent with City of Oakland circulation and bicycle planning.

Neither rail-to-trail nor rail-with-trail are feasible for these segments in the short- to mid-term.

- 54th Avenue in Oakland to Industrial Parkway in Hayward is recommended as Class I multi-use pathway including segments parallel to San Leandro Boulevard from 54th Avenue south to 98th Avenue and rail-to-trail from 98th Avenue south to Industrial Parkway. Freight service is likely to continue north of 98th Avenue and the project recommendations in this study are consistent with the recommendations in the East Bay Greenway – a multi-use pathway parallel to San Leandro Street/Boulevard. South of 98th Avenue to Industrial Parkway the Oakland Subdivision will not likely have freight or passenger rail service and is prime candidate for acquisition by regional and local government agencies for development of a rail-to-trail.
- Industrial Parkway in Hayward south to the Union City Intermodal Station is recommended as on-street Class III bicycle lanes in response to planned Capitol Corridor commuter rail use of this segment of the Oakland Subdivision, complex grade separation and property access issues, and in response to Union City’s circulation and bicycle planning efforts. Neither rail-to-trail nor rail-with-trail are feasible for these segments in the short- to mid-term.

Figure 4-1 presents an overview of the recommended alignment and **Table 4-1** presents a summary of the recommended designs, crossing locations and estimated costs by corridor segment. This table presents total construction costs, design cost, environmental and permitting cost and planning level contingency. The total construction cost for the recommended alignment is \$23 Million. Design cost at 20 percent of construction costs is \$4.5 Million. Environmental and permitting costs are estimated at 15 percent of construction costs totaling \$3.4 Million.

In response to the fact that this planning level cost estimate is based on long-range planning assumptions, a large contingency of 30 percent is included in order to accommodate additional local improvements that may be incorporated through design development and an assumption for inflation. This contingency is \$6.8 Million.

The recommended alignment grand total based on these assumptions is \$37.5 Million.

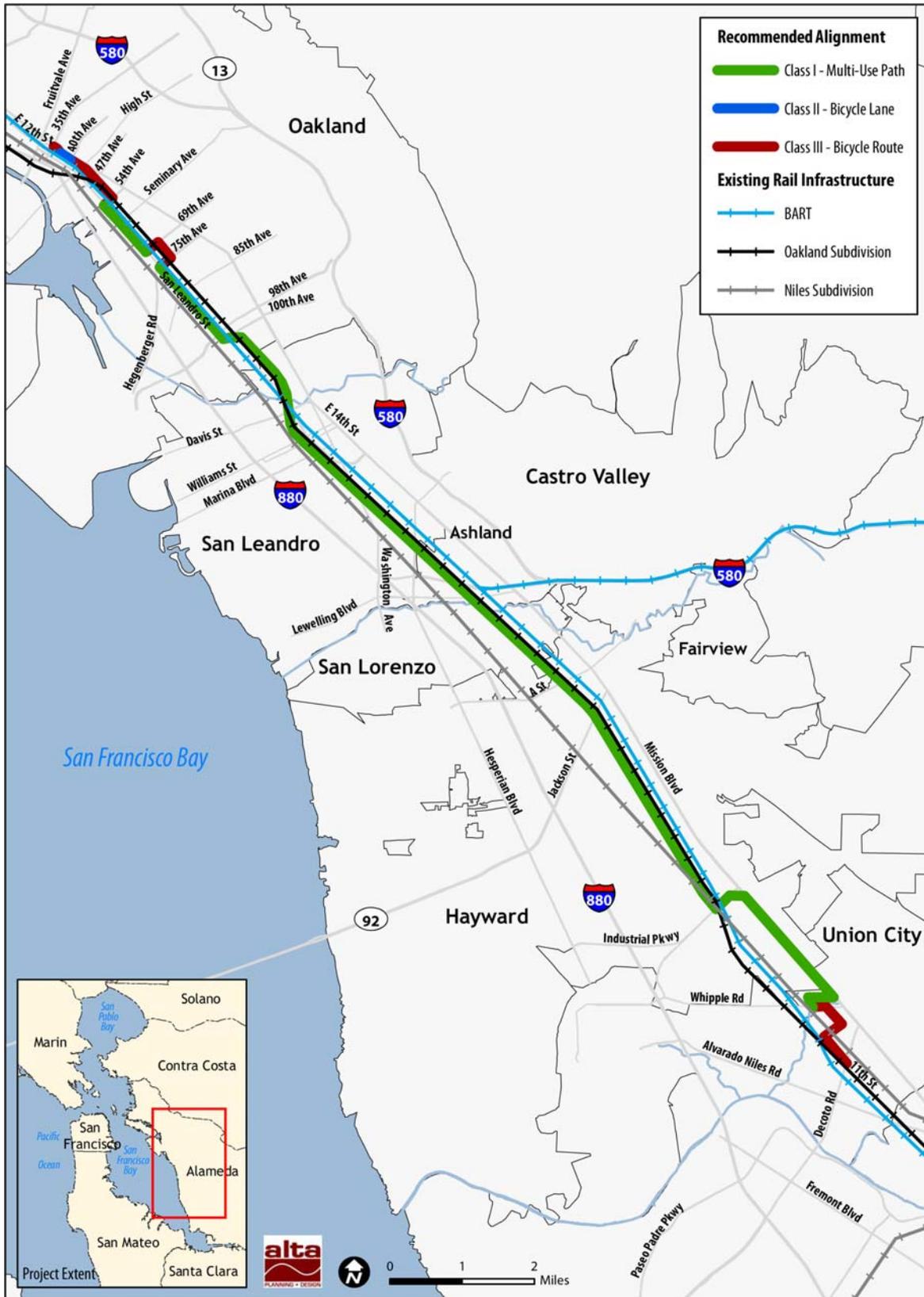


Figure 4-1: Recommended Alignment

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Table 4-1: Recommended Alignments by Segment with Construction Costs

Segment	From	To	Length (mi)	Recommended Design	Crossings	Segment Total Cost
1.1	Fruitvale BART Station	37 th Avenue	0.13	<ul style="list-style-type: none"> Class III Bicycle Route (E. 12th St: 35th Ave to 37th Ave) 	<ul style="list-style-type: none"> No new crossings or upgrades to existing crossings proposed¹ 	\$2,000
1.2	37 th Avenue	47 th Avenue	0.60	<ul style="list-style-type: none"> Class III Bicycle Route (E. 12th St: 37th Ave to 47th Ave) 	<ul style="list-style-type: none"> One-to-two way conversion Signal modification 	\$162,000
1.3	47 th Avenue	Seminary Avenue	0.85	<ul style="list-style-type: none"> Class III Bicycle Route (E. 12th St: 47th Ave to 54th Ave) Class III Bicycle Route (54th Ave: E. 12th St to San Leandro St) Class I Multi-use Pathway (San Leandro St: 54th Ave to Seminary Ave) 	<ul style="list-style-type: none"> No new crossings or upgrades to existing crossings proposed¹ 	\$464,000
1.4	Seminary Avenue	81 st Avenue	1.50	<ul style="list-style-type: none"> Class I Multi-use Pathway (San Leandro St: San Leandro Ave to 69th Ave) Class III Bicycle Route (69th Ave: San Leandro St to Snell St) Class III Bicycle Route (Snell St: 69th Ave to 75th Ave) Class III Bicycle Route (75th Ave: Snell St to San Leandro St) Class I Multi-use Pathway (San Leandro St: 75th Ave to 81st Ave) Crosswalks 	<ul style="list-style-type: none"> Seminary Ave 66th Ave 69th Ave 75th Ave 	\$1,458,000
1.5	81 st Avenue	105 th Avenue	1.40	<ul style="list-style-type: none"> Class I Multi-use Pathway (San Leandro St: 81st Ave to 105th Ave) Crosswalks 	<ul style="list-style-type: none"> 81st Ave 83rd Ave 85th Ave 92nd Ave 98th Ave 	\$1,833,000
2.1	105 th Avenue	Peralta Avenue	1.70	<ul style="list-style-type: none"> Class I Multi-use Pathway (UPRR Oakland Subdivision ROW: 105th Ave to Peralta Ave) Traffic Signal at 105th Ave Crosswalks 	<ul style="list-style-type: none"> 105th Ave 	\$2,521,000
2.2	Peralta Avenue	Marina Boulevard	1.25	<ul style="list-style-type: none"> Class I Multi-use Pathway (UPRR Oakland Subdivision ROW: Peralta Ave to Marina Blvd) Traffic Signal at Davis St Crosswalks San Leandro Creek Crossing 	<ul style="list-style-type: none"> Peralta Ave Davis St Parrott St Thomton St Williams St Castro St Harlan St Estabrook St San Leandro Creek 	\$1,947,000

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Segment	From	To	Length (mi)	Recommended Design	Crossings	Segment Total Cost
2.3	Marina Boulevard	Hesperian Boulevard	1.75	<ul style="list-style-type: none"> Class I Multi-use Pathway (UPRR Oakland Subdivision ROW: Marina Blvd to Hesperian Blvd) Washington Ave overcrossing Traffic signals at 143rd Ave and Halcyon Dr Crosswalks 	<ul style="list-style-type: none"> Marina Blvd Washington Ave 139th Ave 143rd Ave Halycon Dr 	\$2,905,000
3.1	Hesperian Boulevard	Elgin Way	0.80	<ul style="list-style-type: none"> Class I Multi-use Pathway (UPRR Oakland Subdivision ROW: Hesperian Blvd to Elgin Wy) Traffic signal at Hesperian Ave Crossings at Estudio Canal, Bay Fair BART Access, and Thornally St Crosswalks 	<ul style="list-style-type: none"> Hesperian Blvd Thomally St Estudillo Canal Bay Fair BART Access 	\$1,385,000
3.2	Elgin Way	Hampton Road	0.80	<ul style="list-style-type: none"> Class I Multi-use Pathway (UPRR Oakland Subdivision ROW: Elgin Wy to Hampton Rd) Crossings at Ashland Ave and San Lorenzo Creek Traffic signal at E. Lewelling Blvd 	<ul style="list-style-type: none"> Elgin Wy SR 238 East Lewelling Blvd San Lorenzo Creek 	\$1,370,000
3.3	Hampton Road	A Street	1.40	<ul style="list-style-type: none"> Class I Multi-use Pathway (UPRR Oakland Subdivision ROW: Hampton Rd to A St) Crosswalks 	<ul style="list-style-type: none"> Hampton Rd Medford Ave Cherry Wy Blossom Wy Grove Wy Sunset Blvd 	\$1,834,000
3.4	A Street	D Street	0.35	<ul style="list-style-type: none"> Class I Multi-use Pathway (UPRR Oakland Subdivision ROW: A St to D St) Crosswalks Traffic signals at A St and B St 	<ul style="list-style-type: none"> A St B St 	\$759,000
3.5	D Street	Sycamore Avenue	0.52	<ul style="list-style-type: none"> Class I Multi-use Pathway (UPRR Oakland Subdivision ROW: D St to Sycamore Ave) Crossings at D St and Jackson St 	<ul style="list-style-type: none"> D St Jackson St 	\$729,000
4.1	Sycamore Avenue	Sorensen Road	1.40	<ul style="list-style-type: none"> Class I Multi-use Pathway (UPRR Oakland Subdivision ROW: Sycamore Ave to Sorensen Rd) Overcrossings at Orchard Ave, Harder Rd, and Zeile Creek 	<ul style="list-style-type: none"> Orchard Ave Harder Rd Zeile Creek 	\$1,881,000
4.2	Sorensen Road	Tennyson Road	0.80	<ul style="list-style-type: none"> Class I Multi-use Pathway (UPRR Oakland Subdivision ROW: Sorensen Rd to Tennyson Rd) 	<ul style="list-style-type: none"> No existing or proposed crossings 	\$1,044,000

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Segment	From	To	Length (mi)	Recommended Design	Crossings	Segment Total Cost
4.3	Tennyson Road	Industrial Parkway	0.80	<ul style="list-style-type: none"> Class I Multi-use Pathway (UPRR Oakland Subdivision ROW: Tennyson Rd to Industrial Pkwy) Crossing at Tennyson Rd 	<ul style="list-style-type: none"> Tennyson Rd 	\$1,074,000
4.4	Industrial Parkway	Whipple Road	1.11	<ul style="list-style-type: none"> Class I Multi-use Pathway (Industrial Pkwy: Oakland Subdivision to Mission Blvd) Class I Multi-use Pathway (Mission Blvd: Blanch St to Dry Creek Class I) Crossing at Industrial Pkwy 	<ul style="list-style-type: none"> Industrial Pkwy 	\$1,362,000
5.1	Whipple Road	Decoto Road	1.26	<ul style="list-style-type: none"> Class III Bicycle Route (Whipple Rd: Cry Creek Class I to 6th St) Class III Bicycle Route (6th St: Whipple Rd to E St) Class III Bicycle Route (E St: 6th St to 11th St) Class III Bicycle Route (11th St: E St to Decoto Rd) 	<ul style="list-style-type: none"> Decoto Rd 	\$19,000
Total Construction Cost						\$22,749,000
Design Cost/PS&E (20% of Total Construction Cost)						\$4,550,000
Permitting and Environmental Clearance (15% of Total Construction Cost)						\$3,412,000
Planning Level Cost Contingency (30% of Total Construction Cost)						\$ 6,825,000
TOTAL						\$37,536,000

¹ This study assumes that the intersections will be upgraded consistent with the design guidance set forth in the City of Oakland Bicycle and Pedestrian Master Plan and Pedestrian Plan.
Summary cost figures rounded to the nearest significant figure.

Cost Estimating Methodology

The planning level cost estimating methodology used for this study is based on gross per-mile costs for the primary construction items required to develop the recommended alignments and improvements. **Table 4-2** presents frequently recurring unit costs used in the preparation of the planning level cost estimates. The unit costs are based on recently built projects in the San Francisco Bay Area.

Table 4-2: Recommended Alignment Unit Costs

Facility Type/Improvement	Summary Description	Cost
Class I Multi-use Pathway	Twelve foot wide paved surface for shared pedestrian and bicycle use; California MUTCD regulatory and wayfinding signage; minor intersection safety improvements	\$1,200,000 per mile
Class I Multi-use Pathway Barrier Separation	Barrier fencing along multi-use path immediately adjacent to roadway	\$105,000 per mile
Class III Bicycle Route	On-street bicycle wayfinding signage; on-pavement shared-use pavement arrows	\$15,000 per mile
High Visibility Crosswalks	Ladder crosswalks	\$1,000 per crosswalk
One-to-Two Way Conversion	Street restriping, traffic signal improvements	\$150,000 each
Railroad bridge fencing	Fencing along existing rail trestle or bridge	\$50 per linear foot
Rail-to-Trail Multi-use Pathway	Twelve foot wide paved surface for shared pedestrian and bicycle use; California MUTCD regulatory and wayfinding signage; minor intersection safety improvements	\$1,200,000 per mile
Rail-with-Trail Multi-use Pathway	Twelve foot wide paved surface for shared pedestrian and bicycle use; California MUTCD regulatory and wayfinding signage; minor intersection safety improvements; 6-foot fence separation between trail and active rail	\$1,200,000 per mile
N/A	Class I multi-use path annual operation and maintenance costs	\$14,000 per year per mile

The estimated total raw construction cost for the recommended alignment is \$22,749,000 dollars. The addition of design documents, permitting and environmental clearance, and a 30 percent planning level cost contingency results in a grand total of approximately \$37,536,000 not including corridor acquisition cost.

Table 4-3 presents these summary costs. The basic unit costs incorporated for each segment include the pedestrian-bicycle facility type (bike route, multi-use pathway), minor crossing improvements, major crossing improvements, rail bridge retrofit, and barrier separation where required.

Table 4-3: Recommended 18 Mile Alignment Cost

Description	Cost
Total Construction Cost	\$22,749,000
Design Cost/PS&E (20%)	\$4,550,000
Permitting and Environmental Clearance (15%)	\$3,412,000
Planning Level Cost Contingency (30%)	\$6,825,000
TOTAL	\$37,536,000

Maintenance and operation costs per year per mile for the multi-use path facilities are presented below in **Table 4-4** by corridor segment. The basic unit of cost is an estimate of \$13,900 per year per mile.

Table 4-4: Annual Maintenance and Operation Cost Estimate

Description	Cost
Oakland	\$40,000
San Leandro	\$66,000
Alameda County	\$54,000
Hayward	\$58,000
Union City	\$5,700
TOTAL	\$223,300

The following important costs are not included in these current estimates:

- Rail removal cost is not included because rails, ties and crossing equipment are valuable salvage material that the transferring railroad entity or other entity removes free of cost to the right-of-way purchaser
- Environmental clean-up and remediation costs are not included because multi-use pathway construction does not require excavation and generally requires only capping on existing rail beds.
- Intersection specific traffic engineering and spot improvements that may benefit trail users including but not limited to modification of signal timing, installation of pedestrian count-down timers, intersection approach restriping and lane configuration, and other traffic calming or crossing safety features.
- Landscaping and other amenities benefiting trail users including but not limited to benches, water fountains, and public art.

Recommended Alignment Compared to East Bay Greenway Alignment

Direct comparison of the Oakland Subdivision Corridor Improvement Study recommendations with the East Bay Greenway Concept Plan recommendations raises several important points. **Figure 4-2** graphically illustrates where the recommendations from the two studies overlap and where they are separate.

From 35th Avenue in Oakland south to the southern terminus of the East Bay Greenway Concept Plan study area at Hayward BART, there are significant differences in recommended facility types summarized in **Table 4-5**. While this Oakland Subdivision study recommends 9.0 miles of multi-use pathway, the East Bay Greenway Concept recommends 5.85 miles of multi-use pathway. Clearly, acquisition and use of the Oakland Subdivision right-of-way creates far greater opportunity for a separated multi-use pathway than does the BART and public street right-of-way project corridor defined by the East Bay Greenway. **Table 4-6** summarizes and compares the recommended facilities over the entire length of the Oakland Subdivision Corridor Improvement Study area, illustrating the obvious point that with a longer corridor, yet more continuous multi-use pathway mileage can be achieved.

Chapter 5 Action Plan, highlights strategies for integrating analysis of the recommendations of this Oakland Subdivision Study into the forthcoming East Bay Greenway environmental analysis to be led by ACTIA.

The narrative discussion of each segment below includes more detailed discussion of the relationship between this study’s recommendations and the East Bay Greenway Concept Plan.

Table 4-5: Facility Comparison 35th Avenue to Hayward BART

Facility Type	UPRR Oakland Subdivision Recommend Alignment (miles)	East Bay Greenway Preferred Route Alignment (miles)
Class I Multi-use Pathway	9.05	5.85
Class II Bicycle Lane	0.18	3.59
Class III Bicycle Route	1.44	2.14
Total Miles	10.67	11.58

Table 4-6: Facility Comparison 35th Avenue to Union City Intermodal Station

Facility Type	UPRR Oakland Subdivision Recommend Alignment (miles)	East Bay Greenway Preferred Route Alignment (miles)
Class I Multi-use Pathway	16.90	5.85
Class II Bicycle Lane	0.18	3.59
Class III Bicycle Route	1.31	2.14
Total Miles	18.39	11.58

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Figure 4-2: Recommended Alignment Compared to East Bay Greenway Alignment

Map 1: Oakland

Map 1 covers the area of Oakland from the Fruitvale BART Station south to 105th Avenue near the San Leandro Border. **Figure 4-3** presents the recommended project alignment in Oakland.

The Oakland segments are surrounded by a mix of industrial, commercial and residential land uses. There are few park and open space areas and limited pedestrian and bicycle facilities. Local residents must rely on transit or private vehicles to access regional open space on the Bayshore or in the East Bay Hills.

Pursuant to this study's goals to investigate the feasibility of a multi-use path in the Oakland Subdivision, rail-with-trail and rail-to-trail scenarios were investigated. Rail-with-trail is not a likely option between 47th and 98th Avenues for numerous reasons, including lack of sufficient setback and crossing issues. The Oakland Subdivision is not immediately adjacent to San Leandro Street. Corridor distance from intersections poses crossing and safety issues and mid-block crossings may cause circulation problems. A rail-to-trail scenario in the Oakland subdivision provides the same crossing and circulation issues.

Alignment alternatives to the Oakland Subdivision include facilities proposed in the City of Oakland Bicycle Plan: Class II bike lanes on San Leandro Street and the East Bay Greenway multi-use path along San Leandro Street. Installation of either facility would preclude the other and each has its own opportunities and challenges.

Bike lanes and multi-use paths may serve different users. Bike lanes often serve confident bicyclists who may travel for sport or commuting. Multi-use paths may serve bicyclists who are not comfortable traveling near traffic and ride for recreational and utilitarian trips. Paths also serve both bicycles and pedestrians while lanes do not.

Both facility types also have design challenges. Bike lanes require less right-of-way however can result conflict between bicyclists and buses. This portion of the corridor includes the Fruitvale and Coliseum BART stations, both of which are served by numerous AC Transit routes. Multi-use paths do not pose conflict with transit however; paths have limited access to the opposite side of the street and pose unique intersection crossing challenges.

Given this study's goals, the following recommended segment alignments are Class I multi-use paths, where there is available right-of-way. Both facilities have been reviewed by the public through the adoption of the Oakland Bicycle Plan and outreach conducted during the development of the East Bay Greenway Concept Plan. The City of Oakland will determine the final alignment. The estimated annual operations and maintenance cost for the Class I facilities in Oakland is \$40,000.

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Figure 4-3: Proposed Map 1 Alignment - Oakland

Segment 1.1: 35th Avenue to 37th Avenue

Summary

Segment 1.1 is immediately adjacent to the Fruitvale BART Station and is surrounded by the Fruitvale Transit Village, a mixed-use transit-oriented development. This segment is subject to several constraints including lack of available right-of-way precluding development of a trail. The right-of-way is occupied by the BART station parking lot where the UPRR rail lines have been removed.

Despite the lack of unoccupied right-of-way, the area is rich in supportive amenities. The adjacent land uses include residential neighborhoods, transit-oriented development, the Fruitvale commercial district, and light industrial. The surrounding area is at the heart of the development of the pedestrian oriented Fruitvale Transit Village, as potential attractor and generator for the trail. The transit village would tie into the development of the corridor as a multi-use trail serving as a recreational and transportation corridor.

Parallel alignment options include East 12th and San Leandro Streets. The City of Oakland Bicycle Plan identifies the East Bay Greenway along San Leandro Street from Fruitvale Avenue to the San Leandro border as a priority project. The City of Oakland Bicycle Master Plan also includes a Class III bike route along East 12th Street. The East 12th Street route is the City's preferred alternative.

Alternatives on the Oakland Subdivision alignment are not feasible because the railroad right-of-way has been abandoned and is occupied by industrial and storage uses. San Leandro Street was considered as an alignment but peak hour and average daily vehicle volumes suggest that adding bicycle lanes by removing travel lanes may not be feasible. A shared lane treatment is not recommended given the traffic volumes and speeds on this truck route.

Alignment Recommendations

The recommended alignment option in Segment 1.1 is a Class III bike route on E. 12th Street from 35th Avenue to 37th Avenue (**Figure 4-4**). This alignment is a Class 3A arterial bike route proposed bikeway in the Oakland Bicycle Master Plan.

Crossings

The proposed alignment is on-street and this study assumes that the intersections will be upgraded consistent with the design guidance set forth in the City of Oakland Bicycle Master Plan and Pedestrian Master Plan.

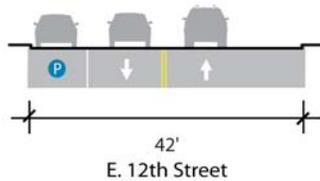
Planning-Level Cost Estimate

Table 4-7 summarizes the cost estimates for the recommended alignment in Segment 1.1. The cost estimate includes the implementation of a Class III bike route on East 12th Street.

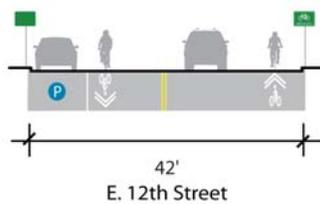
Table 4-7: Segment 1.1 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class III	East 12 th Street	35 th Avenue	37 th Avenue	0.12	\$2,000

EXISTING



PROPOSED ALIGNMENT



Notes:
1. Property ownership/ROW varies significantly through the corridor and the sketch is a representation of typical dimensions.
2. All dimensions presented are accurate for conceptual design and planning purposes only.
3. Section faces north.

Figure 4-4: Segment 1.1 Proposed Alignment

Segment 1.2: 37th Avenue to 47th Avenue

Summary

Segment 1.2 is defined by industrial land uses and occupied right-of-way. The at-grade freight tracks have been removed. Rail operations here are limited to BART, which operates on elevated tracks. The corridor is adjacent to the Fruitvale BART Station, the Fruitvale Commercial District, and nearby residential communities; all of which generate and attract pedestrians and bicycle trips.

The constraints in Segment 1.2 include available right-of-way, adjacent industrial land uses, and functional trail characteristics. In this segment, the corridor runs through the interior of many blocks and provides little opportunity to use the right-of way. The right-of-way between 37th and 39th Avenues is occupied by Ascend Academy. The remainder of the corridor is intermittently occupied by industrial uses. The UPRR Oakland Subdivision corridor crosses over the trestle bridge at 42nd Street.

The block lengths, frequent crossings, and mid-block location limit the feasibility of the UPRR Oakland Subdivision and BART right-of-way as a multi-use path alignment. The East Bay Greenway’s preferred route for Segment 1.2 is a Class II bike lane on San Leandro Street. San Leandro Street was considered as an alignment but peak hour and average daily vehicle volumes

suggest that adding bicycle lanes by removing travel lanes may not be feasible. A shared lane treatment is not recommended given the traffic volumes and speeds on this truck route. The Oakland Bicycle Plan identifies the East Bay Greenway as a priority project and also identifies a proposed Class III bike route (Class 3A arterial bike route) on East 12th Street. The City of Oakland recently striped a Class II bike lane on East 12th between 37th and 40th Streets.

Alignment Recommendations

A continuation of the Segment 1.1 Class III bike route on East 12th Street is recommended for Segment 1.2 (**Figure 4-5**) where there is no existing Class II bike lane. This recommendation includes a one-to-two way conversion of East 12th Street between 40th Avenue and High Street. The Oakland Bicycle Master Plan identifies a Class 3A arterial bike route on this segment.

Crossings

The proposed alignment is on-street and this study assumes that the intersections will be upgraded consistent with the design guidance set forth in the City of Oakland Bicycle Master Plan and Pedestrian Plan. Traffic signal improvements will be necessary at East 12th Street and High Street due to the one-to-two way conversion.

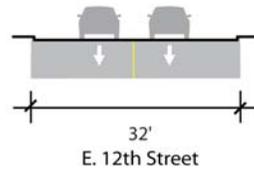
Planning-Level Cost Estimate

Table 4-8 summarizes the cost estimates for the recommended alignment in Segment 1.2. The cost estimate includes the implementation of a Class III bike route on East 12th Street and a one-to-two way conversion with signal improvement on East 12th Street between 40th Avenue and High Street.

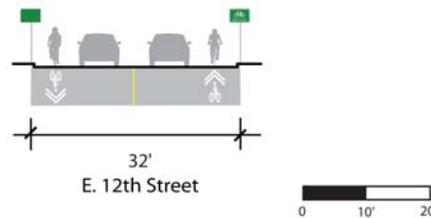
Table 4-8: Segment 1.2 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class III	East 12 th Street	37 th Avenue	47 th Avenue	0.60	\$12,000
One-to-two way conversion	East 12 th Street	40 th Avenue	High Street	0.20	\$150,000
				Total	\$162,000

EXISTING



PROPOSED ALIGNMENT



Notes:
1. Property ownership/ROW varies significantly through the corridor and the sketch is a representation of typical dimensions.
2. All dimensions presented are accurate for conceptual design and planning purposes only.
3. Section faces north.

Figure 4-5: Segment 1.2 Proposed Alignment

Segment 1.3: 47th Avenue to Seminary Avenue

Summary

Segment 1.3 is surrounded primarily by industrial uses with surface automobile parking, no nearby open space access, and few bicycle and pedestrian opportunities. The industrial uses to the east of the corridor include large industrial buildings and storage yards. These industrial facilities may be an access barrier for the residential communities to the east. Like many neighborhoods along the Study Corridor, this area does not meet MTC's Lifeline transit service objectives designed to ensure low-income families, seniors, and youth have access to transit when and where it is needed.

The primary opportunities in this segment include long block lengths and limited roadway crossings, making this segment conducive to a regional trail. There are no existing bikeways within the immediate vicinity of the corridor. The City of Oakland Bicycle Master Plan recommends north/south facilities including the East Bay Greenway and a Class III route (Class 3A arterial bike route) on East 12th Street. A proposed Class 3B bicycle boulevard on 54th Avenue would provide an east/west connector.

Key constraints on this segment include at-grade rail operations begin at 47th Avenue where a spur from the Niles Subdivision connects to the Oakland Subdivision. In this segment, the Oakland subdivision has two at-grade tracks. There are no known current freight customers on this segment but freight operations do serve customers further south.

The City of Oakland's Bicycle Plan includes both a Class II bicycle lane on San Leandro Street and the East Bay Greenway's Class I multi-use path in the BART ROW (between 54th Avenue and

Seminary Avenue). The installation of either facility would preclude the other, each may serve different users and each facility type provides its own design challenges.

Alignment Recommendations

The recommended alignment begins as a Class III bike route (Class 3A arterial bike route) on East 12th Street between 47th Avenue and 54th Avenue (**Figure 4-6**). This alignment follows a route proposed in the Oakland Bicycle Master Plan. The recommended alignment then continues on 54th Avenue as a Class III bike route to a Class I multi-use path on the western BART ROW adjacent to San Leandro Street (**Figure 4-7**). This Class I facility is the East Bay Greenway preferred route and will serve both bicyclists and pedestrians.

The curb-to-curb width of San Leandro Street from 54th Avenue to Seminary Avenue is 52-feet and includes four travel lanes and curb-side parking on the west. Removal of on-street parking will allow the construction of the Class I multi-use path.

Crossings

The proposed alignment is a combination of an on-street and a multi-use pathway in close parallel to existing San Leandro Street. The on-street bicycle route and Class I pathway do not require special crossing considerations or costs. It is assumed that the Class I pathway segments will cross intersecting streets at existing pedestrian crossings at existing intersections.

Planning-Level Cost Estimate

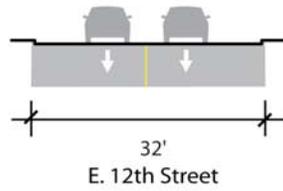
Table 4-9 presents planning level cost estimates for the recommended Class I and Class III bikeways in Segment 1.4. The cost estimate includes the implementation of Class III bike routes on East 12th Street and 54th Avenue, and a Class I multi-use path along San Leandro Street.

Table 4-9: Segment 1.4 Cost Estimates

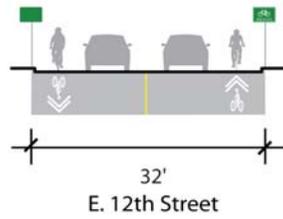
Facility Type	Route	From	To	Length (miles)	Cost
Class III	East 12 th St.	47 th Ave.	54 th Av.	0.35	\$5,000
Class III	54 th Ave.	E. 12 th St.	San Leandro St.	0.15	\$2,000
Class I	San Leandro St.	54 th Ave.	Seminary Ave.	0.35	\$457,000
				Total	\$464,000

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PROJECT RECOMMENDATIONS

EXISTING



PROPOSED ALIGNMENT

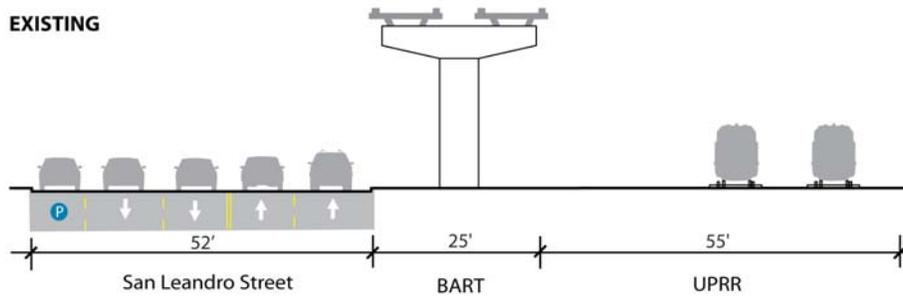


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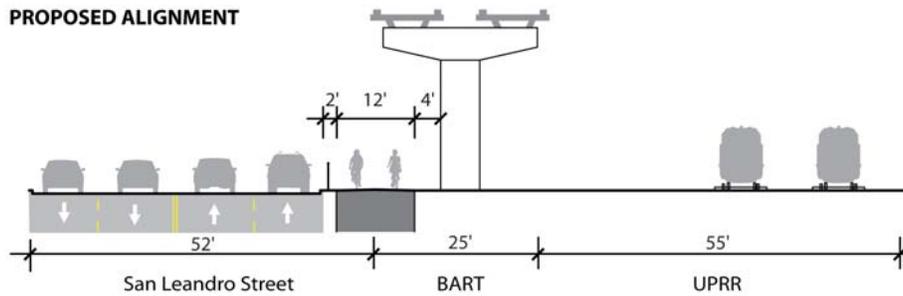
1. Property ownership/ROW varies significantly through the corridor and the sketch is a representation of typical dimensions.
2. All dimensions presented are accurate for conceptual design and planning purposes only.
3. Section faces north.

Figure 4-6: Proposed Segment 1.3 Alignment North of 54th Avenue

EXISTING



PROPOSED ALIGNMENT



Notes:

1. Property ownership/ROW varies significantly through the corridor and the sketch is a representation of typical dimensions.
2. All dimensions presented are accurate for conceptual design and planning purposes only.
3. Section faces north.

Figure 4-7: Proposed Segment 1.3 Alignment South of 54th Avenue

Segment 1.4: Seminary Avenue to 81st Avenue

Summary

Segment 1.4 is surrounded by mixed-use transit oriented development to the east and industrial uses to the west and in close proximity to existing Bay Trail segments. The corridor is adjacent to the elevated BART tracks and runs parallel to San Leandro Street. The Coliseum BART Station, McAfee Coliseum and the Oracle Arena are all located immediately adjacent to the Oakland Subdivision.

As in the previous segment, there are existing rail operations. BART operates on elevated tracks while two freight rail tracks operate at grade. An active rail spur between 77th and 81st Avenues serves freight customers east of the corridor. The corridor is currently fenced in and adjacent to the back of buildings on the eastern edge from Seminary Avenue to approximately 69th Avenue. Between the Coliseum BART Station and 81st Avenue, the corridor is fenced in from the BART tracks to the industrial buildings.

This segment, in terms of block length and number of crossings, is conducive to a regional trail corridor. The block lengths are long and there are few roadway crossings.

The adjacent land uses, specifically the existing and planned transit oriented development near the Coliseum BART Station provide potential users for the trail; however, the existing TOD development walls off the corridor. Proposed bikeways include three east/west connections via 66th Avenue, Hegenberger Road, and 75th Avenue.

The East Bay Greenway's preferred route is a multi-use path parallel to San Leandro Street. This pathway would occupy BART property and City of Oakland street right-of-way. At the Coliseum BART Station, the preferred East Bay Greenway alignment is routed on-street to a proposed Class III bike route east of the Station on Snell Street and back onto a multi-use path in the BART right-of-way. The Oakland Bicycle Plan identified this same concept as a priority project; however it does not include the Snell Street diversion. The Oakland Bicycle Plan also includes a Class II bike lane on San Leandro Street. As in Segment 1.3, the installation of either facility would preclude the other, each may serve different users and each facility type provides its own design challenges.

Alignments considered included a path within the UPRR Oakland Subdivision right-of-way and an on-street facility, however they were determined to not meet the project goals. It is likely the Oakland Subdivision right-of-way will have active short-haul freight activity creating setback challenges. Additionally, the Oakland Subdivision right-of-way is not adjacent to intersections and would pose crossing challenges. A bicycle lane on San Leandro Street is an option however; a multi-use path serves both bicyclists and pedestrians.

Alignment Recommendations

The alignment recommendation for Segment 1.4 (**Figure 4-8**) is a continuation of the Class I multi-use path from Segment 1.3 on the western BART property adjacent to San Leandro Street south to 69th Avenue. At 69th Avenue, the alignment will go around the Coliseum BART Station and continue as a Class III bike route on 69th Avenue, to Snell Street, to 75th Avenue. A Class I multi-use path continues along the western boundary of the BART right-of-way adjacent to San Leandro

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Street to 81st Avenue. This alignment will allow path users to access BART by the station underpass on Snell Street.

The curb-to-curb width of San Leandro Street on this segment is 76-feet and includes four travel lanes, a center turn lane, and on-street curb-side parking on the west. Reallocation of this width and lane configuration allows for the construction of the Class I multi-use path.

Crossings

Table 4-10 outlines the four roadway crossings in Segment 1.4 and the recommended improvements with associated costs.

Table 4-10: Segment 1.4 Crossings

Crossing Location	Type	Notes	Improvements	Cost
Seminary Avenue (key crossing)	Roadway, at grade	Path directed to intersection	High Visibility Crosswalk	\$1,000
66th Avenue (key crossing)	Roadway, at grade	Path directed to intersection	High Visibility Crosswalk	\$1,000
69th Avenue	Roadway, at grade	Path directed to intersection	High Visibility Crosswalk	\$1,000
75th Avenue	Roadway, at grade	Path directed to intersection	High Visibility Crosswalk	\$1,000

Planning-Level Cost Estimate

Table 4-11 summarizes the cost estimates for the recommended alignment in Segment 1.4. The cost estimate includes the implementation of Class III bike routes on 69th Avenue, Snell Street and 75th Avenue as well as a Class I on San Leandro Street. The recommended high visibility crosswalks are also included in the cost estimate.

Table 4-11: Segment 1.4 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class I	San Leandro St.	Seminary Ave.	69 st Ave.	0.85	\$1,123,000
Class III	69 th Ave.	San Leandro St.	Snell St.	0.15	\$1,000
Class III	Snell St	66 th Ave.	75 th Ave.	0.35	\$4,000
Class III	75 th Ave	Snell St.	San Leandro St.	0.15	\$450
Class I	San Leandro St.	75 th Ave.	81 st Ave.	0.25	\$326,000
Crosswalks					\$4,000
				Total	\$1,458,000

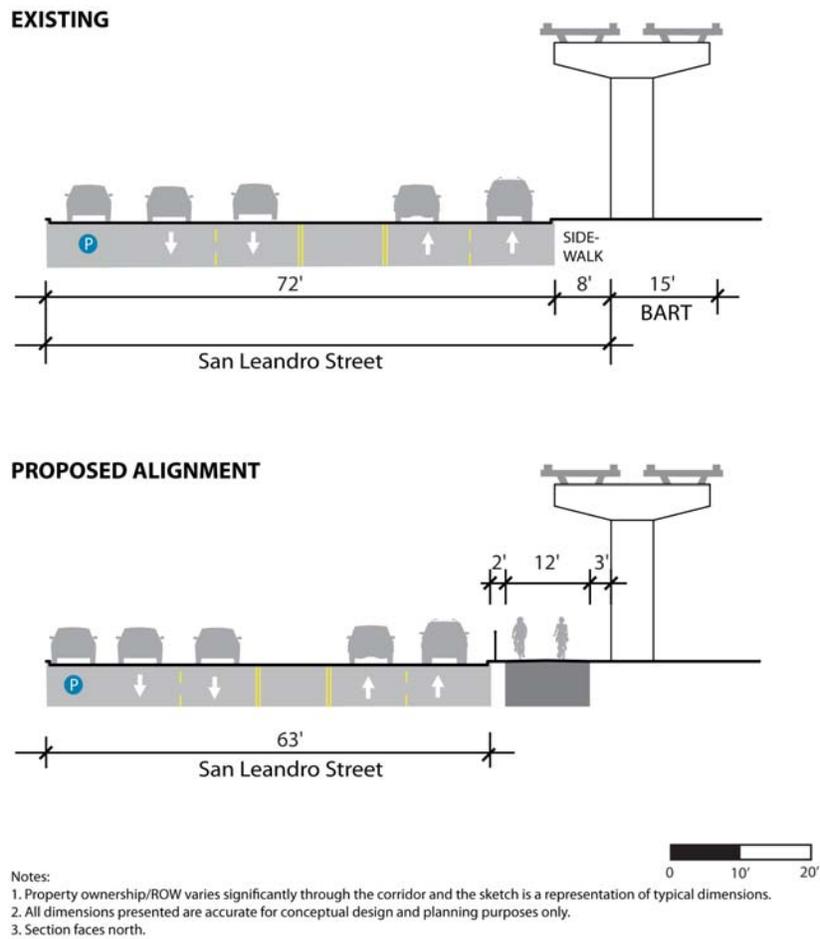


Figure 4-8: Proposed Segment 1.4 Alignment

Segment 1.5: 81st Avenue to 105th Avenue

Summary

Segment 1.5 is immediately surrounded by commercial and industrial uses with surface automobile parking. Single family residential neighborhoods are located east of the existing commercial and industrial properties and immediately border the southern end of this segment. The right-of-way is occupied by elevated BART tracks and runs parallel to San Leandro Street.

Opportunities in this segment include available right-of-way and functional suitability for a regional trail facility. The total right-of-way in this segment is approximately 72 feet. The block lengths are long and there are few roadways crossings making it conducive to a regional trail. A proposed east/west connector bicycle facilities includes a Class III route (3A arterial) on 85th and Avenue.

Segment 1.5 constraints include rail operations, adjacent land uses, and potential crossing conflict with at-grade rail spurs. Rail operations in this segment include BART (elevated), two at-grade tracks, and three at grade rail spurs. Between 81st and 85th Avenues, an at-grade spur turns east from the UPRR tracks. South of 85th Avenue, a spur turns west and crosses San Leandro Street. Finally,

between 92nd and 98th Avenues another spur turns west and crosses San Leandro Street into the Oakland Foreign Trade Zone.

As in the previous two segments, the City of Oakland’s Bicycle Plan includes both a Class II bicycle lane on San Leandro Street and a Class I multi-use path in the BART ROW. The installation of either facility would preclude the other, each may serve different users and each facility type provides its own design challenges.

Alternatives including a continuous path within the UPRR right-of-way and an on-street bicycle lane were considered, however they were determined to not be feasible. It is likely the UPRR right-of-way will have active short-haul freight activity to 98th Avenue and recommended setbacks may not be feasible. A bicycle lane on San Leandro Street is an option however; a multi-use path will serve both bicyclists and pedestrians.

Alignment Recommendations

A continuation of the Class I multi-use path on the western BART ROW adjacent to San Leandro Street is recommended from 81st Avenue south to 100th Avenue (**Figure 4-9**) where it would cross under the elevated BART tracks to the UPRR Oakland Subdivision right-of-way. As discussed in **Chapter 2**, this study assumes freight rail service will not continue south of 98th Avenue.

Crossings

Table 4-12 outlines the five roadway crossings in Segment 1.5 and the recommended improvements with associated costs.

Table 4-12: Segment 1.5 Crossings

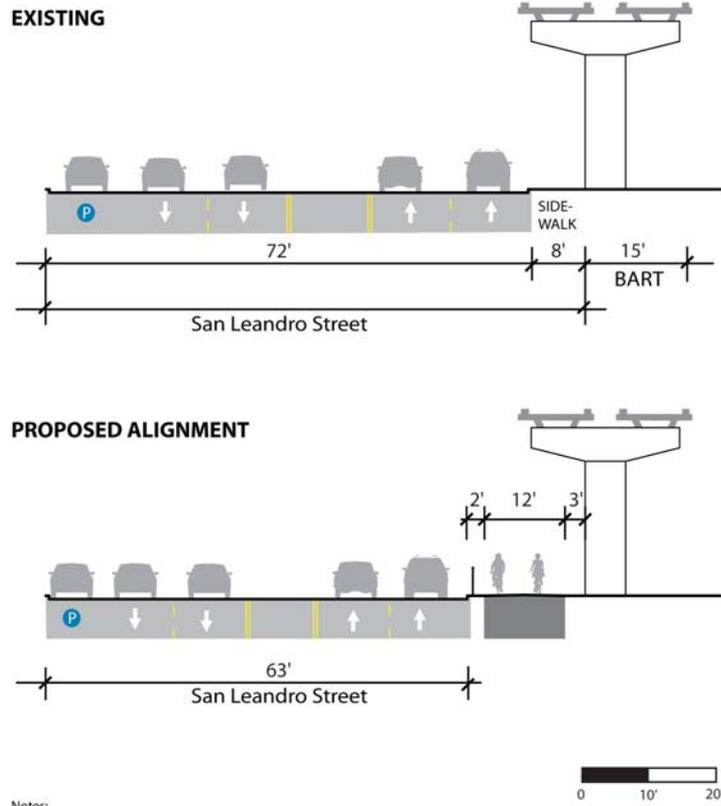
Crossing Location	Type	Notes	Improvements	Cost
81st Avenue	Roadway, at grade	Path directed to intersection	High Visibility Crosswalk	\$1,000
83rd Avenue	Roadway, at grade	Path directed to intersection	High Visibility Crosswalk	\$1,000
85th Avenue (key crossing)	Roadway, at grade	Path directed to intersection	High Visibility Crosswalk	\$1,000
92nd Avenue (key crossing)	Roadway, at grade	Path directed to intersection	High Visibility Crosswalk	\$1,000
98th Avenue (key crossing)	Roadway, at grade	Path directed to intersection	High Visibility Crosswalk	\$1,000

Planning-Level Cost Estimate

Table 4-13 summarizes the cost estimates for the recommended alignment in Segment 1.5. The cost estimate includes the implementation of a Class I multi-use path on San Leandro Street and five intersection crossing improvements.

Table 4-13: Segment 1.5 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class I	San Leandro St.	81 st Ave	105 th Ave.	1.40	\$1,828,000
Crosswalks					\$5,000
				Total	\$1,833,000



Notes:
 1. Property ownership/ROW varies significantly through the corridor and the sketch is a representation of typical dimensions.
 2. All dimensions presented are accurate for conceptual design and planning purposes only.
 3. Section faces north.

Figure 4-9: Proposed Segment 1.5 Alignment

Map 2: San Leandro

Map 2 begins at 105th Avenue in Oakland and continues to the Bay Fair BART Station in San Leandro. The San Leandro segments are surrounded primarily by single-family homes with occasional commercial and industrial uses. The corridor has no parks between 105th Avenue and the San Leandro BART Station, a predominantly residential area with low incomes and limited vehicle access. Most residents near the corridor must use transit or private vehicles to access open space and park facilities. The pedestrian and bicycle network adjacent to the corridor is limited. Most bikeways connect residents to downtown San Leandro while bikeways near the Bay Fair BART Station are limited.

Figure 4-10 presents the recommended project alignment in San Leandro. Due to the likelihood that there will be no freight rail in San Leandro, a rail-to-trail on the Oakland Subdivision is recommended between 105th Avenue and Hesperian Boulevard. The estimated annual operations and maintenance cost for the Class I facilities in San Leandro is \$66,000.

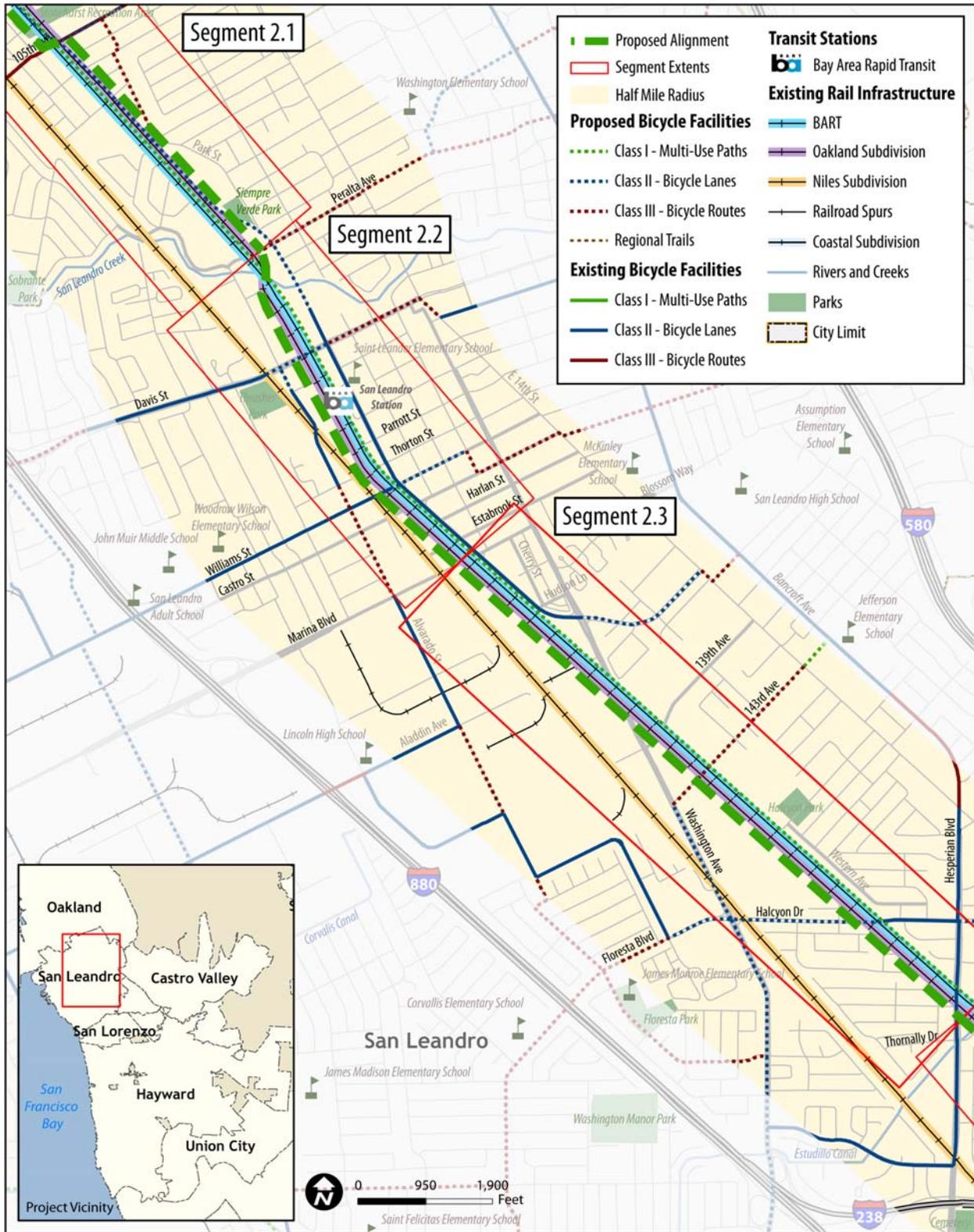


Figure 4-10: Proposed Map 2 Alignment - San Leandro

Segment 2.1: 105th Avenue to Peralta Avenue

Summary

Segment 2.1 is predominantly bordered by single and multifamily residential communities with some commercial and industrial frontage. The segment includes elevated BART tracks and runs parallel to San Leandro Street. At 105th Avenue, San Leandro Street switches to the eastern side of the UPRR right-of-way. Russet Street bounds the corridor to the west as far south as Moorpark Street.

Opportunities in this segment include limited rail operations, available right-of-way, adjacent land uses and functional characteristics conducive to a regional trail. Segment 2.1 has no at-grade rail spurs. According to the City of San Leandro staff, there is only one freight customer in the city in Segment 2.3. The right-of-way, occupied by elevated BART tracks on the western edge of the corridor and one at-grade rail track, is approximately 80 feet in total width and is owned by the UPRR. Adjacent land uses include single- and multi-family residential communities and commercial and industrial between San Leandro Boulevard and Park Street.

At-grade roadway crossings of this right-of-way occur only at the beginning and end of the segment. Proposed bikeways include parallel facilities on E Street and San Leandro Boulevard. The City of San Leandro Bicycle Plan proposes a Class I bikeway along the BART corridor.

The constraints in Segment 2.1 include the industrial use at Moorpark and Russet Streets. This facility may have rail service and have operations that cross the right of way from the tracks on the east to the facility on the west. Additionally, the corridor lacks connectivity to the residential community to the east. The corridor runs parallel to San Leandro Street, a four-lane roadway. The only connections are at 105th and Peralta Avenues.

The East Bay Greenway's preferred route is a multi-use path on the western edge of San Leandro Boulevard, adjacent to the UPRR ROW. The Oakland Bicycle Plan also includes a Class II bike lane on San Leandro Boulevard.

Alignment Recommendations

A continuation of the Class I multi-use path across 105th Avenue to Peralta Avenue is recommended for Segment 2.1 (**Figure 4-11**). It is also recommended that a new signalized midblock crossing be installed at 105th Avenue and Russet Street for crossing ease and safety.

Alternatives including a continuous path within the BART right-of-way and an on-street facility were considered, however the UPRR right-of-way is recommended based on its consistency with the design criteria and study goals. The BART right-of-way was considered but access and available right-of-way make the UPRR Oakland Subdivision a more functional alignment. Russet Street, an on-street option, parallels the corridor but is not continuous. An on-street bikeway San Leandro Boulevard is infeasible due to the west to east roadway undercrossing.

Crossings

Table 4-14 outlines the roadway crossing in Segment 2.1 and the recommended improvements with associated costs.

Table 4-14: Segment 2.1 Crossings

Crossing Location	Type	Notes	Improvements	Cost
105th Avenue	Roadway, at grade	New mid-block crossing	Traffic Signal High Visibility Crosswalk	\$300,000 \$1,000

Planning-Level Cost Estimate

Table 4-15 summarizes the cost estimates for the recommended alignment in Segment 2.1. The cost estimate includes the implementation of a Class I multi-use path in the UPRR Oakland Subdivision right-of-way as well as a traffic signal and crosswalk at 105th Avenue.

Table 4-15: Segment 2.1 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class I	UPRR Oakland Subdivision	105 th Ave	Peralta Ave	1.70	\$2,220,000
Traffic Signal					\$300,000
Crosswalk					\$1,000
				Total	\$2,521,000

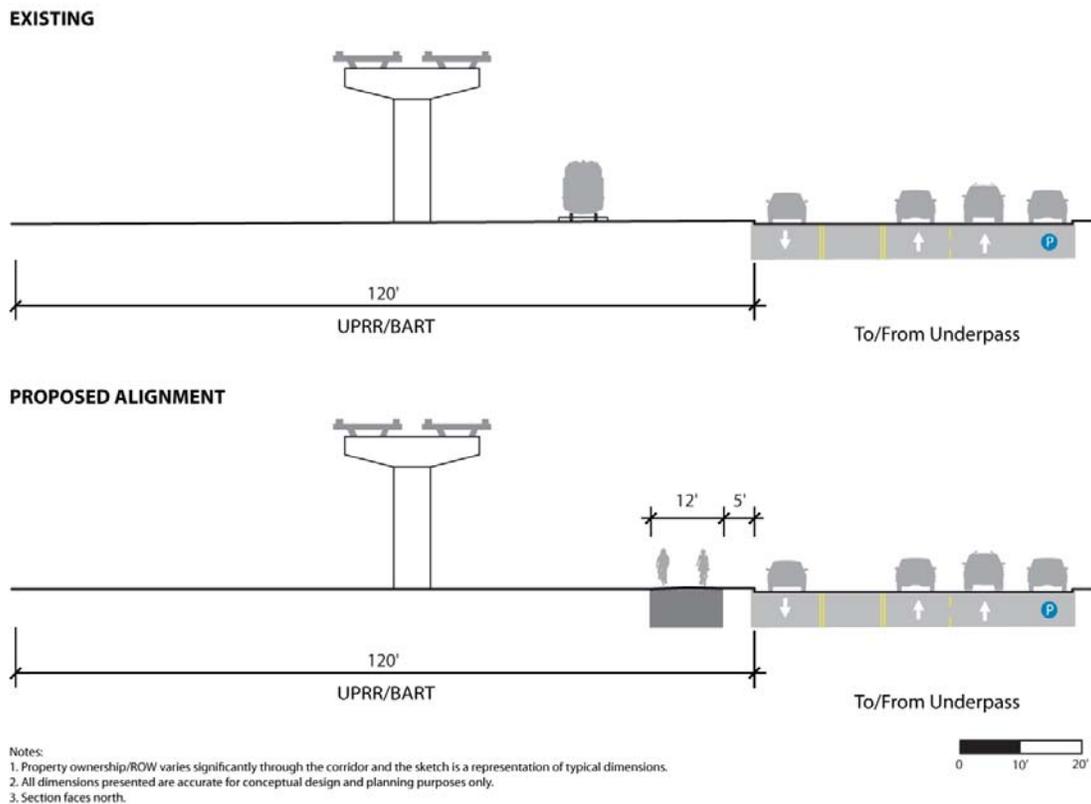


Figure 4-11: Proposed Segment 2.1 Alignment

Segment 2.2: Peralta Avenue to Marina Boulevard

Summary

Segment 2.2 is located in downtown San Leandro and is part of the Downtown San Leandro Transit-Oriented Development Strategy. The San Leandro BART Station and surface parking occupies much of this segment. Adjacent to the corridor is downtown commercial, retail, and multi-family and single-family residential land uses. The segment includes the elevated BART tracks which are on the eastern side of the right-of-way in the northern portion and the western side of the right-of-way in the south. The corridor runs parallel to San Leandro Street and contains a single freight track.

Primary opportunities along this segment include limited rail operations, available right-of-way, and supportive adjacent land uses. The total right-of-way width is approximately 85 feet and owned by the UPRR. It holds elevated BART tracks and one at-grade rail track. Adjacent land uses, including the transit-oriented areas surrounding the San Leandro BART Station, are conducive to generating potential trail users.

The San Leandro Bicycle Plan identifies existing and proposed bikeways along this segment. East/west connections are located on Peralta Avenue, Davis Street, and Williams Street. North/South routes (both existing and proposed) include a Class II bicycle lane on San Leandro Boulevard and a Class II/III bikeway on Alvarado Street. A Class I bikeway is proposed along the BART corridor.

Segment 2.2 constraints include the crossing of the UPRR tracks from the eastern to western edge of the right-of-way, a creek crossing, and numerous at-grade street crossings coupled with short block segments. Between Peralta Avenue and Antonio Street the layout of the right-of-way changes. The at-grade tracks switch from the eastern to western edge of the corridor. This switch will pose a constraint for trail users to cross as there is no at-grade crossing legally existing. Near this switch there is a grade-separated crossing over San Leandro Creek.

Finally, the short block lengths and many roadway crossings present a functional challenge for bicyclists on what is envisioned as a regional trail. There are nine roadway or parking facility crossings in this segment, creating potential points of conflict. Two of the roadway crossings, Williams Street and Castro Street, include roadway crossings with slip turn lanes.

The East Bay Greenway's preferred route is the existing Class II bike lanes on San Leandro Boulevard.

Alignment Recommendations

A Class I multi-use path is recommended along the Oakland subdivision right-of-way (**Figure 4-12**). The Oakland Subdivision right-of-way crosses from the eastern side of the BART tracks to the west. The recommended path would cross under the elevated BART tracks to from the eastern side to the western side. It will continue along the western side of the Oakland subdivision to Marina Boulevard.

Alternatives including a continuous path within the BART right-of-way and an on-street facility were considered, however the UPRR right-of-way was determined to be the recommended option. The

BART right-of-way was considered but access and available right-of-way make the UPRR Oakland Subdivision a more functional alignment. San Leandro Boulevard parallels the corridor but an on-street facility would require the removal of travel lanes and create conflicts with transit. An on-street bikeway San Leandro Boulevard is an option however; a multi-use path is preferred over an on-street facility.

Crossings

Table 4-16 outlines the nine crossings in Segment 2.2 and the recommended improvements with associated costs.

Table 4-16: Segment 2.2 Crossings

Crossing Location	Type	Notes	Improvements	Cost
Peralta Ave (key crossing)	Roadway, at grade	Uncontrolled crossing	High Visibility Crosswalk	\$1,000
Davis Street (key crossing)	Roadway, at grade	New signal controlled mid-block crossing	Traffic Signal High Visibility Crosswalk	\$300,000 \$1,000
Parrott Street	Roadway, at grade	Stop-controlled intersection	High Visibility Crosswalk	\$1,000
Thornton Street	Roadway, at grade	Uncontrolled intersection	High Visibility Crosswalk	\$1,000
Williams Street (key crossing)	Roadway, at grade	Route path to intersection	High Visibility Crosswalk	\$1,000
Castro Street (key crossing)	Roadway, at grade	Route path to intersection	High Visibility Crosswalk	\$1,000
Harlan Street (key crossing)	Roadway, at grade	Route path to intersection	High Visibility Crosswalk	\$1,000
Estabrook Street (key crossing)	Roadway, at grade	Route path to intersection	High Visibility Crosswalk	\$1,000
San Leandro Creek	Creek	Convert existing crossing for bicycle and pedestrian access; Install railing	Railing	\$8,000

Planning-Level Cost Estimate

Table 4-17 presents planning level cost estimates for the recommended Class I multi-use path and crossings in Segment 2.2. The estimate includes the crossing improvements listed in **Table 4-16**.

Table 4-17: Segment 2.2 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class I	UPRR Oakland Subdivision	Peralta Ave	Marina Blvd	1.25	\$1,632,000
Traffic Signal					\$300,000
Crosswalks					\$7,000
Creek Crossing					\$8,000
				Total	\$1,947,000

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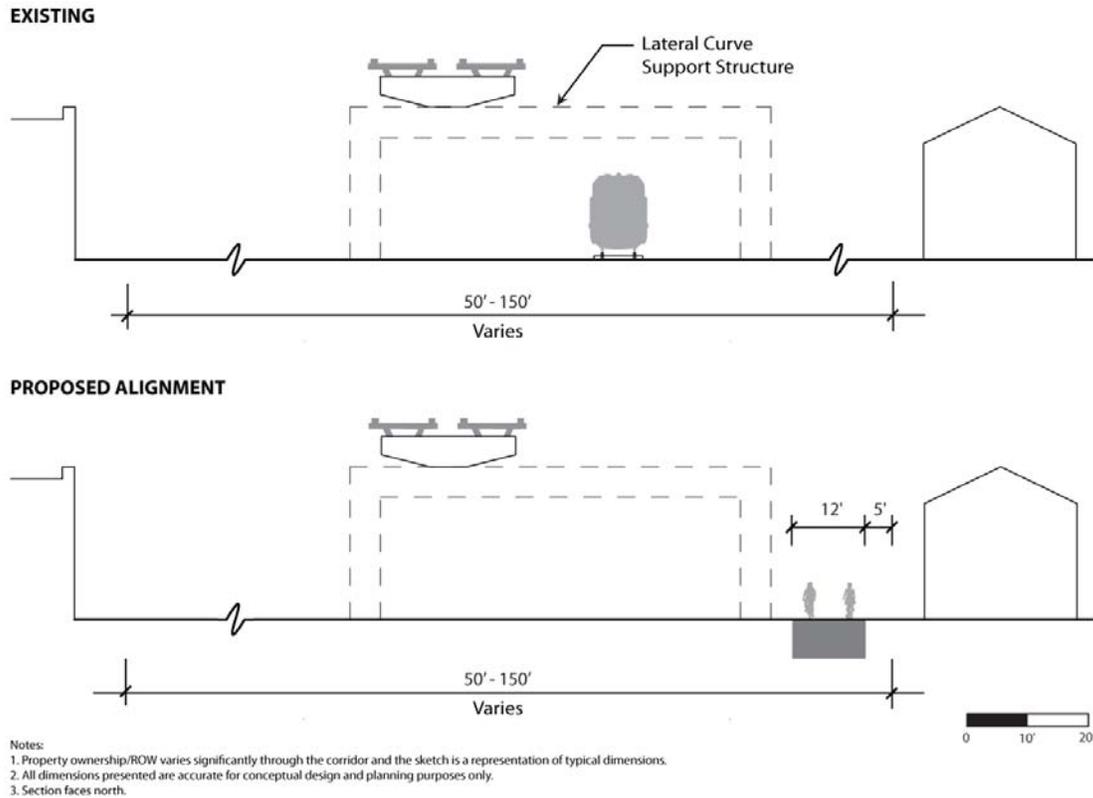


Figure 4-12: Proposed Segment 2.2 Alignment

Segment 2.3: Marina Boulevard to Hesperian Boulevard

Summary

Segment 2.3 (**Figure 4-13**) is bound by industrial uses as well as single-family and multi-family homes. At the northern edge of the segment, San Leandro Street discontinues its parallel path to the corridor. There are no roadways immediately parallel to the corridor.

The opportunities along this segment include limited rail operations and available right-of-way. BART operates on elevated tracks and occupies the eastern edge of the corridor. Discussions with San Leandro City staff revealed only one potential freight customer, Preferred Freezer, served by at-grade rail in this segment. Preferred Freezer is currently constructing a new cold storage facility on Polar Way just east of the Oakland Subdivision. The total right-of-way width is approximately 80 feet. UPRR owns the majority of the corridor; however, the City of San Leandro owns a portion on the eastern edge for part of the segment. Near 147th Avenue, BART owns a portion of the corridor on the eastern edge.

Segment 2.3 constraints include potentially incompatible land uses and complex roadway crossings. Industrial land uses, bordering both the eastern and western edges of the corridor block access the corridor for the nearby residential communities. Though the segment is long compared to others in the study corridor, there are five roadway crossings, one of which is grade-separated. The corridor crosses over Washington Avenue where a bridge would be required for trail users. At Marina

Boulevard, the corridor crosses over six travel lanes, two of which are slip turn lanes. Additionally, the crossing at Halcyon Drive is angled.

There are three recommended bikeways connecting to the corridor including a Class II bike lane on San Leandro Boulevard, a proposed Class III route on 143rd Avenue, and a Class II bike lane on Halcyon/Fairmont Drive. Each of these facilities is shown in **Figure 4-13**. The East Bay Greenway’s preferred route is a multi-use path on the western edge of the UPRR ROW.

Alignment Recommendations

The recommended route through Segment 2.3 (**Figure 4-13**) is a continuation of a Class I multi-use path in the Oakland Subdivision right-of-way. This alignment has available right-of-way and provides continuity between segments.

This study analyzed alignment alternatives within the BART right-of-way and an on-street facility, however the UPRR right-of-way was selected based on consistency with the study goals and design criteria.

Crossings

Table 4-18 outlines the crossings in Segment 2.3 and the recommended improvements with associated costs.

Table 4-18: Segment 2.3 Crossings

Crossing Location	Type	Notes	Improvements	Cost
Marina Boulevard (key crossing)	Roadway, at grade	Route path to intersection	High Visibility Crosswalk	\$1,000
Hudson Lane	Roadway, at grade	Private driveway crossing	High Visibility Crosswalk	\$1,000
Washington Avenue (key crossing)	Roadway, overcrossing	Convert existing grade-separated roadway crossing to bicycle and pedestrian access; Install railing	Railing	\$15,000
139 th Avenue (key crossing)	Roadway, at grade	Uncontrolled crossing	High Visibility Crosswalk	\$1,000
143 rd Avenue	Roadway, at grade	Mid-block crossing	Traffic Signal High Visibility Crosswalk	\$300,000 \$1,000
Halcyon Drive (key crossing)	Roadway, at grade	Mid-block crossing	Traffic Signal High Visibility Crosswalk	\$300,000 \$1,000

Planning-Level Cost Estimate

Table 4-19 presents planning level cost estimates for recommended Segment 2.3 Class I multi-use path and crossing improvements.

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Table 4-19: Segment 2.3 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class I	UPRR Oakland Subdivision	Marina Blvd	Hesperian Blvd	1.75	\$2,285,000
Overcrossing					\$15,000
Traffic Signals					\$600,000
Crosswalks					\$5,000
				Total	\$2,905,000

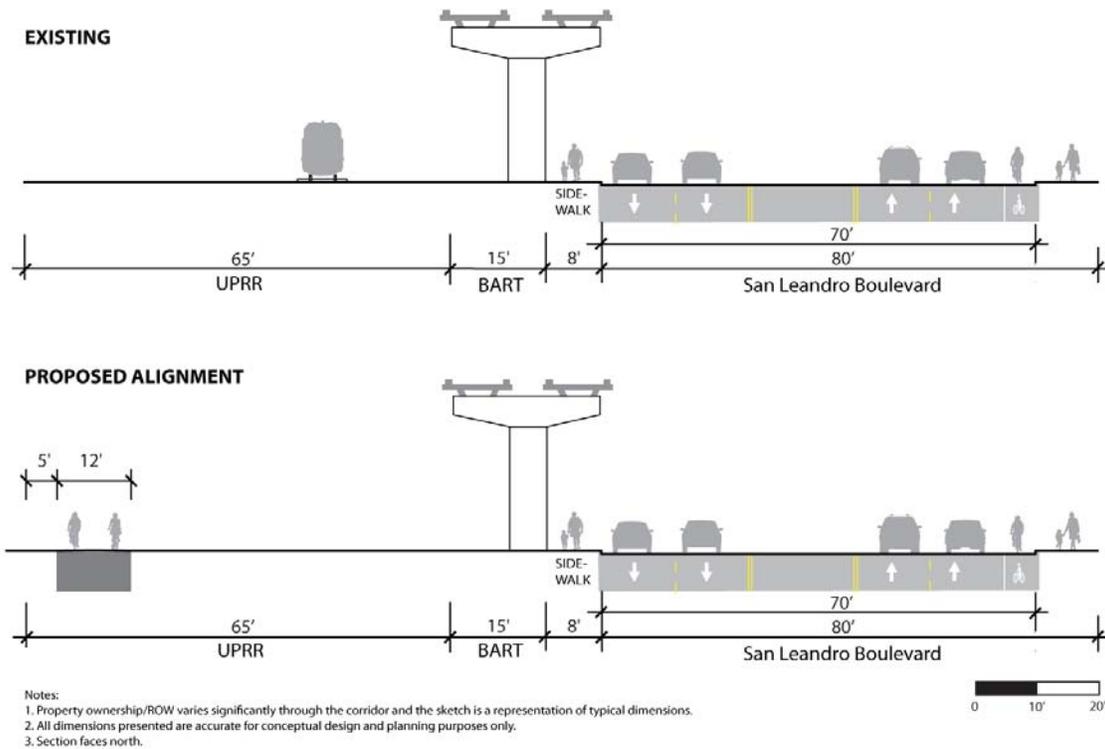


Figure 4-13: Proposed Segment 2.3 Alignment

Map 3: Alameda County

Map 3 begins at the Bay Fair BART Station in San Leandro and continues to Sycamore Avenue in Hayward. This map area includes parts of San Leandro, Hayward and Unincorporated Alameda County.

The environment surrounding the corridor in these segments is residential with one commercial area. There is limited open space or park access and the bicycle and pedestrian network is limited to the area surrounding the Hayward BART Station.

Figure 4-14 presents the recommended project alignment in southern San Leandro, Alameda County and Hayward. Given this study's goals and available right-of-way, a multi-use path in the Oakland Subdivision is recommended between the Bay Fair BART Station and Sycamore Avenue. The estimated annual operations and maintenance cost for the Class I facilities in Alameda County is \$54,000.

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Figure 4-14: Proposed Map 3 Alignment - Alameda County

Segment 3.1: Hesperian Boulevard to Elgin Way

Summary

Segment 3.1 is bounded by the Bay Fair BART Station, the Bayfair Center, other commercial retail and residential land uses as well as the Hesperian Elementary School. The Hesperian Elementary School serves approximately 700 kindergarten through fifth-grade students. These land uses are likely to generate activities supportive of a multi-use path.

Opportunities along this segment include limited rail operations, available right-of-way and adjacent land uses. At-grade rail operates on a single track in this segment and there is infrequent freight activity. The average total right-of-way varies but does provide available space for a trail. Near the Bay Fair Station, the right of way is approximately 100 feet wide and immediately south the total right-of-way is an estimated 200 feet wide.

The primary constraints for Segment 3.1 include limited access from adjacent land uses and complex roadway crossings. The Bay Fair BART Station is not easily accessible by biking or walking and potential improvements to overall access and circulation have been studied by BART. The primary obstacle to pedestrian and bicycle access to Bay Fair BART is the existing roadway undercrossing of the UPRR track. The undercrossing is narrow and does not provide bicycle or pedestrian facilities. The at-grade angled crossing of Hesperian Boulevard presents a functional design challenge.

If the UPRR Oakland Subdivision right-of-way were acquired for a regional multi-use pathway the City of San Leandro, BART and other stakeholders would be interested to develop at-grade or otherwise improved multi-modal access to the Bay Fair BART Station. This scenario would require careful balancing of regional multi-use trail design goals and station access goals and may require development of additional design alternatives not presented here.

There are no existing bikeways in this segment however the City of San Leandro Bicycle Plan proposes a Class I multi-use path along the UPRR right-of-way. The East Bay Greenway's preferred route is a multi-use path on the eastern edge of the BART right-of-way to the Bay Fair BART Station. South of the Bay Fair Station, the recommended Class III bike route follows Elgin Street.

Alignment Recommendations

The recommended alignment for Segment 3.1 is a Class I multi-use path in the Oakland Subdivision ROW (**Figure 4-15** and **Figure 4-16**). BART operations, the Bay Fair BART Station and available right-of-way limit options to the Oakland subdivision and there are no continuous parallel roadways within a half-mile. This alignment provides for a continuous facility through the corridor.

Crossings

Table 4-20 outlines the crossing in Segment 3.1 and the recommended improvements with associated costs.

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Table 4-20: Segment 3.1 Crossings

Crossing Location	Type	Notes	Improvements	Cost
Hesperian Boulevard (key crossing)	Roadway, at grade	New signal controlled mid-block crossing subject to traffic study (Alternative route to Thornally Drive signal controlled intersection)	Traffic Signal High Visibility Crosswalk	\$300,000 \$1,000
Thornally Street	Roadway, overcrossing	Convert existing crossing for bicycle and pedestrian access; Install railing	Railing	\$15,000
Estudillo Canal	Creek, overcrossing	Convert existing crossing for bicycle and pedestrian access; Install railing	Railing	\$15,000
Bay Fair BART Access	Other, overcrossing	Convert existing crossing for bicycle and pedestrian access; Install railing	Railing	\$10,000

Planning-Level Cost Estimate

Table 4-21 presents planning level cost estimates for the Segment 3.1 recommended Class I multi-use path and crossing improvements.

Table 4-21: Segment 3.1 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class I	UPRR Oakland Subdivision	Hesperian Blvd	Elgin Wy	0.80	\$1,044,000
Traffic Signal					\$300,000
Crosswalks					\$1,000
Crossings					\$40,000
				Total	\$1,385,000

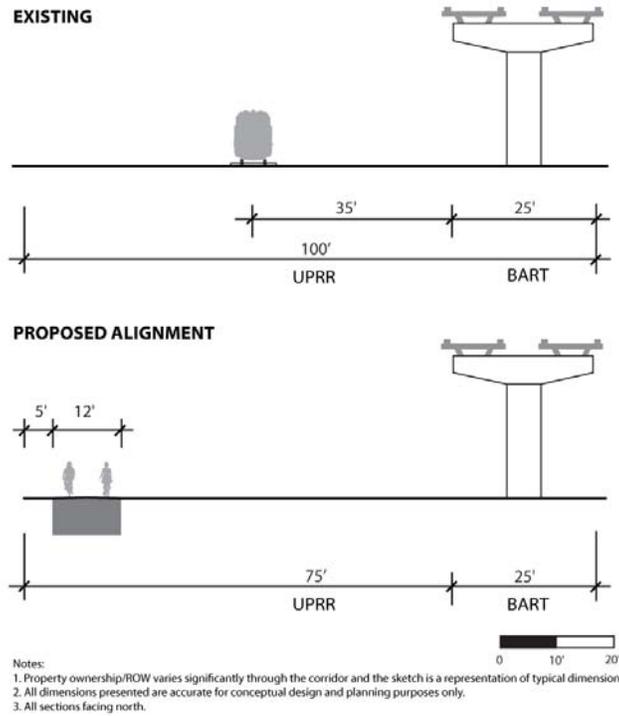


Figure 4-15: Proposed Segment 3.1 Alignment North of Bay Fair BART Station

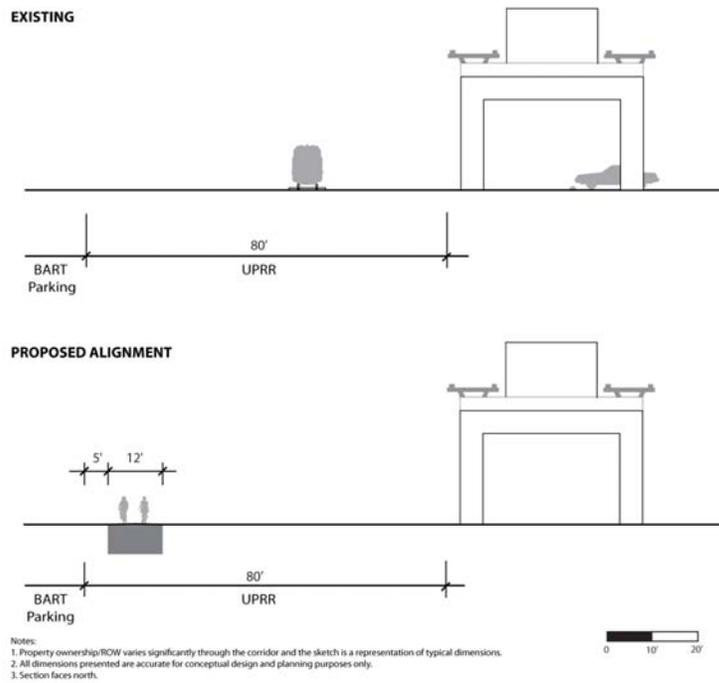


Figure 4-16: Proposed Segment 3.1 Alignment at Bay Fair BART Station

Segment 3.2: Elgin Way to Hampton Road

Summary

Segment 3.2 is surrounded by primarily residential, commercial and light industrial uses. These adjacent land uses are conducive to generating potential trail users.

Primary opportunities along this segment include limited freight rail operations, available right-of-way, compatible adjacent land uses, and limited roadway crossings. This segment has no at-grade rail spurs and no known freight customers. The right-of-way width is approximately 100 feet north of Interstate 238 and 70 feet to the south. The corridor contains one at-grade UPRR track and numerous at-grade BART tracks however there is approximately fifty feet of separation between the tracks and the western parcel boundary in the UPRR right-of-way.

Segment 3.2 constraints include roadway crossings and grade separation challenges including overcrossings at Ashland Avenue and San Lorenzo Creek. Additionally, the crossing at East Lewelling Boulevard is angled and is located more than 500 feet from existing controlled intersections in both directions. The BART tracks, on the eastern edge of the corridor, are elevated immediately south of the Interstate 238 undercrossing. The BART Dublin Pleasanton line branches from the Richmond-Fremont tracks at the 238 undercrossing. The Dublin-Pleasanton tunnel portal is located immediately north of the Interstate 238 deck, creating a complex sequence of grade separations.

City of San Leandro proposed bikeways include a Class II lane serving as an east/west connector on Lewelling Boulevard and a Class I path located in the BART corridor. The East Bay Greenway's preferred route is a bicycle boulevard on Elgin Street connecting to another bicycle boulevard on Delano Street. A Class II bike lane on Ashland would connect users to another Class II on Lewelling Avenue. Lewelling Avenue would then connect to the BART ROW.

Alignment Recommendations

The recommended route for Segment 3.2 is a Class I multi-use path in the Oakland Subdivision right-of-way (**Figure 4-17**). A facility in the BART ROW is infeasible due to limited width, the Interstate 238 grade-separated crossings and the Dublin-Pleasanton Line.

Crossings

Table 4-22 presents the recommended crossing improvements and associated costs for Segment 3.2.

Table 4-22: Segment 3.2 Crossings

Crossing Location	Type	Notes	Improvements	Cost
Elgin Way/ Ashland Avenue	Roadway, overcrossing	Convert existing crossing for bicycle and pedestrian access; Install railing	Railing	\$20,000
SR 238	Roadway, undercrossing	ROW passes under SR 238	Leave as is	\$0

Crossing Location	Type	Notes	Improvements	Cost
East Lewelling Boulevard (identified as key crossing)	Roadway, at grade	Mid-block crossing	Traffic Signal High Visibility Crosswalk	\$300,000 \$1,000
San Lorenzo Creek	Creek, overcrossing	Convert existing crossing for bicycle and pedestrian access; Install railing	Railing	\$5,000

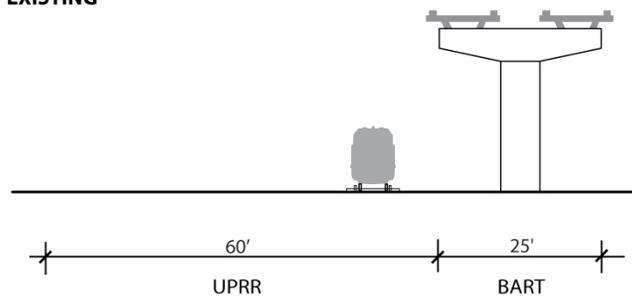
Planning-Level Cost Estimate

Table 4-23 presents planning level cost estimates for the Segment 3.2 recommended Class I multi-use path and crossing improvements.

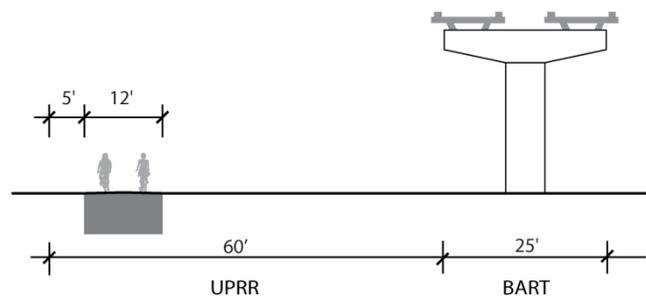
Table 4-23: Segment 3.2 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class I	UPRR Oakland Subdivision	Elgin Wy	Hampton Rd	0.80	\$1,044,000
Crossings					\$25,000
Traffic Signal					\$301,000
				Total	\$1,370,000

EXISTING



PROPOSED ALIGNMENT



- Notes:
1. Property ownership/ROW varies significantly through the corridor and the sketch is a representation of typical dimensions.
 2. All dimensions presented are accurate for conceptual design and planning purposes only.
 3. Section faces north.

Figure 4-17: Proposed Segment 3.2 Alignment

Segment 3.3: Hampton Road to A Street

Summary

Segment 3.2 is bordered by land uses conducive to a regional trail including single-family and multi-family residential, schools and churches. There are two large school sites located immediately adjacent to the Oakland Subdivision including the Cherryland Elementary School and the Abramowitz Alternative High School where a regional trail would provide excellent walking and bicycling access.

The elevated BART tracks are on the eastern edge of the corridor right-of-way. Western Boulevard parallels the Oakland subdivision for the length of this segment. There are no at-grade rail spurs and no known freight customers. At-grade rail activity is likely to be infrequent; however, there are two at-grade rail tracks.

Primary opportunities along Segment 3.3 include limited rail operations, supportive adjacent land uses, a parallel street right-of-way, and excellent access to the corridor from adjacent neighborhoods via low volume residential streets. There are numerous roadway crossings; however, the roadway volumes are generally low and these at-grade crossings provide good neighborhood access to the Study Corridor.

Constraints include limited available right-of-way and roadway crossings. The typical right-of-way width is approximately 80 feet and has split ownership between Alameda County, the City of Hayward, and the UPRR. The existing tracks include elevated BART tracks and two at-grade freight rails. While the six roadway crossings along this segment yield block lengths of approximately 500 feet, the roadway volumes are generally low and these at grade crossings provide good access to the corridor. These short block lengths would limit the speed of bicycle commuters and other long-distance riders but is conducive to local pedestrian and Safe Routes to School use.

The East Bay Greenway’s preferred route is a bicycle boulevard on the western side of Western Boulevard.

Alignment Recommendations

The recommended alignment for Segment 3.3 is a Class I multi-use path in the Oakland Subdivision right-of-way (**Figure 4-18**). A BART right-of-way alignment is infeasible because of limited ROW. A bicycle boulevard is feasible along Western Boulevard however, a multi-use path is preferred over an on-street facility based on the study goals and design guidance.

Crossings

Table 4-24 presents the Segment 3.3 crossings, recommended improvements and associated costs.

Table 4-24: Segment 3.3 Crossings

Crossing Location	Type	Notes	Improvements	Cost
Hampton Road (key crossing)	Roadway, at grade	Uncontrolled intersection	High Visibility Crosswalk	\$1,000

Crossing Location	Type	Notes	Improvements	Cost
Medford Avenue (key crossing)	Roadway, at grade	Route path to intersection	High Visibility Crosswalk	\$1,000
Cherry Way (key crossing)	Roadway, at grade	Route path to intersection	High Visibility Crosswalk	\$1,000
Blossom Way (key crossing)	Roadway, at grade	Route path to intersection	High Visibility Crosswalk	\$1,000
Grove Way	Roadway, at grade	Route path to intersection	High Visibility Crosswalk	\$1,000
Sunset Boulevard (key crossing)	Roadway, at grade	Route path to intersection	High Visibility Crosswalk	\$1,000

Planning-Level Cost Estimate

Table 4-25 presents planning level cost estimates for the Segment 3.3 recommended Class I multi-use path and crossing improvements.

Table 4-25: Segment 3.3 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class I	UPRR Oakland Subdivision	Hampton Rd	A St	1.40	\$1,828,000
Crosswalks					\$6,000
				Total	\$1,834,000

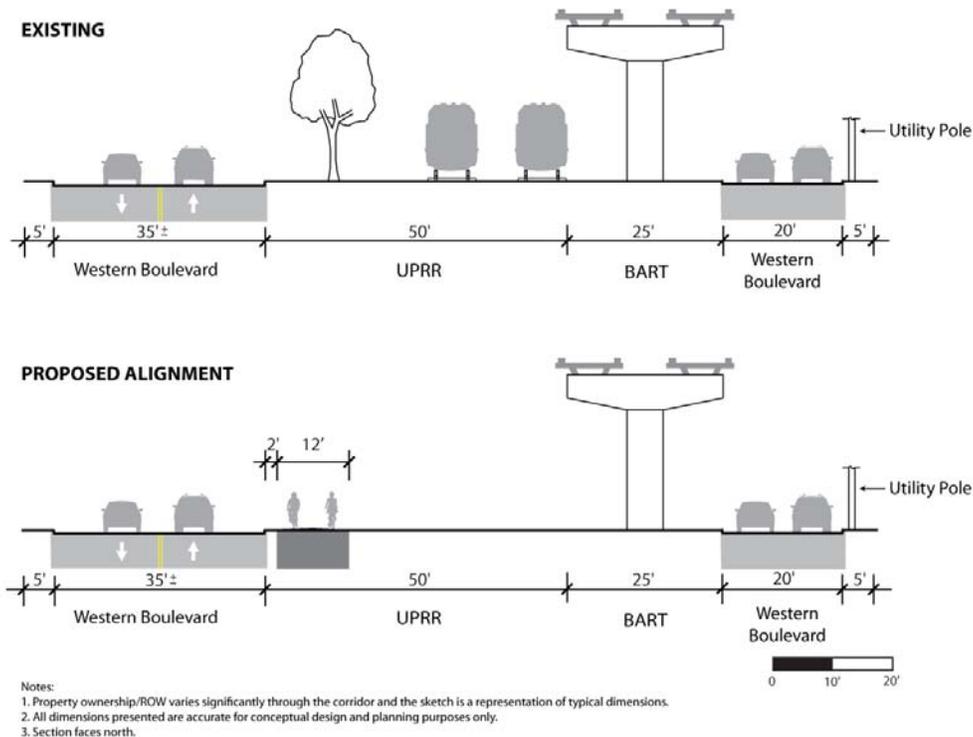


Figure 4-18: Proposed Segment 3.3 Alignment

Segment 3.4: A Street to D Street

Summary

Segment 3.4 is located in Downtown Hayward. The Hayward BART Station, the AC Transit hub, downtown Hayward, and the nearby residential communities have the potential to generate significant numbers of pedestrian and bicycle trips, many of which would be drawn to a continuous regional trail along the Oakland Subdivision.

Segment 3.4 constraints include limited right-of-way and complex grade-separated crossings. There are two at-grade tracks located in the approximate 60 foot wide UPRR right-of-way with potentially available right-of-way located on the western edge.

The East Bay Greenway’s preferred route is a bicycle boulevard on Grand Street to B Street. A Class II bike lane on B Street will then direct users to the Hayward BART Station and the end of the East Bay Greenway. An existing Class II bike lane on A Street provides an east/west connection to the corridor.

Alignment Recommendations

The recommended alignment for Segment 3.4 is a Class I multi-use path in the Oakland Subdivision right-of-way (**Figure 4-19**). A path in the Oakland subdivision right-of-way would be feasible with the removal of the freight rail tracks, as discussed in **Chapter 2**. This study analyzed additional alignment options following the BART right-of-way and on-street. A path in the BART right-of-way is infeasible because of BART configuration, utilities, and drainage. A facility on a street within the public right-of-way is not feasible because there are no parallel roadways.

Crossings

Segment 3.4 has two crossings, both are at-grade. **Table 4-26** outlines the crossings in Segment 3.4 and the recommended improvements with associated costs.

Table 4-26: Segment 3.4 Crossings

Crossing Location	Type	Notes	Improvements	Cost
A Street (key crossing)	Roadway, at grade	Route to existing intersection at A Street and Grand Street	High Visibility Crosswalk	\$1,000
B Street (key crossing)	Roadway, at grade	Pedestrian-actuated mid-block crossing (Synchronized with B Street/Grand Street signal; dependent on traffic operations)	Traffic Signal High Visibility Crosswalk	\$300,000 \$1,000

Planning-Level Cost Estimate

Table 4-27 presents planning level cost estimates for the Segment 3.4 recommended Class I multi-use path and crossing improvements.

Table 4-27: Segment 3.4 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class I	UPRR Oakland Subdivision	A St	D St	0.35	\$457,000
Crosswalks					\$2,000
Traffic Signals					\$300,000
				Total	\$759,000

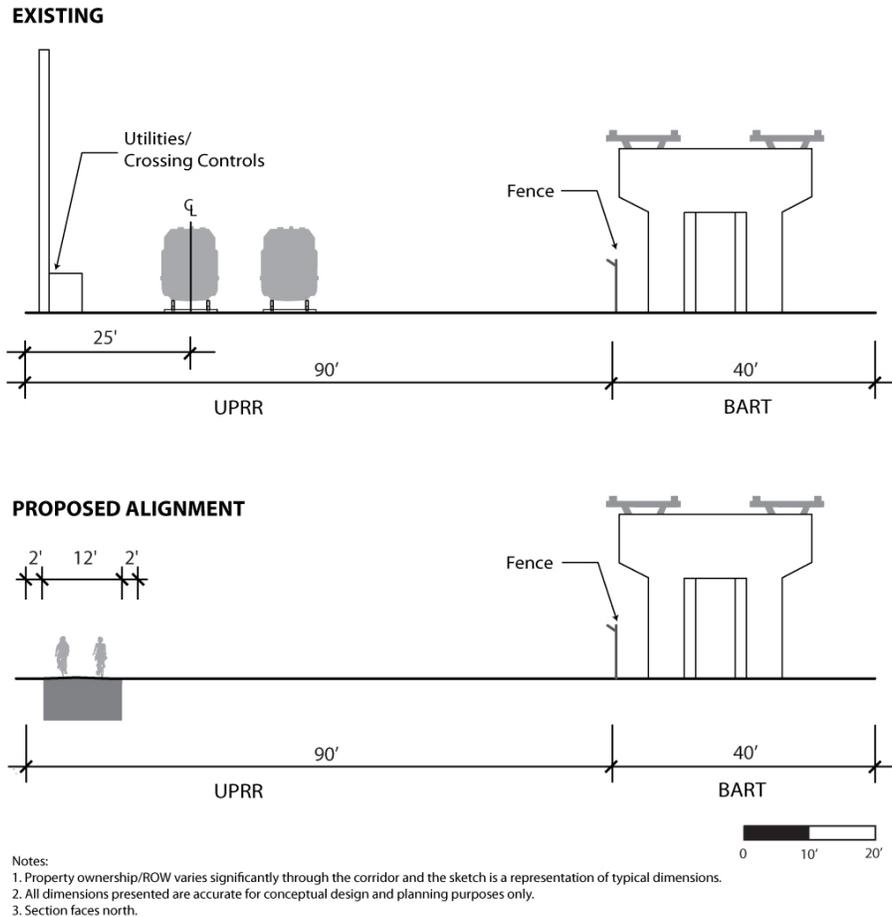


Figure 4-19: Proposed Segment 3.4 Alignment

Segment 3.5: D Street to Sycamore Avenue

Summary

Segment 3.5 extends through central Hayward residential communities and some commercial uses with land uses generally conducive to generating potential trail users. The at-grade BART tracks are on the eastern edge of the corridor right-of-way where there are two freight tracks.

The primary Segment 3.5 opportunities include limited at-grade rail operations and limited roadway crossings. There are no at-grade rail spurs and no known freight customers. At-grade rail activity is

likely to be infrequent. While there are no immediately parallel roadways providing on-street alignment options, the existing Class II bicycle lanes from Sutro Street to Silvia Avenue and then to Alves Street does provide a route parallel to the corridor.

Constraints include narrow right of way, grade-separation challenges and a disconnection from the surrounding communities. The right-of-way width is approximately 75 feet and contains at-grade BART tracks and two at-grade freight rail tracks. The corridor passes over Jackson Street via a bridge supporting the two rail tracks which has no width for a multi-use trail. Another constraint is related to the corridor’s connection with the surrounding communities. D Street and Sycamore Avenue are the only at-grade intersection crossings of this segment. There is an existing pedestrian overcrossing at Sycamore Avenue. The corridor is walled off on both sides by back yards of single and multi-family homes. The limited street connectivity, while creating a possible advantage for through bicyclists, offers extremely limited pedestrian connectivity.

Alignment Recommendations

The recommended route for Segment 3.5 is a Class I multi-use path in the Oakland Subdivision right-of-way (**Figure 4-20**). A 12-foot path on the western edge of the Oakland subdivision would be within typical design standards however, existing utility and drainage consideration would require more detailed analysis.

Alignment options are limited in Segment 3.5. The at-grade BART configuration prohibits a multi-use path in the BART right-of-way and there are no parallel roadways to provide an on-street parallel route.

Crossings

Segment 3.5 has two grade-separated crossings, both over roadways. **Table 4-28** presents the crossings in this segment, recommended improvements and associated costs.

Table 4-28: Segment 3.5 Crossings

Crossing Location	Type	Notes	Improvements	Cost
D Street (key crossing)	Roadway, overcrossing	Convert existing crossing for bicycle and pedestrian access; Install railing	Railing	\$20,000
Jackson Street (key crossing)	Roadway, overcrossing	Convert existing crossing for bicycle and pedestrian access; Install railing	Railing	\$30,000

Planning-Level Cost Estimate

Table 4-29 presents planning level cost estimates for the Segment 3.5 recommended Class I multi-use path and crossing improvements.

Table 4-29: Segment 3.5 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class I	UPRR Oakland Subdivision	D St	Sycamore Ave	0.52	\$679,000
Crossing					\$50,000
				Total	\$729,000

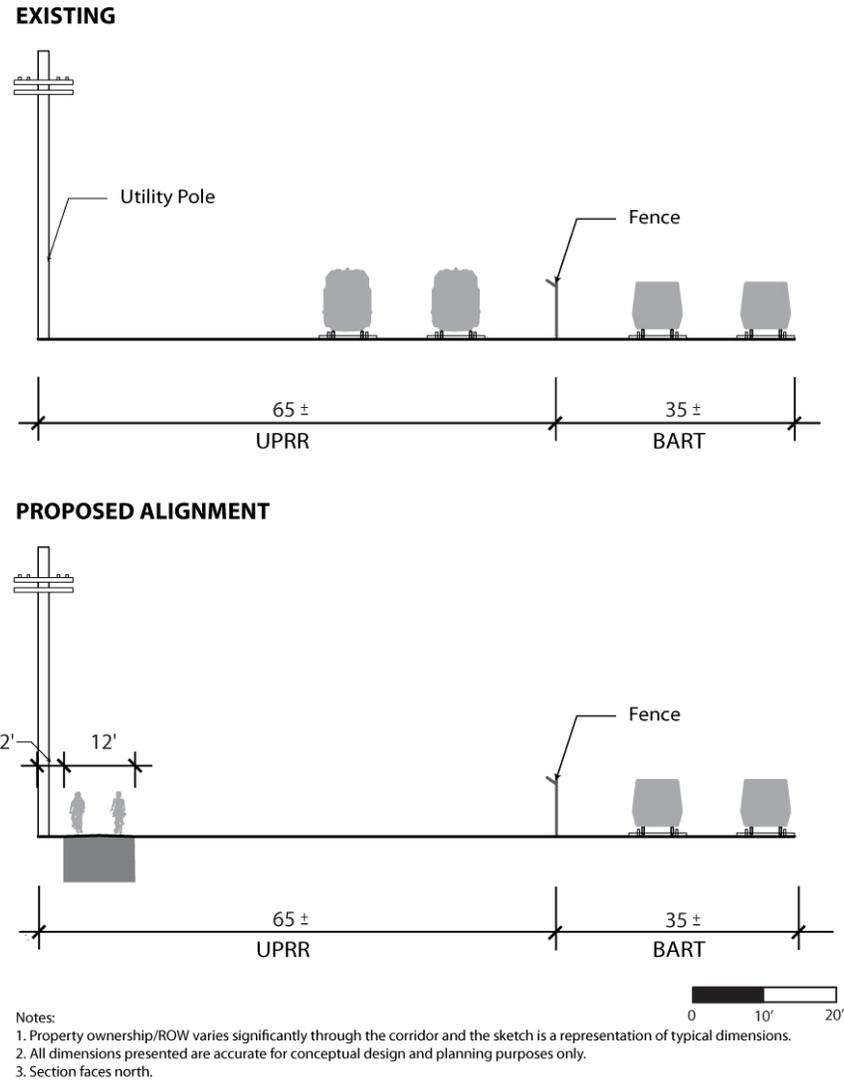


Figure 4-20: Proposed Segment 3.5 Alignment

Map 4: Hayward

Map 4 begins at Sycamore Avenue in Hayward and continues south to Whipple Road. The corridor in this area is bound by residential, downtown commercial and industrial uses. The residential areas on the northern portion of the corridor do not have open space access within a reasonable walking distance. Hayward's bicycle network adjacent to the corridor consists of numerous east/west routes connecting the community to the corridor.

The recommended alignment in this section of Hayward is a multi-use path in the Oakland Subdivision to Industrial Parkway. The Oakland Subdivision and Niles Subdivision cross at a grade-separated crossing immediately south of Industrial Parkway, located in southern Hayward. As discussed in **Chapter 2**, south of Industrial Parkway the range of alignment options changes considerably in this map area due to existing and planned rail activity. The existing BART layover and maintenance yard, planned operations at that facility, and the planned rerouting of Capitol Corridor service from the Niles Subdivision to the Oakland Subdivision eliminates the possibility of using the Oakland Subdivision for non-motorized uses. The feasible on-street alignments and potential Class I multi-use pathway alignment outside of the Oakland Subdivision are discussed in greater on the following pages.

Figure 4-21 presents the recommended alignment for this area and includes a Class I path from Sycamore Avenue to Industrial Boulevard. The City of Hayward will determine the final alignment. The estimated annual operations and maintenance cost for the Class I facilities in Hayward is \$58,000.

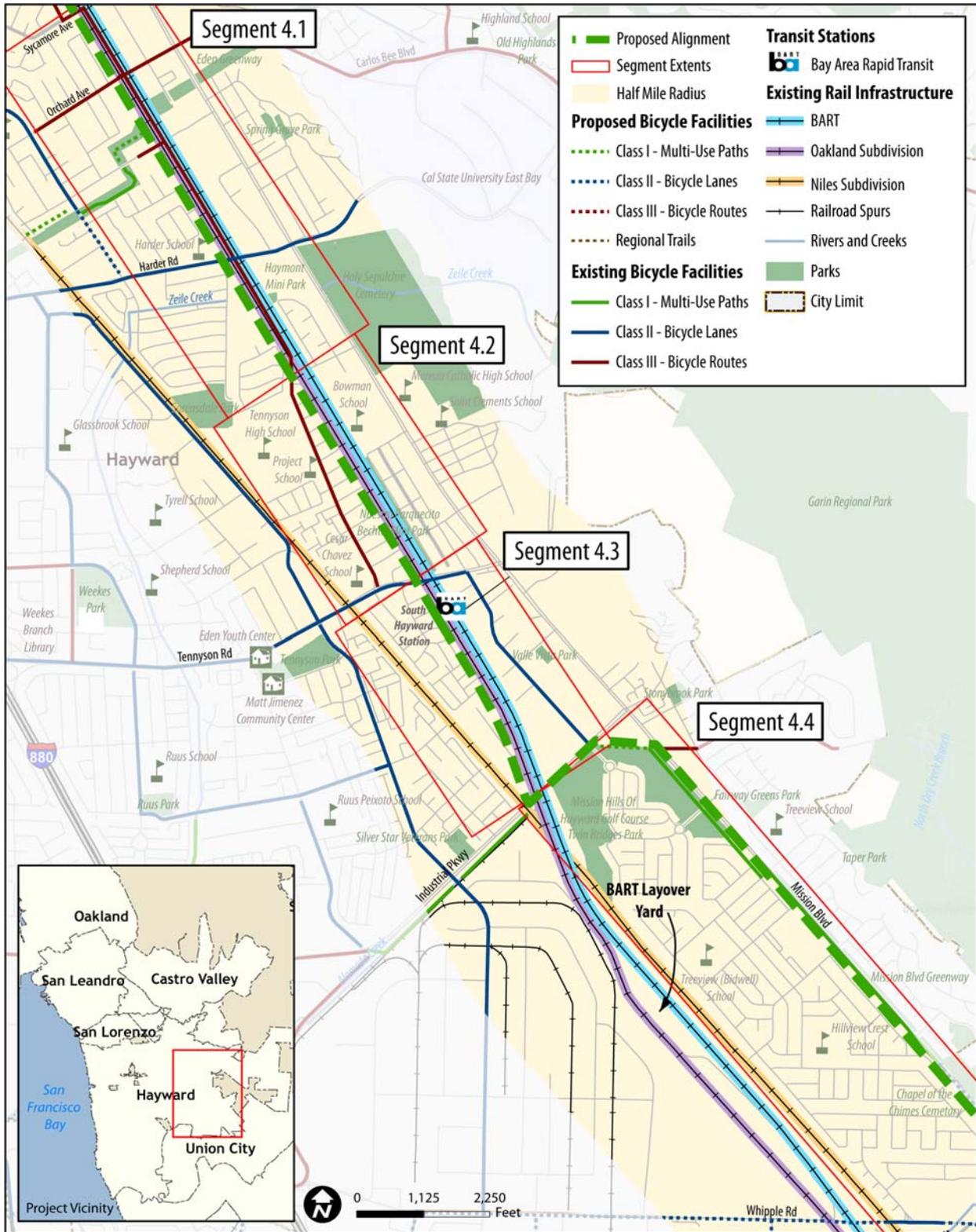


Figure 4-21: Proposed Map 4 Alignment - Hayward

Segment 4.1: Sycamore Avenue to Sorenson Road

Summary

Segment 4.1 is bordered by central Hayward residential neighborhoods and some commercial uses. The Oakland Subdivision is a significant division between the neighborhoods to the west and east of the Study Corridor in this area. Between Jackson Street in the north and Orchard Street in the south, a distance of approximately 0.6 miles, the existing pedestrian overcrossing of the UPRR at Sycamore Street provides the only east-west neighborhood connectivity.

California State University East Bay is located less than one-mile from the Oakland Subdivision and the existing Class II Bicycle Lane on Harder Road directly connects the Study Corridor to the campus. Other existing east/west connections include a Class III route on Orchard Avenue. An existing Class III route on Whitman Street provides a route parallel to the corridor.

The at-grade BART tracks are located on the eastern edge of the right-of-way and there is one existing freight track. Whitman Street, to the west, provides a parallel roadway alignment option.

This segment of the Oakland Subdivision is constrained by the at-grade BART tracks and complex crossing issues. This segment has three overcrossings including Orchard Avenue, Harder Road and Zeile Creek, a small creek south of Harder Road. Assuming removal of freight rail from this segment of the Study Corridor, each of the existing rail crossing structures could be converted to trail use.

Alignment Recommendations

The recommended route through Segment 4.1 is a Class I multi-use path in the Oakland Subdivision (**Figure 4-22**). A 12-foot path in the Oakland Subdivision would be within typical design standards however, existing utility and drainage consideration would require more detailed analysis.

This study analyzed other alternatives for this segment including a continuous path within the BART right-of-way and an on-street facility, The BART right-of-way was considered but the at-grade tracks separation and barrier requirements prohibit a multi-use path. An on-street bike lane is feasible on Whitman Street but it would require the removal of on-street parking. Whitman Street is conducive to a bicycle boulevard treatment given its low traffic volumes and primarily residential land use.

Crossings

Segment 4.1 has three crossings; two over roadways and one over Zeile Creek. **Table 4-30** outlines the crossings in this segment and the recommended improvements with associated costs.

Table 4-30: Segment 4.1 Crossings

Crossing Location	Type	Notes	Improvements	Cost
Orchard Avenue	Roadway, overcrossing	Convert existing crossing for bicycle and pedestrian access; Install railing	Railing	\$20,000
Harder Road	Roadway, overcrossing	Convert existing crossing for bicycle and pedestrian access; Install railing	Railing	\$25,000

Crossing Location	Type	Notes	Improvements	Cost
Zeile Creek	Creek, overcrossing	Convert existing crossing for bicycle and pedestrian access; Install railing	Railing	\$8,000

Planning-Level Cost Estimate

Table 4-31 presents planning level cost estimates for the Segment 4.1 recommended Class I multi-use path and crossing improvements.

Table 4-31: Segment 4.1 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class I	UPRR Oakland Subdivision	Sycamore Ave	Sorensen Rd	1.40	\$1,828,000
Overcrossings					\$53,000
				Total	\$1,881,000

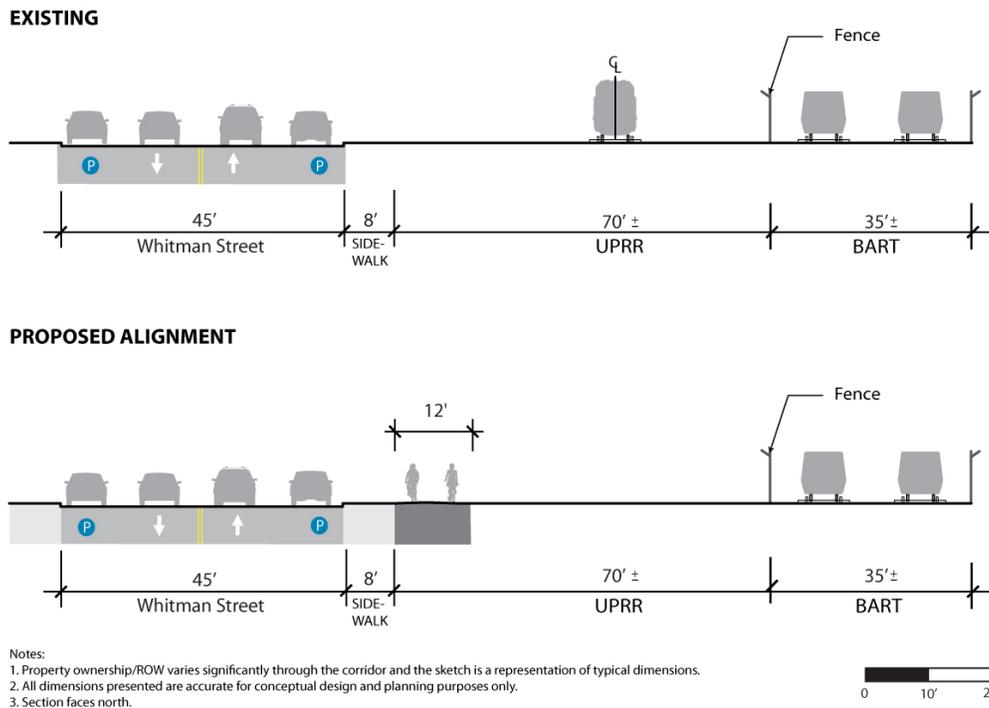


Figure 4-22: Proposed Segment 4.1 Alignment

Segment 4.2: Sorenson Road to Tennyson Road

Summary

Segment 4.2 is bound by residential neighborhoods and commercial uses at the northern edge of the segment. The at-grade BART tracks are on the eastern end of the corridor right-of-way and there is one freight track. The right-of-way width is approximately 100 feet for the majority of the segment with approximately 25 to 30 feet separating the tracks from the western parcel boundary.

Opportunities along this segment include significant pedestrian and bicycle trip generators and attractors. The adjacent land uses include residential, retail and schools sites. The Bowman Elementary School property is located immediately adjacent to the right-of-way and Moreau Catholic High School is located immediately across Mission Boulevard only one tenth of a mile from the corridor. Between Jefferson Street and Tennyson Road, there is an existing developed Class I trail through greenspace parallel to the corridor. Whitman Road parallels the Oakland Subdivision to the west along the northern half of this segment and is a designated Class III Bicycle Route. East 10th Street parallels to the east along the southern half. There is also an existing east/west connection on the Class II bike lane on Tennyson Road.

Segment 4.2 constraints are limited to existing rail activity and access to the Study Corridor. There are no at-grade rail spurs and no known freight customers however all rail operations are at-grade and setback and separation from BART limits the feasible alignment options. Equally important, the neighborhood street network is not connected to the Oakland Subdivision. The existing pedestrian overcrossing at Sorensen Road is the only crossing of the UPRR right-of-way for the 1.2 miles between Harder Road in the north and Tennyson Road in the south. Conversion of this right-of-way would significantly change neighborhood connectivity by providing potential connections between residences, schools and employment locations.

Alignment Recommendations

The recommended route through Segment 4.2 is a Class I multi-use path in the Oakland Subdivision ROW (**Figure 4-23**). Alternative alignment options are limited. Paths within the BART right-of-way are infeasible due to setback and separation requirements from the at-grade tracks. A bicycle boulevard facility following Whitman Street to the west of the corridor is feasible but does not comply with the study goals and design criteria as directly as would the Class I multi-use pathway.

Crossings

Segment 4.2 does not have any existing or proposed crossings.

Planning-Level Cost Estimate

Table 4-32 presents a planning level cost estimate for the Segment 4.2 recommended Class I multi-use path.

Table 4-32: Segment 4.2 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class I	UPRR Oakland Subdivision	Sorensen Rd	Tennyson Rd	0.80	\$1,044,000
				Total	\$1,044,000

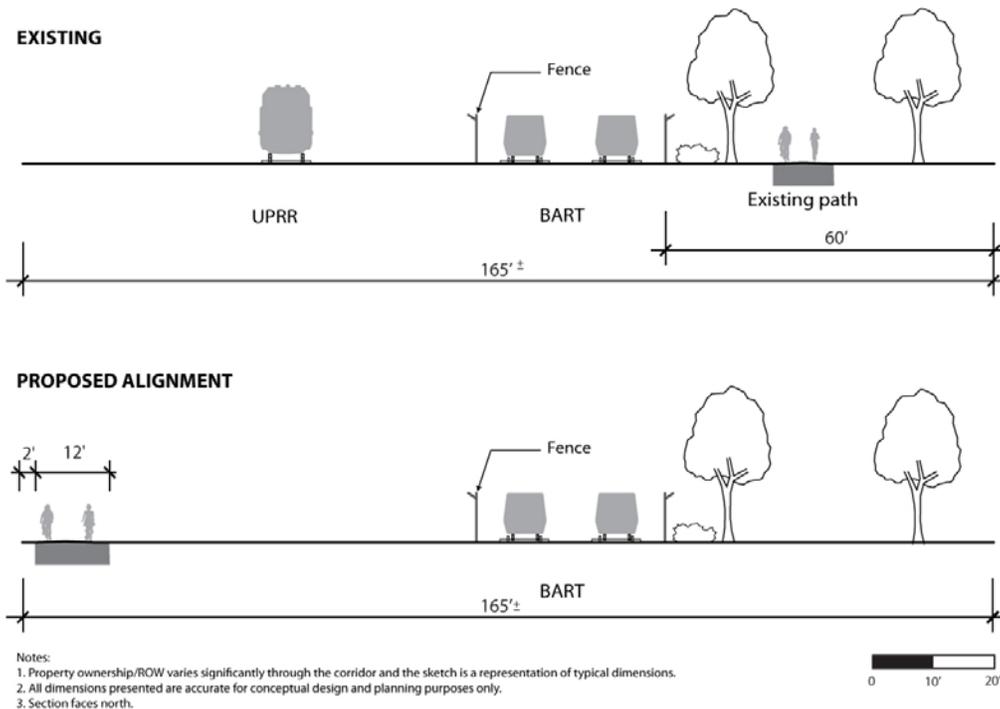


Figure 4-23: Proposed Segment 4.2 Alignment

Segment 4.3: Tennyson Road to Industrial Parkway

Summary

Segment 4.3 begins at the South Hayward BART Station, continues through residential communities and ends near industrial uses. The at-grade BART tracks are on the eastern edge of the corridor right-of way where there is one freight track. There is no parallel roadway offering an on-street option for this segment.

The characteristics of this segment present a mix of opportunities and constraints. Primary opportunities include available right-of-way, adjacent land use, and limited roadway crossings. The approximate right-of-way width is 100 feet with approximately 30 feet of right-of-way located

between the existing track and the on the western right-of-way boundary. The South Hayward BART Station, transit-oriented development near the station, and residential communities all have the potential to generate pedestrian and bicycle trips, yet the residential subdivisions and industrial properties located between Oakland Subdivision and the Niles Subdivision represent a limited number of residents and employees. The development of a regional multi-use pathway along this segment would bring some connectivity benefits between neighborhoods that are currently cut off from one another however the presence of at-grade BART tracks does mean that the corridor will persist as a crossing barrier. Immediately north of Industrial Parkway there are undeveloped parcels contiguous to the right-of-way offering either opportunity for adjacent open space or other future land uses that could be compatible with a regional pedestrian and bicycle facility.

Assuming that freight rail is discontinued as discussed in **Chapter 2**, the grade separated crossing do not present a significant constraint. This study assumes the existing UPRR bridges over Tennyson Road and Industrial Parkway would be converted to multi-use pathway use.

Alignment Recommendations

The recommended route through Segment 4.3 is a Class I multi-use path in the Oakland Subdivision ROW (**Figure 4-24**). A path within the BART ROW is not feasible due to grade change and limited right-of-way. An on-street facility is not feasible because there are no parallel roadways.

Crossings

Segment 4.3 has one crossing over Tennyson Road. **Table 4-33** outlines the crossings in this segment and the recommended improvements with associated costs.

Table 4-33: Segment 4.3 Crossings

Crossing Location	Type	Notes	Improvements	Cost
Tennyson Road	Roadway,overcrossing	Convert existing crossing for bicycle and pedestrian access; Install railing	Railing	\$30,000

Planning-Level Cost Estimate

Table 4-34 presents a planning level cost estimate for the Segment 4.3 recommended Class I multi-use path.

Table 4-34: Segment 4.3 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class I	UPRR Oakland Subdivision	Tennyson Rd	Industrial Pkwy	0.80	\$1,044,000
Crossing					\$30,000
				Total	\$1,074,000

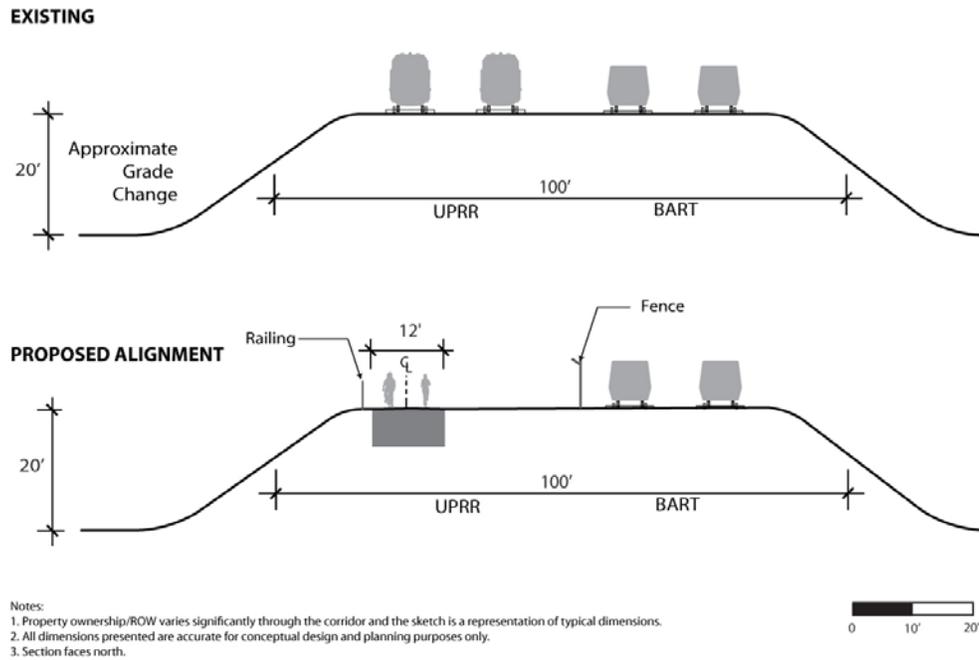


Figure 4-24: Proposed Segment 4.3 Alignment

Segment 4.4: Industrial Parkway to Whipple Road

Summary

Segment 4.4 is adjacent to residential communities on the east, however, the primary land uses surrounding this segment include the Niles Subdivision overcrossing and the BART layover and maintenance yard. The single-family and multi-family neighborhoods within a half mile radius of the right-of-way have limited access to the Oakland Subdivision. The Oakland Subdivision right-of-way is separated from the BART right-of-way for most of this segment. The at-grade BART tracks are to the east of the Oakland Subdivision right of way adjacent to the Niles Subdivision.

There are limited opportunities for pedestrian and bicycle facility improvements along this segment. Industrial Parkway presents an opportunity to bypass both the BART yard and Niles Subdivision/Oakland Subdivision crossing. Industrial Parkway and Mission Boulevard can provide a connection between south Hayward residential areas and northern Union City residential areas. The existing Class I sidepaths on Industrial Parkway and Mission Boulevard represent a significant opportunity to provide a connection around the rail operations constraints described below.

Segment 4.4 constraints include rail operations, safety and liability, right-of-way, and incompatible adjacent land uses. At the north end of this segment the Niles Subdivision and Oakland Subdivisions crossover via a grade separation. This physical configuration necessitates that any trail facility must be routed north or south at Industrial Parkway in order to follow the perimeter of all rail operations. In addition, the BART layover and maintenance yard operations are not conducive to public access and this study assumes that an alignment adjacent to or through this area is infeasible from a management and liability standpoint. As discussed in **Chapter 2** and in the introduction to this chapter, south of Industrial Parkway, a path within the UPRR Oakland Subdivision is infeasible because of planned Capitol Corridor operations.

Alignment Recommendations

The recommended alignment is a multi-use path along Industrial Parkway (**Figure 4-25**) to Mission Boulevard south to Union City (**Figure 4-26**). In order to access Industrial Parkway the multi-use pathway would cross to the south side using the existing overcrossing and then ramp down to the existing Class I side-path on Industrial Parkway. Once on the south side of Industrial Parkway, pedestrians and bicyclists would use the existing Class I multi-use pathway along the frontage of the Mission Hills Golf Course to Mission Boulevard. This facility is continuous from the Oakland Subdivision in the east as far east as the Mission Hills neighborhood entryway at Dixon Street. An approximately 0.3 miles gap closure project around the commercial property located at the intersection of Industrial Parkway and Mission Boulevard is required to connect to the existing north-south Class I sidepath on Mission Boulevard. This existing Class I sidepath on the west side of Mission Boulevard extends approximately 0.3 miles south to Fairway Street. The Class I sidepath is then located on the east side of Mission Boulevard from Fairway Street south approximately 0.8 miles. The remaining 0.65 miles south to Whipple Road has not been developed and is recommended as a part of this study.

Crossings

Segment 4.4 has one roadway overcrossing over Industrial Parkway. **Table 4-35** outlines the crossings in this segment and the recommended improvements with associated costs.

Table 4-35: Segment 4.4 Crossings

Crossing Location	Type	Notes	Improvements	Cost
Industrial Parkway	Roadway, overcrossing	Convert existing crossing for bicycle and pedestrian access; Install railing	Railing Pavement	\$102,00

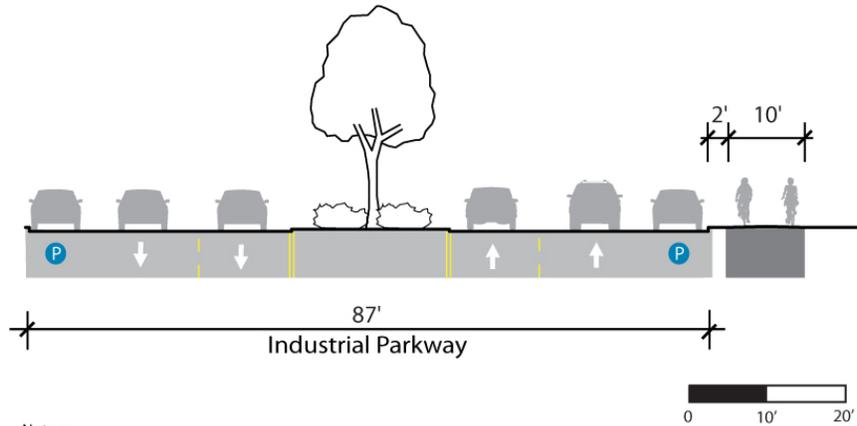
Planning-Level Cost Estimate

Table 4-36 presents planning level cost estimates for the Segment 4.4 recommended Class I multi-use path and crossing improvements.

Table 4-36: Segment 4.4 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class I	Industrial Pkwy	Oakland Subdivision	Mission Blvd	0.35	\$420,000
Class I	Mission Blvd	Blanch St	Dry Creek Class I Path	0.70	\$840,000
Crossing					\$102,000
				Total	\$1,362,000

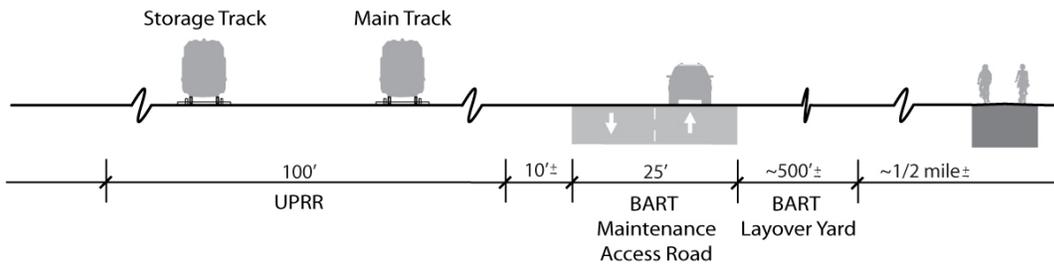
EXISTING



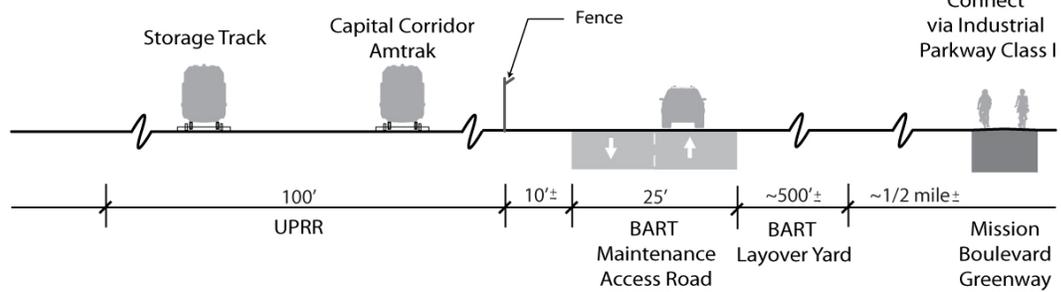
- Notes:
 1. Property ownership/ROW varies significantly through the corridor and the sketch is a representation of typical dimensions.
 2. All dimensions presented are accurate for conceptual design and planning purposes only.
 3. Section faces east.

Figure 4-25: Existing Industrial Parkway Class I Path

EXISTING



PROPOSED ALIGNMENT



- Notes:
 1. Property ownership/ROW varies significantly through the corridor and the sketch is a representation of typical dimensions.
 2. All dimensions presented are accurate for conceptual design and planning purposes only.
 3. Section faces north.



Figure 4-26: Proposed Segment 4.4 Alignment

Map 5: Union City

Map 5 begins at Whipple Road in the north and continues south to the Union City BART Station (**Figure 4-27**). Planned and anticipated rail use for this map area of the Oakland Subdivision includes Capitol Corridor/Amtrak and UPRR freight. This segment requires primarily on-street facilities through Union City to the Union City Intermodal Station. Consistent with the southern half of the Map 5 area in Hayward, planned rail operations significantly limit feasible alignment options. The estimated annual operations and maintenance cost for the Class I facility in Union City is \$5,700.

Segment 5: Whipple Road to Alvarado Niles Road

Summary

This segment of the Oakland Subdivision has two active at-grade rail tracks and active rail spurs. The right-of-way width is approximately 70 feet and has a grade-separated crossing over Dry Creek. There are no existing or proposed bikeways immediately adjacent to the corridor. Location of Capitol Corridor (Amtrak) service on the Oakland Subdivision will increase rail service frequency and speed for this segment. In addition, the Capitol Corridor layover yard may be situated north of the Intermodal Station and would use the Oakland Subdivision line.

Segment 5 passes through northern Union City residential communities, industrial and commercial land uses and through the Union City Intermodal Station District. The southern portion of Segment 5 is defined by the Union City Intermodal Station and TOD development. Single- and multi-family residential communities surround the BART station area as well as the Union Station commercial area at the intersection of Decoto Road and Alvarado Niles Road. The elevated BART tracks are on the eastern edge of the right-of-way until the block between H and I Streets where it crosses over to the western edge. East of the Niles Subdivision is a residential community. There is no parallel public street right-of-way contiguous or immediately adjacent to the Oakland Subdivision.

Opportunities in the northern area of Segment 5 are limited. Residential development to the east may generate some trail users; however, it is separated from the corridor by the Niles Subdivision and industrial activities. Railroad Avenue, beginning at Whipple Road offers the only public street alternative alignment in reasonable proximity to the Oakland Subdivision.

Greater opportunities exist in the central and southern portions of the segment including adjacent supportive land uses, long block lengths, parallel on-street options and intermodal transit connectivity to BART, future Capitol Corridor service, and AC Transit bus service. Union City High School, Charles F. Kennedy Park and Searles Elementary School are all located within one quarter mile of the Oakland Subdivision in this area. 11th Street (to the east) and 12th Street (to the west) provide an opportunity for parallel alignment within City of Union City street right-of-way.

South of the Union City Intermodal Station area, the East-West Connector Project, a regional roadway capacity expansion project currently in design phase, will provide an east-west Class I multi-use pathway from Mission Boulevard to Paseo Padre Parkway. The southern terminus of this proposed bikeway will connect to Quarry Lakes to the existing Alameda Creek Trail. This extension can connect the corridor to the proposed Fremont UPRR Trail, as shown in **Figure 4-27**.

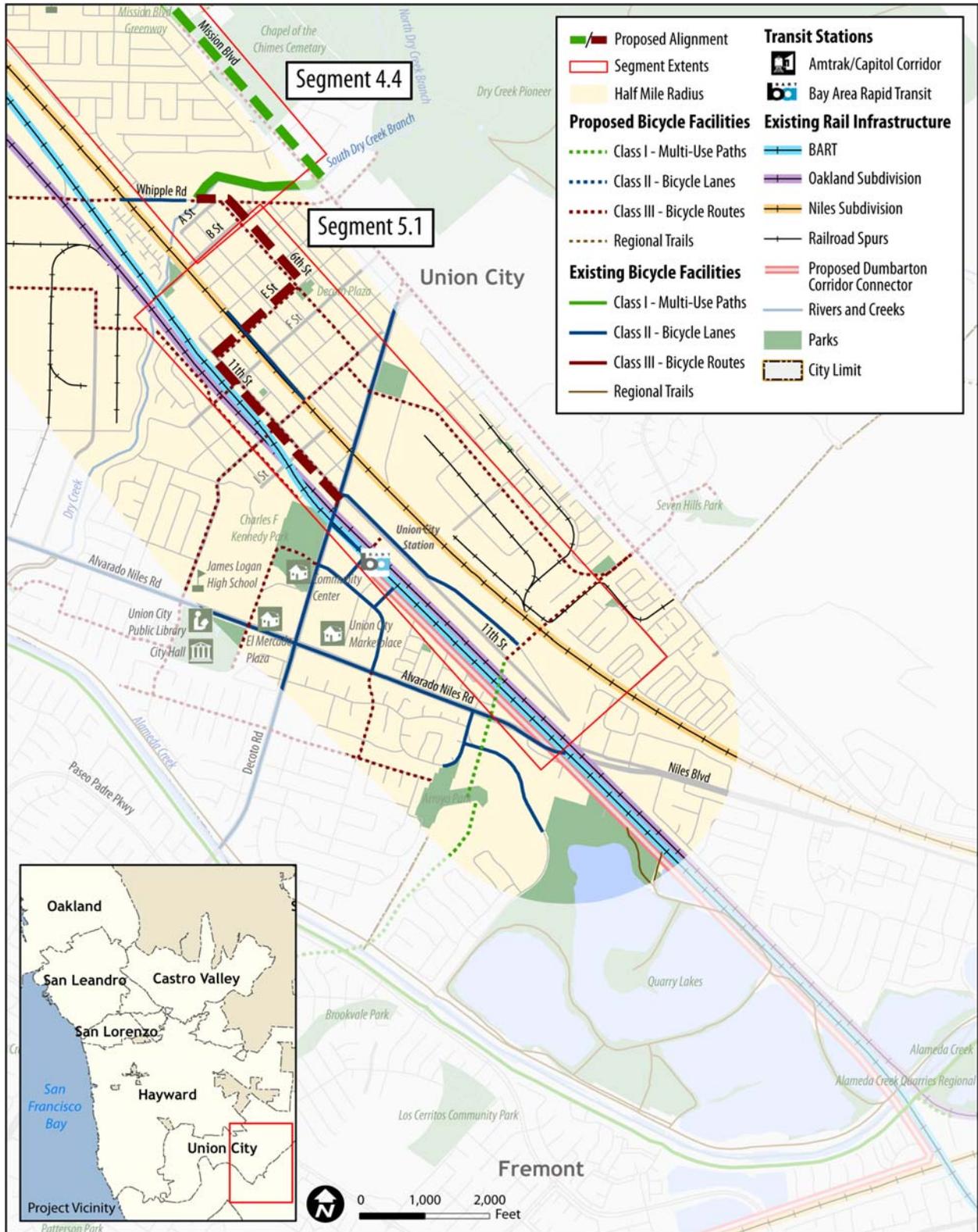


Figure 4-27: Proposed Map 5 Alignment - Union City

Alignment Recommendations

The short- and mid-term alignment recommendation for Segment 5 is to take advantage of the detailed network planning already completed by Union City and avoid the complex operational and grade-separation constraints that characterize the Oakland Subdivision in this area. Alignment options within the BART right-of-way are infeasible because of BART activities, except within the central portion of the segment. A path within the UPRR ROW is infeasible because of planned Capitol Corridor operations and storage tracks.

As shown in **Figure 4-28**, the recommended alignment follows Whipple Road, 6th Street, E Street and 11th Street to reach the Union City Intermodal Station. Existing Class II bike lanes on 11th Street provide for bicyclist connectivity to the Union City Intermodal Station. 11th Street bicycle lanes exist and the other recommended street segments are part of the City of Union City’s proposed Class III bicycle route network. Each of these recommended facilities is located on low-volume neighborhood streets that provide a reasonably direct connection between the Intermodal Station and the proposed continuous Mission Boulevard Class I facility outlined above under Segment 4.4.

The City of Union City is currently considering a connection south to Quarry Lakes Regional Park, the Alameda Creek Regional Trail and potential future City of Fremont UPRR RWT facility. Union City is actively promoting inclusion of a Class I multi-use pathway in the State Route 84 Connector project that would achieve pedestrian and bicycle connectivity between the Intermodal Station and Alameda Creek Regional Trail at the City of Union City and City of Fremont boundary.

Crossings

Table 4-37: Segment 5.1 Crossings

Crossing Location	Type	Notes	Improvements	Cost
Decoto Road (identified key crossing)	Roadway, at grade		N/A	\$0

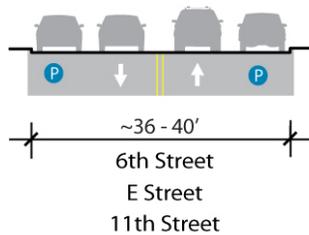
Planning-Level Cost Estimate

Table 4-38 presents planning a level cost estimate for the Segment 5-1 recommended Class III bicycle route.

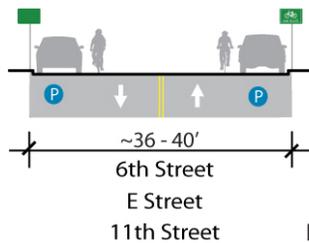
Table 4-38: Segment 5.1 Cost Estimates

Facility Type	Route	From	To	Length (miles)	Cost
Class III	Whipple Rd	Cry Creek Class I	6 th St	0.06	\$1,000
Class III	6 th St	Whipple Rd	E St	0.35	\$5,000
Class III	E St	6 th St	11 th St	0.30	\$5,000
Class III	11 th St	E St	Decoto Rd	0.55	\$8,000
				Total	\$19,000

EXISTING



PROPOSED ALIGNMENT



- Notes:
1. Property ownership/ROW varies significantly through the corridor and the sketch is a representation of typical dimensions.
 2. All dimensions presented are accurate for conceptual design and planning purposes only.
 3. Section faces north.

Figure 4-28: Proposed Segment 5.1 Alignment

Rail with Trail Alternative

The alignments recommended in this chapter are presented as a rail-to-trail scenario. In addition to a rail-to-trail alternative, a rail-with-trail option is possible in many segments along the corridor. Trail setback distance of the trail from the rail centerline, separation requirements such as barriers, and crossings must be considered in this option.

Generally, a rail-with-trail is possible between approximately 105th Street near the San Leandro border and A Street in Hayward (Segments 2.1 and 3.3). A rail-with-trail is also possible between A Street and Industrial Parkway in Hayward, however there are numerous pinch points.

In most cases, the corridor between Segments 2.1 and 3.3 has adequate setback widths, typically 25 feet or more. A Street to Industrial Parkway in Hayward may also accommodate a rail-with-trail however, there are constrained areas where the typical setbacks cannot be accommodated. At these pinch points additional barrier devices should be used where additional right-of-way cannot be purchased.

A significant factor in engineering and financial feasibility of a rail-with-trail option is the number of grade separated crossing over major arterials where the right-of-way is occupied by separated BART and UPRR bridges with limited remaining right-of-way. With rail service remaining in place, new pedestrian-bicycle bridges would be required. Yet, there is insufficient right-of-way to expand the existing bridge abutments to accommodate a third bridge in these locations. The only alternative in these situations would be to route the multi-use pathway around these grade separated crossings on to surface streets. The long block lengths fronting the Oakland Subdivision and lack of

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neighborhood street connectivity through many of the adjacent neighborhoods means this routing would result in an indirect facility.

Appendix D of this report provides a detailed analysis of project alternatives considered.

5. Action Plan

This chapter presents actions that will result in a regional pedestrian and bicycle facility along the Oakland Subdivision in a cost effective and strategic manner. The discussion includes short-term, mid-term and long-term actions and discusses roles and responsibilities for participating agencies.

Short-Term Actions

Lead Agency Commitment

This complex project will require continued leadership on many fronts including ongoing planning and environmental review, coordination of local jurisdictions, monitoring of activities along the corridor, pursuit of major acquisition and capital funding, and other related activities. Alameda County Public Works Agency has provided this leadership over the course of this current study with strong support and direct funding from the Alameda County Transportation Improvement Authority (ACTIA). As of the writing of this report, ACTIA is also determining the scope of its East Bay Greenway planning and environmental review, discussed in greater detail below. Ongoing study and implementation of the East Bay Greenway and Oakland Subdivision Corridor Improvement recommendations concurrently requires policy choices and design decisions that require a regional perspective and expertise in allocating scarce funding among competing projects. ACTIA is one possible agency which could take the lead coordination role. Alameda County and the East Bay Regional Park District could offer direct support to ACTIA in real estate analysis, operations and maintenance expertise, and other critical technical areas. Each of the cities along the corridor will also play a continuing role in identifying local needs and priorities to guide the lead agency.

Corridor Acquisition

The UPRR owns the Oakland Subdivision and will determine whether the right-of-way is available for sale. Acquisition of the Oakland Subdivision by the local agencies with support from county and regional agencies is critical to the implementation of the recommended alignment and will require identification of a lead agency for negotiation, completion of environmental due diligence, preparation of appraisal, and acquisition negotiation at a minimum. As of the preparation of this study, the Capitol Corridor Joint Powers Authority is authorized to lead investigation of purchase of Oakland Subdivision. The currently available funding for acquisition of the southern portion of the Oakland Subdivision is up to \$35 Million. As of the completion of this study, the availability of this specific source of money is in question and other sources may be available. Acquisition of the entire Oakland Subdivision may be addressed in this current negotiation if proposed by the UPRR and will require joint consideration by all involved agencies

The only data available on potential acquisition cost of the Oakland Subdivision from the Port of Oakland to the Shinn Yard in Fremont is from the 2007 MTC Regional Rail Plan supporting documentation when the cost was estimated at \$60 Million. Accounting for inflation this is \$65 Million in 2009 dollars.

Alameda County, ACTIA, BART, and all participating cities need to work with MTC and CCJPA to demonstrate the interest and value of acquiring this corridor. Corridor acquisition now would create

the opportunity for a significant rail-to-trail project from 98th Avenue in the north to Industrial Parkway in the south for a total of 9.5 miles.

As of publication of this report, additional opportunities and strategies for acquisition of the Oakland Subdivision emerged including a possible land swap between the UPRR and Alameda County. This land swap would result in exchange of the Oakland Subdivision owned by the UPRR for the Niles Canyon right-of-way from Fremont to Livermore owned by Alameda County. The UPRR is interested in regaining access to this one time freight corridor in order to improve regional freight movement out of the Bay Area. The specific valuation of these two track segments and financial requirements of this transaction are not known at this time. This scenario would substantially reduce the cash requirements of the Oakland Subdivision acquisition.

Pursue Major Funding for Acquisition

Depending on the acquisition strategy that emerges, regional, county and local agencies would need to secure a minimum of \$30 Million in the short term in order to acquire the Oakland Subdivision north of Industrial Parkway in Hayward. This amount greatly exceeds the typical maximum requests associated with competitive grant programs that fund non-motorized transportation projects. Obtaining \$30 Million will require a dedicated legislative campaign such as the Active Transportation legislative effort currently being led by ACTIA, or other strategies that can be accommodated in the 2009 reauthorization of the six-year federal transportation bill. This will require continued partnership building as outlined below.

Federal

- U.S. Department of Transportation
 - Federal Transit Administration
 - Federal Highway Administration

State

- Assembly Member Sandré R. Swanson
- Assembly Member May Hayashi
- Assembly Member Nancy Skinner
- Senator Ellen M. Corbett
- Senator Loni Hancock
- California Department of Transportation (CalTrans)
- California Public Utilities Commission

Regional

- Metropolitan Transportation Commission
- Capitol Corridor Joint Powers Authority
- Bay Area Rapid Transit District
- East Bay Regional Park District

County

- Alameda County
- Alameda County Congestion Management Agency
- Alameda County Transportation Improvement Authority

Local

- City of Oakland
- City of San Leandro
- City of Hayward
- City of Union City
- City of Fremont

Advocacy Organizations

- East Bay Bicycle Coalition
- Walk Oakland Bike Oakland
- Transform (TALC)
- Transportation for America

East Bay Greenway Environmental Documentation

ACTIA has committed \$527,000 of Measure B funding for environmental documentation of the East Bay Greenway Concept Plan recommendations. Based on the current conditions as of the writing of this Oakland Subdivision Improvement Study, ACTIA is determining the appropriate approach and scope for use of this funding. One of the chief considerations in determining this approach and scope is balancing the recommendations of the East Bay Greenway Concept Plan with the recommendations of this Oakland Corridor Improvement Study.

A simple mileage comparison by facility type illustrates the key scope decisions for the planned environmental study. As previously outlined, the East Bay Greenway recommends approximately 5.9 miles of multi-use pathway, 3.6 miles on-street bicycle lanes, and 2.1 miles of bicycle routes. This Oakland Corridor Improvement Study recommends 17 miles of multi-use pathway, 0.2 miles of bicycle lanes, and 1.3 miles of bicycle routes.

In the northern segments from 37th Avenue in Oakland south to Peralta Avenue in San Leandro, there is significant overlap of the East Bay Greenway Concept Plan recommendations and the Oakland Subdivision Corridor Improvement Study recommendations. In this area, the ongoing planning and environmental analysis can readily capture the options and recommendations presented in both studies.

Beginning in central San Leandro and continuing south to Industrial Parkway in Hayward, the recommendations of the East Bay Greenway Concept Plan and this Oakland Subdivision Corridor Improvement Study area substantially different and ACTIA will be required to consider how to focus its environmental analysis of these segments. The East Bay Greenway recommends substantial on-street facilities through San Leandro and Hayward to its terminus at Hayward BART station, whereas this Oakland Subdivision study recommends Class I multi-use pathway on the railroad right-of-way based on a rail-to-trail scenario. Depending on the short-term progress in acquisition of the Oakland Subdivision, ACTIA may elect to prioritize analysis of the rail-to-trail scenario presented here over the on-street recommendations presented in the East Bay Greenway Concept Plan. If rail acquisition does not appear to be moving forward, analysis of the on-street proposals will have benefit as a short-term improvement, but should emphasize bicycle lanes and sidewalk improvements over construction of a multi-use path immediately adjacent to public streets with frequent intersections.

South of Industrial Parkway in Hayward, this study recommends a combination Class I multi-use path and bicycle routes to reach the Union City BART station and the Fremont border. ACTIA should consider including further analysis of these recommendations in the environmental scope in order to move the entire Oakland Subdivision project concept forward.

Local Plan Updates and Project

Each county and city agency embarking on local plan updates should focus on supplementing and adding to the analysis prepared for this feasibility study. For example, the City of San Leandro intends to update its Bicycle and Pedestrian Master Plan in 2009-2010 and can further investigate design options and provide design development and traffic analysis pursuant to the recommended improvements outlined in this study. The City of Oakland, City of Hayward, Alameda County, and the City of Union City can all place a priority on further analysis and priority implementation of the recommended improvements identified here. Regardless of the ultimate details that are implemented, each of these plan updates and projects needs to focus on assembling and connecting to the East Bay Greenway and Oakland Subdivision corridor improvement concepts.

Pedestrian and Bicycle Travel Demand Model

Development of accurate estimates of the potential pedestrian and bicycle use of a continuous regional trail facility can demonstrate potential environmental, health and community benefits. With the results of this feasibility study, including the basic characteristics of the recommended alignment,

trail use forecasts based on a corridor demand model can be used to calculate reduced vehicle miles traveled, air quality benefits, public health benefits and other factors. A trail demand model should be based on a combination of available data including existing journey to work mode share data, existing pedestrian and bicycle count data completed by local jurisdictions and park agencies, AC Transit access mode data, BART station access mode data, Capitol Corridor station access mode data, and other available inputs. A pedestrian and bicycle demand model can be developed for the corridor as a whole and for specific segments depending on the specific characteristics of the recommended pedestrian and bicycle facilities. This information would provide local, regional and national decision makers with valuable information on the potential value and benefits of a continuous Oakland Subdivision bikeway or multi-use pathway.

Develop Detailed Design Guidelines

This study presents a basic design framework that will need to be further developed in order for the project to move forward. In order for a true regional project to take shape, a set of uniform design standards covering pathway design, crossing design, wayfinding signage, site amenities, landscape design standards, and other pathway features is required. This is essential for trail identity and regional function and will effectively guide the work recommended in the actions above.

Develop Management Plan

A management and maintenance plan is critical for the success of a regional multi-use pathway located. The county and cities along the corridor will be required to agree to a set of uniform management and maintenance standards. Agencies will also be required to decide whether to manage the corridor using their own public works and parks agencies or if they will partner financial with the East Bay Regional Park District (EBRPD) to manage this facility and part of the EBRPD Regional Trail system.

Mid-Term Actions

Design Development

The East Bay Greenway environmental documentation will necessarily provide traffic operations analysis and design refinements for key on-street segments and intersections outside of the Oakland Subdivision. The environmental documentation will need to identify a preferred alternative, provide necessary environmental context, and provide appropriate mitigations and design refinements to enable certification by ACTIA. The next logical step in design development will be to seek design and construction funding for the rail-to-trail segment from 98th Avenue south to Industrial Parkway. Design development for this rail-to-trail segment will need to focus on a host of specific rail-to-trail design issues, including but not limited to those topics presented in **Chapter 3** and summarized here:

- Site specific rail-to-trail or rail-with-trail pathway crossing design at minor and major roadways
- Separation and setback from rail activity for both open and constrained areas

- Relocation or removal of above ground and/or overhead utilities potential conflicting with public access
- Overcrossing and bridge design

Project-Specific Environmental Analysis

Program- and project-specific analysis for the recommended alignment segments not covered in the East Bay Greenway Program EIR will require a primary emphasis on traffic operations at roadway crossings, air and noise impacts primarily during the construction phase, public services capacity to provide emergency response and safety patrol, and hazardous materials. Each of the following CEQA topics would be required for a project analysis.

Aesthetics

A multi-use pathway is being considered within the UPRR right-of-way. The UPRR corridor extends northwest-southeast, is generally flat and generally straight. The UPRR corridor includes a railroad and elevated BART tracks. The UPRR corridor extends through urbanized areas, and adjacent land uses include a mix of industrial, commercial, office and residential uses. Scenic vistas in the vicinity may include views to the East Bay Hills or other locally designated vistas. However, a portion of existing views may be obstructed by existing buildings and vegetation.

Introduction of a multi-use pathway within the UPRR corridor is not likely to impact existing scenic vistas or scenic resources as it would generally parallel existing rail facilities. In addition, a multi-use pathway may include landscaping, signage, and trail facilities (e.g., benches, garbage cans) and may improve the existing visual character or quality of the site and its surroundings.

A multi-use pathway may include lighting for safety and security. In this urban area, a new source of light would not adversely affect day or night time views.

Agricultural Resources

The areas of Oakland, San Leandro, Bay Fair, Ashland, Cherryland, Hayward and Union City adjacent to the UPRR corridor are characterized as Urban and Built-up Land by the California Department of Conservation, Farmland Mapping and Monitoring Program. In addition, the project area is located in a developed area near downtown Menlo Park. Introduction of a multi-use pathway within the UPRR corridor is not likely to impact agricultural resources.

Air Quality and Global Climate Change

The project site is located within the San Francisco Bay air basin and is within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The BAAQMD's Bay Area Clean Air Plan contains BAAQMD-wide control measures to reduce carbon monoxide and ozone precursor emissions. The closest BAAQMD monitoring sites to the project site are located at 9925 International Boulevard, Oakland and at 40733 Chapel Way, Fremont. Common pollutants (carbon monoxide, particulate matter, nitrogen dioxide, ozone, and sulfur dioxide) are monitored at these sites.

The excavation and earthwork that would be required for implementation of the multi-use pathway would likely be confined to temporary grading, landscaping, and construction activities. Both the area of ground disturbance and (due to the developed and level nature of the corridor) the amount of construction equipment operating within the project site would be limited. In addition, the proposed project would not generate a substantial number of car trips that would increase regional carbon monoxide and ozone precursor emissions. The multi-use pathway would provide northwest/southeast bicycle connections between Oakland and Union City, as well as connections to other bicycle and transit facilities, allowing for more convenient bike commutes throughout the East Bay, and could reduce the use of motorized vehicles, resulting in a decrease in the emission of criteria pollutants associated with internal combustion engines. Therefore, the proposed project is not expected to conflict with or obstruct implementation of relevant air quality plans.

As of March 2009, the San Francisco Bay air basin is under nonattainment status for ozone and particulate matter – both 10 micron (PM10) and fine (PM2.5) – per State standards. The air basin is under marginal attainment status for ozone at the federal level. Increases in PM10 and PM2.5 due to implementation of the proposed project would occur only during the construction period for the proposed project. Because earthwork would generally be confined to the footprint of the trail and its immediate surroundings, implementation of the multi-use pathway would not likely result in a cumulatively considerable increase in particulate matter. In addition, implementation of the BAAQMD's feasible control measures for construction emissions, including watering active construction sites, covering all trucks hauling loose materials, covering exposed stockpiles and unvegetated areas, and implementing measures to reduce emissions from construction equipment exhaust, would reduce this potential impact.

Implementation of the multi-use pathway would not result in the removal or disturbance of large quantities of saturated or hydric soils with high proportions of organic matter that would cause objectionable odors when the soil dries. Other components of the proposed project, including the installation of landscaping and the construction accessory uses, would not create objectionable odors. Existing sources of odor in the project vicinity, including odor from diesel exhaust from freight trains along short segments of the UPRR corridor, could expose persons using the multi-use pathway to objectionable odor. However, use of the corridor would consist of recreational (primarily biking) activities, thus users would experience only short-term exposure as they pass any such odor source.

Greenhouse Gas Emissions

Global climate change (GCC) is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades. Global surface temperatures have risen by $0.74^{\circ}\text{C} \pm 0.18^{\circ}\text{C}$ over the last 100 years (1906 to 2005). The rate of warming over the last 50 years is almost double that over the last 100 years. The prevailing scientific opinion on climate change is that most of the warming observed over the last 50 years is attributable to human activities. The increased amounts of carbon dioxide (CO₂) and other greenhouse gases (GHGs) are the primary causes of the human-induced component of warming. GHGs are released by the burning of fossil fuels, land clearing, agriculture, and other activities, and lead to an increase in the greenhouse effect.

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere, and enhancing the natural greenhouse effect, which is believed to be causing global warming. While

manmade GHGs include naturally-occurring GHGs such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), some gases, like hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆) are completely new to the atmosphere.

The State of California has taken the following steps to regulate and reduce GHG:

- Assembly Bill 32 (AB 32), the “Global Warming Solutions Act,” was passed by the California State legislature on August 31, 2006.
- On January 18, 2007, Governor Schwarzenegger signed Executive Order S-1-07, further solidifying California’s dedication to reducing GHGs by setting a new Low Carbon Fuel Standard. The Executive Order sets a target to reduce the carbon intensity of California transportation fuels by at least 10 percent by 2020 and directs the California Air Resources Board (CARB) to consider the Low Carbon Fuel Standard as a discrete early action measure.
- In June 2007 CARB approved a list of 37 early action measures, including three discrete early action measures (Low Carbon Fuel Standard, Restrictions on High Global Warming Potential Refrigerants, and Landfill Methane Capture).
- Senate Bill (SB) 375, signed into law on October 1, 2008, enhances the CARB’s ability to reach AB 32 goals by directing CARB to develop regional greenhouse gas emission reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035.

The 17.4 mile multi-use pathway being considered within the UPRR right-of-way would provide an alternative transportation route, and would connect to existing and planned bicycle and transit routes. Because no applicable numeric thresholds have yet been defined for GHGs in CEQA documentation, and because the precise causal link between an individual project’s emissions and global climate change has not been developed, it is reasonable to conclude that an individual development project cannot generate a high enough quantity of GHG emissions to affect global climate change.

To ensure that the multi-use pathway complies and does not conflict with or impede implementation of reduction measures identified in AB 32, the Governor’s Executive Order S-3-05, and other strategies to help reduce GHGs to the level proposed by the Governor, mitigation measures may be developed for the corridor. Mitigation measures may include use of locally produced and/or manufactured or “green” materials for construction of the project; use of efficient lighting systems, including light emitting diodes (LEDs), and lighting control systems; and creation of water-efficient landscapes along the project corridor. Additionally, as stated previously, construction of the multi-use pathway could result in a decrease in VMT and a concurrent decrease in vehicle GHG emissions.

Biological Resources

The UPRR corridor includes an active rail line as well as an active BART line on an elevated track. Vegetation within the corridor is minimal and is likely to consist of ruderal and non-native grasslands and secondary-growth scrub habitat. Landscaping changes associated with

implementation of the multi-use pathway would likely be limited to those necessary for trail buffering and restoration of construction disturbance.

The project site has been subject to significant disturbance and is not considered a significant migratory or native wildlife corridor, or a nursery site. The plant and wildlife species that currently occur within the project site have adapted to disturbed conditions and would not be adversely affected by project construction activities or the use of the project site as a bicycle route. Implementation of the multi-use pathway would not likely interfere with the movement of wildlife or the function of a nursery site.

However, the existing corridor crosses three creeks, and assuming freight rail and/or passenger rail use of the alignment continues, a separate multi-use trail bridge would be required north of Bay Fair BART (Estudillo Canal), Hampton Road (San Lorenzo Creek) and Whitman Street in the vicinity of Orchard Avenue (Ward Creek). The type of crossing for the creeks has not yet been determined. Potential impacts to biological resources associated with new creek crossing would need to be addressed on a site specific basis.

Cultural Resources

The multi-use pathway would be a transportation corridor similar in use to the historic use of the UPRR corridor. The developed nature of the corridor suggests that intact cultural resources are not likely present. The project corridor does not contain any structures, and it is unlikely that the development of a multi-use pathway within the UPRR corridor could impact any adjacent historical structures. The ground disturbance related to railroad construction and operation suggests that intact archaeological deposits that predate the railroad may have been disturbed by prior development.

However, the UPRR corridor includes three creek crossings, and a multi-use pathway may require new bridges adjacent to existing bridges. Areas adjacent to water ways are considered sensitive for prehistoric archaeological deposits. Potential impacts to archeological resources associated with new creek crossing would need to be addressed.

The corridor is generally flat, and as noted above, the ground was previously disturbed as part of the construction of the UPRR line. It is anticipated that minimal excavation or grading would be required to implement the multi-use pathway and it is unlikely that paleontological resources would be adversely affected.

Geology and Soils

The project corridor is located within the Coast Ranges Geomorphic Province, a relatively geologically young and seismically-active region on the western margin of the North American plate. In general, the Coast Ranges are composed of sedimentary bedrock with layers of recent alluvium filling the intervening valleys. The entire San Francisco Bay Area is located within the San Andreas Fault Zone (SAFZ), a complex of active faults forming the boundary between the North American and Pacific lithospheric plates. Movement of the plates relative to one another results in the accumulation of strain along the faults, which is released during earthquakes. The multi-use pathway would be subject to ground shaking. It may also be subject to liquefaction, subsidence, expansive soils, settling and lateral spreading. The trail and related structures must be designed and built to withstand these hazards.

The potential for erosion and loss of topsoil and any impacts related to the construction of the trail would also need to be evaluated and addressed.

Hazards and Hazardous Materials

The proposed multi-use pathway is located within the UPRR right-of-way, which historically has been used for freight and other rail operations; a few rail freight customers continue to use the corridor and BART service runs through the study area on an elevated structure. The multi-use pathway is bordered by a variety of industrial, commercial and residential land uses. The soil and other surface media within the railroad right-of-way and adjoining areas may contain environmental contaminants from spills, leaks, or the routine use of chemicals, such as herbicides to prevent plant growth along the tracks, that occurred during the corridor's many years of rail use. Potential contaminants from rail uses include metals, petroleum products, semi-volatile organic compounds, and pesticides. In addition, rail corridors can be subject to illegal dumping.

Because the corridor is located in an urban area and often parallels nearby busy streets and highways, aerially deposited lead and lead from the erosion of paint from older buildings may occur in surface soils within the multi-use pathway. Leaded gasoline was used as a vehicle fuel in the United States from the 1920s until the late 1980s. Although lead is no longer used in gasoline formulations, lead emissions from automobiles are a recognized source of contamination in soils along roads in urban areas. Elevated concentrations are well-documented along portions of nearby Interstate-880.

Workers could be exposed to chemical residues in the soil during construction activities (e.g., grading or excavation) via the inhalation of dust, inadvertent ingestion of soil, or direct contact with contaminated soil. Bicyclists and pedestrians could be exposed to chemical residues that remain in surface soils after the trail is constructed. Pre-construction surveys of the corridor for hazardous materials should be conducted. If deemed necessary by the results of the surveys, soil samples should be collected and evaluated to determine whether measures are needed to protect workers during construction or if special handling and/or disposal of soil is required. The preparation of a worker health and safety plan and/or a soil management plan that considers the concentration of chemical residues in soil would reduce or eliminate the potential risk to construction workers. Any contaminated surface materials should be evaluated to determine whether they can be left in place or should be removed, capped or otherwise treated to prevent future trail users from being exposed to hazardous concentrations. Proper disposition of the soil would reduce or eliminate the potential risk to trail users.

Construction of the multi-use pathway could involve the use and disposal of hazardous materials, such as solvents and paints. Compliance with hazardous materials regulations would ensure that these commonly used materials would be stored, used and disposed of in a safe manner. No acutely hazardous materials would be used during construction or project operations that would present a substantial risk to on- or off-site receptors, including sensitive receptors such as schools. As an urban trail, the project would not create hazards associated with urban/wildland fires or airport operations, or interfere with emergency response plans or emergency evacuation plans.

Hydrology and Water Quality

The multi-use pathway would include the development of a paved bicycle trail. Because this trail would be surrounded by the unpaved railroad corridor and open space (and associated landscaping),

the bicycle trail would not substantially increase runoff from the corridor site during storm events. Storm water would percolate into the unpaved portions of the corridor. In addition, bicyclists, who would be the main users of the project site, would not generate substantial quantities of hazardous materials. Implementation of the multi-use pathway could incrementally increase the amount of contaminants, such as dog waste, within the corridor; in addition, small quantities of fertilizers used for landscaping could infiltrate runoff from the project site. However, these substances would occur in relatively small concentrations that would not likely result in a substantial adverse effect to water quality.

Implementation of the multi-use pathway would include obtaining all necessary permits from the San Francisco Bay Region Water Quality Control Board (RWQCB), preparing a Stormwater Pollution Prevention Plan (SWPPP), meeting all requirements of the Alameda County Clean Water program, and submitting any grading plans to the respective jurisdictions.

Land Use and Planning Policy

A multi-use pathway is being considered within the UPRR right-of-way. The UPRR corridor includes a railroad and elevated BART tracks. The UPRR corridor extends through urbanized areas of Oakland, San Leandro, Bay Fair, Ashland, Cherryland, Hayward and Union City, and adjacent land uses include a mix of industrial, commercial, office and residential uses. Implementation of the multi-use pathway would not physically divide an established community and would result in an overall benefit to community integrity.

The UPRR Corridor Improvement Study, Existing Conditions Technical Memorandum includes a discussion on Background Policy Review. This section includes relevant policies from regional transportation and recreation agencies, Alameda County and the cities through which the corridor extends. The Study noted that there are several important themes identified in the planning documents reviewed and summarized; these themes include:

- The UPRR Oakland Subdivision is identified in regional transportation planning documents as a corridor for potential future rail expansion
- The UPRR Oakland Subdivision is identified in County and regional transportation planning documents as a corridor for a potential greenway or pedestrian and bicycle facility
- Local planning and land use documents consistently support the use of the corridor for a greenway or pedestrian and bicycle facility
- It is therefore likely that a multi-use pathway within the UPRR corridor would be consistent with relevant plans and policies.

Mineral Resources

As the project site is located in a developed urban area, it is assumed that there are no known mineral resources on or in the vicinity of the project site. As such, the implementation of a multi-use pathway would not be expected to affect mineral resources.

Noise

A multi-use pathway is being considered within the UPRR right-of-way. This land uses would encourage bicycle access and would not result in the generation of high noise levels. No long-term increase in ambient noise levels is expected as a result of implementation of the multi-use pathway.

The UPRR corridor extends through urbanized areas, and adjacent land uses include a mix of industrial, commercial, office and residential uses. Some of these adjacent land uses may contain stationary noise sources. In addition, implementation of the multi-use pathway within the UPRR corridor may expose trail users to high levels of rail noise. However, use of the corridor would consist of recreational and commuting bicycling activities, thus users would experience only short-term exposure as they pass any adjacent stationary noise sources or trains pass by.

Construction of the multi-use pathway would require minor excavation and earthwork activities. Although these activities could result in infrequent periods of high noise, this noise would not be sustained and would occur only during the temporary construction period.

Metropolitan Oakland International Airport (OAK) is located approximately 1.3 miles west of the UPRR corridor and the Hayward Executive Airport is located approximately 1.6 miles west of the UPRR corridor, exposing trail users to airplane noise. Due to the distance from these two airports and the orientation of the runways and flight patterns, the corridor does not lie within the 55 dBA CNEL noise contours of either airport.

Population and Housing

Implementation of the multi-use pathway would result in the development of a bicycle route within an existing UPRR corridor and would not directly or indirectly induce population growth and would not remove existing housing.

Public Services

Multi-use trails similar to the proposed project typically require one hour of police personnel time per day for every five miles of trail. Therefore, it is not expected that implementation of the proposed project would result in the need for a substantial increase in police or fire department staff. The proposed project includes no housing or permanent residences and so would not affect school enrollment or library use.

In addition, as noted above in the project description, safety elements for the multi-use pathway will be developed in subsequent stages of the project. It is recommended that the RWT project develop a public safety plan that includes: proper design and use of space to minimize crime and trespassing; incorporation of strong and damage-resistant construction materials; coordinated patrol and emergency response to the corridor; frequent sources of lighting, emergency reporting call-boxes, and other monitoring devices; and that events are frequently hosted along the trail corridor.

Recreation

Implementation of the multi-use pathway would result in a net increase of recreational space in Alameda County. The communities along the UPRR corridor currently lack access to recreational opportunities and open space, and the multi-use pathway may increase the ratio of parkland per

1,000 residents. Because the proposed project does not include any new residences or employment-generating uses, it would not increase the use of other parks such that the parks would undergo physical deterioration.

Transportation, Circulation, and Parking

Implementation of the multi-use pathway would ultimately allow for increased bicycle access through areas of Oakland, San Leandro, Bay Fair, Ashland, Cherryland, Hayward and Union City. Development of the multi-use pathway would offer a transportation alternative to driving, and could reduce regional car trips. In addition, the bicycle route is anticipated to be used mostly by commuters and neighborhood residents; it is not expected to result in substantially increased car visitation. Therefore, the proposed project would not cause an increase in car traffic which is substantial in relation to the existing traffic load and capacity of the street system.

As noted in the project description, primary design standards considered for any RWT include setback from operating railroads, barrier separation between the trail and operating railroad, trail-roadway crossings, trail-railroad crossings, signage, and other multi-use trail design standards. It is assumed that the design standards for the multi-use pathway developed in subsequent stages would ensure the safe access to and circulation along the multi-use pathway. In addition, it is assumed that any at-grade roadway crossings and bridges would be designed to safely accommodate additional pedestrians and bicycles.

The multi-use pathway currently under consideration does not include the provision of parking or identify the need for removal of existing parking adjacent to the corridor. As design of the corridor is developed, adequate parking capacity for the facility and/or adjacent land uses may need to be considered.

Utilities

Implementation of the multi-use pathway would not generate substantial quantities of wastewater or require the use of substantial quantities of water. Minimal water would be used for landscape irrigation and trail maintenance.

The proposed project would not alter existing storm water facilities, including culverts that extend under the surface of the project site. Implementation of the proposed project would preserve most of the UPRR corridor as unpaved open space. Runoff from the trail would percolate into the unpaved portion of the project site and is not expected to overburden existing storm drain facilities or require the construction of new storm drain facilities.

First-Phase Construction

First phase construction of the recommended alignment should focus on the highest potential use segments of the proposed rail-to-trail segment from 98th Avenue south to Industrial Parkway. A first phase should be comprised of physical improvements that can be reasonably constructed under assembled competitive grant funding not exceeding approximately \$10 Million in construction budget. Peralta Avenue to Elgin Way in San Leandro is an approximately 3.8 mile segment with an estimated construction budget of \$5.4 Million that passes through downtown San Leandro, expanding Transit-Oriented Development around the San Leandro BART station, existing residential and mixed-use neighborhoods, and connects to the Bay Fair BART station. This segment

would attract significant use, be highly visible, and would create significant momentum for the remainder of the corridor. On-street segments in Oakland, Hayward, and Union City could proceed concurrent with this major project.

Long-Term Actions

Second-Phase Construction

Future construction phases would proceed in appropriate-scale project increments in response to available funding. The corridor segment in South San Leandro through Central Hayward from Elgin way to Sycamore Avenue represents a next logical phase followed by the segment from Sycamore Avenue to Industrial Parkway.

Rail-with-Trail Development North of 98th Avenue

The short- and mid-term alignment recommended in this study north of 98th Avenue largely follows the recommendations presented by Urban Ecology in their East Bay Greenway report and the guidance provided by City of Oakland pedestrian and bicycle planning however acquisition of the Oakland Subdivision would create the opportunity for a rail-with-trail in conjunction with public ownership and leased operation of Oakland freight service to a short-haul rail operator. As discussed in **Chapter 3** of this document and as evidenced by many California and national rail-with-trail precedents narrow setback rail-with-trail facilities operate safely in a variety of urban contexts. The foreseeable low speed and low frequency service that would operate from Oakland Industrial properties to the Port of Oakland between 98th Avenue and 47th Avenue (where switchover to the Niles Subdivision occurs) would be compatible with a rail-to-trail under public ownership. This rail-with-trail segment would serve a valuable regional bikeway function by providing a link between the Coliseum BART Station/TOD area and the Fruitvale BART Station/TOD area.

6. Funding Plan

This chapter presents a summary of the financial need of the project along with existing and potential funding. This summary is followed by a catalog of the available and referenced funding sources.

The recommended alignment presented in this study requires significant financial capital to complete. Acquisition of the Oakland Subdivision, environmental analysis, design development, and project specific environmental permitting and clearance costs are presented in

Table 6-1. The \$102.5 Million in projected costs including an estimated \$65 Million for acquisition of the Oakland Subdivision and an estimated \$37.5 Million for design, permitting and construction may be partially paid for by existing funding sources, in addition to estimating the funding shortfall.

Aside from the money potentially available through the Dumbarton Rail Project, where \$35 Million may be available for Oakland Subdivision acquisition to provide for passenger rail connection to Union City Intermodal Station, much of the funding is expected to come from regional and local sources depending on local agency priorities and ability to support local significant investment in what will become a local and regional facility. Additionally, acquisition costs could be far less in an acquisition involving a land swap or other negotiating strategies benefitting both Alameda County as a whole and the UPRR.

A conservative approach is used in this table to project the likely amount of these sources that may be used on East Bay Greenway/Oakland Subdivision Corridor improvements, since this regional corridor represents only one small part of the bicycle, pedestrian, and trail needs in any community. For example, five percent of the estimated \$80 Million available from Alameda County sales tax measures for bicycle and pedestrian projects is projected to be used on Oakland Subdivision corridor segments.

Regional sources available for bicycle and pedestrian projects such as Safe Routes to Transit, Regional Bikeway Network Program, and other sources including the Climate Action Program, are projected to total \$200 Million over the next five years of which 3.75 percent could be used on the Oakland Subdivision corridor.

State sources available for bicycle and pedestrian projects such as the Bicycle Transportation Account, Safe Routes to Schools, Office of Traffic Safety, and other sources is expected to total \$30 Million of which five percent could be used on the Oakland Subdivision corridor.

The 2010 federal surface transportation act will reauthorize and hopefully expand numerous sources, some of which could be used on the Oakland Subdivision corridor. For estimating purposes, the amounts assume two (2) authorizations over the next 15 years. The Oakland Subdivision corridor could potentially receive five percent of the Bay Area allocation for Transportation, Community, and System Preservation, five percent of the Recreational Trails allocation, five percent of the Congestion Mitigation and Air Quality program, five percent of the Safe Routes to School program, and five percent of the Transportation Enhancements program.

UPRR CORRIDOR IMPROVEMENT STUDY
PROJECT RECOMMENDATIONS

Based on these assumptions, there will be a shortfall of \$36.6 Million to complete the Oakland Subdivision corridor. The critical time period for identification of this shortfall is in the short-term in order to support acquisition.

Table 6-1: Oakland Subdivision Corridor Improvement Financial Needs

Projected Costs	
Total Acquisition ¹	\$65,000,000
Total Project Cost ²	\$37,536,000
Total Financial Need	\$102,536,000
Potential Funding Sources	
Active Transportation ³	\$12,500,000
Dumbarton Rail Project ⁴	\$35,000,000
Local Sources	
Sales Tax ⁵	\$4,000,000
Regional Sources ⁶	\$7,500,000
EBRPD Measure WW ⁷	\$400,000
State Sources ⁸	\$1,500,000
Federal Sources ⁹	
TCSP ¹⁰	\$700,000
Recreational Trails ¹¹	\$250,000
CMAQ ¹²	\$1,100,000
Safe Routes to School ¹³	\$800,000
Transportation Enhancements ¹⁴	\$2,200,000
Total Potential Funding	\$65,950,000
Surplus/(Shortfall)	(\$36,586,000)

- 1 Acquisition cost is based on Regional Rail Plan documentation prepared in 2007 assuming \$60 Million for the Oakland Subdivision from Port of Oakland to Niles Junction. This number was increased based on 2.85% rate of inflation for 2007 and 3.85% rate of inflation for 2008. This acquisition cost could be substantially reduced if Alameda County and the UPRR negotiate a land swap such as currently being explored.
- 2 Total construction includes construction cost, design (20% of construction cost), environmental permitting and clearance (15% of construction cost), and planning level contingency (30% of construction cost).
- 3 The Alameda County Transportation Improvement (ACTIA) legislative campaign for Active Transportation funding through the federal transportation bill reauthorization could generate up to \$50 Million for Alameda County that would be combined with existing sales tax and other anticipated funding (already accounted for in this table) for a total \$135 Million investment in Active Transportation including transit access, regional greenways, and programs/education. The estimated total financial need for urban greenways is \$57 Million including the East Bay Greenway, Iron Horse Trail and Bay Trail. 25% of the \$50 Million request is assumed.
- 4 \$35 Million is the remaining Regional Measure 2 funds in the Dumbarton Rail Project currently allocated for securing and purchase of the needed rail rights of way (ROW) along UPRR's Oakland Subdivision for the operation of the Dumbarton trains from Industrial Parkway in Hayward to the Shinn Yard in Fremont. This funding may not be available if moved by MTC to other projects from the Dumbarton Rail Project.
- 5 Assumes 5% of Alameda County sales tax measure moneys for bikeways/trails (estimated at \$80 Million) including both non-competitive and competitive shares, subject to variation based on available sales tax revenue, a competitive grant process, and regional and local priorities.
- 6 Assumes 3.75% of regional funding sources including Safe Routes to Transit, Regional Bikeway Network Program, Climate Action Program (estimated at \$200 Million for the Bay Area over the next five years).
- 7 East Bay Regional Park District Measure WW includes \$400,000 specifically to assist local jurisdictions with acquisition of the UPRR Oakland Subdivision for the East Bay Greenway.
- 8 Assumes 5% of state funding in Bay Area from Bicycle Transportation Account, Safe Routes to School, Office of Traffic Safety and other sources.
- 9 Federal funding from the federal surface transportation act is estimated based on state and Bay Area share; assumes two authorizations over the next 15 years.
- 10 Transportation, Community and System Preservation Program, 5% of Bay Area share.
- 11 Recreational Trails program, 5% of Bay Area share.
- 12 Congestion and Mitigation and Air Quality Program, 5% of Bay Area share.
- 13 Safe Routes to School Program, 5% Bay Area share.
- 14 Transportation Enhancements, 5% Bay Area share.

Federally-Administered Funding

The primary federal source of surface transportation funding—a portion of which can be used to fund bicycle and pedestrian facilities—is SAFETEA-LU, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. SAFETEA-LU is the fourth iteration of the transportation vision established by Congress in 1991 with the Intermodal Surface Transportation Efficiency Act. Also known as the federal transportation bill, the \$286.5 Billion SAFETEA-LU bill was passed in 2005 and authorizes Federal surface transportation programs for the five-year period between 2005 and 2009.

SAFETEA-LU funding is administered through the state (Caltrans and the State Resources Agency) and regional planning agencies. Most, but not all, of these funding programs are oriented toward transportation versus recreation, with an emphasis on reducing auto trips and providing inter-modal connections. SAFETEA programs require a local match of between zero percent and 20 percent. SAFETEA funding is intended for capital improvements and safety and education programs and projects must relate to the surface transportation system.

Specific funding programs under SAFETEA-LU include, but are not limited to:

- Congestion Mitigation and Air Quality (CMAQ) – Funds projects that are likely to contribute to the attainment of national ambient air quality standards
- Recreational Trails Program—\$370 Million nationally through 2009 for non-motorized trail projects
- Safe Routes to School Program—\$612 Million nationally through 2009
- Transportation, Community and System Preservation Program—\$270 Million nationally over five years
- Federal Lands Highway Funds—Approximately \$4.5 Billion dollars are available nationally through 2009

To be eligible for Federal transportation funds, States are required to develop a State Transportation Improvement Program (STIP) and update it at least every four years. A STIP is a multi-year capital improvement program of transportation projects, and serves to coordinate transportation-related capital improvements of the metropolitan planning organizations and the state.

In California, the STIP includes projects on and off the State Highway System and is funded with revenues from the Transportation Investment Fund and other funding sources. The California STIP is typically updated every two years. To be included in the STIP, projects must be included in the Interregional Transportation Improvement Plan (ITIP), prepared by Caltrans or the Regional Transportation Improvement Plans (RTIPs), prepared by regional agencies. Bicycle and pedestrian projects are eligible for inclusion.

The following programs are administered by the Federal government.

Transportation, Community and System Preservation (TCSP) Program

The Transportation, Community and System Preservation (TCSP) Program provides federal funding for transit oriented development, traffic calming and other projects that improve the efficiency of the transportation system, reduce the impact on the environment, and provide efficient access to jobs, services and trade centers. The program provides communities with the resources to explore the integration of their transportation system with community preservation and environmental activities. TCSP Program funds require a 20 percent match. Congress appropriated \$204 Million to this program in Fiscal Year 2009.

Rivers, Trails and Conservation Assistance Program

The Rivers, Trails and Conservation Assistance Program (RTCA) is a National Parks Service program which provides technical assistance via direct staff involvement, to establish and restore greenways, rivers, trails, watersheds and open space. The RTCA program provides only for planning assistance—there are no implementation monies available. Projects are prioritized for assistance based upon criteria which include conserving significant community resources, fostering cooperation between agencies, serving a large number of users, encouraging public involvement in planning and implementation and focusing on lasting accomplishments.

State-Administered Funding

The State of California uses both federal sources and its own budget to fund the following bicycle and pedestrian projects and programs.

Bicycle Transportation Account

The Bicycle Transportation Account (BTA) provides state funding for local projects that improve the safety and convenience of bicycling for transportation. Because of its focus on transportation, BTA projects, including trails, must provide a transportation link. Funds are available for both planning and construction. BTA funding is administered by Caltrans and cities and counties must have an adopted Bicycle Transportation Plan in order to be eligible. City Bicycle Transportation Plans must be approved by the local MPO prior to Caltrans approval. Out of \$5 Million available statewide, the maximum amount available for individual projects is \$1.2 Million.

Federal Safe Routes to School (SRTS) and California Safe Routes to School (SR2S)

Caltrans administers funding for Safe Routes to School projects through two separate and distinct programs: the state-legislated Program (SR2S) and the federally-legislated Program (SRTS). Both programs competitively award reimbursement grants with the goal of increasing the number of children who walk or bicycle to school. The programs differ in some important respects.

California Safe Routes to School Program expires December 21, 2012, requires a ten percent local match, is eligible to cities and counties and targets children in grades K-12. The fund is primarily for construction, but up to 10 percent of the program funds can be used for education, encouragement, enforcement and evaluation activities. Forty-eight million dollars are available for Cycle 8 (FY 08/09 and 09/10).

The Federal Safe Routes to School Program, which expired September 30, 2009, reimburses 100 percent, is eligible for cities, counties, school districts, non-profits, and tribal organizations, and targets children in grades K-8. The program reauthorization is currently pending. Program funds can be used for construction or for education, encouragement, enforcement and evaluation activities. Construction must be within 2 miles of a grade school or middle school. Forty-six million dollars are available for Cycle 2 (FY 08/09 and 09/10).

<http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm>

Congestion Mitigation and Air Quality Improvement Program

Congestion Mitigation and Air Quality Improvement Program (CMAQ) funds are directed to transportation projects and programs which contribute to the attainment or maintenance of National Ambient Air Quality Standards in non-attainment or air quality maintenance areas for ozone, carbon monoxide, or particulate matter under provision in the Federal Clean Air Act. The fund is administered by Caltrans. Bicycle and pedestrian projects and programs are eligible for funding. About \$1.7 Billion dollars are available nationwide per year. Estimated annual program level for California is \$360 Million. Federal share payable is up to 100 percent for 2008/09.

http://www.dot.ca.gov/hq/LocalPrograms/lam/Transportation_Funding_Guidebook.pdf

Recreational Trails Program

The Recreational Trails Program of SAFETEA-LU provides funds to states to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. Examples of trail uses include hiking, bicycling, in-line skating, equestrian use, and other non-motorized as well as motorized uses. In California, the funds are administered by the California Department of Parks and Recreation. A minimum 12 percent of local match is required. California's apportionment was \$1.7 Million in 2009 and proposals are due October 1, 2009 for 2010 apportionment funds. RTP projects must be ADA compliant. Recreational Trails Program funds may be used for:

- Maintenance and restoration of existing trails;
- Purchase and lease of trail construction and maintenance equipment;
- Construction of new trails; including unpaved trails;
- Acquisition of easements or property for trails;
- State administrative costs related to this program (limited to seven percent of a State's funds); and
- Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a State's funds).

<http://www.fhwa.dot.gov/environmnet/rectrails/index.htm>

California Conservation Corps

The California Conservation Corps (CCC) is a public service program which occasionally provides assistance on construction projects. The CCC may be written into grant applications as a project partner. In order to utilize CCC labor, project sites must be public land or be publicly accessible. CCC labor cannot be used to perform regular maintenance, however, they will perform annual maintenance, such as the opening of trails in the spring.

<http://www.ccc.ca.gov/>

Transportation Planning Grant Program

The Transportation Planning Grant Program, administered by Caltrans, provides two grants that can be used to construct and plan bicycle and pedestrian facilities.

The Community-Based Transportation Planning Grant provides funding for projects that exemplify livable community concepts including bicycle and pedestrian improvement projects. Eligible applicants include local governments, MPOs and RPTAs. A 20 percent local match is required and projects must demonstrate a transportation component or objective. There are \$3 Million dollars available annually statewide.

The Environmental Justice: Context Sensitive Planning Grants promote context sensitive planning in diverse communities and funds planning activities that assist low-income, minority and Native American communities to become active participants in transportation planning and project development. Grants are available to transit districts, cities, counties and tribal governments. This grant is funded by the State Highway Account at \$1.5 Million annually state-wide. Grants are capped at \$250,000.

Petroleum Violation Escrow Account (PVEA)

In the late 1970s, a series of Federal court decisions against various United States oil companies ordered refunds to the States for price overcharges on crude oil and refined petroleum products during the period of price control regulations. To qualify for PVEA funding, a project must save or reduce energy and provide a direct public benefit within a reasonable time frame. In the past, the PVEA has been used to fund programs based on public transportation, computerized bus routing and ride sharing, home weatherization, energy assistance and building energy audits, highway and bridge maintenance, and reducing airport user fees. In California, transportation related PVEA projects are administered by Caltrans. PVEA funds do not require a match and can be used as match for additional Federal funds.

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

Funding Administered by Regional Agencies

Regional bicycle and pedestrian grant programs come from a variety of sources, including SAFETEA-LU, the State budget and vehicle registration fees. The following programs are administered by regional agencies.

Active Transportation Legislation

Alameda County and the Alameda County Transportation Improvement Authority (ACTIA) are both involved in the 2010 Campaign for Active Transportation, a potential future funding source. The campaign aims to build on the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Nonmotorized Transportation Pilot Programs by creating a \$2 Billion program where 40 communities would each received \$50 Million in federal funding to shift automobile trips to biking and walking. Alameda County has outlined an Active Transportation Plan that:

- Advances Pedestrian and Bicycle Access to Transit
- Connects Communities with Urban Greenways
- Inspires the Community to Walk and Bike

The UPRR Oakland Subdivision Corridor Project meets the three goals of the Active Transportation Plan and completion of EBG was included in this plan. If Alameda County were to receive \$50 Million in Active Transportation funding, this project would benefit as a second phase of EBG development.

There are a variety of other potential funding sources including local, state, regional and federal funding programs as well as private sector funding that can be used to construct the proposed corridor improvements. Most of the federal, state and regional programs are competitive and involve the completion of extensive applications with clear documentation of the project need, costs and benefits. The following resources are provided to assist the Alameda County and local jurisdiction staff in identifying appropriate sources of funding for the recommendations in this plan. The following should be noted:

- Funding sources are highly competitive, with many agencies competing for the same “pots” of money.
- Funding is limited; capital funding needs far outstrip available funding every year.
- Applying for funding is a time-consuming and staff-intensive process

Regional Surface Transportation Program

The Regional Surface Transportation Program (RSTP) is a block grant program which provides funding for bicycle and pedestrian projects, among many other transportation projects. Under the RSTP, Metropolitan planning organizations, such as the Metropolitan Transportation Commission's (MTC), prioritize and approve projects which will receive RSTP funds. Metropolitan planning organizations can transfer funding from other federal transportation sources to the RSTP program in order to gain more flexibility in the way the monies are allocated. In California, 62.5 percent of RSTP funds are allocated according to population. The remaining 37.5 percent is available statewide.

Transportation for Livable Communities Program

The Transportation for Livable Communities Program (TLC) provides grant monies to public agencies to encourage land use decisions that support compact, pedestrian and bicycle friendly development near transit hubs. MTC administers the two-thirds of TLC program with funds from the Surface Transportation Program (STP) and the Congestion Mitigation and Air Quality Improvement Program (CMAQ). Alameda County Congestion Management Agency administers the remaining one-third of TLC funds. TLC grants are capped at \$6 Million. Funds may be used for capital projects.

http://www.mtc.ca.gov/planning/smart_growth/tlc_grants.htm

Transportation Fund for Clean Air Program (TFCA)

TFCA funds are generated by a four dollar surcharge on automobile registration fees in the nine-county Bay Area. Approximately \$20 Million is collected annually which funds two programs: 60 percent of the TFCA monies go to the Regional Fund and 40 percent go to the County Program Manager Fund. The Regional Fund is administered by the Bay Area Air Quality Management District (BAAQMD).

The Bicycle Facility Program (BFP) is a grant program provided by the BAAQMD's Transportation Fund for Clean Air Regional Fund. Bay Area public agencies are eligible to apply for these funds that are applicable for new bicycle facilities, including Class I, II, and III. Eligible projects also include bike parking and bike racks for transit vehicles. The total amount available in fiscal year 2009/2010 is \$600,000. The minimum grant for a single project is \$10,000 and the maximum grant is \$120,000.

http://www.baaqmd.gov/pln/grants_and_incentives/bfp/index.htm

Regional Bicycle Network Program (Replaces the Regional Bicycle and Pedestrian Program)

MTC's Transportation 2035 Plan essentially replaces the former Regional Bicycle and Pedestrian Program with a Regional Bicycle (RBN) Program. The RBN Program will fund projects included in the Regional Bicycle Network as described in MTC's Regional Bicycle Plan. As revised, the program no longer funds pedestrian facilities. Program details will be adopted in RBN Program guidelines early next year.

http://www.mtc.ca.gov/planning/bicyclespedestrians/MTC_Regional_Bicycle_Plan_Update_FIN_AL.pdf

Safe Routes to Transit (SR2T)

Regional Measure 2 (RM2), approved in March 2004, raised the toll on seven state-owned Bay Area bridges by one dollar for 20 years. This fee increase funds various operational improvements and capital projects which reduce congestion or improve travel in the toll bridge corridors.

Twenty million dollars of RM2 funding is allocated to the Safe Routes to Transit Program, which provides competitive grant funding for capital and planning projects that improve bicycle and

pedestrian access to transit facilities. Eligible projects must be shown to reduce congestion on one or more of the Bay Area's toll bridges. The competitive grant process is administered by the Transportation and Land Use Coalition and the East Bay Bicycle Coalition. Funding is awarded in five \$4 Million grant cycles. The first round of funding was awarded in December 2005. Future funding cycles will be in 2011 and 2013.

www.transcoalition.org/c/bikeped/bikeped_saferoutes.html

Funding Administered by Local Agencies

TDA Article 3

Transportation Development Act (TDA) Article 3 funds are state block grants awarded annually to local jurisdictions for transit, bicycle and pedestrian projects in California. Funds for pedestrian projects originate from the Local Transportation Fund (LTF), which is derived from a ¼ cent of the general state sales tax. LTF funds are returned to each county based on sales tax revenues. Eligible pedestrian and bicycle projects include: construction and engineering for capital projects; maintenance of bikeways; bicycle safety education programs (up to five percent of funds); and development of comprehensive bicycle or pedestrian facilities plans. A city or county is allowed to apply for funding for bicycle plans not more than once every five years. These funds may be used to meet local match requirements for federal funding sources. Two percent of the total TDA apportionment is available for bicycle and pedestrian funding.

<http://www.mtc.ca.gov/funding/STA-TDA/>

Measure B -Bicycle and Pedestrian Funding

Measure B is a sales tax measure administered by the Alameda County Transportation Improvement Authority (ACTIA). It is a half-cent sales tax devoted to transportation projects and programs. Five percent is devoted to bicycle and pedestrian improvements. Of this amount, 75 percent is distributed directly to local jurisdictions according to population. The remaining 25 percent is awarded competitively. Eligible projects include bikeways, plans, and educational programs.

<http://www.acta2002.com/bikeped.html>

Non-Traditional Funding Sources

Community Development Block Grants

The CDBG program provides money for streetscape revitalization. Federal Community Development Block Grant Grantees may “use CDBG funds for activities that include (but are not limited to): acquiring real property; reconstructing or rehabilitating housing and other property; building public facilities and improvements, such as streets, sidewalks, community and senior citizen centers and recreational facilities, paying for planning and administrative expenses, such as costs related to developing a consolidated Plan and managing CDBG funds; provide public services for youths, seniors, or the disabled; and initiatives such as neighborhood watch programs.” California distributed \$39 Million in CDBG funds in 2008.

www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm

Assessment Districts

Local government entities can form an assessment district to fund the construction and maintenance of public facilities, including sidewalks and paths. The process begins with property owners who want an improvement signing a petition. The proposed district includes all property owners who will benefit from the proposed improvement. A public hearing is held, and if a majority of property owners approve, the assessment district is established. Once the assessment district is approved, property owners within the assessment district are levied a special assessment in proportion to the share of the benefit they receive from the improvement.

Business Improvement Districts

Business improvement districts (BIDs) are public/private partnerships used to promote individual business districts through a variety of means, including the construction and maintenance of streetscape improvements, paths, and bicycle facilities. A city, county or joint powers authority can establish a BID and levy annual assessments on businesses within its boundaries. To establish a BID, a public hearing must be held, and a majority of businesses must agree to the BID. In forming a BID, the boundaries and the improvements and activities to be financed are established. These cannot be changed once the BID is formed.

Developer Fees, Exactions and Impact Fees

With the increasing support for “routine accommodation” and “complete streets,” requirements for new development, road widening and new commercial development provide opportunities to efficiently construct pedestrian facilities. If a significant nexus to justify the improvements exists, local governments can require such improvements as a condition of project approval.

One potential local source of funding is developer impact fees, typically tied to trip generation rates and traffic impacts produced by a proposed project. A developer may attempt to reduce the number of trips (and hence impacts and cost) by paying for on- and off-site pedestrian improvements designed to encourage residents, employees and visitors to the new development to walk rather than drive. Establishing a clear nexus or connection between the impact fee and the project’s impacts is critical to ensure legal soundness.

Mello-Roos Community Facilities Act

The Mello-Roos Community Facilities Act was passed by the Legislature in 1982 in response to reduced funding opportunities brought about by the passage of Proposition 13. The Mello-Roos Act allows any county, city, special district, school district or joint powers of authority to establish a Community Facility Districts (CFD) for the purpose of selling tax-exempt bonds to fund public improvements within that district. CFDs must be approved by a two-thirds margin of qualified voters in the district. Property owners within the district are responsible for paying back the bonds. Pedestrian and bicycle facilities, construction and maintenance are eligible for funding under CFD bonds.

<http://mello-roos.com/pdf/mrpdf.pdf>

Volunteer and Public-Private Partnerships

Local schools or community groups may use the bikeway projects as a project for the year, possibly working with a local designer or engineer. Work parties may be formed to help clear the right of way where needed. A local construction company may donate or discount services. A challenge grant program with local businesses may be a good source of local funding, where corporations ‘adopt’ a bikeway and help construct and maintain the facility.

Table 6-2: Funding Sources

<p><u>Acronyms:</u> AQMD - Air Quality Management District Caltrans - California Department of Transportation CMAQ - Congestion Mitigation and Air Quality CTC - California Transportation Commission FHWA - Federal Highway Administration RTPA - Regional Transportation Planning Agency State DPR - California Department of Parks and Recreation (under the State Resources Agency) SAFETEA – Safe Accountable Flexible, Efficient Transportation Equity Act: A Legacy for Users TAM – Transportation Authority of Marin</p> <p><u>Jurisdictions for Fairfax, San Anselmo, and San Rafael, California:</u> Caltrans - Caltrans District 4 TAM – Transportation Authority of Marin Congressional District 6 Assembly District 6 Senate District 3 County District 1 and 2</p>	<p><u>Resources:</u> Caltrans TEA-21 website - http://www.dot.ca.gov FHWA – SAFETEA-LU website - http://www.fhwa.dot.gov/reauthorization http://www.dot.ca.gov/hq/LocalPrograms/www.fhwa.dot.gov/environmnet/rectrails/index.htm http://www.ccc.ca.gov/ http://www.mtc.ca.gov/planning/smart_growth/hip.htm http://www.mtc.ca.gov/funding/STA-TDA/ http://www.baaqmd.gov/pln/grants_and_incentives/bfp/index.htm www.transcoalition.org/c/bikeped/bikeped_saferoutes.html http://www.acta2002.com/bikeped.html www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm http://mello-roos.com/pdf/mrpdf.pdf</p>
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UPRR CORRIDOR IMPROVEMENT STUDY
PROJECT RECOMMENDATIONS

	Due Date	Agency	Annual Total	Matching Requirement	Eligible Applicants	Eligible Bikeway Projects			Comments
						Commute	Recreation	Safety / Ed	
Federally-Administered Funding									
Transportation, Community and System Preservation Program	pending	FHWA	\$25 m nationwide	--	State, local, MPOs	--	--	--	Projects that improve system efficiency, reduce environmental impacts of transportation, etc. Contact K. Sue Kiser, Regional FHWA office, (916) 498-5009
Rivers, Trails and Conservation Assistance Program	--	NPS	--	--	Governments, communities	X	X	--	RTCA staff provide technical assistance to communities so they can conserve rivers, preserve open space, and develop trails and greenways. Contact NPS at (202) 354-6900.
State-Administered Funding									
Bicycle Transportation Account	December	Caltrans	\$5 m	min. 10% local match construction on	City, county	X	--	X	State-funded. Projects that improve safety and convenience of bicycle commuters. Contact Ken McGuire, Caltrans, (916) 653-2750
Federal Safe Routes to School (SRTS)	July 18	Caltrans	\$46 m	none	State, city, county, MPOs, RTPAs and other organizations that partner with one of the above	X	--	X	Construction, education, encouragement and enforcement program to encourage walking and bicycling to school. Contact Caltrans District 4 Transportation Planning and Local Assistance office at (510) 286-5226.
California Safe Routes to School (SR2S)	May 31	Caltrans	\$48.5 m	10%	City, county	X	X	X	Primarily construction program to enhance safety of pedestrian and bicycle facilities. Contact Caltrans District 4, (510) 286-5598
Congestion Mitigation and Air Quality Program (CMAQ)	Dec. 1 yearly	RTPAs, Caltrans	\$360 m	None	Local and state governments within federally certified jurisdictions	X	--	--	Only air quality nonattainment and maintenance areas for ozone, carbon monoxide and certain PM-10 projects are eligible.
Recreational Trails Program (RTP)	Oct. 1	State DPR	\$3 m	20% match	Jurisdictions, special districts, non profits with management responsibilities over the land	--	X	--	For recreational trails to benefit bicyclists, pedestrians, and other users; contact State Dept. of Parks & Rec. , Statewide Trails Coordinator, (916) 653-8803

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						Commute	Recreation	Safety / Ed	
California Conservation Corps	On-going	California Conservation Corps	Labor	None	Federal and state agencies, city, county, school district, NPO, private industry	X	X	--	Contact the Corps at (916) 341-3100.
Community Based Transportation Planning Grant Program	Nov.	Caltrans	\$3 m	20% local	MPO, RPTA, city, county	X	--	--	Projects that exemplify livable community concepts. Contact Leigh Levine, Caltrans, (916) 651-6012
Environmental Justice: Context Sensitive Planning Grants	Apr. 1	Caltrans	\$3 m	10%	RTPA, MPO, city, county, tribal government, transit agency. Universities and community colleges, community-based organizations, NPOs, other public entities if partnering with one of above.	X	X	X	Requires a local match of 10% with a 5% in-kind contribution maximum. For more information call (916) 651-6889.
Petroleum Violation Escrow Account (PVEA)	On-going	Caltrans	\$0.5 m	--	City, county, transit operators	--	--	--	Bicycle and trail facilities have been funded with this program. Contact Caltrans Federal Resource Office, (916) 654-7287
Funding Administered by Regional Agencies									
Regional Surface Transportation Program (RSTP)	varies by RTPA	RTPAs, Caltrans	\$320 m	11.47% non-federal match	Cities, counties, transit operators, Caltrans, and MPOs	X	X	--	RSTP funds may be exchanged for local funds for non-federally certified local agencies; no match may be required if project improves safety. Contact Cathy Gomes, Caltrans, (916) 654-3271.
Transportation for Livable Communities Program	Jun. 23	MTC	\$16 m	None	City, neighborhood, transit agency, NPO	X	X	--	Program provides technical assistance and capital grants. TLC grants are capped at \$400,000. Contact MTC at (510) 817-5700.

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PROJECT RECOMMENDATIONS

	Due Date	Agency	Annual Total	Matching Requirement	Eligible Applicants	Eligible Bikeway Projects			Comments
						Commute	Recreation	Safety / Ed	
Transportation Fund for Clean Air Program (Bicycle Facility Program)	Sept. 14 (BFP only)	BAAQMD, CMAs	\$600K (BFP only)	None	Public agencies within BAAQMD's jurisdiction	X	--	--	Two channels: the Regional Fund (administered by BAAQMD) receives 60% of the TFAC revenues and the Program Manager Fund (administered in coordination with the Bay Area's CMAs) receives 40% of TFCA revenues. Amount of BFP grant funds requested must be between \$10,000 and \$120,000.
Regional Bicycle Network Program (replaces the Regional Bicycle and Pedestrian Program)	--	MTC	--	--	Local governments, transit operators, other public agencies	X	X	--	Determination of the fund amount, application due date and any matching requirement is scheduled for Nov. 2009. Funding anticipated to become available in early 2010. Contact MTC at (510) 817-5733.
Safe Routes to Transit	Aug. 12	MTC	\$4 m	None	Public agencies	X	X	--	Eligible projects must have a bridge nexus (i.e., reduce congestion on one or more state toll bridges). Program is run by Transform (510-740-3150) and the East Bay Bicycle Coalition (510-533-7433).
Funding Administered by Local Agencies									
Transportation Development Act (TDA) Article 3 (2% of total TDA)	Jan.	RPTA (MTC)	\$746K for Marin County	None	City, county, joint powers agency	X	X	--	Projects must be included in either a detailed circulation element or plan included in a general plan or an adopted comprehensive bikeway plan and must be ready to implement within the next fiscal year. Contact MTC at (510) 817-5733.
Measure B – Pedestrian and Bicycle Funds		ACTIA	--	--	Any Alameda County public agency, non-profits that meet ACTIA's requirements	X	X	X	Projects must be in Alameda County. Pedestrian and bicycle capital projects, programs and master plans are eligible.
Non-Traditional Funding Sources									
Community Development Block Grants	--	U.S. Dept. of Housing and Urban Development (HUD)	--	--	City, county	X	X	--	Funds local community development activities such as affordable housing, anti-poverty programs, and infrastructure development.

UPRR CORRIDOR IMPROVEMENT STUDY
PROJECT RECOMMENDATIONS

	Due Date	Agency	Annual Total	Matching Requirement	Eligible Applicants	Eligible Bikeway Projects			Comments
						Commute	Recreation	Safety / Ed	
Assessment Districts	--	City, county, joint powers authority	--	--	Neighborhoods, communities	X	X	X	Only those who benefit from the improvement may be taxed. Taxes should be tied to the amount of benefit received.
Business Improvement Districts	--	City, county, joint powers authority	--	--	City, county, joint powers authority, private industry	X	X	--	A public-private partnership in which businesses in a defined area pay an additional tax or fee in order to fund improvements within the district's boundaries.
Developer Fees or Exactions (developer fee for street improvements - DFSI); Impact Fees	--	City, county	--	--	--	X	X	--	Mitigation required during land use approval process
Mello-Roos Community Facilities Act	--	City, county, special district, school district, joint powers authority	--	--	City, county, special district, school district, joint powers of authority	X	X	X	Property owners within the district are responsible for paying back the bonds.
Volunteer and Public-Private Partnerships	--	--	--	--	Public agency, private industry, schools, community groups	X	X	X	Community-based initiative to implement improvements.