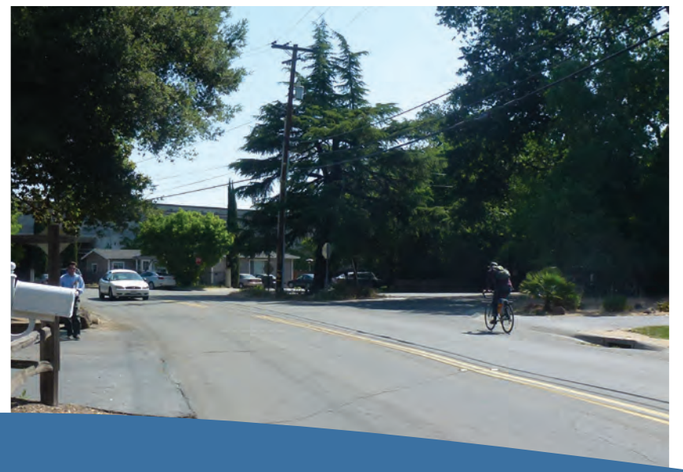

Olympic Corridor Trail Connector Study

Preferred Alignment Report

June 2015

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IN ASSOCIATION WITH:
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PREPARED FOR:
Contra Costa County
City of Lafayette
City of Walnut Creek

This project is funded through a grant from the Contra Costa County Transportation Authority

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Table of Contents

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1. Introduction

The Olympic Boulevard Corridor Trail Connector Study is an investigation to connect two well-used, multi-use regional trails in Contra Costa County – the Lafayette-Moraga Trail and the Iron Horse Regional Trail – with low stress, convenient, and family friendly bicycle and pedestrian facilities.

The communities along the corridor envision a trail connector that will help them connect, become healthier, and support thriving communities. Attractive and low stress facilities such as this vision for the Olympic Boulevard Corridor Trail Connector (Connector) are attractive and welcoming to the broad community and contribute to economic development.

The Connector will provide many benefits to the communities of Lafayette, Contra Costa County, and Walnut Creek. These benefits include:

- Connecting community members to work
- Connecting community members to recreation activities
- Connecting community members to schools
- Connecting community members to shopping
- Supporting economic activity
- Supporting active living through walking or bicycling
- Supporting community development by slower travel by walking or bicycling

This Report describes the preferred alignment and types of facilities that will serve community members of all ages and abilities.

2. Background and Context

2.1 Study Overview

The Olympic Boulevard Corridor Trail Connector Study (Study) assessed several potential alignments for improved pedestrian and bicycle facilities in the Olympic Boulevard Corridor, connecting two paved multi-use regional trails in Contra Costa County: the Lafayette-Moraga Trail (LMT) and the Iron Horse Trail (IHT). The LMT connects the cities of Lafayette and Moraga and the community of Canyon. The IHT extends from Concord to Dublin, following the Southern Pacific Railroad right-of-way (ROW). The Study objective is to identify the best alignment or combination of alignments to connect the two trails.

This Study is funded by Contra Costa Measure J (2004) Transportation for Livable Communities grant administered by the Contra Costa Transportation Authority (Authority). Consistent with the grant program description in the voter approved Measure J, the trail connector will improve walking and bicycling access to housing, schools, job centers, and transit by:

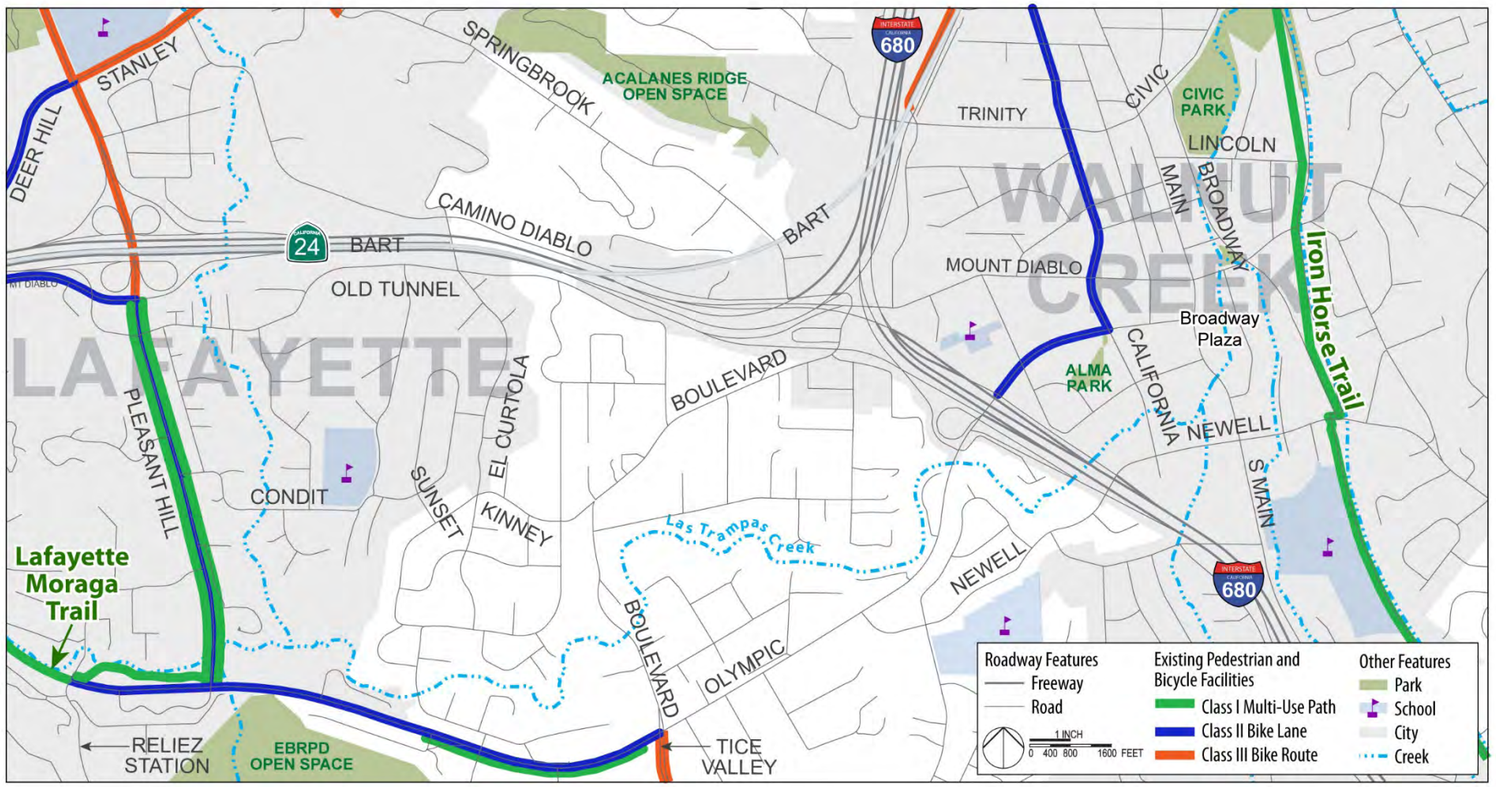
- Providing a high-quality non-motorized facility connecting housing and jobs, services, and retail areas including Mt. Diablo Boulevard and St. Mary's College in Lafayette and Downtown Walnut Creek;
- Providing a high-quality non-motorized facility(s) connecting housing to schools;
- Providing an improved bicycle and pedestrian connections to transit in Lafayette and downtown Walnut Creek; and
- Improving access to the IHT which, in turn, provides additional non-motorized, countywide access to retail, recreational areas, and job centers.

2.1.1 Scope and Study Area

The Study began in spring 2013 and examined several possible alignments and identified a draft preferred alignment connecting the LMT and the IHT. The Study Area spans three jurisdictions including the City of Lafayette, unincorporated Contra Costa County, and the City of Walnut Creek (Figure 2-1).

The Study recommends improvements which could be implemented in phases, in addition to geographic phasing of improvements. The recommendations include short-term/low-cost improvements as well as longer term/larger scale projects that would require substantial reconstruction of road corridors and travel lanes, or collaboration with private property owner's regarding potential modification of private frontage improvements. In any case, these improvements are intended to provide a connector between the LMT and IHT, which would significantly improve safety and accessibility for pedestrians and bicyclists along the corridor.

Figure 2-1: Study Area



2.1.2 Existing Conditions Report

An Existing Conditions Report, provided as a separate document, includes detailed background information for and analysis of potential alignment options. It describes the relevant background, policies, conditions, issues, objectives, and potential challenges in the Study Area for each possible alternative. Review of these alternatives through a Technical Advisory Committee (TAC), local Stakeholders Group, and a general public workshop resulted in the preferred/recommended alternatives presented here.

2.1.3 Technical Advisory Committee

The Technical Advisory Committee (TAC) for the project consisted of staff from Contra Costa County, the cities of Walnut Creek and Lafayette, the East Bay Regional Park District, and the Contra Costa Flood Control District (CCFCD). The TAC provided valuable input on previous and current planning efforts, identified opportunities and challenges, and guided the alignment selection.

The TAC met through a series of meetings between 2013-2015.

2.1.4 Stakeholder Meetings and Public Input

A Stakeholder meeting was held on August 15, 2013. The purpose of this meeting was to gather input from representative groups on existing conditions, opportunities, and challenges for the Connector Trail. Groups invited to participate included:

- Acalanes School District
- Bike East Bay
- Bike Walnut Creek
- Broadway Shopping Center
- Caltrans
- Greenbelt Alliance
- Hall Equities Group
- Kaiser Permanente
- Lafayette Bicycle Pedestrian Advisory Committee
- Lafayette Chamber of Commerce
- Lafayette Circulation Commission
- Lafayette Homeowners Association: Olympic Oaks
- Lafayette Homeowners Association: Pleasant Hills and Valley
- Lafayette Homeowners Council
- Lafayette Park, Recreation and Trails Commission
- Lafayette Unified School District
- Parkmead Association
- Parkmead Elementary
- Saranap Association
- Sierra Club
- Sun Valley Swim Club
- Supervisor Andersen's Office
- Supervisor Mitchoff's Office
- Sustainable Lafayette
- Walnut Creek Chamber of Commence
- Walnut Creek Downtown Business Association
- Walnut Creek School District
- Walnut Creek Watershed Council
- White Pony Preschool

Following the stakeholder meeting, a public meeting was held on December 5, 2013 where approximately 35 community members attended. Similar to the stakeholder meeting, this meeting focused on existing conditions, opportunities, and challenges. A public meeting to share the Draft Study was held on September 16, 2014 where approximately 30 community members attended and provided input on the recommendations.

In addition to the formal meetings, Bike East Bay organized a bike ride of route alternatives on October 12, 2013. County and consultant staff participated.

Parent riding to the Lafayette Moraga Trail

3. Connector Development Vision, Goals and Objectives

3.1 Vision Statement

The Olympic Boulevard Corridor Trail Connector will close a major gap in the Central Contra Costa County trail network. This gap closure will link the Lafayette-Moraga and Iron Horse Regional Trails creating a network of comfortable, convenient off-street trails and on-street bike and pedestrian facilities connecting to area schools, employment centers, transit hubs, shopping districts, neighborhoods, community facilities, parks, and open spaces. This Connector, along with the Lafayette-Moraga and Iron Horse Regional Trails and the Contra Costa Canal Trail, which joins the Iron Horse Regional Trail 1.5 miles to the north, will connect the majority of Central Contra Costa cities with the off-street trail network.

This vision statement was developed with input from a variety of stakeholders, including Contra Costa County and the cities of Lafayette and Walnut Creek. Residents were invited to share their vision for the Connector during several public events.

The ideal vision for the Connector expressed in the public participation process is a separated, buffered "cycle track" facility (see Section 5.3 for descriptions of a cycle track and other facility types), ideally with a separate path or sidewalk for pedestrians. This type of facility accommodates the broadest range of users with the highest degree of comfort and safety.

Some parts of the Olympic Boulevard Corridor already have a well-separated shared use path that may be an appropriate comparable facility for a suburban setting. The study team carefully evaluated the opportunities, challenges and requirements to create a continuous separated shared-use or bicycle-oriented path through the entire corridor.

3.2 Goals and Objectives

This Study identifies the following goals and objectives for the Connector based on County, Walnut Creek, and Lafayette planning document goals and objectives for the Connector or pedestrian and bicycle facilities in general:

- Goal: The project should improve bicycle and pedestrian safety and connectivity in Contra Costa County by meeting the following objectives:
  - Provide an enjoyable, low-stress[1] experience along the route that is similar to the experience of using the LMT and IHT and away from the noise and fumes from local roads and highways where feasible.
  - Ensure that the facility offers a direct route and meets or exceeds best practices for pedestrian and bicycle facility design.
  - Provide links and improve access to connect pedestrian and bicycle facilities and important destinations along the corridor (e.g., employment and shopping centers, transit hubs, schools, parks, and open spaces).
  - Improve safety conditions for bicyclists and pedestrians in the corridor by minimizing potential conflicts with motor vehicles and different user groups.
  - To maximize the range of potential users, consider the needs and capabilities of each user group and users of all ages and abilities in the trail design.
  - Maximize the functional aspects of any recommendation in terms of convenience, gradients, directness, cost, and connectivity to major destinations, while minimizing negative impacts to traffic operations.
  - Design a project that is within the financial resources of the County and cities to construct and maintain.
  - Design the project to be consistent with local, state, and federal standards, policies, and goals on pedestrian and bicycle facilities including ADA.
- Goal: The project should minimize impacts to the existing environment by meeting the following objectives:
  - Design the project to avoid significant adverse impacts to the environment.
  - Avoid or minimize impacts to private property.

[1] *As used in this Study, a low stress facility is a facility that meets Level of Stress (LTS) 1 or 2 of four levels as defined by Mekuria, Furth & Nixon in "Low-Stress Bicycling and Network Connectivity" (Mineta Transportation Institute, May 2012). LTS 1 is considered suitable for almost all bicyclists, including children trained to safely cross intersections. LTS 2 is suitable to most adult bicyclists but demanding more attention than might be expected from children.*

3.3 Design Guidelines

The Connector, or other pedestrian and bicycle improvements, should conform to California design standards. Pathway design in California is governed by many design documents, the most important of which include the Caltrans Highway Design Manual (HDM), the California Manual of Uniform Traffic Control Devices (MUTCD), and the Access Board Draft Final Accessibility Guidelines for Outdoor Developed Areas. The *Urban Bikeway Design Guide* of the National Association of City Transportation Officials (NACTO) is an important reference for the latest techniques.[2] The 2001 Contra Costa County Trail Design Resource Handbook supplements the HDM by providing guidance on when and how to exceed the HDM minimum standards for Class I bikeways. The cities of Lafayette and Walnut Creek do not have specific design standards for paved trails and defer to Caltrans standards.

The Iron Horse Trail at South Broadway and Newell Avenue

[2] *Caltrans endorsed the NACTO Urban Bikeway Design Guide and the Urban Street Design Guide in April 2014.*

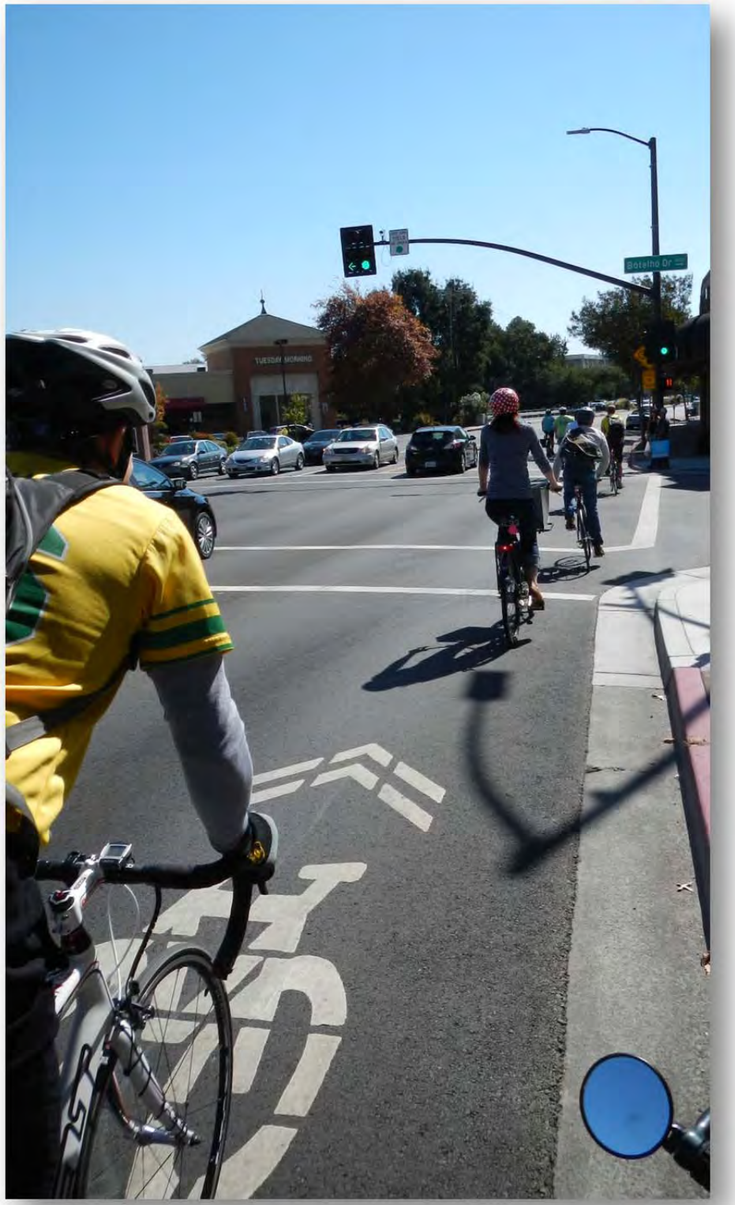
4. Alignments Considered

4.1 Alignment Selection Criteria and Environmental Challenges Considered

Alignment Selection Criteria

The criteria used to guide the development of the preferred alignment were informed by the Contra Costa Countywide Bicycle and Pedestrian Plan's evaluation criteria for prioritizing projects as well as input from the TAC, Stakeholder Group, and the community. The criteria include:

- **Range of Users**: The Connector should attract and meet the needs of a broad array of distinct groups of users, including school children, students, seniors, the disabled, families, commuters, and recreationalists.
- **User Experience:** The Connector should provide a low-stress, family-friendly experience that functions for the intended and likely user groups, and addresses potential conflicts between user groups: pedestrians, bicyclists, and persons with disabilities.
- **Neighborhood Compatibility:** The Connector should strive to maintain neighborhood character and may provide traffic calming.
- **Public Support:** The Connector should have public and local jurisdiction support.
- **Destinations:** The Connector should strive to serve key existing and planned activity centers such as shopping areas, employment centers, transit centers, stations or stops, civic buildings, parks, schools, libraries, and other community facilities.
- **Feasibility:** The options should meet basic tests of cost vs. benefit, with cost considerations including environmental impact, right-of-way acquisition, and construction cost, and benefits including the ability of the facility to accommodate a wide range of users.
- **Right-of-Way:** The Connector should include minimal requirement to secure additional ROW and/or agreements from other parties to complete the trail improvements.
- **Environmental Issues:** The Connector should have minimal potential to adversely impact geologic stability, storm drainage, biological or cultural resources, aesthetics, noise, water quality, or other factors typically addressed during the state or federal environmental review process.



South California Boulevard, Walnut Creek
Photo courtesy of John Cunningham

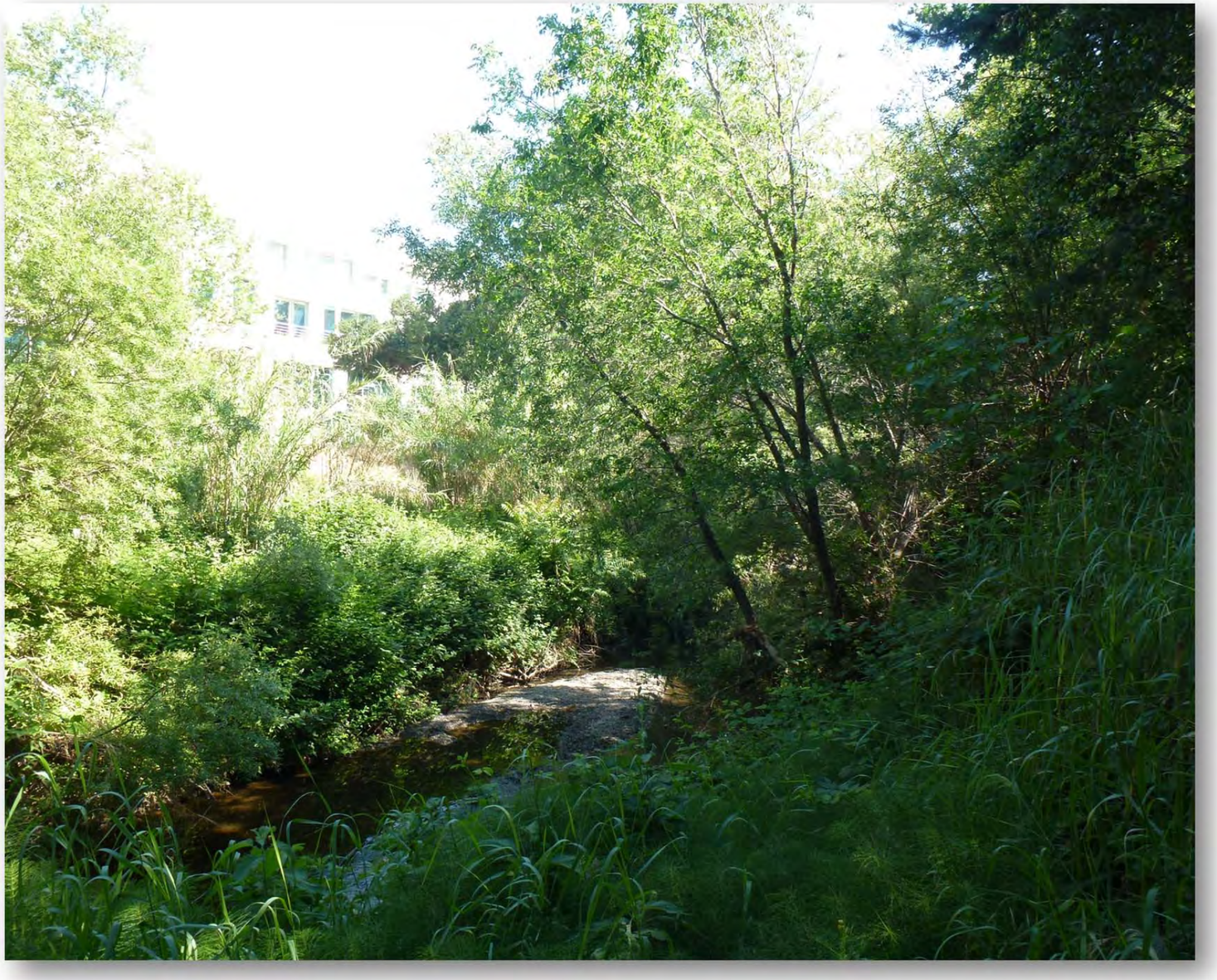
Engineering Challenges

In order to achieve a low-stress, family-friendly connection for a wide range of users, several challenge points in the Study Area were considered and addressed, such as:

- **Use of available ROW and functional allocation of space:** There is little opportunity to acquire additional ROW in this highly-developed corridor. There are heavy, often fast traffic flows, and many complicated intersections and turn movements.
- **Transitions from Class I Bikeways to Class II or Class III facilities:** Ideally, the most appropriate facility can be planned for any given situation, but transitions between paths and bike lanes or routes may create challenges for how bicyclists can safely cross the street, along with wayfinding/directional issues.
- **Connection through downtown Walnut Creek/the Broadway Plaza area:** Downtown Walnut Creek is one of the premier retail and entertainment attractions in the county. It is walkable for pedestrians, but has no well-defined east-west route for bicyclists.
- **Crossings of and connections to busy roads:** This will be critical to the safety and utility of the potential improvements.
- **I-680 undercrossings:** Each of the identified alignments has a constrained undercrossing of I-680. Sidewalks are present, but are currently too narrow for a shared bicyclist and pedestrian facility.
- **Creek alignments:** These alignments are challenging due to lack of public ROW, potential conflicts with adjacent land uses, resources, and flood control operations.

Specific solutions to these challenges are described in Chapter **Error! Reference source not found.**. Proposed Preferred Alignment.

A number of constraints, such as limited ROW and cost concerns, may warrant consideration of an interim phase before an ultimate alignment can be implemented.



The study strives to avoid significant adverse impacts to the environment

Biological Challenges

The study corridor is largely developed, which limits the likelihood for occurrence of sensitive biological resources. Based on the field reconnaissance, sensitive resources appear to be limited to regulated trees and the jurisdictional waters associated with Las Trampas and San Ramon Creeks. The potential for occurrence of special-status species along most of the Connector alignment is considered highly unlikely. The two exceptions to this are 1) the possible presence of a number of special-status species in the natural habitat along the creek corridors at bridge crossings, and 2) the possibility that nests of birds are in active use in trees along the trail alignment. Special-status species possibly associated with the aquatic and riparian habitat of the creek corridors could be addressed through conduct of preconstruction surveys by a qualified biologist, worker training and construction exclusion, and appropriate monitoring. Any active nests regulated under State Fish and Game Code and the federal Migratory Bird Treaty Act could be addressed through controls on timing of vegetation removal, preconstruction surveys by a qualified biologist, and appropriate avoidance until young birds have successfully fledged if an active nest has been located within the vicinity of improvements.

The crossings of Las Trampas Creek at South California Boulevard and San Ramon Creek at Newell Avenue would require new bridge structures through regulated habitat. Based on the assumed alignment, the new bridge structures would require removal of mature native trees and affect the banks at both crossings. The extent of disturbance would depend on bridge design, including the need for any support footings, removal of existing vegetation, and other variables. Both streams are perennial and construction may require temporary dewatering of the active channel, again depending on design. Authorizations would be required by both the California Department of Fish and Wildlife (CDFW) and Regional Water Quality Control Board (RWQCB), and if disturbance below the ordinary high water mark is required (including temporary dewatering during construction) then authorization would also be required by the U.S. Army Corps of Engineers (USACE). Involvement from these agencies would focus on minimizing project-related impacts to areas in their various jurisdictions and potential mitigation efforts including creating, restoring, or enhancing wetlands to compensate for those affected. Given that jurisdictional waters would be affected (new bridges over Las Trampas and San Ramon Creeks in the long-term options) and agency authorizations would be required, this would be considered a significant impact of the project with a high level environmental constraint.

The potential impacts of the project on tree resources will depend on final improvement designs. Based on a preliminary review, however, a considerable number of regulated trees could be removed. A survey of tree trunk location, size, and species would be necessary to accurately assess potential impacts on regulated tree resources. Tree loss would occur along some roadway segments and at the new bridge crossings of Las Trampas Creek on South California Boulevard and San Ramon Creek at Newell Avenue. Given the proximity of tree trunks and root systems to the existing roadway prism, careful construction practices would be critical to minimizing damage and decline of trees to be retained along the Connector alignment. Given that regulated trees would be lost and affected, this would be considered a significant impact of the project with a high level of environmental constraint.

4.2 Eliminated Route Alternatives

This Study reviewed all the public roads that provide significant east-west connections between the two regional trails as well as portions of the Las Trampas Creek corridor that have maintenance roads or are in public ownership and connecting streets or other public corridors between the alternative routes that might be used to create a complete connection.

This section describes routes that were initially considered, but were eliminated through the technical and public review process. These are shown on Figure 4-1. A more detailed analysis of the eliminated route alternatives is provided in the Existing Conditions Report.

Connections to the Olympic Boulevard Route (orange):

Fatal Flaws: Steep hills and environmental challenges

Paulson Lane is a connection within the City of Walnut Creek from Olympic Boulevard southeast via Paulson Lane, a buffer strip in the I-680 ROW, a trail and bridge along and across Las Trampas Creek (discussed in more detail under the Las Trampas Creek Route below) and another buffer strip in I-680 ROW to Newell Avenue (alternative to the western part of Newell Avenue). Paulson Lane should be considered for further study or future connections.

I-680 Off-Ramp / ROW is a connection within the City of Walnut Creek south along the I-680 off-ramp from Olympic Boulevard to Newell Avenue (uses same bridge across Las Trampas Creek).

Alpine Road / Botelho Drive / S. California Boulevard is a connection within the City of Walnut Creek from Olympic Boulevard east of I-680 south on Alpine Road, east on Botelho Drive, and south on S. California Boulevard to Newell Avenue.

Boulevard Way / Mt. Diablo Boulevard Route (blue):

Fatal Flaws: Steep hills, poor sight distance, narrow streets, relatively circuitous route, challenge of navigating under the 24/680 interchange and ramps, and the heavy traffic on Mt Diablo Boulevard.

Boulevard Way in unincorporated Contra Costa County runs from the Olympic Boulevard/Tice Valley Road intersection north and east to the City of Walnut Creek at Mt. Diablo Boulevard then following Mt. Diablo Boulevard east to the IHT. An alternative to using the north-south portion of Boulevard Way was also evaluated.

Condit Road / Leland Drive / Meek Place / Sunset Loop /Kinney Drive is a connection from Olympic Boulevard north along Pleasant Hill Road, then east via Condit Road, Leland Drive, Meek Place, and Sunset Loop in the City of Lafayette, and Kinney Drive to Boulevard Way in unincorporated Contra Costa County.

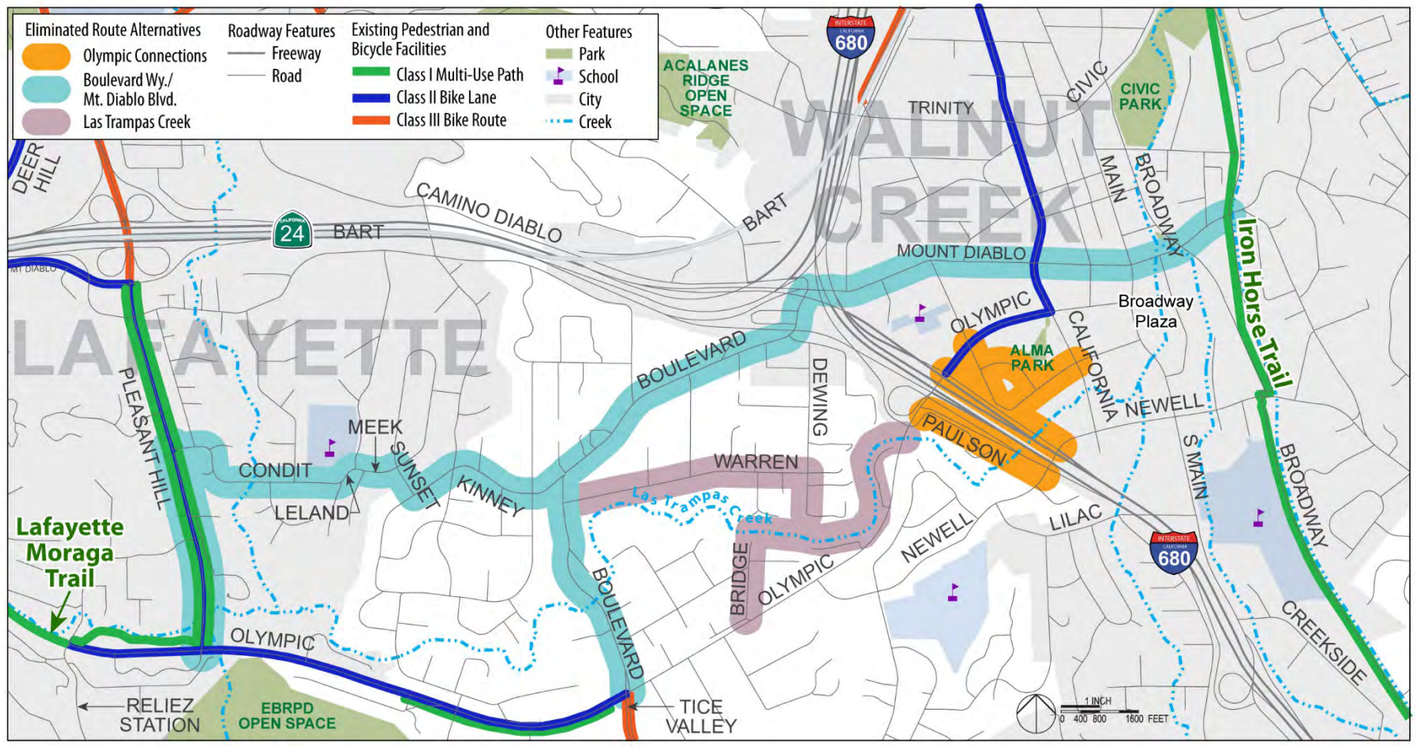
Las Trampas Creek Route (purple):

Fatal Flaws: Indirect connections with the roadway network, limited right-of-way, and potential conflict with adjacent residences.

Most of *Las Trampas Creek* is in private ownership and has residences abutting the creek. However, the portion of the creek from Bridge Road east to Olympic Boulevard in unincorporated Contra Costa County has creek access roads and easements owned by the Contra Costa Flood Control and Water Conservation District, and portions of the creek under and east of I-680 within the City of Walnut Creek are in public ownership by Caltrans. Potential routes to extend or connect to the Creek Route included:

- *Warren Road and Dewing Lane* in unincorporated Contra Costa County from Boulevard Way to Olympic Boulevard (if a bridge is implemented), and;
- *Bridge Road* in unincorporated Contra Costa County from Warren Road to Olympic Boulevard, would require construction of a new pedestrian bridge over the creek.

Figure 4-1: Eliminated Route Alternatives



5. Proposed Preferred Alignment

5.1 Alignment Overview

The preferred route shown in Figure 5-1 is based on the initial review process and identified community preference.

Preferred Route: from the LMT along Olympic Boulevard to California Boulevard, south on California Boulevard to Newell Avenue; Newell Avenue east to the IHT.

Strengths: Primary existing route for bicycle and walking trips, most direct route, most opportunity for low-stress facility improvement, and most popular alignment identified by community members and stakeholders.

Olympic Boulevard is the main east-west arterial connecting downtown Walnut Creek to the Rossmoor community and to Lafayette. This is also the primary existing route for bicycle and pedestrian connections: it is the most direct route, has significant existing facilities, and the most opportunity for improvement toward the goal of a pathway facility separated from traffic – ideally with separate space for pedestrians and bicyclists.

Starting at Reliez Station Road in the City of Lafayette, the route continues east along Olympic Boulevard through unincorporated Contra Costa County to the City of Walnut Creek west of I-680.

The first portion of the route includes improved segments of pathways separated from the roadway west of Tice Valley Boulevard and a "sidepath" adjacent to the roadway extending from Tice Valley Boulevard to Olympic Boulevard at Newell Avenue.

The eastern portion of Olympic Boulevard, starting with the I-680 interchange, has very heavy traffic and constrained width, as does California Boulevard and the portion of Newell Avenue east of California Boulevard.

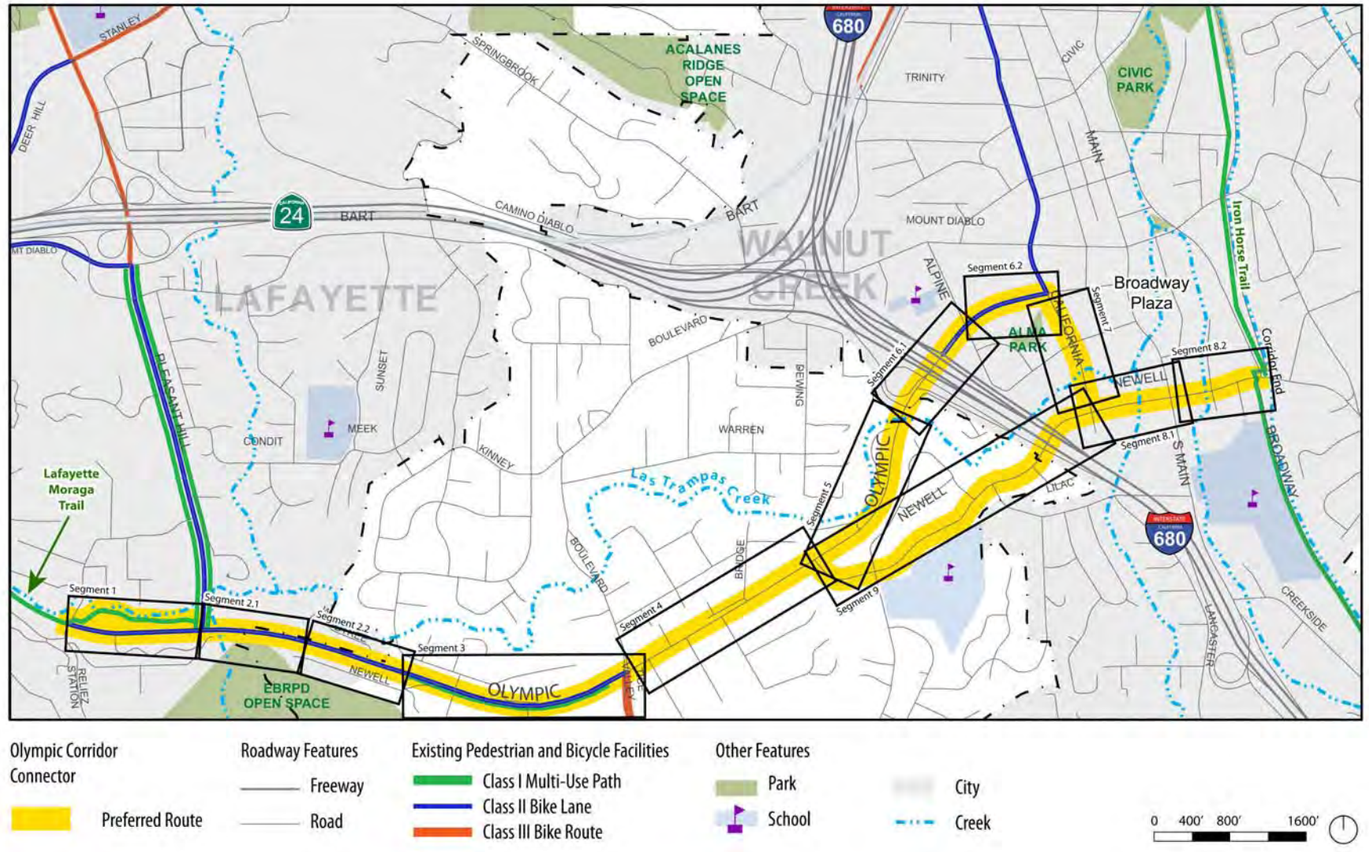
The western portion of Newell Avenue provides an alternative to the eastern portion of the preferred Connector alignment. This portion of Newell Avenue is a narrow, winding, tree-lined residential street. Vehicle turns into Newell Avenue from Olympic Boulevard are blocked to deter through vehicle traffic. There is very limited space for bicycle or pedestrian facility improvements, but Newell Avenue will inevitably continue to be an important bicycle and pedestrian connection, especially to the southern portion of the City of Walnut Creek. This is already a popular route for bicyclists and an important route to Parkmead Elementary School and the Dorris-Eaton School on the west side of I-680 and Las Lomas High School on the east.

The eastern portion of Newell Avenue is a heavily –travelled 4 to 6 lane connector through office and commercial areas and serves the busy Kaiser Hospital and adjacent parking structures.

5.2 Chapter Organization

Short and long-term alternatives for improvement of the Connector alignment are presented moving west to east. The route is divided into a series of 14 maps (see Figure 5-1) in order to show sufficient detail. The maps are grouped into 10 segments reflecting changes and similarities of conditions along the route. Maps are accompanied by a series of cross-sections and descriptions of potential short-term and long-term improvements. In some cases there are alternative approaches for how space can be secured to construct the Connector improvements.

Figure 5-1: Preferred Route Alignment



5.3 Preferred Alignment and Improvement Types

5.3.1 Preferred Alignment

Table 5-1 summarizes the improvement concepts for the preferred alignment. This study provides further detail on the potential scope of improvements that could occur given the opportunities, constraints, prior and current plans and polices, and the expressed interests of the community.

Table 5-1: Summary of Recommended Improvements

Segment		Jurisdiction	Potential Improvement	Related Plans, Efforts
1	Olympic Blvd.: Reliez Station Rd. to Pleasant Hill Rd.	Lafayette	**Short Term:** Convert existing bike lanes to buffered bike lanes by narrowing vehicle lanes; extend existing path on S. side; signing and marking improvements at crossing of Reliez Station Rd.; wayfinding improvements at Pleasant Hill Rd. intersection **Long Term:** None – there is already a separate trail	Pending study by City of Lafayette. City of Lafayette is planning to implement a traffic signal at Reliez Station Rd and roundabout at Pleasant Hill Rd.
2.1	Olympic Blvd.: Pleasant Hill Rd. to Windtree Ct.	Lafayette	**Short Term:** Create buffered bike lanes as above **Long Term:** Widen existing path on north side to create 10 foot sidepath (requires retaining wall tapering up to 10 feet tall, and median narrowing with tree replacement)	
2.2	Olympic Blvd.: Windtree Ct. to Newell Ct.	Lafayette & CC County	**Short Term:** Create buffered bike lanes **Long Term:** Widen existing path on north side to create 14 foot sidepath (requires narrowing median and lane shift to S. at east end; redesign of Newell Ct. intersection and connections	
3	Olympic Blvd.: Newell Ct. to Boulevard Way/ Tice Valley Rd.	CC County	**Short Term:** Create buffered bike lanes; connect existing Class I path on S. side to Tice intersection; provide bike pockets and crossing improvements at intersection **Long Term:** Extend continuous path or sidewalks along N. side (requires approx. 4 foot lane shift to the south)	
4	Olympic Blvd.: Boulevard Way/ Tice Valley Rd. to Newell Ave.	CC County	**Short Term:** Create continuous bike lanes; improve existing sidepath; improve crosswalks to Newell Ave.; improve right turn for bikes from EB Olympic Blvd. to SB Newell Ave. **Long Term:** Continue the sidepath approximately 100 feet to connect to Newell Ave. (may be included w/ Segment 5)	
5	Olympic: Newell Ave. to I-680	CC County	**Short Term:** Create bike lanes in constrained portions at turn pockets; buffered bike lanes on other portions **Long Term:** Expand the existing sidewalks fronting the Villa townhome complex to create a 10 to 12 foot wide sidepath by narrowing lanes and wide portions of medians, eliminating up to 8 curbside parking spaces out of 30. At one location it may be necessary to shift the south side curb 2 feet south to create needed space, involving tree removal.	
6.1	Olympic Blvd.: I-680 to Alpine Road	Walnut Creek	**Short Term:** Create bike lanes on S. side; bike pockets on N side **Long Term:** Create a sidepath along the south side of Olympic from Paulson Ln. to Alpine Rd. by constructing retaining walls. Provide enhanced crossing improvements.	City of Walnut Creek has submitted a grant application for improvements at I-680 undercrossing
6.2	Olympic Blvd.: Alpine Rd. to S. California Blvd.	Walnut Creek	**Short Term:** Convert existing bike lanes to buffered bike lanes by narrowing vehicle lanes **Long Term:** Add a bike path north of the existing sidewalk on the south side. Create space either by removing a vehicle lane or shifting the roadway 10 to 12 feet north in conjunction with future redevelopment of the properties on the north side	
7	S. California Blvd.: Olympic Blvd. to Newell Ave.	Walnut Creek	**Short Term:** Add "sharrows" with green backing to designate lanes as shared with bikes **Long Term:** On first block convert existing wide sidewalk/plaza on E. side to separate bike path on curb side and sidewalk on inside with street tree, light, and utility space in between. On second block create sidepath by eliminating 2 parking spaces S. of Botelho and 3 to 4 parking spaces on W. side S. of creek and shifting lane W.s, extending curb, and installing bicycle/pedestrian bridge over creek	
8.1	Newell Ave: S. California Blvd. to S. Main St.	Walnut Creek	**Short Term:** Add green backing to existing "sharrows" designating lanes as shared with bikes; create bike lanes from S. California Blvd. west on Newell Ave. to I-680 undercrossing **Long Term:** Create sidepath on N. side by narrowing lanes and extending north side curb; OR add a bike path to south of existing sidewalk (create space either by removing a vehicle lane OR narrowing lanes and acquiring 5 – 6 feet of ROW on the south side and shifting roadway south); OR create an all-new sidewalk and bike path in conjunction with future redevelopment of the properties on the north side	City has concept plan for a mid-block crosswalk at Kaiser that might conflict with long-term options
8.2	Newell Ave: S. Main St. to Broadway and IHT	Walnut Creek	**Short Term:** Add green backing to existing "sharrows" designating lanes as shared with bikes **Long Term:** Add a bike path to south of existing sidewalk (create space either by removing a vehicle lane) OR create an all-new sidewalk and bike path by narrowing lanes and acquiring 5 – 6 feet of ROW beyond the existing sidewalk on north side; OR create an all-new sidewalk and bike path in conjunction with future redevelopment of the properties on the north. Install a bicycle/pedestrian bridge over creek; sidepath or sidewalk plus bike path continued to Broadway as part of mall redevelopment project; crossing improvements at Broadway intersection to connect to IHT	Broadway Plaza redevelopment plan includes plan for shared use path along Newell Ave. City has concept plan for adding a lane on this portion – reflected in long-term concept. Sidepath shown is not as wide as improvement concept
9	Newell Ave.: west of I-680	CC County	Wayfinding and marking of route	County working with residents on traffic calming concepts
10	Southern connections to the Iron Horse Trail	Walnut Creek	Provide wayfinding signage to aid in connections to/from Olympic/Newell Connector	

5.3.2 Design Concepts

The Indianapolis Cultural Trail is an 8-mile, world-class urban bike and pedestrian path in downtown Indianapolis, Indiana. It was mentioned by public participants in the current study as a good example of a major trail facility. It seamlessly connects neighborhoods, cultural districts, and entertainment amenities while serving as the downtown hub for central Indiana's vast greenway system. The Cultural Trail was made possible by a large public and private collaboration led by Central Indiana Community Foundation, the City of Indianapolis, and several not-for-profit organizations.

Indianapolis Cultural Trail

Preferred Design Concept 1: Bike path or "cycle track" with separate sidewalk or pedestrian path

One configuration of the preferred bicycle/pedestrian facility is illustrated in Figure 5-2. This would include a bike path or "cycle track," ideally 10 to 12 feet wide depending on adjacent obstacles, and separated from motor vehicle lanes by a buffer such as a landscape or decorative pavement strip and/or curb, pylons, or low barrier. A barrier of railing height would not be desirable because bicyclists could hit it and fall into the vehicle lanes. The inner side, away from the curb, would be occupied by a sidewalk with 5 to 8 feet of clear space, depending on the setting and density of anticipated pedestrian traffic. The street trees, street lights, and utilities such as power poles, boxes, signals, and signal controller equipment that typically occupy the outer few feet of the sidewalk space would occupy a 3 to 5 foot zone between the sidewalk and the bike path. Note that this concept is not compatible with bus stops; additional space for the bus stop would need to be provided in the street outside the bike path, or the bus stop would need to be located on a portion of the route that had a shared use path as described under Design Concept 2.

Design Concept 1 is recommended as a long-term improvement in portions of downtown Walnut Creek where there is sufficient space or the space could be created by future lane reduction or private property redevelopment.

Figure 5-2: Preferred Design Concept 1 – Bike path or "cycle track" with separate sidewalk (on left)

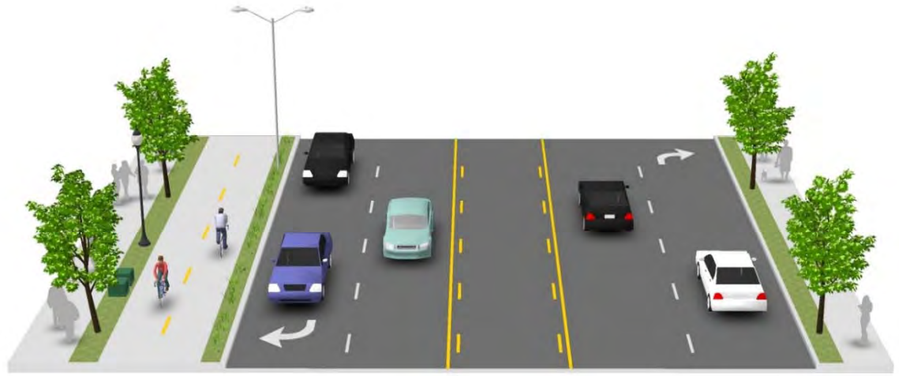
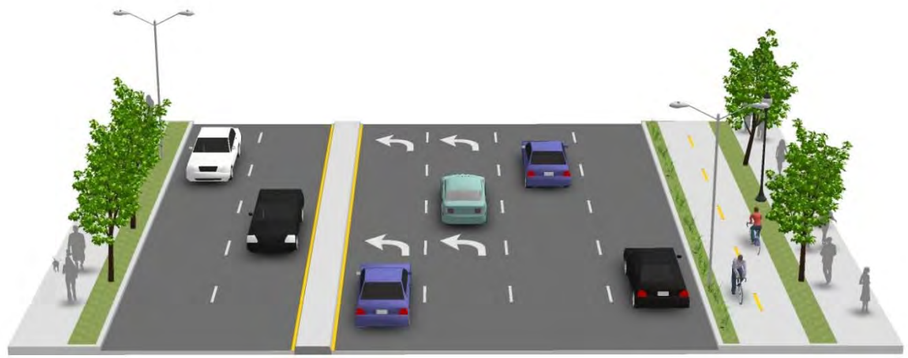


Figure 5-3: Preferred Design Concept 1 – Bike path or "cycle track" with separate sidewalk (on right)

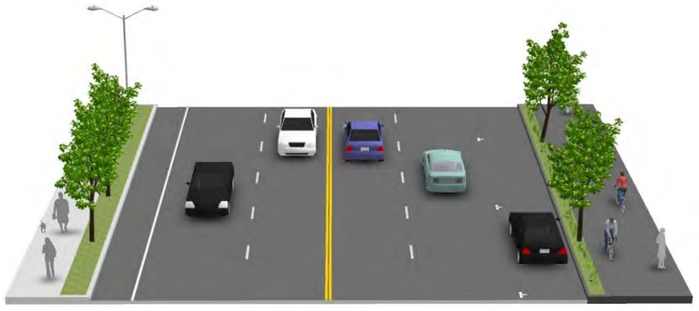


Preferred Design Concept 2: Shared use side path with bike lanes

Where there is not enough room to create a bike path with separate sidewalk, or in some cases to provide on-street dedicated bicycle space, the preferred design concept is a side path. A sidepath is defined in this case as a 10 to 14 foot wide path shared by bicyclists and pedestrians. Typically it is located in the public right-of-way, and takes the place of a sidewalk on that side of the road. It may or may not qualify as a Caltrans Class I Bike Path, which must meet geometric standards defined in Section 1000 of the Caltrans Highway Design Manual. This could be due to lack of 5-foot separation from a roadway or a vertical treatment between the path and roadway, less than standard width, or other departure from Caltrans standards.

Many portions of the existing preferred route have bike lanes – defined as a 5 foot or wider striped shoulder space which ideally will be marked and signed as a bike lane. These are preferred to shared use paths by many bicyclists, and the study recommends that they be preserved in conjunction with other improvements – ideally adding a 2 foot buffer between vehicle lanes and the bike lanes to create "buffered bike lanes." In no case are existing bike lanes recommended to be removed to create space for a side path or bike path.

Figure 5-4: Preferred Design Concept 2 – Shared use "sidepath" with bike lanes (on right)



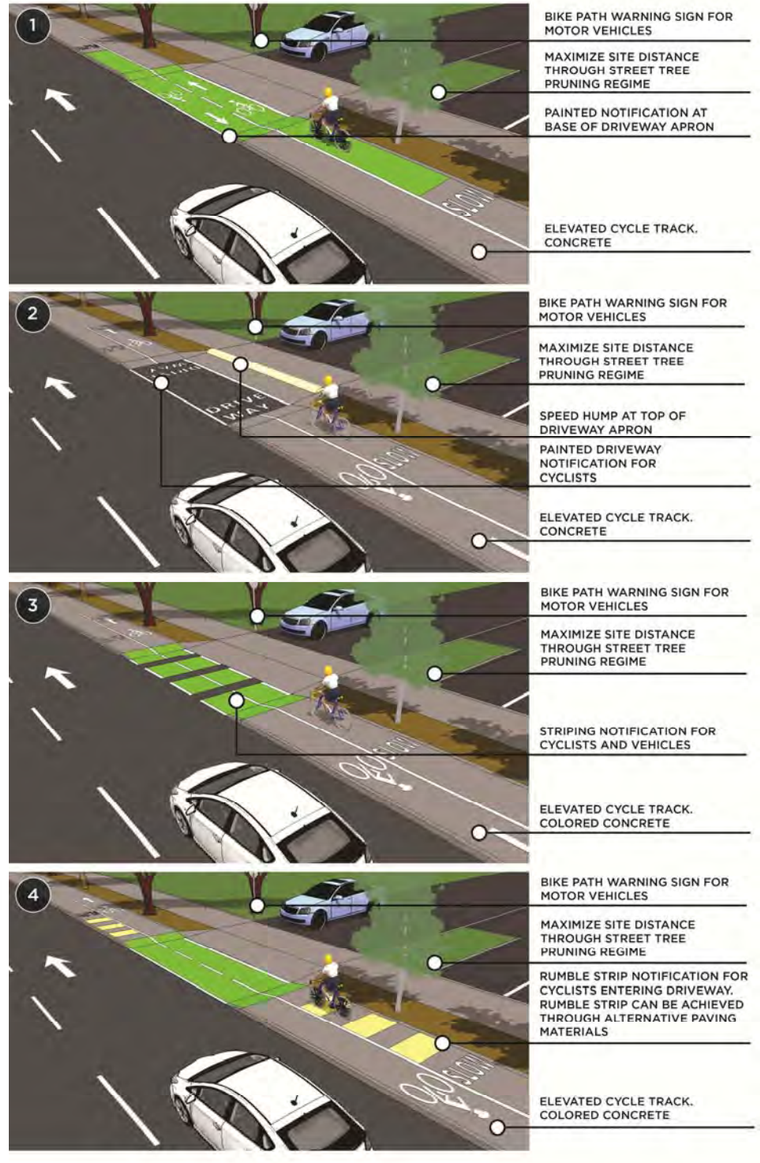
Special Considerations for Driveway Crossings

Special design measures are needed at locations where a bike path/sidewalk or sidepath crosses a driveway to minimize conflict and ensure visibility and awareness. These challenges have been addressed on cycletracks and paths throughout the nation, as illustrated by the example below from Seattle. Driveway crossings are varied in their existing configuration. The following guidelines and the design concepts in Figure 5-5 are provided for use in addressing potential conflicts with vehicles at driveways during future more detailed stages of design.

- If raised, maintain the height of the cycle track/bike path through the crossing, requiring automobiles to cross over.
- Prohibit curbside parking 30 feet prior the crossing.
- Use colored pavement markings, colored pavement and/or shared lane markings through the conflict area.
- Place warning signage to identify the crossing

Driveway crossings on Broadway Cycle Track, First Hill Streetcar, Seattle, WA

Figure 5-5: Driveway Crossing Guidance



5.3.3 Design Guidelines

The conceptual plans on the following pages include a number of treatments which are described below in greater detail.

High Visibility Crosswalks

There are a number of different marked crosswalk types, including the high-visibility, continental-style as shown to the right. These types of crosswalks are more visible to drivers and are generally recommended at locations with high pedestrian activity, where slower pedestrians are expected (such as near schools), and where high numbers of pedestrian related collisions have occurred.

In addition to using striping to increase visibility of crosswalks, there are a number of recommended textured crosswalks at key gateway areas.

High Visibility Crosswalk

Advance Stop Lines

Advance stop lines are a painted stripe in the roadway set back from the crosswalk, directing drivers to stop at least 4 feet before the crosswalk. On multi-lane roads advance stop lines increase pedestrian visibility for drivers in other travel lanes, especially important around schools, as students are harder to see than adults. Advance stop lines also discourage encroachment upon the crosswalk at a red light, leaving more free space for pedestrians to cross.

Advance Stop Lines

Community Wayfinding

A wayfinding system consists of comprehensive signing to guide roadway users to their destinations along preferred routes. The system can be supplemented with pavement markings that primarily benefit bicyclists. There are three general types of wayfinding signs: confirmation signs, turn signs, and decision signs. Confirmation signs indicate to bicyclists they are on a designated roadway. Turn signs indicate where a route turns from one street onto another. Decision signs mark the junction of two or more routes, inform roadway users of key destinations, and indicate the destination, distance, and direction.

Community Wayfinding

Rectangular Rapid Flashing Beacons

Rectangular rapid flashing beacons (RRFB) are pedestrian actuated devices mounted adjacent to the roadway. The beacon lights are rectangular LED lights installed below a pedestrian crosswalk sign that flash in an alternating pattern when activated. The beacon is dark when not activated. Caltrans has received approval from the Federal Highway Administration (FHWA) for use of RRFBs on a blanket basis at uncontrolled pedestrian crosswalk locations in California including State highways and all local jurisdictions' roadways.

RRFB

Bike Pocket

A bike pocket is a bike lane between a through lane and a dedicated right turn lane that helps bicyclists traveling straight through an intersection position themselves correctly and minimize right-hook conflicts with vehicles.

Crossbike

A crossbike is a crossing treatment for bicyclists similar to a pedestrian crosswalk. It alerts motorists that there may be bicyclists crossing at this location, and encourages cyclists to cross in these predicable, marked locations.

Crossbike

Side Paths

A side path is a wide sidewalk or path, typically shared by bicyclists and pedestrians. It may or may not qualify as a Caltrans Class I Bike Path due to lack of 5-foot separation from a roadway or a vertical treatment between the path and roadway, less than standard width, or other departure from Caltrans standards. Special consideration should be made to minimize conflict and ensure visibility and awareness at intersections and driveways.

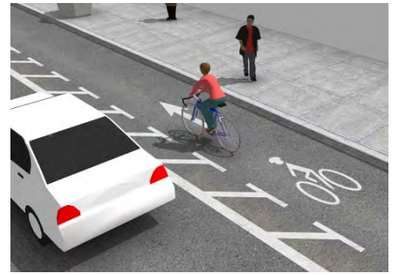
Sidepath Type Treatment

Buffered Bike Lanes

A buffered bike lane is a bike lane that is buffered by a striped "shy zone" between the bike lane and the moving vehicle lane. With the shy zone, the buffered lane offers a more comfortable riding environment for bicyclists who prefer not to ride adjacent to traffic. This design has a number of benefits including:

- Provides greater shy distance between cars and bicyclists
- Provides space for bicyclists to pass each other
- Provides greater space for the bicycle travel lane without making the lane appear so wide that it may be mistaken for car use
- Appeals to not just experienced bicyclists, but people who bicycle on occasion and those new to bicycling

The recommended buffered bike lane design is the same design as a recently implemented Caltrans buffered bikeway on Sloat Boulevard in San Francisco, and is a modified version of the design guidance presented in the NACTO Urban Bikeway Design Guide. The key difference is the proposed design has an inner dashed stripe; this will permit vehicles to cross when necessary, for example to enter or exit driveways.



Buffered Bike Lane

Green Bike Lanes Through Conflict Areas

Green bike lanes through conflict areas is the application of green coloring applied to pavement in conflict zones. Benefits of this treatment include:

- Alerts roadway users to expect bicyclists
- Assigns the right of way to bicyclists

The FHWA (Federal Highway Administration) has provided blanket approval for green colored pavement and Caltrans has also approved this treatment.

Green Bike Lanes Through Conflict Areas

Two-Stage Turn Boxes

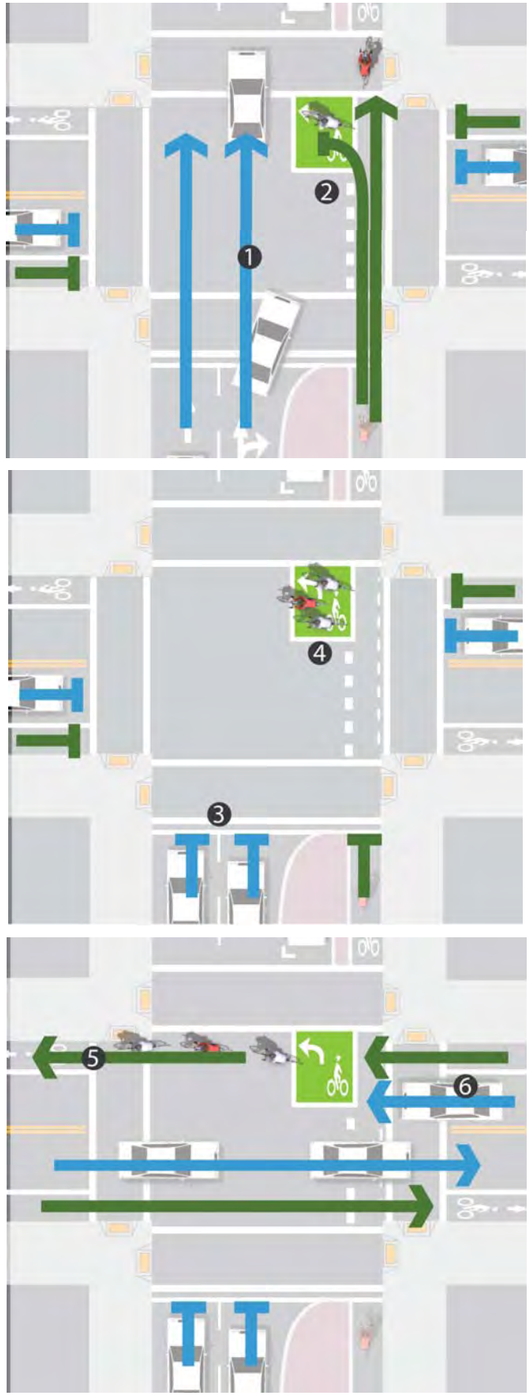
Two-stage turn boxes assist bicyclists with making left turns at multi-lane intersections. This treatment is typically applied on multi-lane streets with high traffic speeds and/or volumes. A two-stage turn box helps a bicyclist make an L-shaped left turn by crossing one leg of the intersection at a time. It provides a number of benefits including:

- Improves bicyclist comfort
- Provides formal waiting area for bicyclists making left turns outside of the crosswalk

This treatment is not a Caltrans approved traffic control device, however the City of Walnut Creek can apply to Caltrans for approval to experiment.

A bicyclist's path of travel through a two-stage left turn box is illustrated in the panels at right.

1. Bicyclists and motorists travel through the intersection on a green signal.
2. Bicyclists turning left stop in the two-stage turn box and wait.
3. A red signal stops all users and the intersection clears of traffic.
4. Bicyclists are highly visible in the two-stage turn box and are positioned to travel through.
5. On the green signal, waiting bicyclists travel forward into the bikeway.
6. Motorists behind the box proceed when clear.

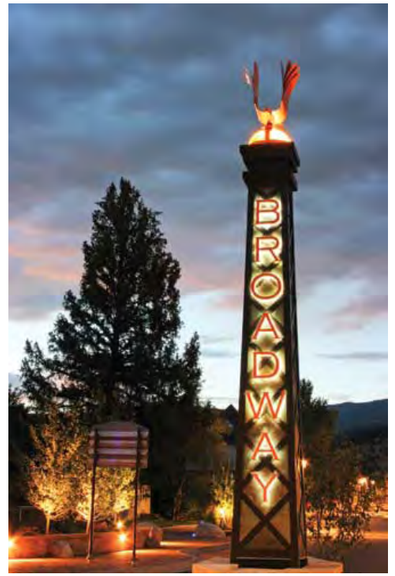


Two Stage Turn Box

Gateway Treatments

This conceptual plan includes recommendations for a number of gateway treatments. Gateways communicate to drivers they are entering a community and often include physical and texture treatments such as markers and textured crosswalks. Example gateway treatments are presented below; however, specific recommendations for treatments along the Connector are not included as part of this Report.

Stamped Asphalt Crosswalk



Gateway Marker

5.4 Segment 1: Olympic Boulevard, Lafayette Moraga Trail to Pleasant Hill Road

Existing Conditions:

- Reliez Station Road Intersection: This is a stop-controlled T-intersection for motorists, and trail users on the LMT have a stop sign before they exit the trail. The primary vehicle movements are turning to and from Reliez Station Road, which creates conflicts for bicyclists, especially for bicyclists transitioning to and from the existing bike lanes. Northbound motorists turning east onto Olympic Boulevard and westbound motorists turning south onto Reliez Station Road often don't look to the west for bicyclists or pedestrians coming off of the trail.
- Existing Class I LMT enters the Olympic Boulevard/Reliez Station Road intersection from the west, transitioning to bike lanes along Olympic Boulevard or a Class I path through an East Bay Regional Park District open space corridor (immediately adjacent to Las Trampas Creek) and past two parking lots and one parking lot driveway that serve users of the LMT.
- An approximately 5 foot wide asphalt walkway exists on the south side of the road, but it gradually transitions to an informal path to the east. Pleasant Hill Road Intersection: Crosswalks are present at all approaches to the stop-controlled Pleasant Hill Road intersection, including across the channelized right-turn lanes on the southbound and westbound approaches.

Short-Term Improvement Concept: Provide crossing improvements at Reliez Station Road, add buffered bike lanes, improve and extend existing walkway on south side of Olympic Boulevard, and provide improved route wayfinding.

- The existing conventional bike lanes can be converted to buffered bike lanes by narrowing the existing vehicle lanes and potentially shifting the center stripe. In at least one location the existing pavement is up to 2 feet narrower than the cross-section shown. This would necessitate widening on the north side, which could conflict with the roots of a non-native black acacia and a medium-sized live oak.
- Reliez Station Road Intersection: Crossing signing and striping improvements will help reduce the conflict for bicyclists transitioning between the LMT and the existing bike lanes. These include 'trail crossing' signage, enhanced crossbike markings, and advance stop bars for motorists (Figure 5-7a). Relocating an existing asphalt curb will facilitate a smoother trail-to-road connection.
- Pleasant Hill Road Intersection:
  - Install additional wayfinding signs.
  - Implement single-lane roundabout, studied in the 2015 Olympic Boulevard and Reliez Station Road Corridor Traffic Study, with consideration for bicyclist merge conflicts and reduced pedestrian crossing distances.

Tree Impact: Potential impact on roots of 2 trees due to widening.

Figure 5-6: Olympic Boulevard Station 7+50 (facing east)

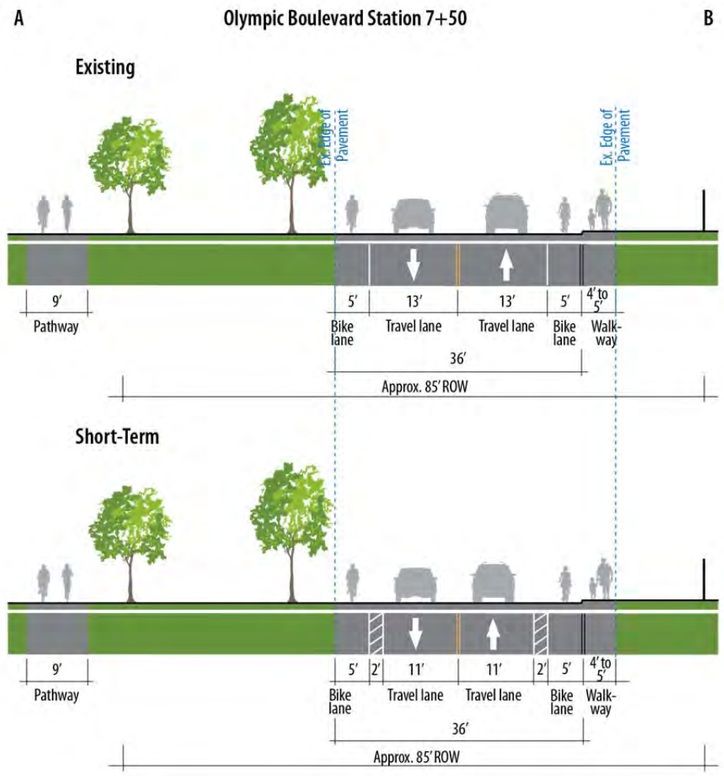
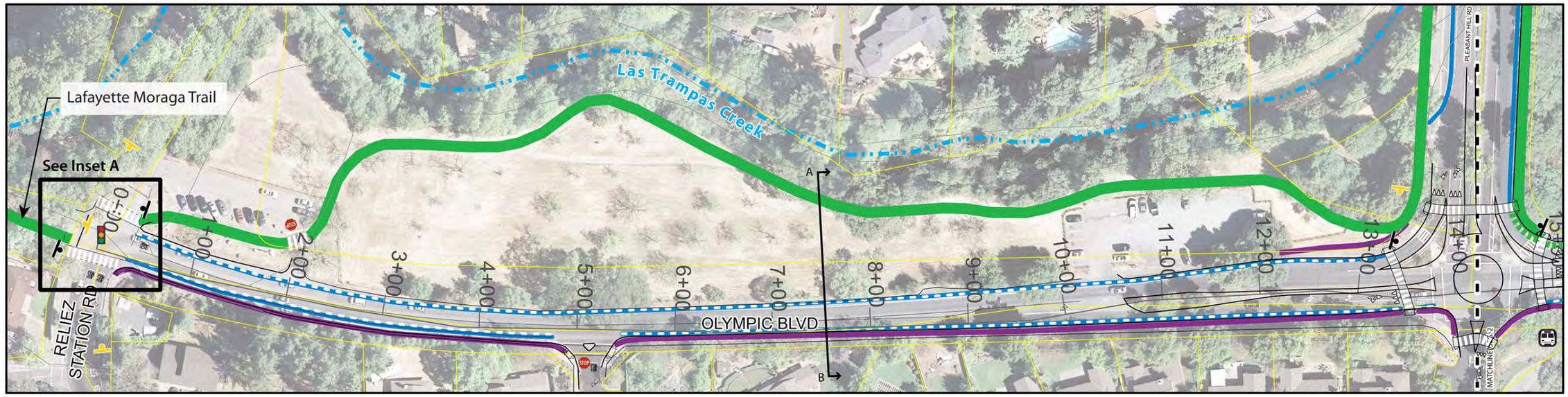


Figure 5-7: Segment 1 – Olympic Boulevard, Lafayette Moraga Trail to Pleasant Hill Road



Existing

- Shared Use Pathway
- Bike Lane
- Walkway
- Parcel
- Easement
- 10' Contour
- Creek
- Stop-Controlled Intersection
- Bus Stop
- # + 00 Stationing
- Cross Section Cut Line

Short-Term Improvement Concept

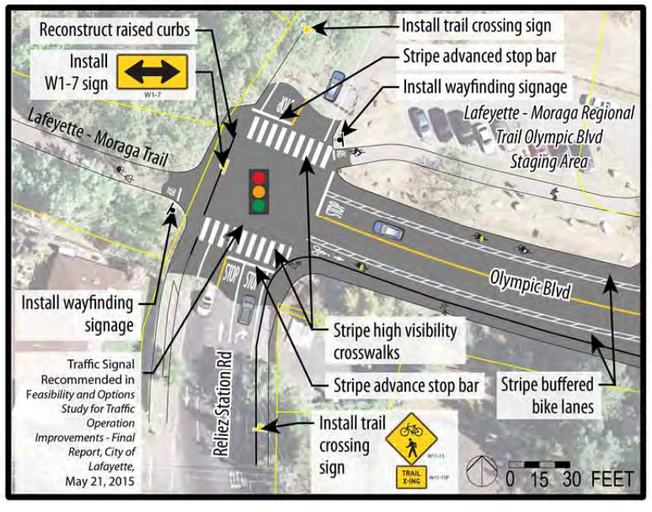
- Add Buffer to Existing Bike Lane
- Green Conflict Area Markings
- High Visibility Crosswalk and Advance Stop Bars
- Wayfinding Sign
- Warning Sign
- Yield Teeth
- Signalized Intersection

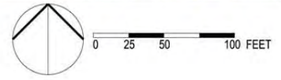
Long-Term Improvement Concept

Same as Short-Term Improvement Concept

Study Area Location Map: Segment 1

Inset A: Olympic Boulevard and Reliez Station Road





5.5 Segment 2: Olympic Boulevard, Pleasant Hill Road to Newell Court

5.5.1 Segment 2.1: Olympic Boulevard, Pleasant Hill Road to Windtree Court

Existing Conditions:

- The western portion of this segment has a landscaped median 4 feet wide at the turn lane and 14 to 15 feet wide with street trees to the east, followed by a 14 to 15 foot painted median, which transitions to turn pockets at Windtree Court.
- There are steep cut slopes on both sides of the road, starting at approximately Sta. 17+00 and extending to 19+00 on the north side. A short retaining wall separates an existing 4 foot path from the rocky slope on the north side.

Short-Term Improvement Concept: Provide buffered bike lanes.

- Buffered bike lanes can be created by narrowing the existing vehicle lanes and painted medians.

Long-Term Improvement Concept: Widen and improve the existing path on the north side as a shared use path while retaining the buffered bike lanes.

- A separated sidepath 10 feet wide with a 3 foot buffer could be created by reducing the width of the median to 10 feet, replacing existing trees, and constructing a taller retaining wall on the north side – tapering up to approximately 10 feet high.
- Fire hydrants, signs, utility poles, mature oaks, and other trees would intrude into the pathway space, reducing clear width to as little as 8 feet in some locations.

Tree Impact (Long-Term Concept): No trees removed. Some leaning tree limbs and vegetation would be trimmed along the sidepath.

Figure 5-8: Olympic Boulevard Stations 16+50, 17+50, and 21+50 (all facing east)

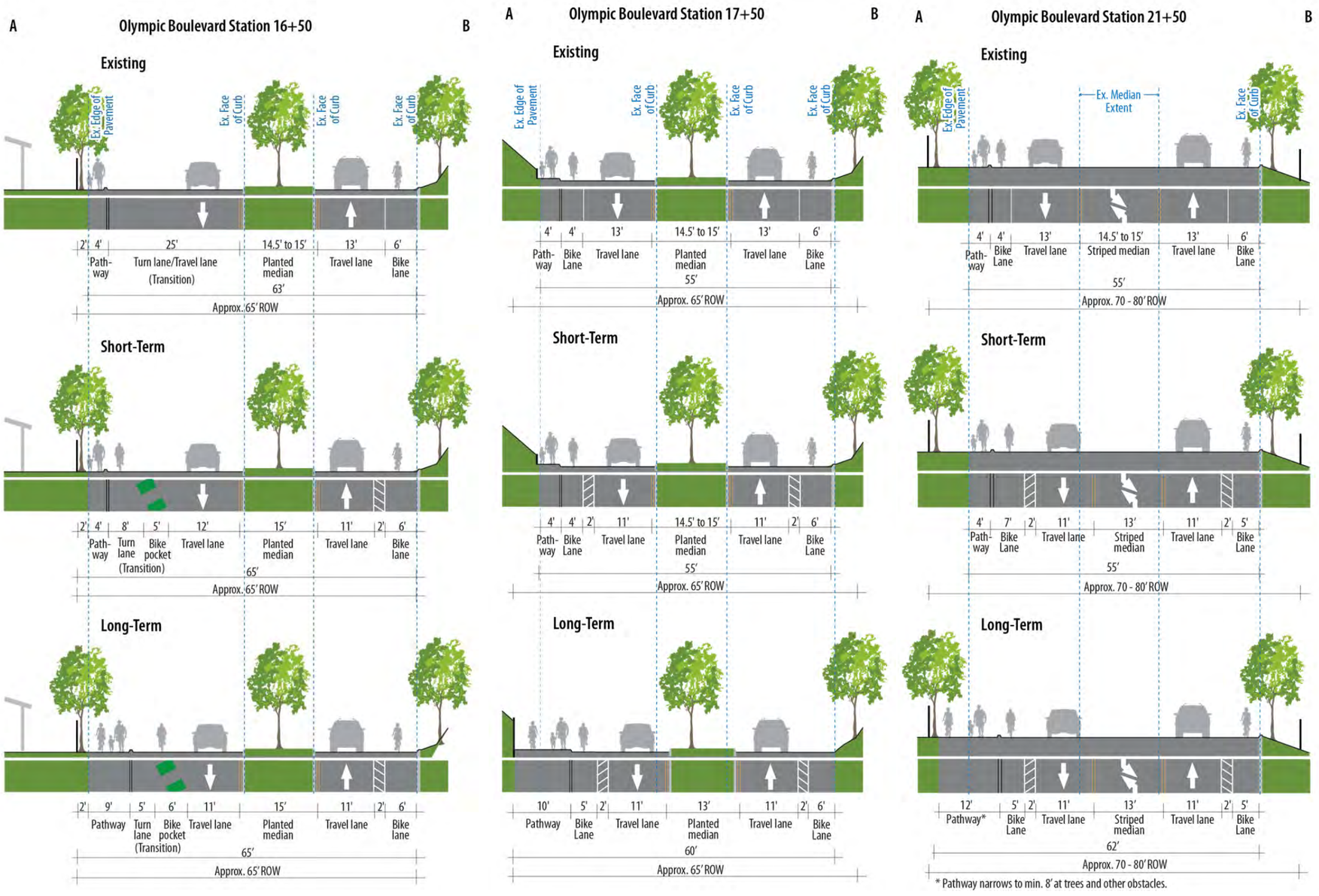
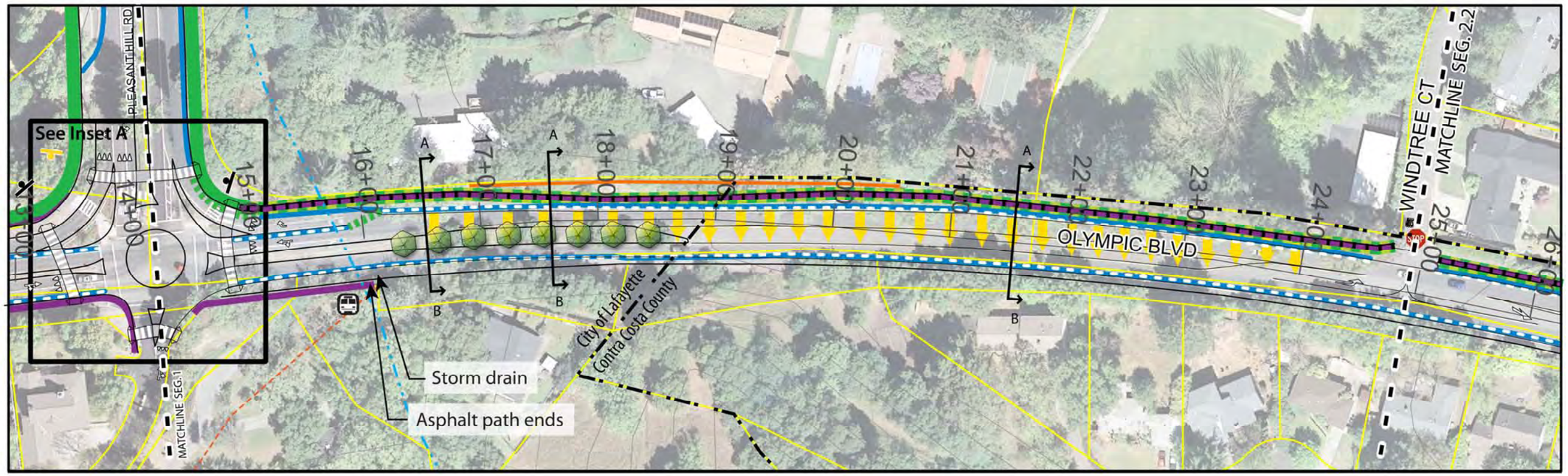


Figure 5-9: Segment 2.1- Olympic Boulevard, Pleasant Hill Road to Windtree Court



Existing

- Shared Use Pathway
- Bike Lane
- Pathway
- County Line
- Parcel
- 10' Contour
- Creek
- Easement
- Stop-Controlled Intersection
- Bus Stop
- # + 00 Stationing
- Cross Section Cut Line

Short-Term Improvement Concept

- Add Buffer to Existing Bike Lane
- Green Conflict Area Markings
- High Visibility Crosswalk and Advance Stop Bar
- Yield Teeth
- Wayfinding Sign
- Warning Sign

Long-Term Improvement Concept

- Sidepath
- Existing Pathway to be Removed /Replaced with Sidepath
- Approx. 5 Foot Lane Shift to South
- Retaining wall up to 10' high

Study Area Location Map: Segment 2.1

Inset A: Olympic Boulevard and Pleasant Hill Road Roundabout

Feasibility and Options Study for Traffic Operation Improvements - Final Report, City of Lafayette, May 21, 2015

5.5.2 Segment 2.2: Olympic Boulevard, Windtree Court to Newell Court

Existing Conditions:

- A 4 to 6 foot wide pedestrian path exists on north side, separated from bike lane by an asphalt curb. The space between the curb and the adjacent property line is as wide as 12 feet at the west end, although hedges and other private improvements intrude into it.
- The roadway includes 5 to 8 foot wide bike lanes, and the existing striped median is 14.5 to 15 feet wide.
- Beyond Sta. 29+00, two properties extend out further and narrow the available right-of-way, and native trees further reduce space that would otherwise be available for a path – which narrows to 4 feet at this point (see section Sta. 28+80).
- Near the intersection with Newell Court, the space between the curb and fence/ROW line is approximately 6 feet and the median narrows to approximately 5 feet at the intersection. A path on the south side of Olympic Boulevard connects with a crosswalk at the Newell Court signalized intersection. The median is 5 feet wide, and the distance beyond the northern curb and property line is only approximately 6 feet.

Short-Term Improvement Concept: Provide buffered bike lanes.

- Buffered bike lanes can be created by narrowing the vehicle lanes and median.

Long-Term Improvement Concept: Widen and improve the existing path on the north side as a shared use path.

- A separated sidepath 10 feet wide could be created by reducing the median to 5 feet and shifting the north side lane approximately 10 feet south between Sta. 26+80 and 28+80.
- West of Sta. 27+00 there are turn pockets for Windtree Court that would prevent narrowing the median more than approximately a foot, but the separated sidepath could be created using the 12 foot wide frontage and an additional 1 or 2 feet from median and lane.
- East of the second property that intrudes into the right-of-way alignment, the curb and path are set back and there is a tapering space extending approximately 150 feet that could accommodate the sidepath.
- The space to continue the separate path and the buffered bike lanes can be created by shifting the lanes south approximately 8 feet, which would require realignment on the east side of the intersection to transition back to the current alignment. This would require realignment of the existing Class I path that connects to the southeast corner of the intersection, including relocation of the signals and controller box.
- Hedges, vines, and trees growing along the north edge of the existing path would reduce the clear space to as little as 10 feet – particularly at a mature oak at approximately Sta. 32+50.
- The sidepath would end at the east side of the intersection where it would connect south to the existing Class I path that continues east.

Tree Impact (Long-Term Concept): No trees removed – minor trimming.

Figure 5-10: Olympic Boulevard Station 28+80 (facing east)

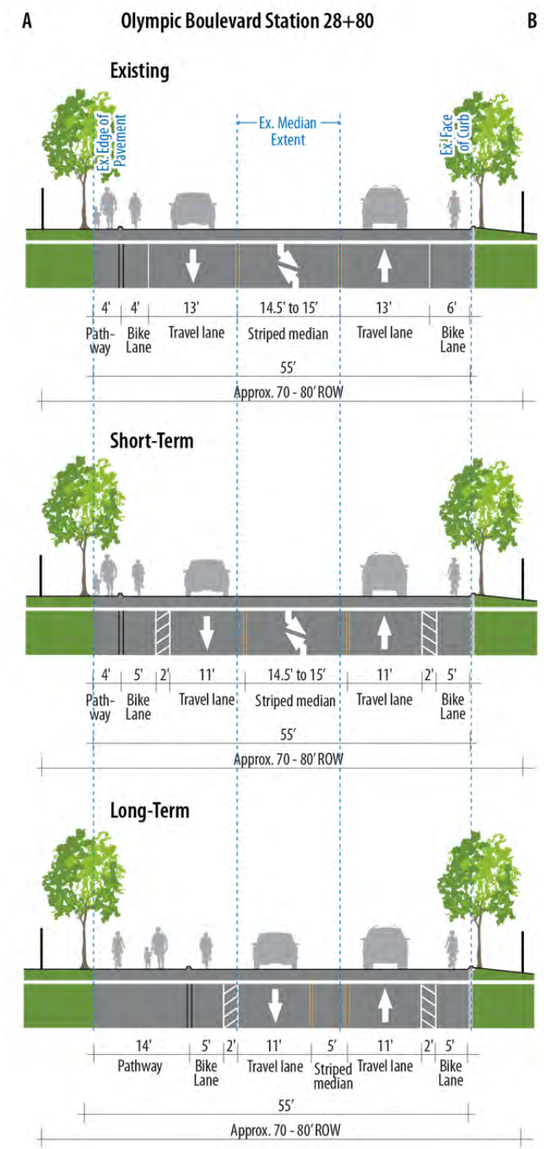
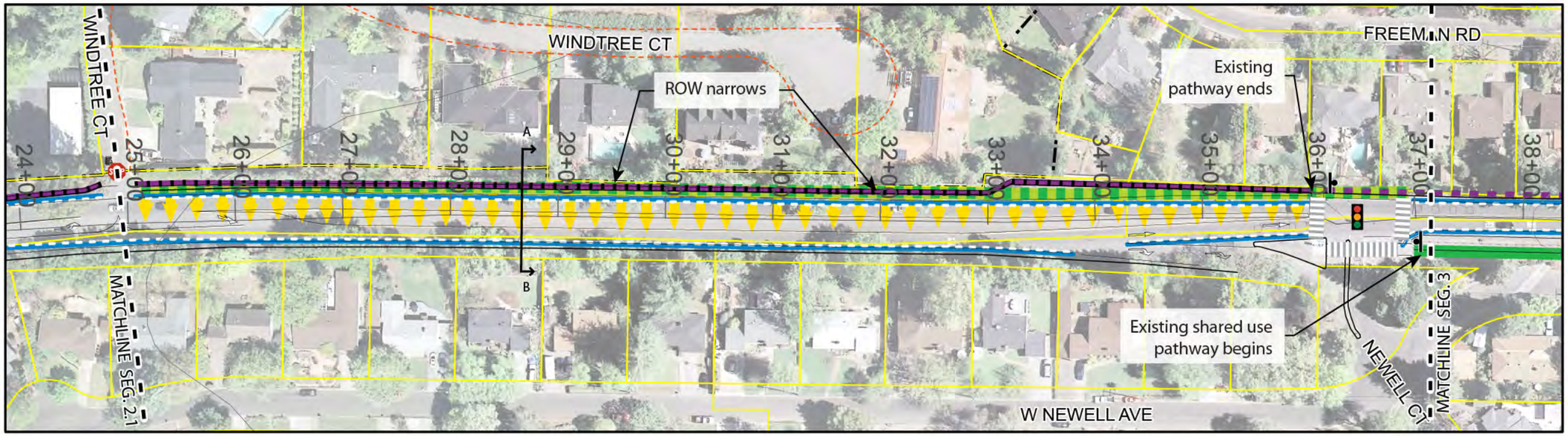


Figure 5-11: Segment 2.2 – Olympic Boulevard, Windtree Court to Newell Court



Existing

- Shared Use Pathway
- Bike Lane
- Pathway
- Parcel
- County Line
- Easement
- 10' Contour
- Stop-Controlled Intersection
- Signalized Intersection
- Bus Stop
- # + 00 Stationing
- Cross Section Cut Line

Short-Term Improvement Concept

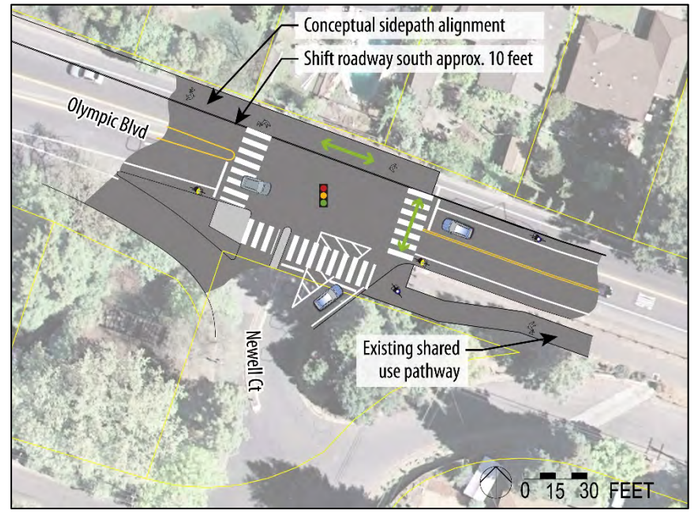
- Approx. 1 Foot Lane Shift to South
- Add Buffer to Existing Bike Lane
- High Visibility Crosswalk and Advance Stop Bar
- Yield Teeth

Long-Term Improvement Concept

- Sidepath
- 6' Pathway
- Existing Pathway to be Removed /Replaced with Sidepath
- Approx. 10 Foot Lane Shift to South (From Existing Conditions)
- Wayfinding Sign

Study Area Location Map: Segment 2.2

Inset A: Olympic Blvd / Newell Ct Intersection Detail



5.6 Segment 3: Olympic Boulevard, Newell Court to Tice Valley Boulevard/ Boulevard Way

Existing Conditions:

- Olympic Boulevard between Newell Court and Tice Valley Boulevard/Boulevard Way is a two lane roadway that includes bike lanes. On-street parking is not allowed.
- A 10 foot wide paved Class I path exists on the south side. It has a wood post and rail barrier fence and 11 foot wide mulched and planted shoulders on either side.
- A sidewalk exists on the north side at the east end of the segment, and a short segment of sidewalk exists in the center.

Short-Term Improvement Concept: Create buffered bike lanes, connect the existing Class I path to Boulevard Way/Tice Valley Road intersection, and provide intersection crossing improvements.

- An improved pedestrian crossing signal at Bridgefield Road would facilitate connections from residences on the north side to the Class I path on the south side and the adjacent bus stop.
- Buffered bike lanes can be created by narrowing vehicle lanes and providing green conflict zone markings and a striped bike pocket at the intersection.

Long-Term Improvement Concept: Provide a continuous pedestrian sidewalk or path at least 4 feet wide on the north side.

- There are space constraints for creation of a continuous path. From near Newell Court to approximately Sta. 38+00, there are many mature trees including native oaks as well as vines and street signs occupying the approximately 4 foot wide space between the curb and the fence.
- The existing Class I path on the south side can be connected to the intersection by extending the path past the gas station at the corner by widening the sidewalk and reducing the right lane width.
- Removal of the existing pork chop islands and addition of high visibility crosswalks are recommended to connect the path to the north and east where an existing sidepath continues.

To create the additional space for the sidewalk without removing all the trees, the north side curb and the roadway could be shifted approximately 2 feet to the south, encroaching into the existing 10 foot space between the roadway and the Class I on the south side. This may require relocation of the existing split trail fence.

Tree Impact (Long-Term Concept): No trees removed – minor trimming.

Figure 5-12: Olympic Boulevard Stations 46+00 and 51+50 (facing east)

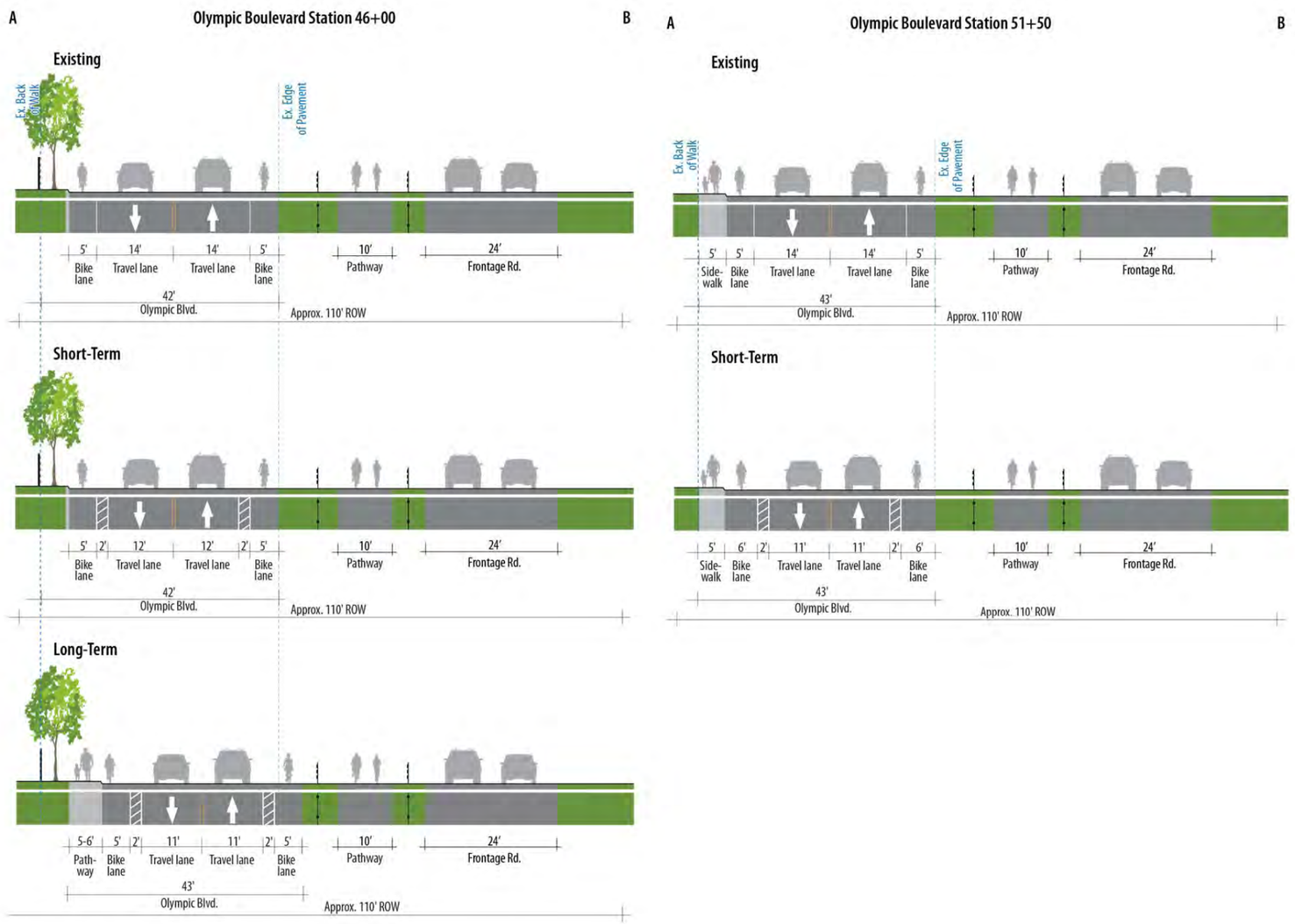
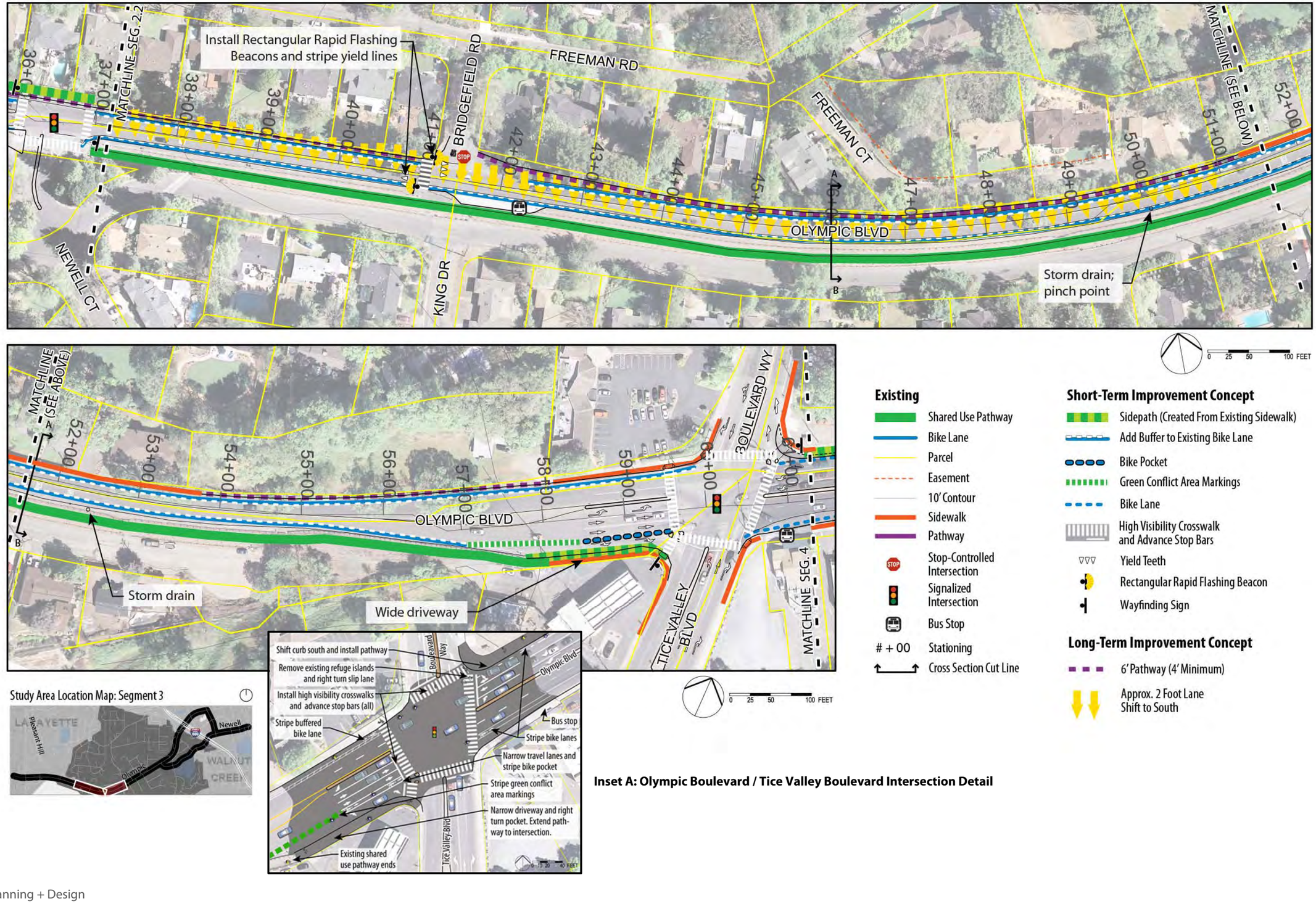


Figure 5-13: Segment 3 – Olympic Boulevard, Newell Court to Tice Valley Boulevard



Study Area Location Map: Segment 3

Inset A: Olympic Boulevard / Tice Valley Boulevard Intersection Detail

5.7 Segment 4: Olympic Boulevard, Boulevard Way/Tice Valley Boulevard Intersection to Newell Avenue

Existing Conditions:

- An existing paved path extends along the north side in a 12 to 14 foot wide space, mostly bordered by fences that separate Olympic Boulevard from the adjacent parallel Cottage Lane, which provides access to several residences along two disconnected segments to the east and west. In between are some residences that take direct access from Olympic Boulevard.
- Parking is allowed along the south side where commercial buildings and a series of single and multi-family residences take access directly off Olympic Boulevard. Removing this parking is not seen to be a viable alternative.

Short-Term Improvement Concept: Provide bike lanes and an improved sidepath on the north side.

- An improved separated path could be created by providing 10 feet of pavement with a 3 foot planting strip at the curb. Mature trees and other obstructions would narrow the path by as much as 2 feet at some points. There is not sufficient continuous space to provide a Caltrans-compliant Class I path, which requires 5 feet of separation from the roadway.
- Space for bike lanes could be created by narrowing the existing lanes, but even if the existing 5 foot wide medians were narrowed there is not enough space to create buffered bike lanes.
- The existing narrow drainage opening – where the right turn from EB Olympic Boulevard to SB Newell Avenue has been blocked off – should be widened to accommodate bike right turns or a connecting path could be constructed across the corner.

Long-Term Improvement Concept: Extend the sidepath to Newell Avenue intersection.

- The improved pathway could be continued to Newell Avenue (the current pathway ends west of the Villa condominiums) by utilizing some of the space from a very wide bus pullout and a portion of landscaped street frontage near the intersection.
- High visibility crosswalks are recommended across Olympic Boulevard at this point to facilitate connections to Newell Avenue.

Tree Impact (Long-Term Concept): No trees removed. There is one mature oak on the north side near Sta. 64+00 that would reduce the clear path space to approximately 8 feet, and two ornamental trees near Sta. 81+50 that would reduce the clear space to 9 feet.

Figure 5-14: Olympic Boulevard Station 66+80 (facing east)

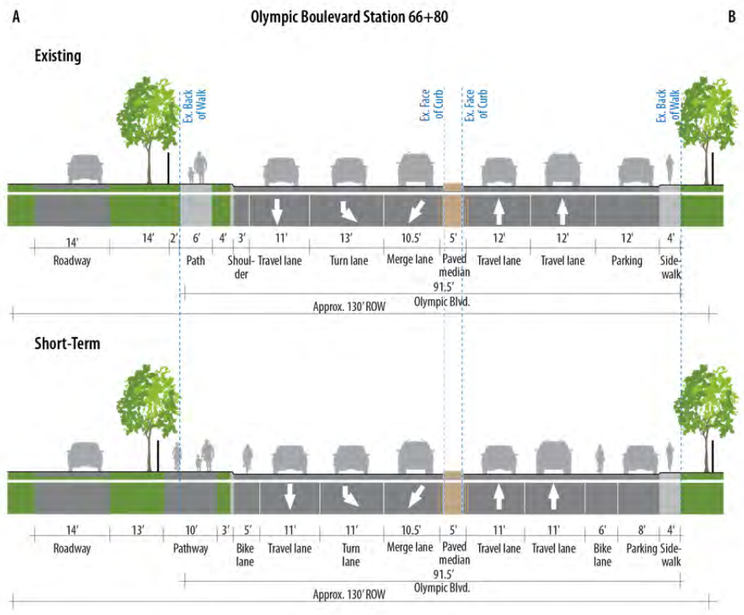


Figure 5-15: Olympic Boulevard/Newell Avenue Intersection Detail

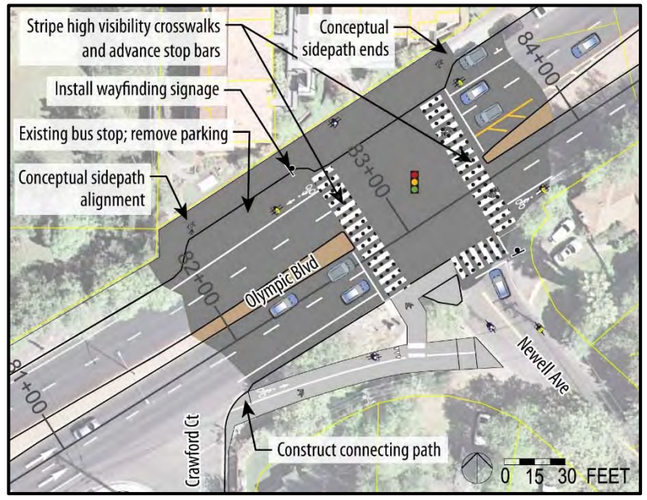
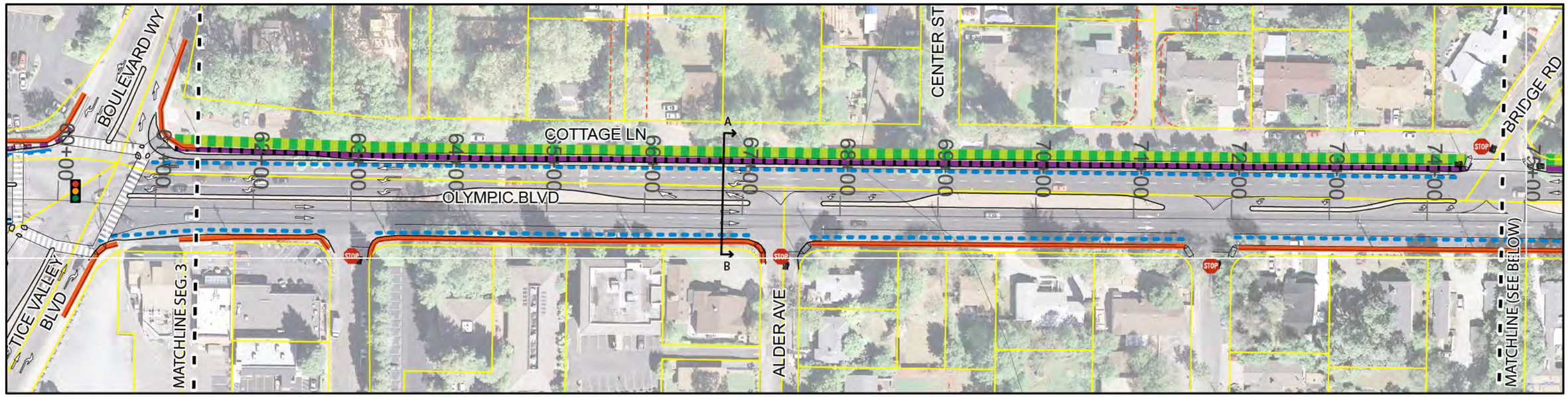
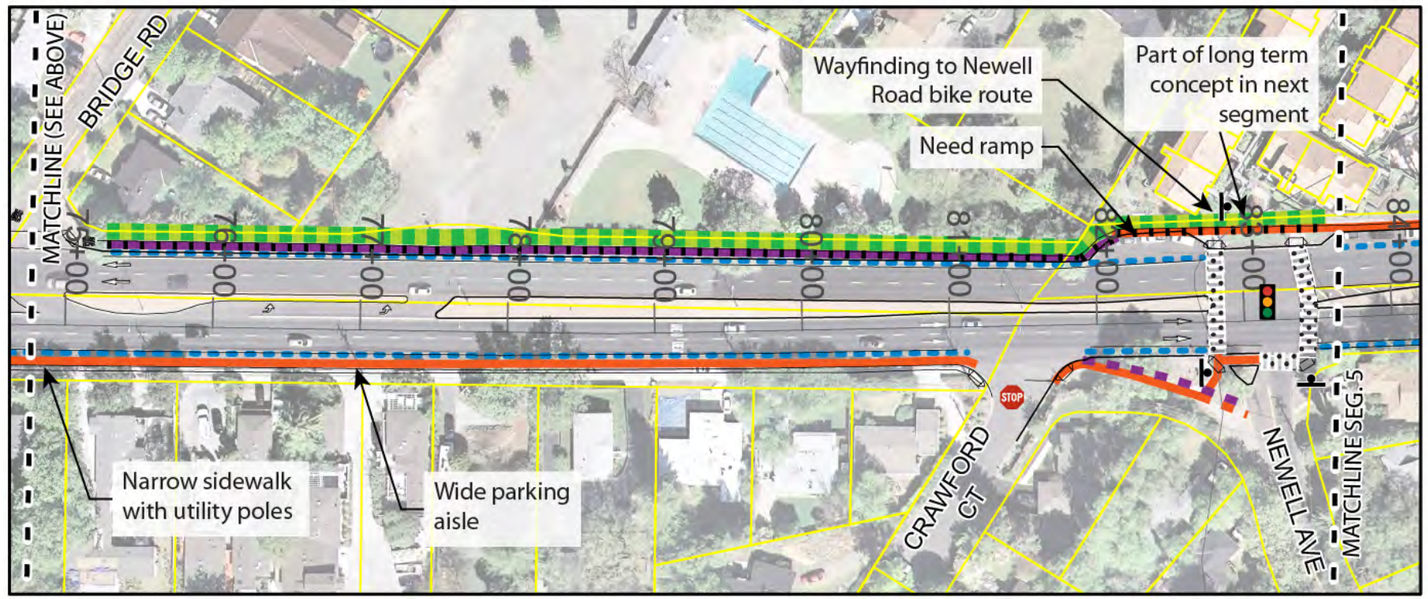


Figure 5-16: Segment 4 – Olympic Boulevard, Boulevard Way/Tice Valley Boulevard Intersection to Newell Avenue





Existing

- Sidewalk
- Pathway
- Parcel
- 10' Contour
- Easement
- Stop-Controlled Intersection
- Signalized Intersection
- # + 00 Stationing
- Cross Section Cut Line

Short-Term Improvement Concept

- Sidepath
- Bike Lane
- 6' Pathway
- Existing Pathway to be Removed /Replaced with Sidepath
- Wayfinding Sign

Long-Term Improvement Concept

- Existing Sidewalk to be Removed /Replaced with Sidepath
- High Visibility Crosswalk and Advance Stop Bar

0 25 50 100 FEET

Study Area Location Map: Segment 4

5.8 Segment 5: Olympic Boulevard, Newell Avenue to S.B. I-680 On/Off Ramps

Existing Conditions:

- A seven foot sidewalk, or a 5 foot sidewalk with 2 foot planting strip, exists on the north side of Olympic fronting the Villa condominium complex along with curbside parking for residents and visitors.
- There are raised paved medians as wide as 16.5 feet and as narrow as 5 feet. There are no existing bike lanes. There is no sidewalk on the south side, or any space for one due to the presence of trees within the approximate 4 foot space between the curb and residential backyard fences.

Short-Term Improvement Concept: Create bike lanes with buffered bike lanes provided where space allows.

- Bike lanes could be created on portions with wide medians by restriping the existing lanes (see Sta. 85+00). At the two turn pocket areas and on the eastern portion where the median is narrow bike lanes could be created by restriping the existing lanes, but they would be a minimal 4 feet (see Sta. 96+50).
- At the eastern end at the bridge over Las Trampas Creek the buffered bike lanes can be created by restriping the existing lanes (see Sta. 101+00).

Long-Term Improvement Concept: Create a 10 foot wide sidepath on the north side with a 2 foot buffer between the bike lane and parked cars.

- Implementation would require that all lanes are narrowed to 11 feet, the medians shifted one foot south, the wide medians narrowed to 10 feet, and the 5 foot medians narrowed to 3 feet.
  - To minimize impacts to homes on the east side of the corridor, a wall or other physical barrier should be considered, although this may not be consistent with existing vegetation and aesthetics.
- In order to minimize loss of parking, there would be a 4 foot off-set between the lane alignment at the left turn pockets and the alignment beyond them, with a suitable transition between alignments (see Figure 5-19).
- 7 or 8 of the current 30 curbside parking spaces would be lost.
- In the vicinity of cross-section at Sta. 96+50 the ROW and roadway narrows. Creating space for a 10 foot wide sidepath would require shifting the south side curb approximately 2 feet into the approximately 4 foot wide space between the curb and the fence. This could potentially remove or impact up to 6 mature trees, including 4 native oaks.

Tree Impact (Long-Term Concept): Potential removal of or impact on up to 6 mature trees, including 4 medium-sized native oaks.

Figure 5-17: Olympic Boulevard Stations 85+00 and 88+00 (facing east)

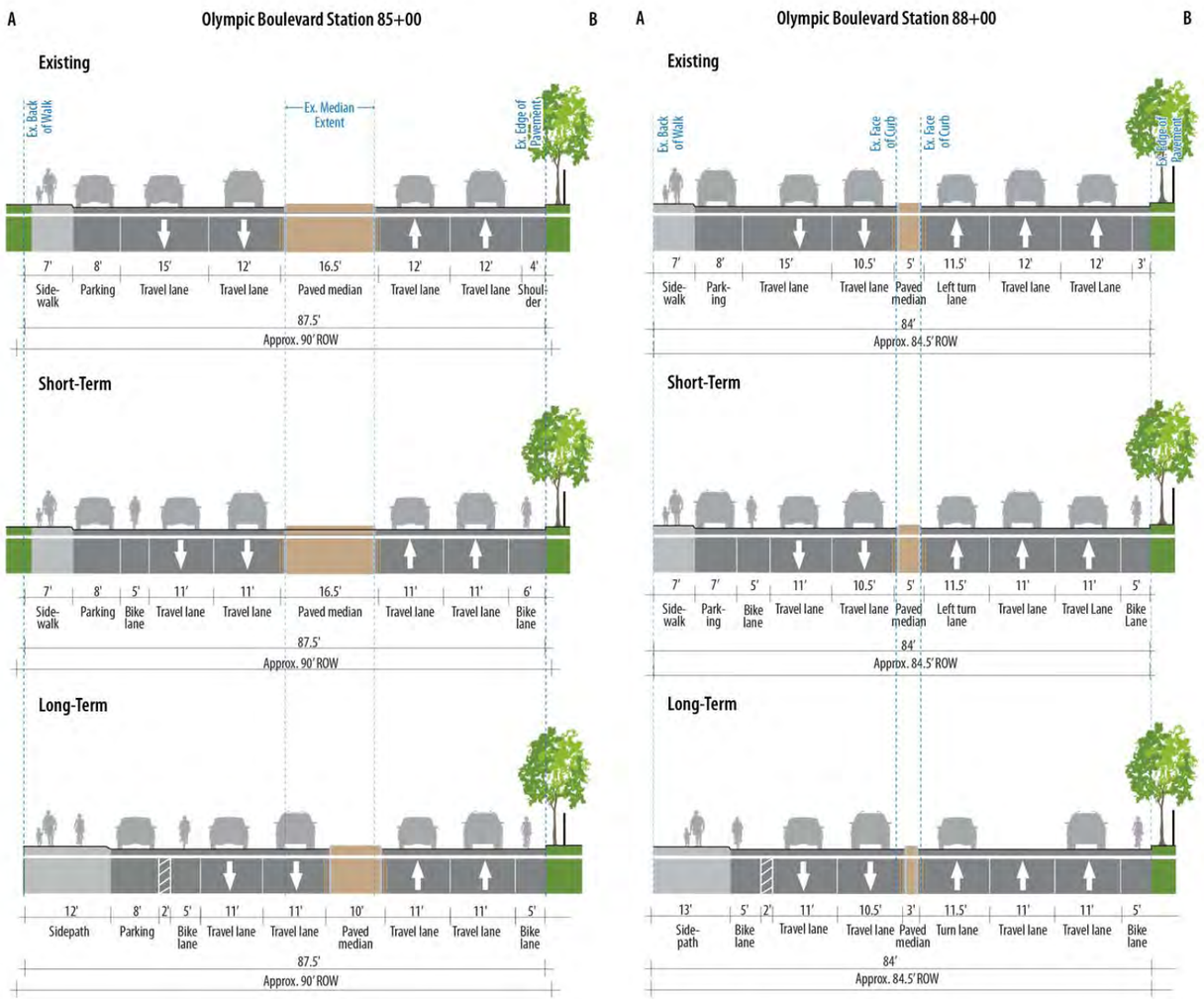
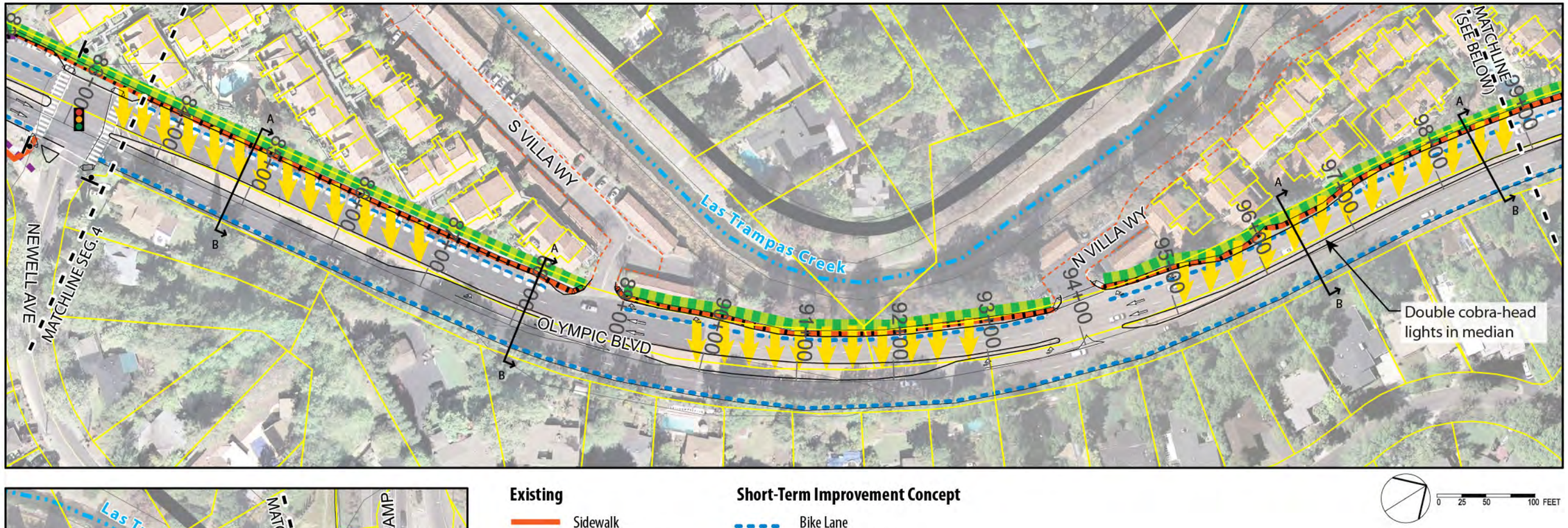
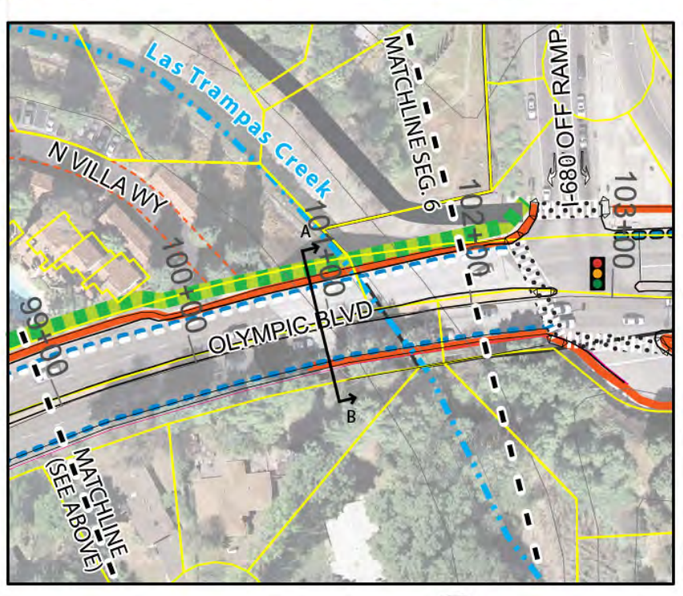


Figure 5-18: Olympic Boulevard Stations 96+50, 98+50, and 101+00 (facing east)

Figure 5-19: Segment 5- Olympic Boulevard, Newell Avenue to SB I-680 Ramps





Existing

- Sidewalk
- Maintenance Road
- Parcel
- 10' Contour
- Creek
- Easement
- Signalized Intersection
- Bus Stop
- # + 00 Stationing
- Cross Section Cut Line

Short-Term Improvement Concept

- Bike Lane
- Buffered Bike Lane

Long-Term Improvement Concept

- Sidepath
- Existing Sidewalk to be Removed/ Replaced with Sidepath
- Textured Crosswalk and Advance Stop Bar
- Approx. 1 Foot Lane Shift to South, Plus 6.5 Foot Median Narrowing; Up to 7.5 Foot Lane Shift net

Study Area Location Map: Segment 5

5.9 Segment 6: Olympic Boulevard, S.B. I-680 On/Off Ramps to S. California Boulevard

5.9.1 Segment 6.1: Olympic Boulevard, S.B. I-680 On/Off Ramps to Alpine Road

Existing Conditions:

- This segment has very heavy traffic, especially at commute and shopping/after hours times with vehicles accessing the I-680 on and off-ramps.
- The City of Walnut Creek has developed a grant application to improve the undercrossing by widening the sidewalk on the south side to 10 feet by building a retaining wall into the existing embankment and adding lighting.

Short-Term Improvement Concept: Provide bike lane on south side and bike pocket on north side.

- Narrowing the lanes would provide enough space to stripe bike lanes, but due to the heavy right turn traffic to the I-680 on-ramps on the north side it would be safer to create a "bike pocket" – a five foot wide through bike lane between the right turn lanes and the through lane.
- Crosswalk and/or bike lane striping improvements would be needed at the Paulson Lane on- and off-ramps and at Alpine Road to support the bike lanes and bike pocket.

Long-Term Improvement Concept: Create a Class I path or sidepath at least 10 feet wide on the south side of Olympic Boulevard.

- The proposed sidepath on the north side of Olympic Boulevard through Segment 5 could connect across Olympic via an improved crosswalk west of the intersection at Paulson Lane and the north side ramps to/from I-680.
- With the extension of the existing retaining wall and a slight lane shift, a Class I path could be extended along the south side of Olympic Boulevard adjacent to Paulson Lane to connect to the path proposed on the south side of the underpass by City of Walnut Creek. Signs and devices to encourage bicyclists to stop before crossing the ramp, especially when eastbound, would help make the crossing safer.
- The current City of Walnut Creek concept for the path under I-680 shows a 10 foot width. A 12 foot width, created with a slightly higher retaining wall, is recommended to provide additional space for this important connection.
- Beyond I-680 (see Sta. 110+50), the path could be continued on the south side to Alpine Road by constructing a taller retaining wall within the ROW of the first office building on the south side. This would allow the existing 6' sidewalk to be widened to 10 feet. This appears to be feasible within the available ROW.
- Crossing Alpine Road with the path at this point would be an engineering challenge due to the steep slope of the side street.

Tree Impact (Long-Term Concept): Creating the sidepath at Sta. 110+50 by constructing a taller wall 4 feet further back will require removal/replacement of up to 3 mature ornamental trees.

Figure 5-20: Olympic Boulevard Stations 107+00 and 110+50 (facing east)

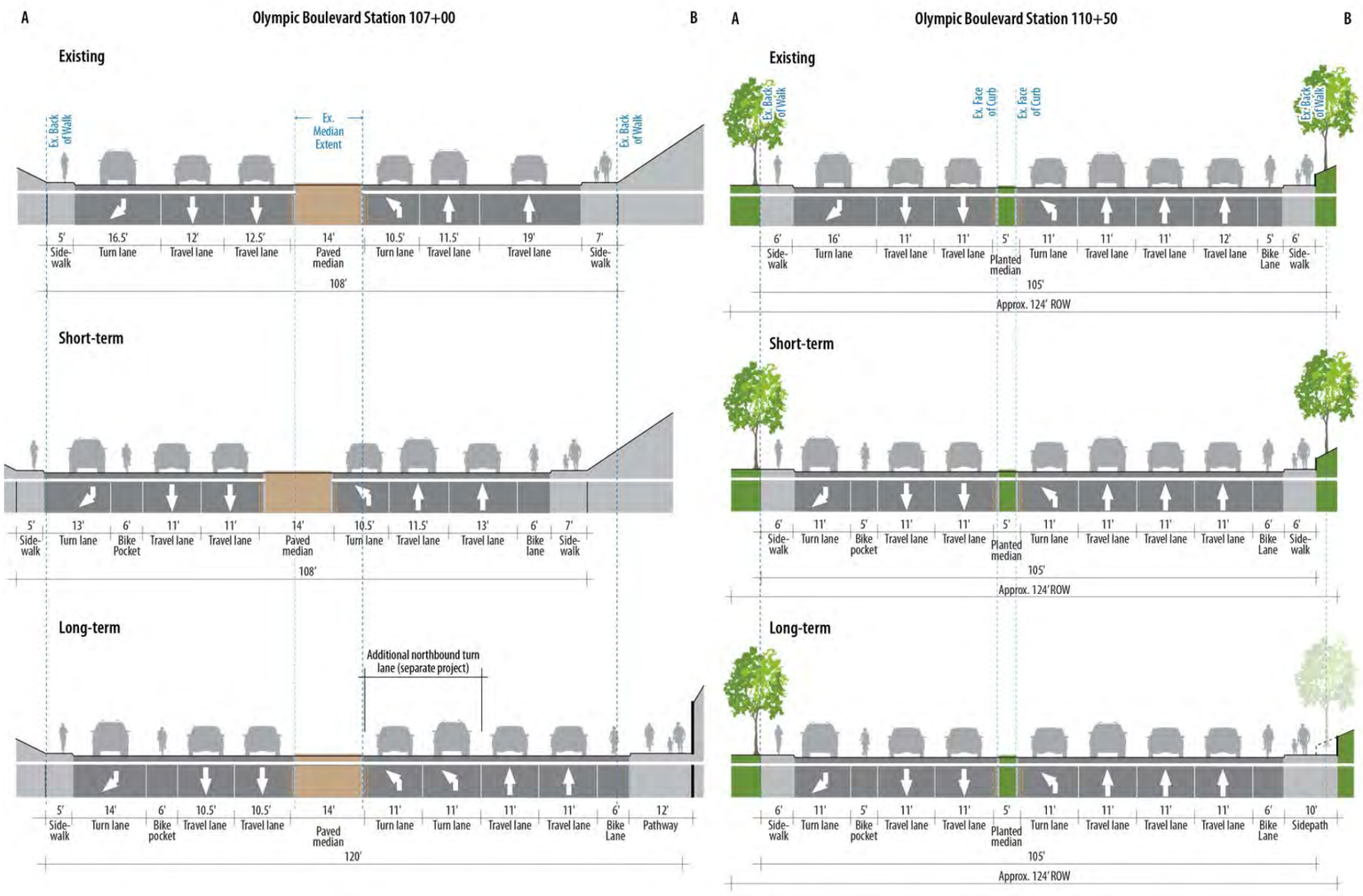
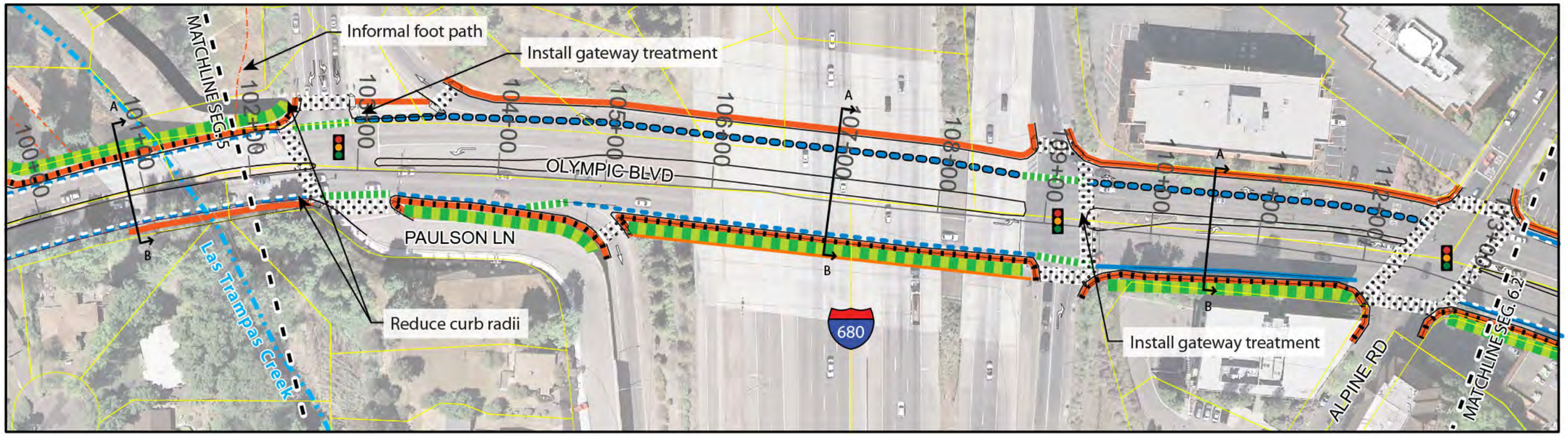


Figure 5-21: Segment 6.1 – Olympic Boulevard, S.B. I-680 On/Off Ramps to Alpine Road



Existing

- Bike lane
- Sidewalk
- Maintenance Road
- Parcel
- 10' Contour
- Creek
- Easement
- Signalized Intersection
- # + 00 Stationing
- Cross Section Cut Line

Short-Term Improvement Concept

- Bike Lane
- Bike Pocket
- Green Conflict Area Markings
- Textured Crosswalk and Advance Stop Bar

Long-Term Improvement Concept

- Sidepath
- Existing Sidewalk to be Replaced
- Retaining wall up to 10'high

Study Area Location Map: Segment 6.1

5.9.2 Segment 6.2: Olympic Boulevard, Alpine Road to S. California Boulevard

Existing Conditions:

- Bike lanes exist on both sides of the roadway between Alpine Road and S. California Street. Office structures are immediately adjacent to the back of sidewalk on the south central portion; the remainder is fronted by commercial parking lots.

Short-Term Improvement Concept: Provide buffered bike lanes.

- Conventional bike lanes can be widened into buffered bike lanes if vehicle lanes are narrowed to 11 feet.

Long-Term Improvement Concept: Create a cycle track/bike path on the south side. The 6 foot sidewalk/pedestrian space on the south would be retained adjacent to the property line and a cycle track or bike path would be created, requiring 10 to 12 feet on the curb side with a street tree, light, and utility zone between the two. The existing trees, lights, and utilities could potentially be left in place. There are 2 scenarios under which the additional space needed for the Cycle Track/Bike Path Alternative could be created:

1) **Future Redevelopment:** Create the required space on the north side in conjunction with future redevelopment of the shopping center and office parking areas on the north side. The path would be created on the south side, incorporating the existing 6 foot sidewalk. The existing roadway configuration would be shifted to the north.
2) **Lane removal:** Create the required space by removing one vehicular lane. Recognizing that this would have a significant impact on traffic in this very heavily-used corridor, this alternative would be a strong statement in support of bicycle and pedestrian access as major transportation alternatives. Other cities (San Francisco, Oakland) have made this tough choice and demonstrated that the increased bicycle access helps offset the reduced motor vehicle traffic capacity.

Tree Impact (Long-Term Concept): The lane removal alternative could potentially be implemented without tree removal. The redevelopment alternative could potentially involve removal and replacement of all the trees on the north side – approximately 15 relatively small ornamental street trees – and 3 large pines in the median.

Figure 5-22: Olympic Boulevard Station 115+50 (facing east)

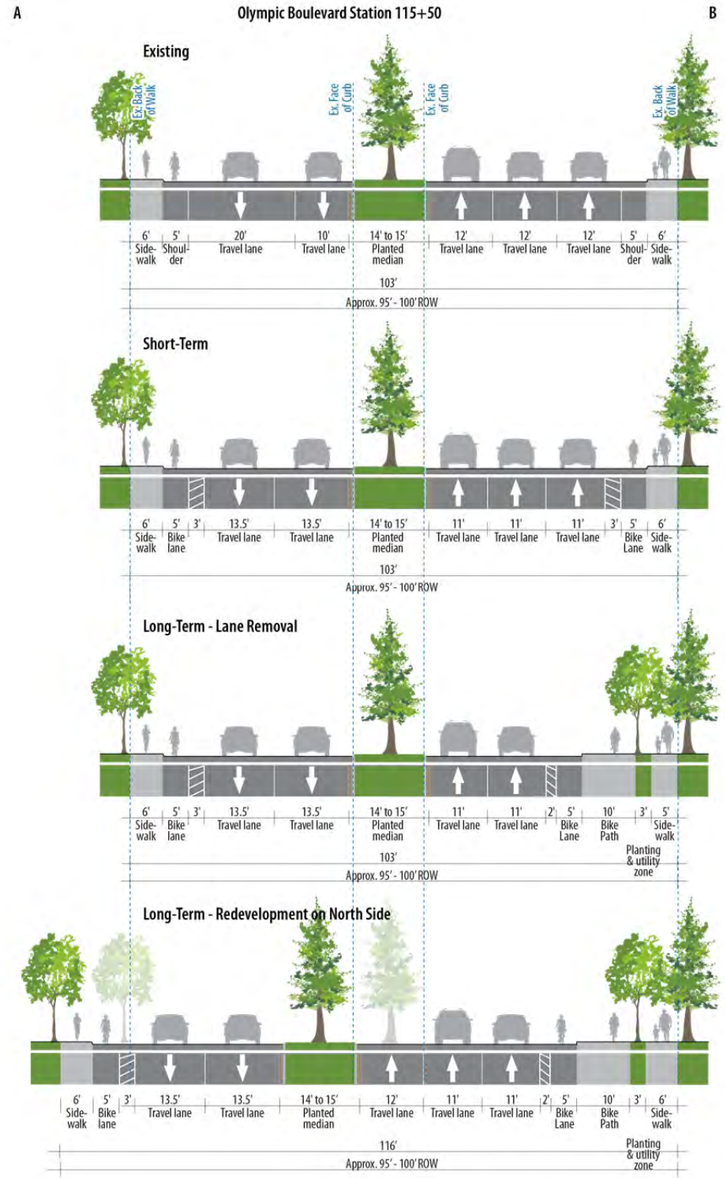
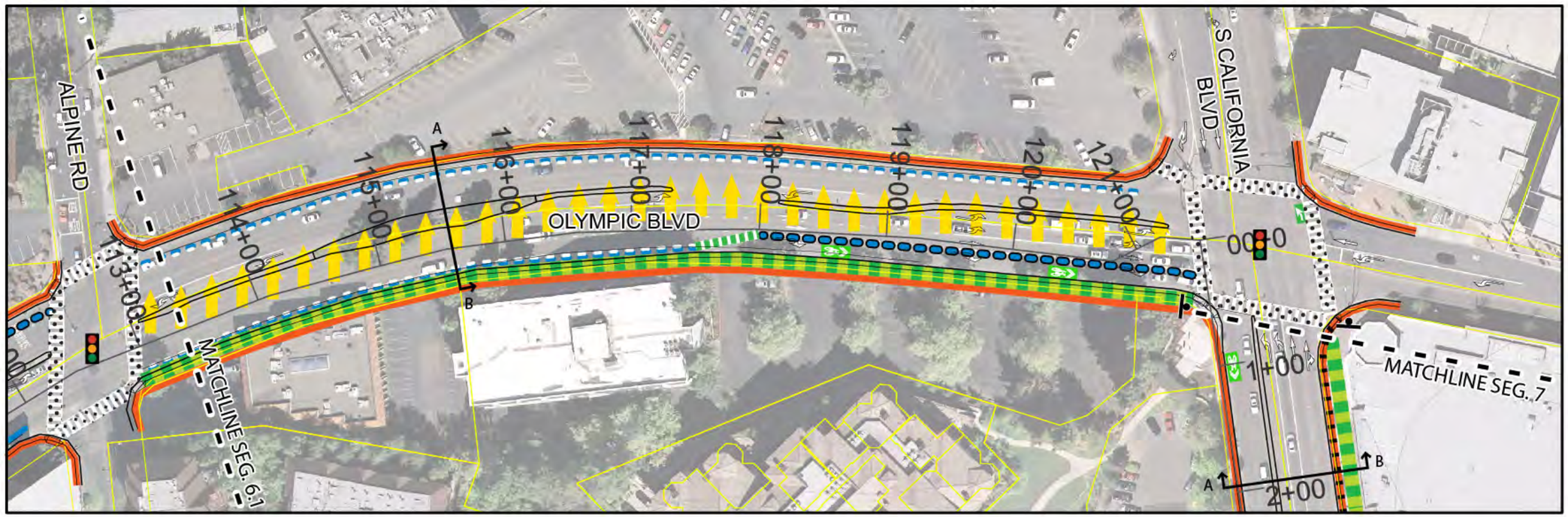


Figure 5-23: Segment 6.2- Olympic Boulevard, Alpine Road to S California Boulevard



Existing

- Sidewalk
- Parcel
- 10' Contour
- Signalized Intersection
- # + 00 Stationing
- Cross Section Cut Line

Short-Term Improvement Concept

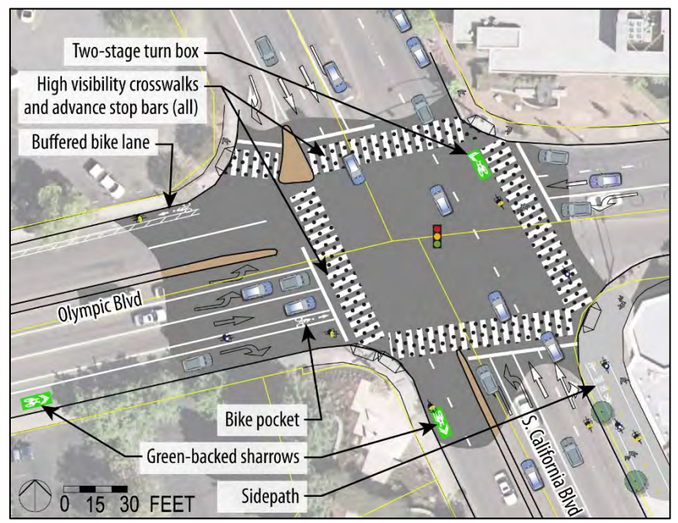
- Buffered Bike Lane
- Bike Pocket
- Green-Backed Sharrow
- Two-Stage Turn Box
- Green Conflict Area Markings
- Textured Crosswalk and Advance Stop Bar
- Wayfinding Sign

Long Term Improvement Concept

- Sidepath
- Possible 14 Foot Lane Shift to North
- Existing Sidewalk to be Removed/ Replaced with Sidepath

Study Area Location Map: Segment 6.2

Inset A: Olympic Boulevard / S. California Boulevard Intersection Detail



5.10 Segment 7: S. California Boulevard, Olympic Boulevard south to Newell Avenue

Existing Conditions:

- This segment has narrow lanes and median. There is no curbside parking up to Botelho Drive; thereafter there is limited curbside parking. There is insufficient space to construct bike lanes.

Short-Term Improvement Concept: Add sharrows with green backing. There is insufficient space to construct bike lanes.

- The existing lanes are narrow and the medians are approximately 4 feet wide. Even if the median was reduced to a barrier, there would not be enough space gained to create the 10 feet needed for bike lanes.
- In theory the curbs could be moved back on one or both sides and the sidewalk narrowed, but this would be more expensive and disruptive than the conceptual long-term solution.

Long-Term Improvement Concept: Create a cycle track or bike path on the east side by utilizing a portion of the wide sidewalk space.

- Although there is 20 feet of space from the curb to the structures on the east side of California Boulevard in the portion from Olympic Boulevard to Botelho Drive, only approximately 10 feet from the face of curb is in the public ROW; only this portion should be used for bicycle space.
- Currently the curbside 4-5 feet is occupied by trees, plantings, street lights, and utilities such as signal controller boxes, conflicting with space for bicyclists.
- The conceptual solution is to move the tree, light, and equipment zone between the bike path and the pedestrian space.
- The conceptual solution for the bus shelter located in the bike space near Botelho Drive is to relocate the shelter to the south side of Botelho Drive where the path will be a shared use facility, rather than separate bike and pedestrian space.
- Warning signs and buffers would be needed at building exits (which occur only at the north and south corners) and the garage driveway crossing and pedestrian entrance.
- Improved crosswalks are recommended at the Olympic Boulevard/ S. California Boulevard intersection to connect to the proposed path on the southwest corner.
- The sidepath can be created south of Botelho Drive by eliminating two on-street parking spaces and extending the curb line out.
- A bicycle/pedestrian bridge (presumably prefab) would be needed at Las Trampas Creek, approximately 130 feet long; requiring the removal of at least one tree – a native live oak. Access to the bridge would require a small encroachment onto the adjacent private parcels and the bridge would require the permission of the Contra Costa County Water Agency.
- The sidepath could be continued south by widening the existing 10 foot wide sidewalk fronting Trader Joe's to 16 feet by eliminating up to 4 curbside spaces on the west side of the street and shifting/retaining the 7 curbside spaces on the east side. This would require moving or replacing street trees, street furniture, and utilities.

Tree Impact (Long-Term Concept): 7 medium-sized street trees would be removed and replaced in the reorganized sidewalk space between Olympic Boulevard and Botelho Drive. One medium sized native oak would be removed on the south side of the proposed bridge over Las Trampas Creek.

Figure 5-24: California Boulevard Stations 2+00 and 9+00 (facing north)

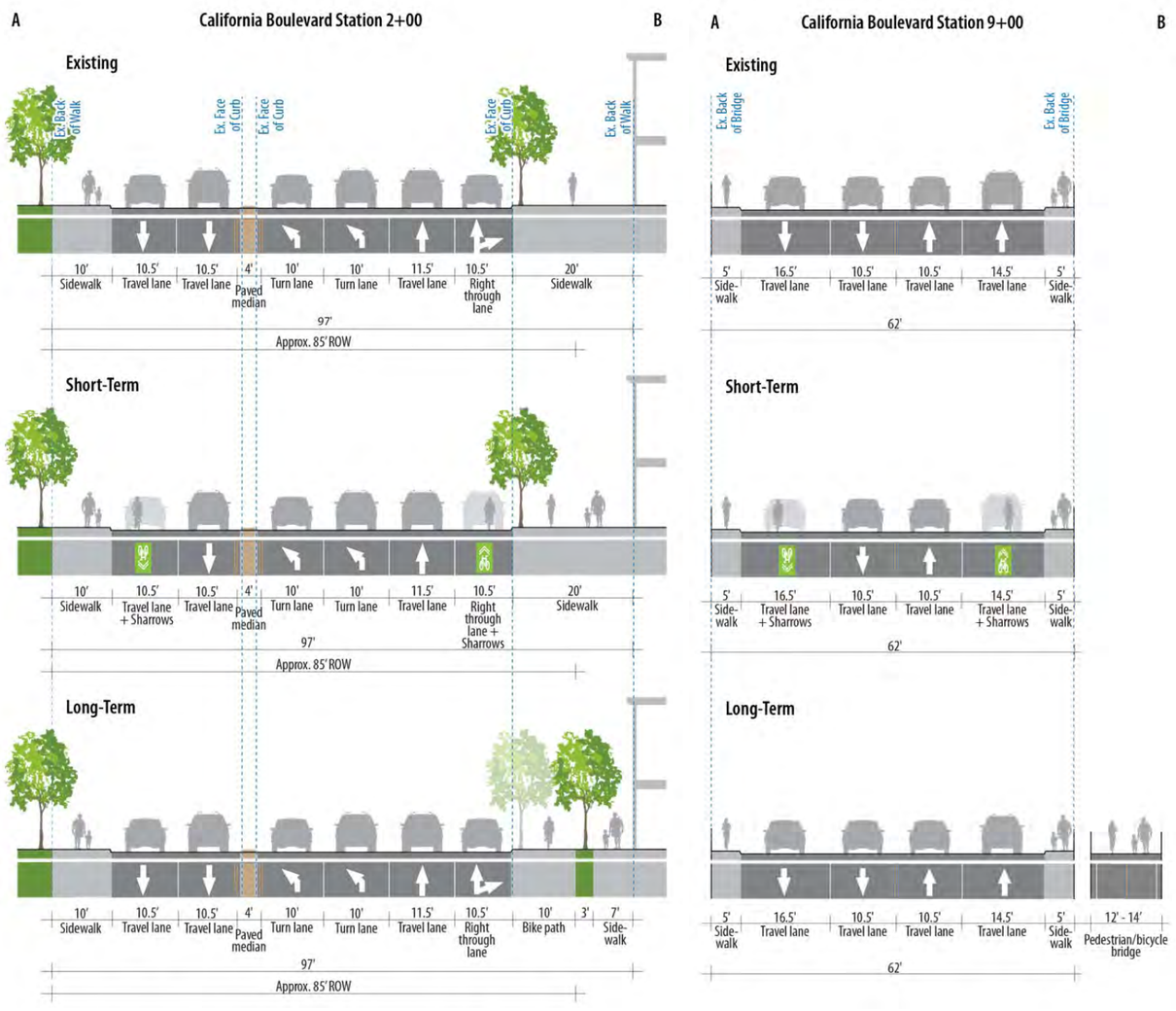


Figure 5-25: California Boulevard Station 11+00 (facing north)

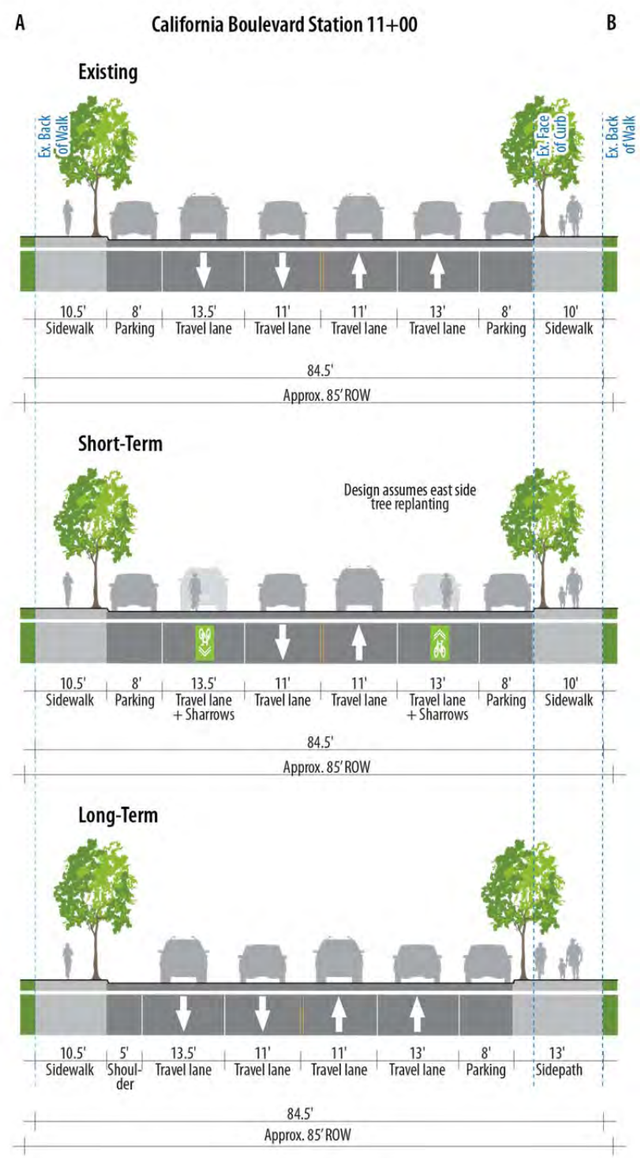
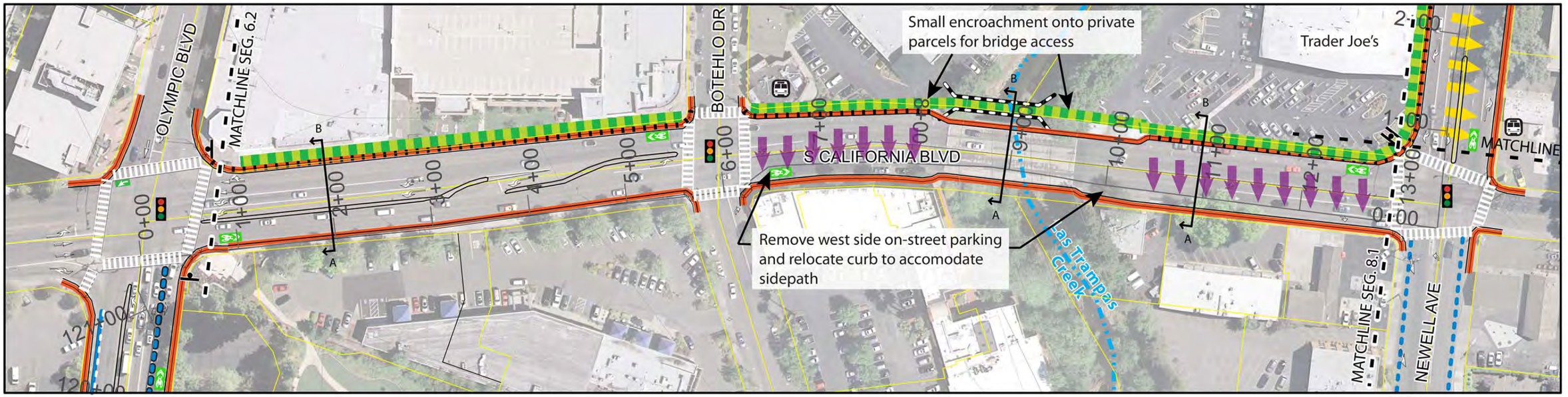


Figure 5-26: Segment 7 – South California Boulevard, Olympic Boulevard to Newell Avenue



Existing

- Bike Lane
- Sidewalk
- Parcel
- 10' Contour
- Creek
- Signalized Intersection
- Bus Stop
- # + 00 Stationing
- Cross Section Cut Line

Short-Term Improvement Concept

- Class III Bike Route with Sharrows
- Wayfinding Sign

Long-Term Improvement Concept

- Sidepath
- Existing Sidewalk to be Removed /Replaced with Sidepath
- Parking Removal and Curb Relocation (West Side); and Lane Shift
- Pedestrian/Bicycle Bridge
- High Visibility Crosswalk and Advance Stop Bar

Study Area Location Map: Segment 7

5.11 Segment 8: Newell Avenue, S. California Boulevard to Broadway

5.11.1 Segment 8.1: Newell Avenue, S. California Boulevard to Main Street

Existing Conditions:

- The sidewalk along the north side is 8 feet wide, but street lights, street trees with gates, power poles, and projecting planters reduce clear path to as little as 4 feet.
- The mixed residential and commercial project at 1500 Newell Avenue, currently under construction at the northwest corner of Newell Avenue and Main Street, will have a 10 foot wide sidewalk along Newell Avenue.
- Kaiser Hospital and its' associated parking structure are located on the south side, where there is an 8 foot or wider sidewalk, a bus stop with pullout, and a landscaped frontage with large mature pines and an oak.

Short-Term Improvement Concept: There is insufficient space to construct bike lanes. Sharrows are already in place (not shown). Even if the lanes were narrowed to 11 feet, and the median reduced to a barrier, there would not be enough space gained to create the 10 feet needed for bike lanes. Add sharrows with green backing.

Long-Term Improvement Concept: Construct a sidepath or add a bike path or "cycle track" adjacent to the sidewalk on the north side. A sidepath with a shared bicycle/pedestrian space of a net 9 to 10 feet is not necessarily adequate to accommodate the significant use anticipated on this segment, which joins the Newell Avenue west segment and the California Boulevard segment. Consistent with the vision for the Connector, a concept for the more desirable separate facilities is presented:

- **Sidepath Alternative:** Six feet could be added to the existing 8 foot sidewalk on the north side by narrowing the lanes to 11 feet and relocating and narrowing the adjacent 4 foot median to 3 feet. The street trees, street lights, and utilities would need to be relocated to near the new curb to provide space for the shared use path.
- **Cycle Track/Bike Path Alternative:** The 8 foot sidewalk/pedestrian space on the north would be retained adjacent to the property line, and a cycle track or bike path would be created, requiring 10 to 12 feet on the curb side with a street tree, light, and utility zone between the two. The existing trees, lights, and utilities could potentially be left in place. This alternative would require some reconstruction of the new frontage of 1500 Newell Avenue, but only in the public ROW. There are 3 scenarios under which the additional space needed for the Cycle Track/Bike Path Alternative could be created:
  1) **Redevelopment Alternative**: Wait for the properties on the north side to be redeveloped, affording the opportunity to provide more space and build the path (as is occurring to the east with Broadway Plaza). The Newell Promenade shopping center is an older facility and economics could warrant its' reconstruction over a medium-term horizon, but Trader Joe's is a high-performing use that is not likely to be redeveloped, and the Village at 1500 Newell Avenue is currently being reconstructed, and while additional sidewalk space is being provided, a Class I path facility was not envisioned.
  2) **Additional ROW Alternative**: Acquire (presumably by willing-seller negotiation) approximately 5 feet of right-of-way along the frontage of the gas station and Kaiser Hospital, and shift the lanes to the south to provide room for the trail facility on the north. This would involve:
     a. relocating the canopy over the gas pumps
     b. demolishing and reconstructing part of the Kaiser landscape areas and planters; sidewalks and pedestrian plazas with associated lighting and amenities and a bus stop;
     c. removing a heritage-size pine tree
  3) **Lane Removal Alternative:** Remove one of the vehicle lanes on Newell Avenue to provide space for the trail. This would have a significant impact on a major connector that already experiences level of service F. This alternative would be a strong statement in support of bicycle and pedestrian access as major transportation alternatives. Other cities (San Francisco, Oakland) have made this tough choice, and demonstrated that the increased bicycle access helps offset the reduced motor vehicle traffic capacity.
- There is a current City proposal to construct a mid-block crosswalk with a curb extension (see Figure 5-28) to accommodate Kaiser employees and visitors. Although this would be a desirable accommodation for bicyclist and pedestrian connectivity, it would also have to be reconstructed if the street shift and/or trail construction occurred.

Tree Impact (Long-Term Concept): If the sidepath was created by lane narrowing, or the cycle track/bike path was created in conjunction with redevelopment of the properties to the north, 5 street trees (small and in poor condition) would need to be removed and replaced. If additional space was created by removing a lane, there would be no tree impact. If the space was created by acquiring frontage to the south, one heritage-sized Italian stone pine, three mature street trees, and one small street tree would need to be removed and replaced.

Figure 5-27: Newell Avenue Station 2+50 (facing east)

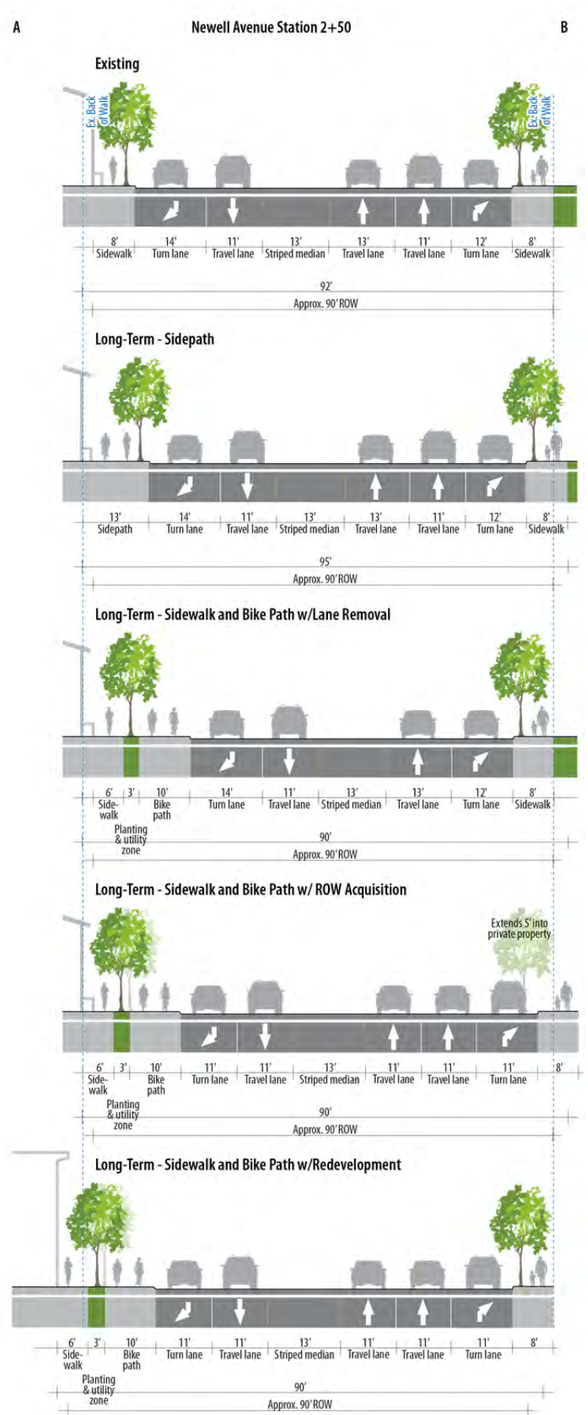
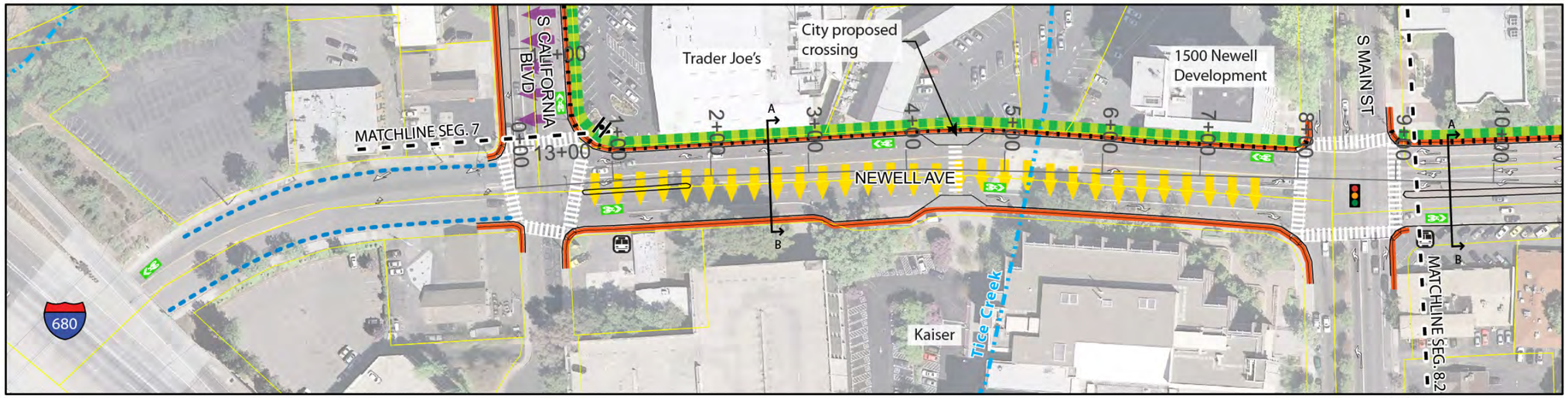


Figure 5-28: Segment 8.1- Newell Ave, S California Blvd to Capwell St



Existing

- Sidewalk
- Parcel
- 10' Contour
- Creek
- Signalized Intersection
- Bus Stop
- # + 00 Stationing
- Cross Section Cut Line

Short-Term Improvement Concept

- Green-backed Sharrows

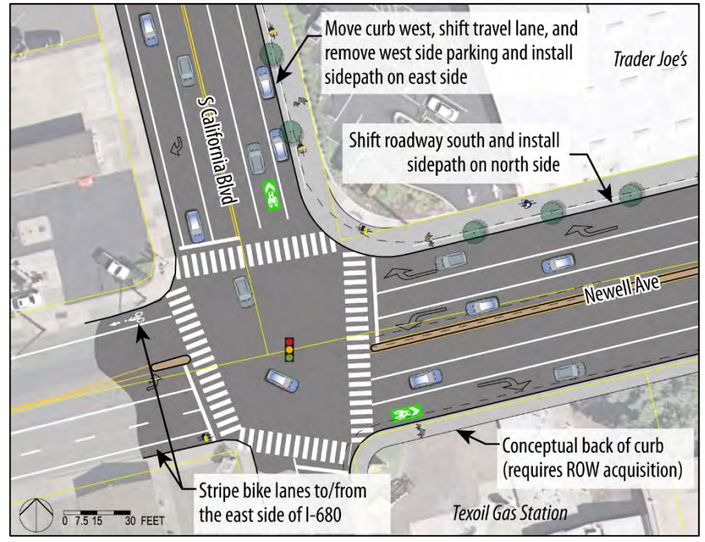
Long-Term Improvement Concept

- Sidepath
- Bike Lane
- Possible Curb Relocation and Lane Shift
- Existing Sidewalk to be Removed/ Replaced with Sidepath
- High Visibility Crosswalk and Advance Stop Bar
- Wayfinding Sign

Study Area Location Map: Segment 8.1

0 25 50 100 FEET

Inset A: S. California Blvd / Newell Ave Intersection Detail



5.11.2 Segment 8.2: Newell Avenue, Main Street to Broadway and the IHT

Existing Conditions:

- The existing lanes and median in this segment are already relatively narrow. There is a 6 foot wide raised median along the left turn pocket from WB Newell Avenue to SB Main Street. A maximum of approximately 3 feet could be gained by narrowing the median. There is not sufficient space to add bike lanes.

Short-Term Improvement Concept: None. There is insufficient space to construct bike lanes and sharrows are already present.

- Even if the lanes were narrowed to 11 feet and the median reduced to a barrier, there would not be enough space to create the 10 feet needed for bike lanes.

Long-Term Improvement Concept: Construct a sidepath or add a bike path or "cycle track" adjacent to the sidewalk on the north side. A sidepath with a shared bicycle/pedestrian space of a net 9 to 10 feet is not really adequate to accommodate the use anticipated on this segment. Consistent with the vision for the Connector, a concept for the more desirable separate facilities is presented:

- **Sidepath Alternative:** 4 feet could be added to the existing 10 foot sidewalk on the north side by narrowing travel lanes to 11 feet and relocating/narrowing the adjacent 6.5 foot median to 4.5 feet. The trees, street lights, and utilities would need to be relocated to near the new curb to provide space for the path. A bike/pedestrian bridge (presumably prefab) would be needed at San Ramon Creek, (about 130 feet long) requiring the removal of at least two trees. Bridge access would require a small encroachment onto adjacent private parcels and the bridge would require permission of the Contra Costa County Water Agency.
- **Cycle Track/Bike Path Alternative:** The 8 foot sidewalk on the would be retained adjacent to the property line, and a cycle track or bike path would be created, requiring 10 to 12 feet at curb side, with a tree, light, and utility zone between the two. The existing trees, lights, and utilities could potentially be left in place. This would require some reconstruction of the new frontage of 1500 Newell, but only in the public ROW. There are 3 scenarios under which the additional space needed could be created:
  1) **Redevelopment Alternative**: The Broadway Plaza property is currently being redeveloped, and a Class I path is part of the proposal. If the Chase Bank Building at 1390 Main Street is also redeveloped opportunity may be presented to complete the cycle track/bike path connection.
  2) **Additional ROW Alternative**: Acquire (presumably by negotiation) approximately 5 feet of right-of-way at the back of sidewalk along the frontage of the Chase Bank building to provide room for the trail facility on the north, utilizing the existing 10 foot wide sidewalk on the north side.
  3) **Lane Removal Alternative:** Remove one of the vehicle lanes on Newell Avenue to provide space for the path. This would have an impact on a major connector that already experiences level of service F (the City is currently planning to add a lane in conjunction with the Broadway Plaza redevelopment project, as shown in the section for Sta. 16+50). This alternative would be a strong statement in support of bicycle and pedestrian access as major transportation alternatives. Other cities (San Francisco, Oakland) have made this tough choice and demonstrated that increased bicycle access helps offset the reduced motor vehicle capacity.
- The sidepath east of the creek anticipated to be constructed as part of the Broadway Plaza redevelopment project. If the sidewalk with cycle track/bike path alternative is pursued, the Broadway Plaza plans would need to be amended to reflect this as the improvements would extend approximately 7 additional feet into the property.
- Crosswalks and ramps on north and west sides of intersection would be improved to accommodate the pathway connections to the north and south IHT segments.

Tree Impact (Long-Term Concept): Unless the path was created in conjunction with lane removal, 5 street trees (small and in poor condition) would need to be removed and replaced. Up to 7 mature ornamental trees near the back of the sidewalk might have to be removed and replaced.

Figure 5-29: Newell Avenue Stations 9+50 and 16+50 (facing east)

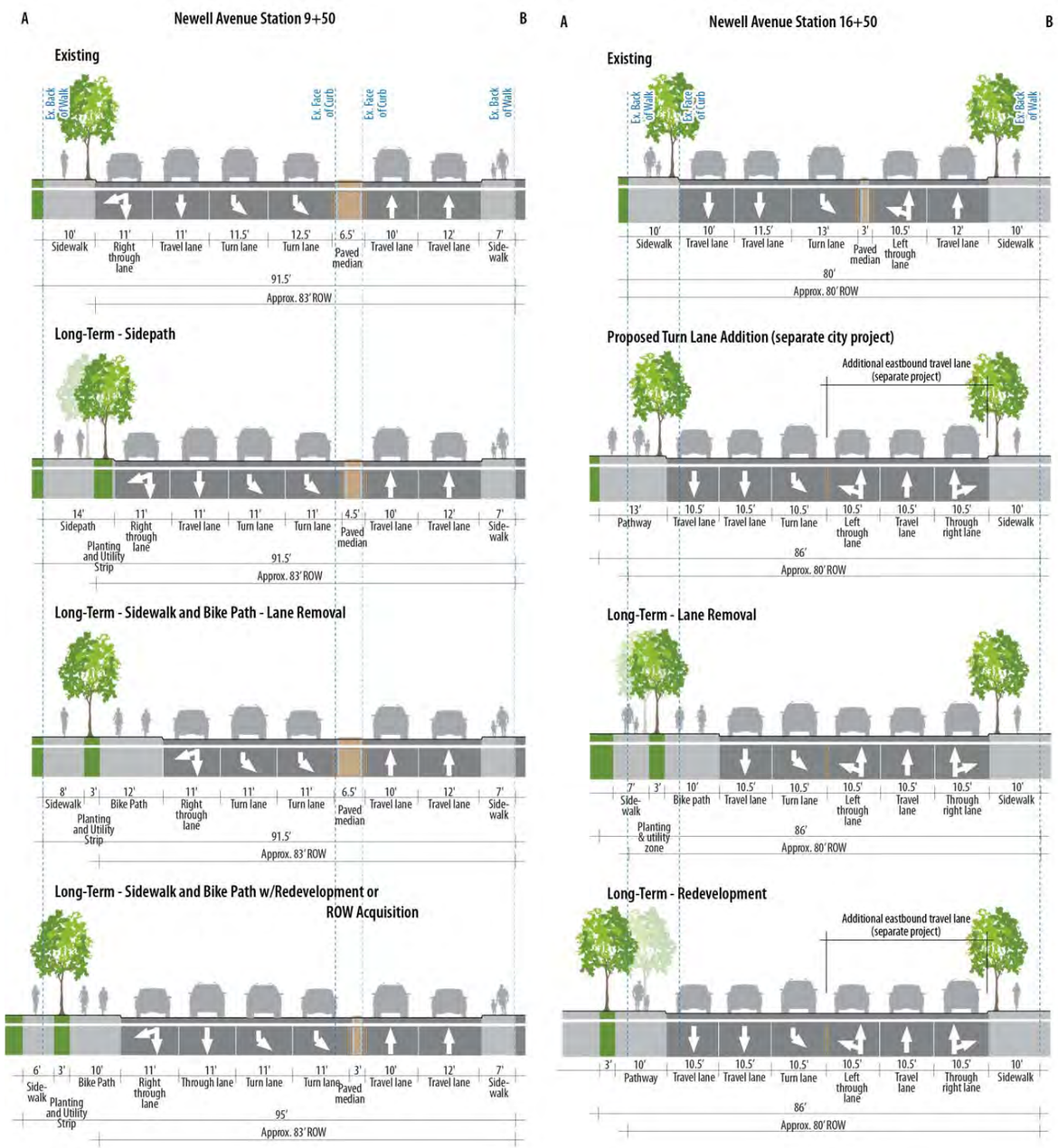
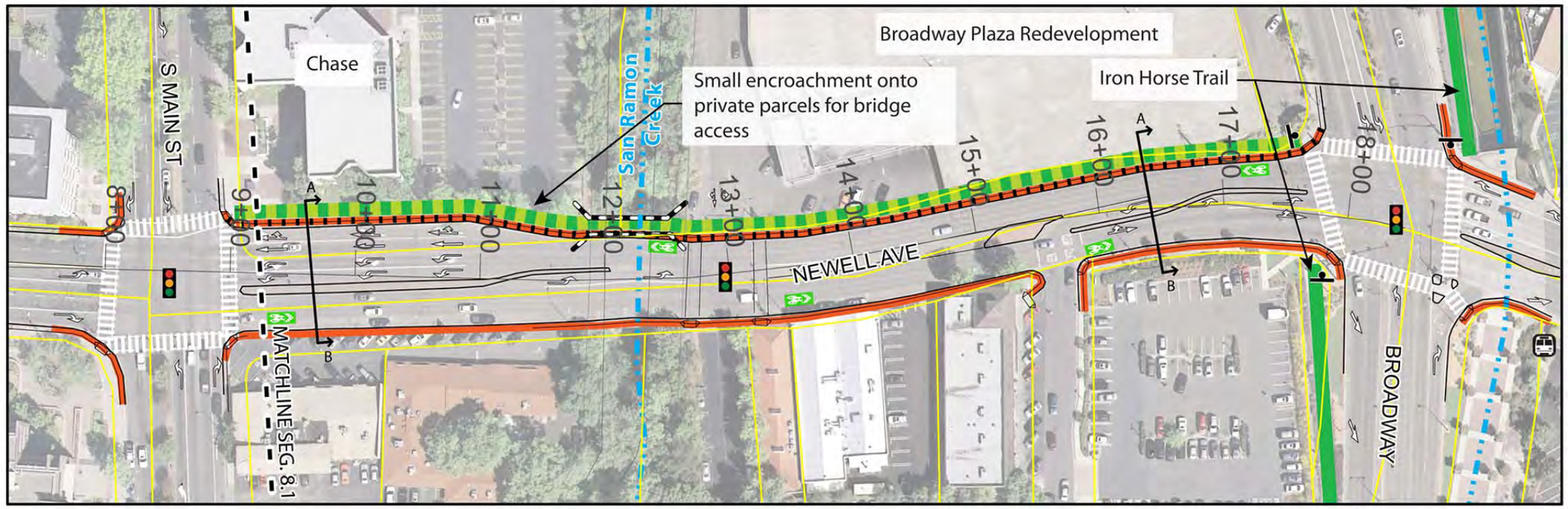


Figure 5-30: Segment 8.2- Newell Avenue, Capwell Street to the Iron Horse Trail



Existing

- Shared Use Pathway
- Sidewalk
- Parcel
- 10' Contour
- Creek
- Signalized Intersection
- Bus Stop
- # + 00 Stationing
- Cross Section Cut Line

Short-Term Improvement Concept

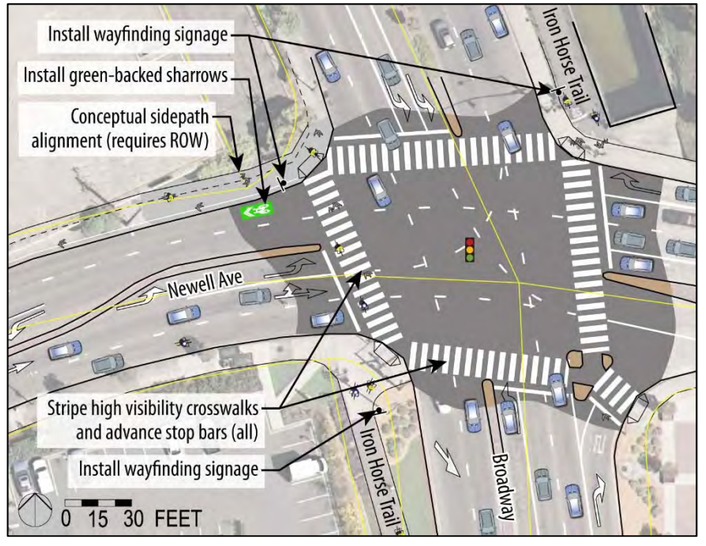
- Green-backed Sharrows
- Wayfinding Sign

Long-Term Improvement Concept

- Sidepath
- Existing Sidewalk to be Removed/ Replaced with Sidepath
- Pedestrian/Bicycle Bridge
- High Visibility Crosswalk and Advance Stop Bar

Study Area Location Map: Segment 8.2

Inset A: Newell Ave / Broadway Intersection Detail



5.12 Segment 9: Newell Ave West of I-680

West of I-680, Newell Avenue is a winding, two-lane roadway with a ROW width of 50 feet through a residential neighborhood. The pavement width is approximately 25 feet. Newell Avenue provides access to Parkmead Elementary School as well as three other schools. Relatively low vehicle volume and speed makes this portion of Newell Avenue more comfortable for bicyclists and pedestrians than other busier roads. Newell Avenue is a popular route with weekend bicyclists, many of whom are headed to the IHT or other routes south to Mt. Diablo, and it is recommended that this route is designated as an option for reaching the IHT. It would be the most low-stress, family-friendly option except that it leads to the eastern portion of Newell Avenue, which won't be a low-stress route until the long term improvements are implemented. In the interim, Lilac Drive and the other existing connections to the south, described under Segment 10, are the best connections to the IHT.

Improvements at the west and east ends of the segment are covered under Segments 4 and 8.1. Significant physical improvements to better accommodate pedestrians and bicyclists are not feasible or necessary in this setting. The existing narrow sidewalks are blocked in many locations by landscaping or resident-installed features and, though reportedly prohibited, parked cars often block the path. Coordination with individual property owners to correct these conditions is recommended.

Short-Term Improvement Concept: Provide wayfinding signage and maps to clarify for bicyclists on Olympic Boulevard and Newell Avenue/downtown Walnut Creek that Newell Avenue west is a connecting route and that Lilac Drive, Lancaster Road and other routes to the south are optional connections to the IHT.

Long-Term Improvement Concept: Provide wayfinding signage and maps to designate that Newell Avenue west is an option to the primary connector route, and that it merges back into the main route at California Boulevard.

5.13 Segment 10: Southern Connections to IHT

Many bicyclists currently use Olympic Boulevard, Newell Avenue, Lilac Drive, Lancaster Road, Castle Hill Road, Danville Boulevard, and other roadways to connect south to the IHT and bicycling destinations in the Danville-San Ramon area, including Mt. Diablo. Parts of these southern connections may also have benefits for access to Las Lomas High School, Kaiser Hospital, high-density residential areas, and other destinations. These connections are not considered for physical improvements, but additional wayfinding would benefit users of the Olympic Boulevard/Newell Avenue route that want to connect to/from the south.

Short-Term Improvement Concept: Provide wayfinding signage and maps to clarify that these routes are connections from Olympic Boulevard via Newell Avenue west to the IHT and other destinations to the south.

Figure 5-31: Segment 9 – Newell Ave West of I-680

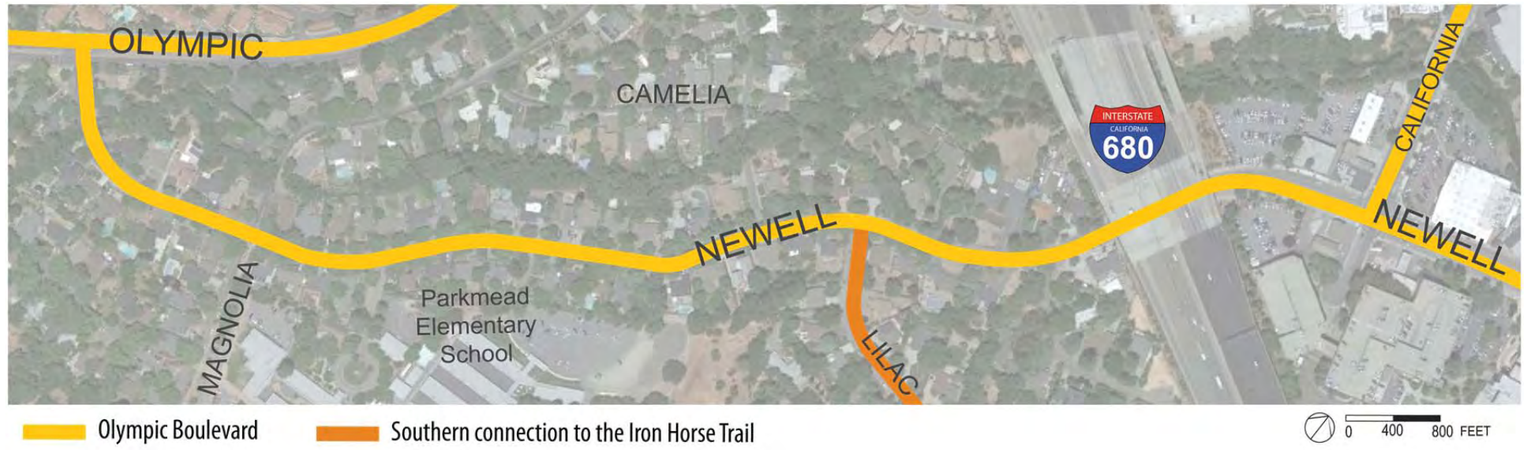
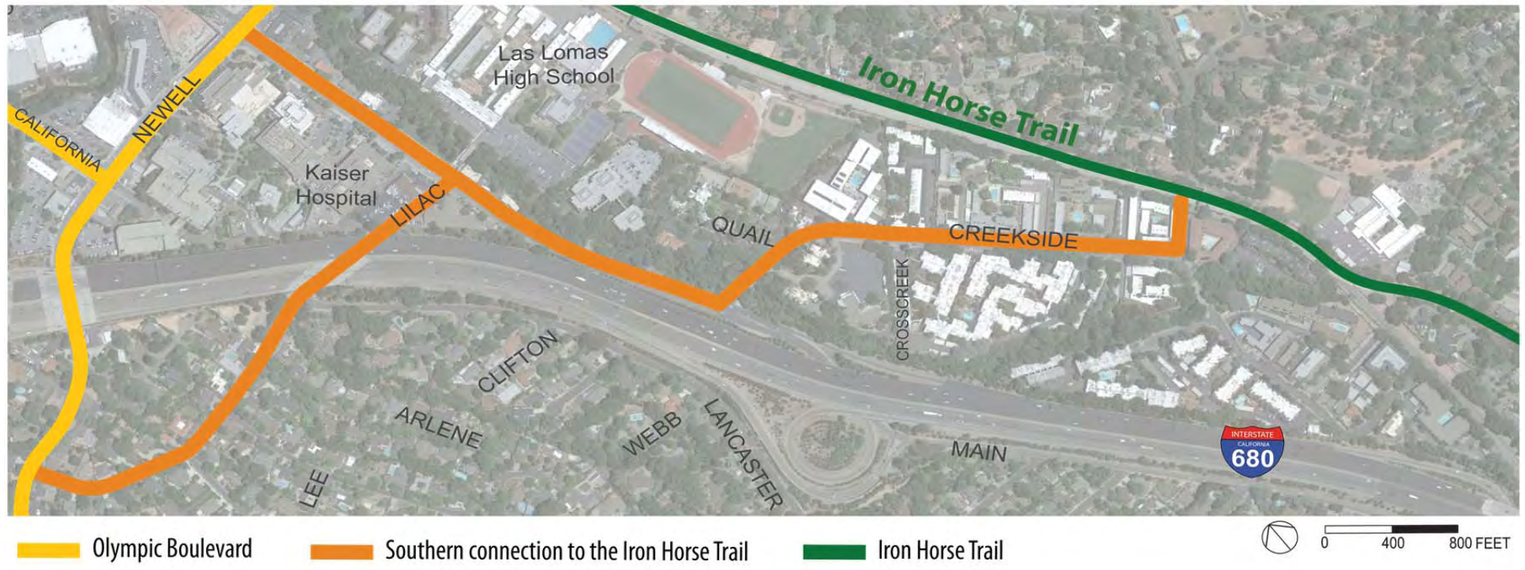


Figure 5-32: Segment 10 – Southern Connections to the Iron Horse Trail



6. Implementation and Phasing

This Study is a bold vision for a bicycle and pedestrian Connector that will provide the region with multiple benefits, including transportation alternatives, healthy recreation, and support for environmental sustainability goals. This chapter outlines an implementation approach including an overview of cost estimates, phasing recommendations, and next steps.

6.1 Cost Estimates

This chapter presents planning-level cost estimates for the proposed short-term and long-term improvement segments. Summaries are presented in **Table 6-1** and **Table 6-2**. The detailed estimates and unit cost assumptions are presented in Appendix B. Planning-level cost estimates require numerous assumptions about the details of construction and associated requirements. The estimate and assumptions reflect the experience of the consultant team based on similar projects.

These cost estimates include all the remaining project implementation steps in addition to "hard" construction costs. This includes costs for surveying, design, technical studies and environmental documentation, as well as construction period engineering and administration. The estimates include cost "placeholders" for each of these stages of project implementation, represented as factors of the construction cost as outlined below.

Cost estimates are summarized in this chapter in two categories:

- Construction Costs
  - "Hard" construction costs for capital improvements
    - Right-of-way easement acquisition, for some segments where additional right-of-way is necessary for the trail alignment. Acquisition is assumed to be on a willing seller basis, and at a placeholder cost of $50.00 per square foot. Actual right-of-way costs would be subject to negotiation
  - Construction overhead (costs the contract typically includes over and above the individual work items – calculated as a percentage of the total project construction cost):
    - Mobilization – 5%
    - General conditions, bonds, and insurance – 2%
    - Erosion control, including Best Management Practices (BMPs), Stormwater Pollution Prevention Plan (SWPPP) and reporting – typically 5%, or 0 for short-term improvements that consist only of signing and striping
    - Traffic control – 10% (most segments will involve significant traffic control)
- Contingency, Survey, Design, Environmental, and Admin Costs – calculated as a percentage of the total project construction cost
  - Contingency, to account for variations in the level of accuracy of the estimate – 20%
  - Survey, including boundary and topographic – 5%
  - Design, including plans, specifications, and estimates – 15%
  - Environmental – in this study, applies only to long term improvements as short-term improvements such as signing and striping are assumed to be categorically exempt from environmental regulations
    - Analysis, documentation, and related permits – 10%
    - Technical and environmental studies and mitigation, including for geotechnical or hazardous waste investigations – 2.5%
  - Administration, including construction period engineering and other management tasks – 15%

Table 6-1: Short-Term Project Segments Costs

	Segment	Jurisdiction	Construction	Contingency, Survey, Design, Environmental, and Admin	Total Estimate
1	Olympic Blvd.: Reliez Station Rd. to Pleasant Hill Rd.	Lafayette	$1,083,489*	$45,919	**$1,130,000**
2.1	Olympic Blvd.: Pleasant Hill Rd. to Windtree Ct.	Lafayette	$41,240	$22,682	**$64,000**
2.2	Olympic Blvd.: Windtree Ct. to Newell Ct.	CC County/ Lafayette	$75,759	$41,667	**$118,000**
3	Olympic Blvd.: Newell Ct. to Boulevard Way/ Tice Valley Rd.	CC County	$143,236	$78,780	**$223,000**
4	Olympic Blvd.: Boulevard Way/ Tice Valley Rd. to Newell Ave.	CC County	$415,814	$228,698	**$645,000**
5	Olympic Blvd.: Newell Ave. to I-680	CC County	$103,563	$56,960	**$161,000**
6.1	Olympic Blvd.: I-680 to Alpine Rd.	Walnut Creek	$92,672	$50,970	**$144,000**
6.2	Olympic Blvd.: Alpine Rd. to S. California Blvd.	Walnut Creek	$33,521	$18,437	**$52,000**
7	S. California Blvd.: Olympic Blvd. to Newell Ave.	Walnut Creek	$7,675	&4,221	**$12,000**
8.1	Newell Ave.: S. California Blvd. to S. Main St.	Walnut Creek	$1,053	$579	**$2000**
8.2	Newell Ave.: S. Main St. to Broadway Ave./Iron Horse Trail	Walnut Creek	$6,458	$3,552	**$11,000**
9	Newell Ave.: west of I-680	CC County	$9,407	$5,174	**$15,000**
10	Southern connections to the Iron Horse Trail	CC County/ Walnut Creek	$9,407	$5,174	**$15,000**

**Includes $1,000,000 estimated for planned improvements at the intersections of Olympic Boulevard with Reliez Station Road and with Pleasant Hill Road. These improvements were identified and cost estimates developed concurrent with but outside the scope of this trail connector alignment study.*

Table 6-2: Long-Term Project Segments Costs

	Segment	Jurisdiction	Construction	Contingency, Survey, Design, Environmental, and Admin	Total Estimate
1	Olympic Blvd.: Reliez Station Rd. to Pleasant Hill Rd.	Lafayette	--	--	**--**
2.1	Olympic Blvd.: Pleasant Hill Rd. to Windtree Ct.	Lafayette	$745,880	$503,469	**$1,250,000**
2.2	Olympic Blvd.: Windtree Ct. to Newell Ct.	CC County/ Lafayette	$292,098	$197,166	**$490,000**
3	Olympic Blvd.: Newell Ct. to Boulevard Way/ Tice Valley Rd.	CC County	$366,302	$247,254	**$614,000**
4	Olympic Blvd.: Boulevard Way/ Tice Valley Rd. to Newell Ave.	CC County	$376,859	$254,380	**$632,000**
5	Olympic Blvd.: Newell Ave. to I-680	CC County	$991,215	$669,070	**$1,661,000**
6.1	Olympic Blvd.: I-680 to Alpine Rd.	Walnut Creek	$758,157	$511,756	**$1,270,000**
6.2	Olympic Blvd.: Alpine Rd. to S. California Blvd.	Walnut Creek	$274,498	$185,286	**$460,000**
7	S. California Blvd.: Olympic Blvd. to Newell Ave.	Walnut Creek	$740,744	$500,003	**$1,241,000**
8.1	Newell Ave.: S. California Blvd. to S. Main St.	Walnut Creek	$302,243	$204,014	**$507,000**
8.2	Newell Ave.: S. Main St. to Broadway Ave./Iron Horse Trail	Walnut Creek	$560,039	$378,027	**$939,000**
9	Newell Ave.: west of I-680	CC County	--	--	**--**
10	Southern connections to the Iron Horse Trail	CC County/ Walnut Creek	--	--	**--**

6.2 Trail Project Priorities and Phasing Recommendations

The following tables summarize the short-term and long-term projects recommended in the Study, organized by jurisdiction, reflecting logical grouping of adjacent segments with similar construction types. Projects could be undertaken as smaller efforts or combined into larger inter-jurisdictional efforts. This multi-jurisdictional regional project approach is consistent with the objectives of the Active Transportation Program grant funding administered by Caltrans, and will enhance the chances to obtain competitive grant awards for implementation. Projects may also be eligible for regional Measure J funding.

Actual project phasing is likely to be opportunity-driven, based on funding availability, ability to forge agreements and partnerships, and/or opportunities to incorporate improvements into development proposals. It is always advantageous to implement "low hanging fruit" portions of the trail that can be completed with minimal funding and maximum community involvement to demonstrate progress and maintain interest on the overall effort.

Short- and long-term improvement maps of the entire trail connector are shown in **Figure 6-1** and **Figure 6-2**.

Table 6-3: Short-Term Projects and Phases

Segment		Jurisdiction	Improvement	Notes, Comments	Length	Cost
Lafayette Projects/Phases						
1	Olympic Blvd.: Reliez Station Rd. to Pleasant Hill Rd.	Lafayette	Convert existing bike lanes to buffered bike lanes by narrowing vehicle lanes; extend existing path on S. side; signing and marking improvements at crossing of Reliez Station Rd.; wayfinding improvements at Pleasant Hill Rd.		1323 ft (0.25 mi)	$1,130,000
2.1	Olympic Blvd.: Pleasant Hill Rd. to Windtree Ct.	Lafayette	Create buffered bike lanes as above	Lafayette jurisdiction only on north side except at west end – coordinate w/ CC Co	1005 ft (0.19 mi)	$64,000
Contra Costa County Projects/Phases						
2.2	Olympic Blvd.: Windtree Ct. to Newell Ct.	CC County/ Lafayette	Create buffered bike lanes – north western portion	Lafayette jurisdiction on north side for short distance - coordinate	1137 ft (0.21 mi)	$118,000
3	Olympic Blvd.: Newell Ct. to Boulevard Way/ Tice Valley Rd.	CC County	Create buffered bike lanes; connect existing Class I path on S. side to Tice intersection; provide bike pockets and crossing improvements at intersection		2288 ft (0.43 mi)	$223,000
4	Olympic Blvd.: Boulevard Wy./ Tice Valley Rd. to Newell Ave.	CC County	Create continuous bike lanes; improve existing sidepath (widen narrow portions); improve crosswalks to Newell Ave.; improve right turn for bikes from EB Olympic Blvd. to SB Newell Ave.		2250 ft (0.42 mi)	$645,000
5	Olympic: Newell Ave. to I-680	CC County	Create bike lanes in constrained portions at turn pockets; buffered bike lanes on other portions		1874 ft (0.35 mi)	$161,000
Walnut Creek Projects/Phases						
6.1	Olympic Blvd.: I-680 to Alpine Road	Walnut Creek	Create bike lanes on S. side; bike pockets on N side	Existing bike lane for last 250' on NB side	1131 ft (0.21 mi)	$144,000
6.2	Olympic Blvd.: Alpine Rd. to S. California Blvd.	Walnut Creek	Convert existing bike lanes to buffered bike lanes by narrowing vehicle lanes	No existing bike lane for last 385' on NB side	847 ft (0.16 mi)	$52,000
7	S. California Blvd.: Olympic Blvd. to Newell Ave.	Walnut Creek	Add "sharrows" with green backing to designate lanes as shared with bikes		1228 ft (0.23 mi)	$12,000
8.1	Newell Ave: S. California Blvd. to S. Main	Walnut Creek	Add green backing to existing "sharrows" designating lanes as shared with bikes; create bike lanes from S. California Blvd. west on Newel Ave. to I-680 undercrossing		725 ft (0.14 mi)	$2000
8.2	Newell Ave: S. Main St. to Broadway and IHT	Walnut Creek	Add green backing to existing "sharrows" designating lanes as shared with bikes Work with the Broadway Plaza redevelopment project sponsors to implement design concept recommended in Study		868 ft (0.16 mi)	$11,000
Joint Projects/Phases						
9	Newell Ave. west of I-680	CC County, Walnut Creek	Provide wayfinding signage for Olympic Connector LMT to IHT			$15,000
10	Southern connections via Lilac, S. Main, Lancaster, Creekside (tributary routes)	Walnut Creek	Provide wayfinding signage to aid in connections to/from Olympic/Newell Connector			$15,000

Table 6-4: Long-Term Projects and Phases

Segment		Jurisdiction	Improvement	Notes, Comments	Length	Cost
Lafayette Projects/Phases						
2.1	Olympic Blvd.: Pleasant Hill Rd. to Windtree Ct.	Lafayette/ CC County	Widen existing path on north side to create 10 foot sidepath (requires retaining wall tapering up to 10 feet tall, and median narrowing with tree replacement)	Lafayette jurisdiction only on north side except at west end – coordinate w/ CC Co	1005 ft (0.19 mi)	$1,250,000
Contra Costa County Projects/Phases						
2.2	Olympic Blvd.: Windtree Ct. to Newell Ct.	CC County/ Lafayette	Widen existing path on north side to create 14 foot sidepath (requires narrowing median and lane shift to S. at east end; redesign of Newell Ct. intersection and connections	Lafayette jurisdiction on north side for short distance - coordinate	1137 ft (0.21 mi)	$490,000
3	Olympic Blvd.: Newell Ct. to Boulevard Way/ Tice Valley Rd.	CC County	Extend continuous path or sidewalks along N. side (requires approx. 4 foot lane shift to the south)		2288 ft (0.43 mi)	$614,000
4	Olympic Blvd.: Boulevard Wy./ Tice Valley Rd. to Newell Ave.	CC County	Continue the sidepath approximately 100 feet to connect to Newell Avenue (may be included w/ Segment5)		2250 ft (0.42 mi)	$632,000
5	Olympic: Newell Ave. to I-680	CC County	Expand the existing sidewalks fronting the Villa townhome complex to create a 10 to 12 foot wide sidepath by narrowing lanes and wide portions of medians, eliminating up to 8 curbside parking spaces out of 30. At one location it may be necessary to shift the south side curb 2 feet south to create needed space, involving tree removal.		1874 ft (0.35 mi)	$1,661,000
Walnut Creek Projects/Phases						
6.1	Olympic Blvd.: I-680 to Alpine Road	Walnut Creek	Create a sidepath along the south side of Olympic from Paulson Lane to Alpine Road by constructing retaining walls. Provide enhanced crossing improvements.	City of Walnut Creek has submitted a grant application for improvements at I-680 undercrossing	1131 ft (0.21 mi)	$1,270,000
6.2	Olympic Blvd.: Alpine Rd. to S. California Blvd.	Walnut Creek	Add a bike path north of the existing sidewalk on the south side. Create space either by removing a vehicle lane or shifting the roadway 10 to 12 feet north in conjunction with future redevelopment of the properties on the north side		847 ft (0.16 mi)	$460,000
7	S. California Blvd.: Olympic Blvd. to Newell Ave.	Walnut Creek	On first block convert existing wide sidewalk/plaza on E. side to separate bike path on curb side and sidewalk on inside with street tree, light, and utility space in between. On second block create sidepath by eliminating 2 parking spaces S. of Botelho and 3 to 4 parking spaces on W. side S. of creek and shifting lane W.s, extending curb, and installing bicycle/pedestrian bridge over creek		1228 ft (0.23 mi)	$1,270,000
8.1	Newell Ave: S. California Blvd. to S. Main	Walnut Creek	Create sidepath on N. side by narrowing lanes and extending north side curb; OR add a bike path to south of existing sidewalk (create space either by removing a vehicle lane OR narrowing lanes and acquiring 5 – 6 feet of ROW on the south side and shifting roadway south); OR create an all-new sidewalk and bike path in conjunction with future redevelopment of the properties on the north side	Cost depends on design option and space-creation scenario	725 ft (0.14 mi)	$460,000
8.2	Newell Ave: S. Main St. to Broadway and IHT	Walnut Creek	Add a bike path to south of existing sidewalk (create space either by removing a vehicle lane) OR create an all-new sidewalk and bike path by narrowing lanes and acquiring 5 – 6 feet of ROW beyond the existing sidewalk on north side; OR create an all-new sidewalk and bike path in conjunction with future redevelopment of the properties on the north. Install a bicycle/pedestrian bridge over creek to connect to sidepath or sidewalk plus bike path at redeveloped Broadway Plaza	Broadway Plaza redevelopment plan includes plan for shared use path along Newell Ave.	868 ft (0.16 mi)	$1,241,000
Joint Projects/Phases						
1 - 10	Varies	Lafayette, CC County, Walnut Creek	Update wayfinding signage to reflect new/improved Olympic Connector LMT to IHT		N.A.	Varies

Figure 6-1: Short-Term Improvement Concepts

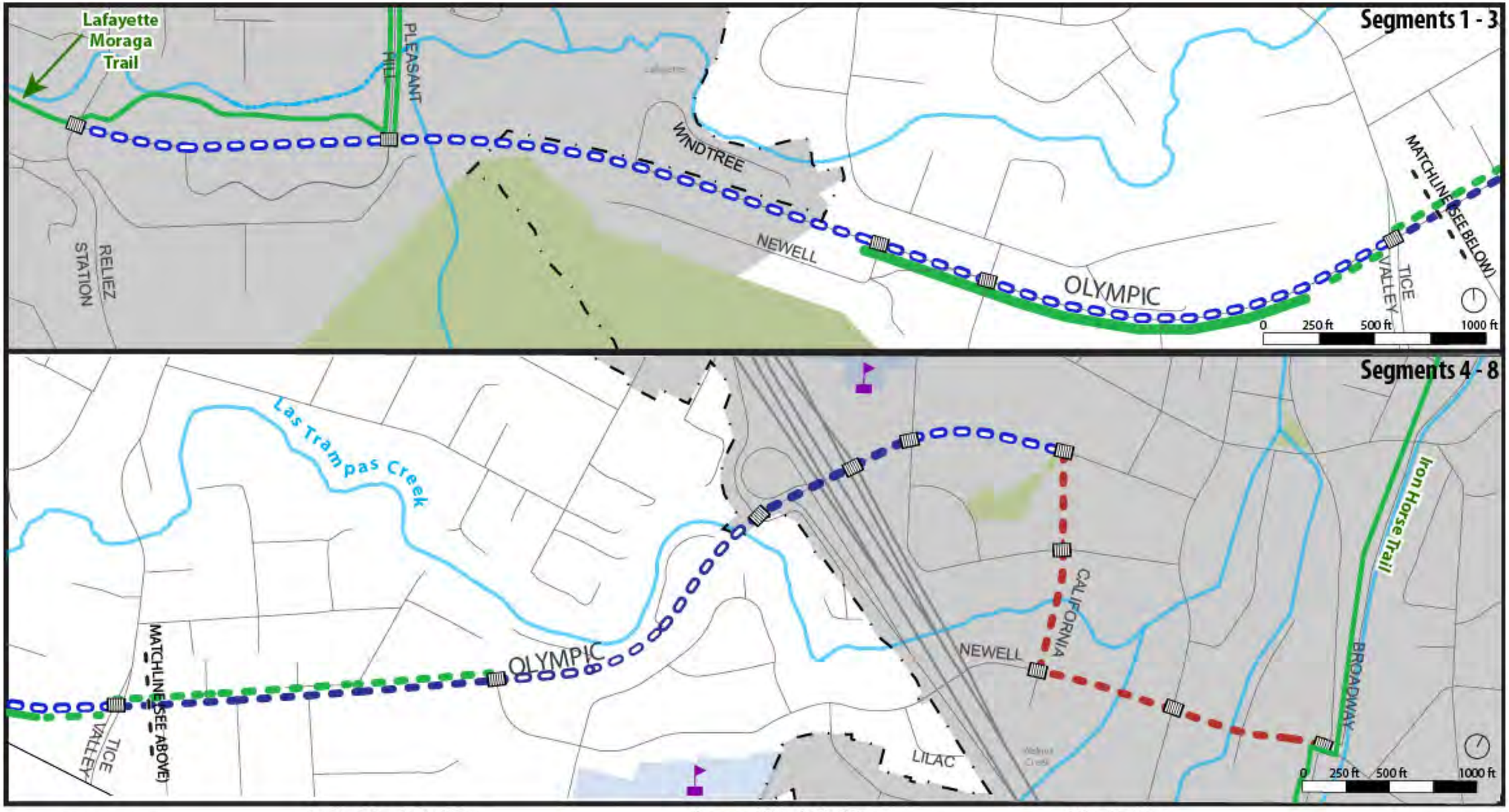
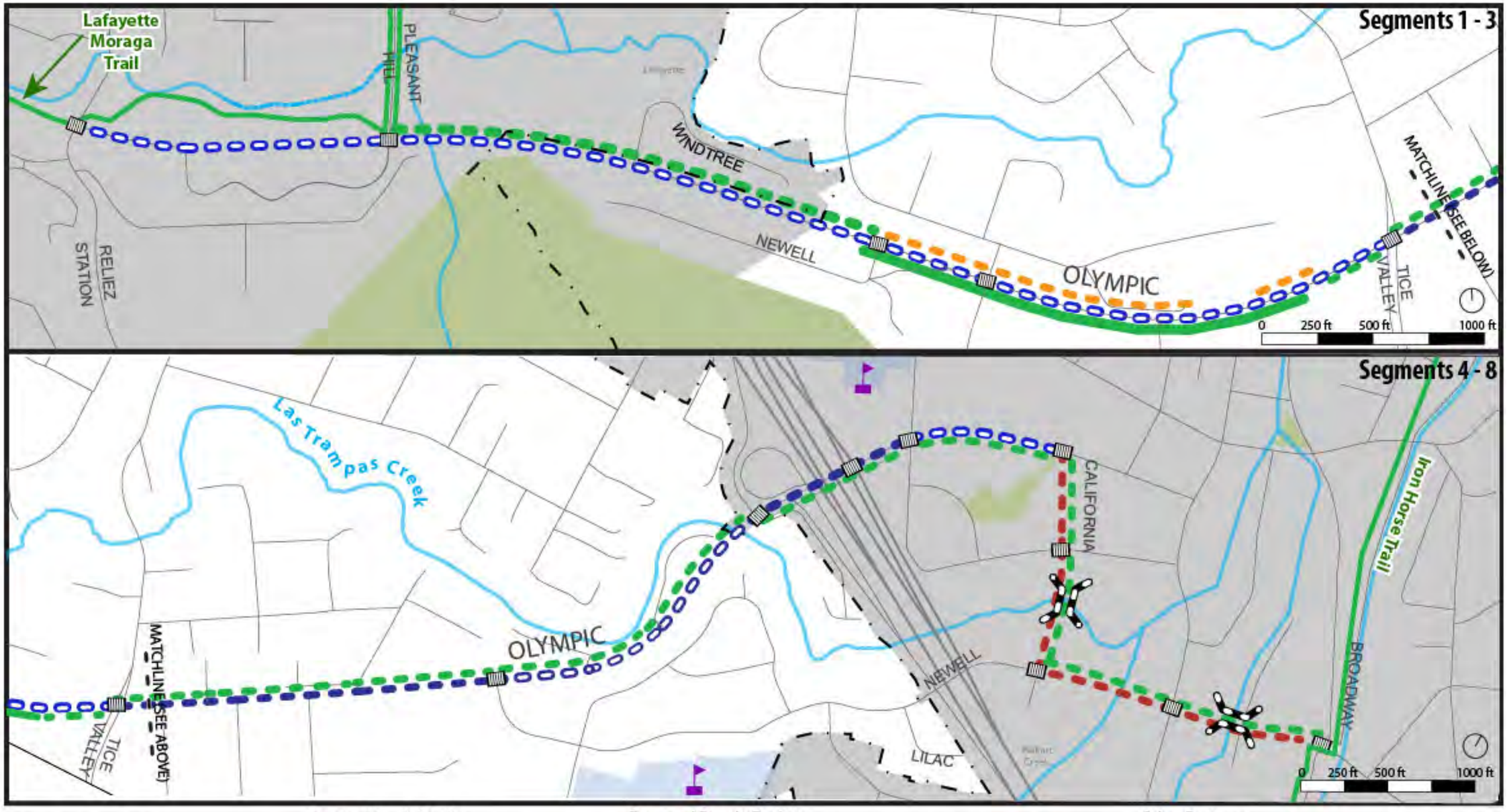


Figure 6-2: Long-Term Improvement Concepts



6.3 Next Steps

This section reviews the steps and documentation anticipated for project planning, design, approval, and implementation, anticipating the particular challenges unique to each project type and location. It describes the typical implementation steps that may be required to take the project from the current concepts through construction. It also describes the permits and approvals that may be required for project implementation.

The Olympic Boulevard Corridor Trail Connector Study accomplished three major milestones: 1) the collection of base data and analysis of opportunities and constraints in the form of maps and descriptions that can be used for more detailed planning and design: 2) the identification of specific community-supported design concepts, and associated cost estimates, consistent with pertinent agencies' policies and standards; and 3) the establishment of public and stakeholder priorities and strategies for implementing the design concepts.

This planning-level study is of the foundation for further planning and design of the design concepts. Specific and generic next steps toward project implementation are outlined below:

- Coordination between Lafayette, Walnut Creek, Contra Costa County, Caltrans and other relevant public agencies and stakeholders to refine the design concepts, and to update and applicable plans to incorporate the conceptual improvements;
- Coordination between Lafayette, Walnut Creek, and Contra Costa County to pursue funding for implementing the design concepts;
- For preparation of grants and coordination with other projects, utilize the plan maps, improvement cross sections, and initial planning-level cost estimates to advance study of the design concepts;
- Continue public and stakeholder engagement on the development of the design concepts and incorporate study concepts throughout the project development process.

6.3.1 Typical Project Implementation Steps

Once funding is secured for design a project or phase of combined projects can move through the more detailed stages of design, environmental review, agreements and approvals, and into construction. A general description of elements and steps is provided below.

Site Survey - Base Maps and Information

Detailed CAD base maps with ROW/property lines, topography (contour lines and/or spot elevations) and features such as roads, trees, buildings and fences must be prepared by a land surveyor or civil engineer covering the improvements and adjacent areas. The pertinent codes, policies, adjacent plans, utilities, and other background information must be analyzed to prepare specific design parameters for the project.

Project Agreements - Right-of-Way Acquisition/Permission

If acquisition or permission for use of property for the improvements is required, this will need to be secured, at least tentatively, before significant study or design work can begin, and typically must be finalized before preliminary design (when the feasible/desired alignment is defined) or at least before preparation of construction documents.

Preliminary Design

More detailed plans would be developed, with disciplines participating depending on the scope of improvements. These plans would have relatively accurate locations, dimensions, materials and features, to allow a correspondingly detailed preliminary cost estimate, but they would not have all the information required for bidding and constructing the project. The preliminary plans would be the basis for environmental documents and public and agency review of the project.

Environmental Studies and Documentation

State and federal law and nearly all grant programs require environmental studies and findings to comply with the California Environmental Quality Act (CEQA). If federal funds or interests are involved the document may also need to address the National Environmental Policy Act (NEPA), which has slightly different processes and document requirements. The environmental document must review and address a broad range of potential issues. Often the most complex issues to address are special status (rare, threatened, or endangered) plant and animal species that are protected under law.

Technical Studies

Technical studies are often required for design and/or to support environmental documentation. This often includes site-specific studies of biological and cultural resources, bluff retreat, hydrology, traffic, soil borings and geotechnical studies for design or foundations for bridges or other factors critical to design and/or project approval. These may be completed before, during or after Preliminary Design, depending on the purpose and type of study.

Permits

Project sponsors may need to obtain several types of permits and agreements. Potentially required permits are described in detail below. Preparing applications and completing the permitting process in areas with sensitive resources and many legal conditions and constraints can be time-consuming and expensive in settings such as along or across streams and wetlands.

Construction Documents

The preliminary plan drawings and descriptions will need to be translated into detailed construction plans, specifications, and estimate that can be used to obtain permits that require such detail, and for bidding by contractors.

Bidding and Contracting

Contract bid documents for the project must be prepared, and the project must be advertised for public bid. The bids must be analyzed, and the sponsoring agency must award a construction contract to the lowest responsible bidder.

Construction

In addition to the work of the contractor, construction of a public project entails responsible agency and/or consultant staff to oversee the contractor and administer the project, including any grant-imposed procedures or paperwork.

6.3.2 Environmental Permitting and Approvals

Where projects involve work in or near a creek, river, or other jurisdictional wetland area, special environmental permit will be required. This section summarizes the major types of permits that may be required and the basic process for each.

U.S. Army Corps of Engineers (USACE) Permit

A Section 404 Permit application to the USACE for placement of fill, including consultation with the U.S. Fish and Wildlife Service, may be required to satisfy the requirements of Section 404(b)(1) of the Clean Water Act (CWA).

A Jurisdictional Delineation Report, or wetland delineation is part of the technical studies required in any location where there is potential for wetlands to occur. This maps and obtains USACE concurrence on jurisdictional "Waters of the U.S.," including wetlands (if present), and/or "Waters of the State".

Section 401 Water Quality Certification - Regional Water Quality Control Board (RWQCB)

The project will be required to prepare a RWQCB CWA Section 401 Water Quality Certification (WQC) notification/application to the local RWQCB, which may include a Storm Water Pollution Prevention Plan (SWPPP). The issuance of the WQC is necessary prior to the issuance of an USACE CWA Section 404(b) (1) permit.

Streambed Alteration Agreement – California Department of Fish and Game (CDFG)

A Section 1602 Notification/Application for a Streambed Alteration Agreement will need to be submitted to CDFG for any work that may impact a stream or related riparian habitat.

Encroachment Permit - Caltrans

Where the project involves work or permanent improvements within the state ROW that would be built or maintained by others, an encroachment permit from Caltrans will be required. This typically requires a maintenance agreement with either a public agency or a non-profit organization to ensure that the facilities in the state ROW will be adequately maintained.

6.4 Funding Sources

This chapter describes various sources of funding available to plan and construct bicycle and pedestrian facilities. The trail connector described in this feasibility study can be funded through multiple sources, and not all sources apply to all segments.

The following sections cover federal, state, regional, and local sources of funding, as well as some non-traditional funding sources that have been used by local agencies to fund bicycle projects.

6.4.1 Federal Sources

Moving Ahead for Progress in the Twenty-First Century (MAP-21)

The largest source of federal funding for bicyclists was the US DOT's Federal-Aid Highway Program, which Congress reauthorized roughly every six years since the passage of the Federal-Aid Road Act of 1916. The latest act, Moving Ahead for Progress in the Twenty-First Century (MAP-21) was enacted in July 2012 for a 2-year period as Public Law 112-141. The Act replaced the Safe, Accountable, Flexible, Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU), which was valid from August 2005 - June 2012. SAFETEA-LU contained dedicated programs including Transportation Enhancements, Safe Routes to School, and Recreational Trails, which were all commonly tapped sources of funding to make non-motorized improvements nationwide. MAP-21 combined these programs into a single source called 'Transportation Alternatives' programs (TAP).

More information on TAP, including eligible activities, can be found below and at: *http://www.fhwa.dot.gov/map21/guidance/guidetap.cfm*

In California (see Section 0 Active Transportation Program), federal monies are administered through the California Department of Transportation (Caltrans) and Metropolitan Planning Organizations (MPOs). Most, but not all, of these programs are oriented toward transportation versus recreation, with an emphasis on reducing auto trips and providing inter-modal connections. Federal funding is intended for capital improvements and safety and education programs, and projects must relate to the surface transportation system. Regional MPO money from MAP-21 is utilized in the One Bay Area Grant (OBAG) Program grants (see Section 8.3.1 One Bay Area Grant Program).

There are a number of programs identified within MAP-21 applicable to bicycle and pedestrian projects. These programs are discussed below.

More information: http://www.fhwa.dot.gov/map21/summaryinfo.cfm

Transportation Alternatives

Transportation Alternatives (TA) is a new funding source under MAP-21 that consolidates three formerly separate programs under SAFETEA-LU: Transportation Enhancements (TE), Safe Routes to School (SR2S), and the Recreational Trails Program (RTP). These funds may be used for a variety of pedestrian, bicycle, and streetscape projects including sidewalks, bikeways, multi-use paths, and rail-trails. TA funds may also be used for selected education and encouragement programming such as Safe Routes to School, despite the fact that TA does not provide a guaranteed set-aside for this activity as SAFETEA-LU did. MAP-21 provides $85 million nationally for the RTP. Complete eligibilities for TA include:

1. **Transportation Alternatives** as defined by Section 1103 (a)(29). This category includes the construction, planning, and design of a range of bicycle and pedestrian infrastructure including "on–road and off–road trail facilities for pedestrians, bicyclists, and other active forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other safety–related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990." Infrastructure projects and systems that provide "Safe Routes for Non-Drivers" is a new eligible activity.

   For the complete list of eligible activities, visit: *http://www.fhwa.dot.gov/environment/transportation_enhancements/legislation/map21.cfm*

2. **Recreational Trails.** TA funds may be used to develop and maintain recreational trails and trail-related facilities for both active and motorized recreational trail uses. Examples of trail uses include hiking, bicycling, in-line skating, equestrian use, and other active and motorized uses. These funds are available for both paved and unpaved trails, but may not be used to improve roads for general passenger vehicle use or to provide shoulders or sidewalks along roads.

   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 or easements of property for trails
   - State administrative costs related to this program (limited to seven percent of a state's funds)
   - Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a state's funds)

   Under MAP-21, dedicated funding for the RTP continues at FY 2009 levels – roughly $85 million annually. California will receive $5,756,189 in RTP funds per year through FY2014.

   More information: http://www.fhwa.dot.gov/environment/recreational_trails/funding/apportionments_obligations/recfunds_2009.cfm

3. **Safe Routes to School** In 2013, Governor Brown signed legislation creating the Active Transportation Program (ATP). This program consolidated the Federal and California Safe Routes to School programs, which are intended to achieve the same basic goal of increasing the number of children walking and bicycling to school by making it safer for them to do so. All projects must be within two miles of primary or middle schools (K-8).

   The Safe Routes to School Program funds non-motorized facilities in conjunction with improving access to schools through the Caltrans Safe Routes to School Coordinator.

   More information: http://www.dot.ca.gov/hq/LocalPrograms/atp/

   Eligible projects may include:

   - **Engineering improvements.** These physical improvements are designed to reduce potential bicycle and pedestrian conflicts with motor vehicles. Physical improvements may also reduce motor vehicle traffic volumes around schools, establish safer and more accessible crossings, or construct walkways, trails or bikeways. Eligible improvements include sidewalk improvements, traffic calming/speed reduction, pedestrian and bicycle crossing improvements, on-street bicycle facilities, off-street bicycle and pedestrian facilities, and secure bicycle parking facilities.
   - **Education and Encouragement Efforts.** These programs are designed to teach children safe bicycling and walking skills while educating them about the health benefits, and environmental impacts. Projects and programs may include creation, distribution and implementation of educational materials; safety based field trips; interactive bicycle/pedestrian safety video games; and promotional events and activities (e.g., assemblies, bicycle rodeos, walking school buses).
   - **Enforcement Efforts.** These programs aim to ensure that traffic laws near schools are obeyed. Law enforcement activities apply to cyclists, pedestrians and motor vehicles alike. Projects may include development of a crossing guard program, enforcement equipment, photo enforcement, and pedestrian sting operations.

4. **Planning, designing, or constructing roadways within the right-of-way of former Interstate routes or divided highways.** At the time of writing, detailed guidance from the Federal Highway Administration on this new eligible activity was not available.

Average annual funds available through TA over the life of MAP-21 equal $814 million nationally, which is based on a 2% set-aside of total MAP-21 authorizations. Projected MAP-21 apportionments for California total $3,546,492,430 for FY 2013 and $3,576,886,247 for FY 2014 *(http://www.fhwa.dot.gov/MAP21/funding.cfm)*. The 2% set-aside for TA funds in California will be about $71,000,000 for the next two fiscal cycles. State DOTs may elect to transfer up to 50% of TA funds to other highway programs, so the amount listed above represents the maximum potential funding.

TA funds are typically allocated through MPOs and may require a 20 percent local match.

Surface Transportation Program

The Surface Transportation Program (STP) in the San Francisco Bay Area is rolled into OBAG grants (see Section 8.3.1). A wide variety of bicycle and pedestrian improvements are eligible, including on-street bicycle facilities, off-street trails, sidewalks, crosswalks, bicycle and pedestrian signals, parking, and other ancillary facilities. Modification of sidewalks to comply with the requirements of the Americans with Disabilities Act (ADA) is also an eligible activity. Unlike most highway projects, STP-funded bicycle and pedestrian facilities may be located on local and collector roads which are not part of the Federal-aid Highway System. Fifty percent of each state's STP funds are suballocated geographically by population. These funds are funneled through Caltrans to the MPOs in the state. The remaining 50 percent may be spent in any area of the state.

Highway Safety Improvement Program

MAP-21 doubles the amount of funding available through the Highway Safety Improvement Program (HSIP) relative to SAFETEA-LU. HSIP provides $2.4 billion nationally for projects and programs that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. MAP-21 preserves the Railway-Highway Crossings Program within HSIP but discontinues the High-Risk Rural roads set-aside unless safety statistics demonstrate that fatalities are increasing on these roads HSIP is a data-driven funding program and eligible projects must be identified through analysis of crash experience, crash potential, crash rate, or other similar metrics. Infrastructure and non-infrastructure projects are eligible for HSIP funds. Bicycle and pedestrian safety improvements, enforcement activities, traffic calming projects, and crossing treatments for active transportation users in school zones are examples of eligible projects. All HSIP projects must be consistent with the state's Strategic Highway Safety Plan. As of the writing of this Study (December 2014), the state is updating the Strategic Highway Safety Plan.

Last updated in 2006, the California SHSP is located here: http://www.dot.ca.gov/hq/traffops/survey/SHSP/SHSP_Final_Draft_Print_Version.pdf

Pilot Transit-Oriented Development Planning

MAP-21 establishes a new pilot program to promote planning for Transit-Oriented Development. At the time of writing the details of this program are not fully clear, although the bill text states that the Secretary of Transportation may make grants available for the planning of projects that seek to "facilitate multimodal connectivity and accessibility," and "increase access to transit hubs for pedestrian and bicycle traffic."

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

The Congestion Mitigation and Air Quality Improvement Program (CMAQ) provides funding for projects and programs in air quality nonattainment and maintenance areas for ozone, carbon monoxide, and particulate matter which reduce transportation related emissions. These federal dollars can be used to build bicycle and pedestrian facilities that reduce travel by automobile. Purely recreational facilities are not eligible.

To be funded under this program, projects and programs must come from a transportation plan (or State (STIP) or Regional (RTIP) Transportation Improvement Program) that conforms to the SIP and must be consistent with the conformity provisions of Section 176 of the Clean Air Act.

CMAQ funding in the San Francisco Bay Area is included in the OBAG Program (see Section 8.3.1). Examples of eligible projects include enhancements to existing transit services, rideshare and vanpool programs, projects that encourage bicycle and pedestrian transportation options, traffic light synchronization projects that improve air quality, grade separation projects, and construction of high-occupancy vehicle (HOV) lanes.

Partnership for Sustainable Communities

Founded in 2009, the Partnership for Sustainable Communities is a joint project of the Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the U.S. Department of Transportation (USDOT). The partnership aims to "improve access to affordable housing, more transportation options, and lower transportation costs while protecting the environment in communities nationwide." The Partnership is based on five Livability Principles, one of which explicitly addresses the need for bicycle and pedestrian infrastructure ("Provide more transportation choices: Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health").

The Partnership is not a formal agency with a regular annual grant program. Nevertheless, it is an important effort that has already led to some new grant opportunities (including the TIGER grants). The City of Vallejo should track Partnership communications and be prepared to respond proactively to announcements of new grant programs.

More information: http://www.epa.gov/smartgrowth/partnership/

Federal Transit Act

Section 25 of the 1964 Urban Mass Transportation Act states that: "For the purposes of this Act a project to provide access for bicycles to mass transportation facilities, to provide shelters and parking facilities for bicycles in and around mass transportation facilities, or to install racks or other equipment for transporting bicycles on mass transportation vehicles shall be deemed to be a construction project eligible for assistance under sections 3, 9 and 18 of this Act." The Federal share for such projects is 90 percent and the remaining 10 percent must come from sources other than Federal funds or fare box revenues. Typical funded projects have included bike lockers at transit stations and bike parking near major bus stops. To date, no projects to provide bikeways for quicker, safer or easier access to transit stations have been requested or funded.

TIGER Grants

The Transportation Investment Generating Economic Recovery, or TIGER, Discretionary Grant program of the U.S. Department of Transportation provides a unique opportunity for the DOT to invest in road, rail, transit and port projects that promise to achieve critical national objectives. Since 2009, Congress has dedicated more than $4.1 billion for six rounds of grants to fund projects that have a significant impact on the Nation, a region or a metropolitan area. A variety of project types have been awarded, including over $153 million for 12 bicycle and pedestrian projects, including a grant for implementation of a portion of the Napa Valley Vine Trail.

More information: http://www.dot.gov/tiger

Community Transformation Grants

Community Transformation Grants administered through the Center for Disease Control support community–level efforts to reduce chronic diseases such as heart disease, cancer, stroke, and diabetes. Active transportation infrastructure and programs that promote healthy lifestyles are a good fit for this program, particularly if the benefits of such improvements accrue to population groups experiencing the greatest burden of chronic disease.

More information: http://www.cdc.gov/communitytransformation/

6.4.2 State Sources

Active Transportation Program

In 2013, Governor Brown signed legislation creating the Active Transportation Program (ATP). This program is a consolidation of the Federal Transportation Alternatives Program (TAP), California's Bicycle Transportation Account (BTA), and Federal and California Safe Routes to School (SRTS) programs.

The ATP program is administered by Caltrans Division of Local Assistance, Office of Active Transportation and Special Programs.

The ATP program goals include:

- Increase the proportion of trips accomplished by biking and walking,
- Increase safety and mobility for nonmotorized users,
- Advance the active transportation efforts of regional agencies to achieve greenhouse gas reduction goals,
- Enhance public health,
- Ensure that disadvantaged communities fully share in the benefits of the program, and
- Provide a broad spectrum of projects to benefit many types of active transportation users.

Eligible bicycle, pedestrian and Safe Routes to School projects include:

- Infrastructure Projects: Capital improvements that will further program goals. This category typically includes planning, design, and construction.
- Non-Infrastructure Projects: Education, encouragement, enforcement, and planning activities that further program goals. The focus of this category is on pilot and start-up projects that can demonstrate funding for ongoing efforts.
- Infrastructure projects with non-infrastructure components

The minimum request for non-SRTS projects is $250,000. There is no minimum for SRTS projects.

The local match requirement for non-SRTS projects is 11.47%. There is no local match requirement for projects benefiting a disadvantage community, stand along non-infrastructure projects and SRTS projects.

More info: http://www.dot.ca.gov/hq/LocalPrograms/atp/

State Highway Account

Section 157.4 of the Streets and Highways Code requires Caltrans to set aside $360,000 for the construction of non-motorized facilities that will be used in conjunction with the State highway system. The Office of Bicycle Facilities also administers the State Highway Account fund.

Funding is divided into different project categories. Minor B projects (less than $42,000) are funded by a lump sum allocation by the CTC and are used at the discretion of each Caltrans District office. Minor A projects (estimated to cost between $42,000 and $300,000) must be approved by the CTC. Major projects (more than $300,000) must be included in the State Transportation Improvement Program and approved by the CTC. Funded projects have included fencing and bicycle warning signs related to rail corridors.

Climate Ready Grant Program - California State Coastal Conservancy

Climate Ready grants are intended to encourage local governments and non-governmental organizations to advance planning and implementation of on-the-ground actions that reduce greenhouse gas emissions and lessen the impacts of climate change on California's coastal communities. The grant program makes eligible "development of multi-use trails with clearly identified GHG reduction goals; (and) protecting and managing open space lands with clearly identified GHG reduction goals." A total of $1,500,000 is available on a competitive basis, with a minimum award of $50,000 and a maximum of $200,000. The size of awarded grants will be based on each project's needs, its overall benefits, and the extent of competing demands for funds.

More info: http://scc.ca.gov/2013/04/24/grant-opportunities/

Office of Traffic Safety Grants

Office of Traffic Safety (OTS) grants are supported by Federal funding under the National Highway Safety Act. In California, the grants are administered by the Office of Traffic Safety.

Grants are used to establish new traffic safety programs, expand ongoing programs or address deficiencies in current programs. Bicycle safety is included in the list of traffic safety priority areas. Eligible grantees are governmental agencies, state colleges, state universities, local city and county government agencies, school districts, fire departments, and public emergency services providers. Grant funding cannot replace existing program expenditures, nor can traffic safety funds be used for program maintenance, research, rehabilitation, or construction. Grants are awarded on a competitive basis, and priority is given to agencies with the greatest need. Evaluation criteria to assess need include potential traffic safety impact, collision statistics and rankings, seriousness of problems, and performance on previous OTS grants.

The California application deadline is January of each year. There is no maximum cap to the amount requested, but all items in the proposal must be justified to meet the objectives of the proposal.

More info: http://www.ots.ca.gov/

6.4.3 Regional & Local Sources

Measure J

Contra Costa County voters approved Measure J in 2004, continuing a countywide half-cent sales tax through 2034. The measure is anticipated to provide approximately $2.5 billion for countywide and local transportation projects.

Projects included in the Expenditure Plan include a wide range of transportation improvements, including carpool lane gap closures, Bay Area Rapid Transit (BART) track expansions, as well as bicycle, pedestrian, and trail facilities. One and a half percent of revenues from Measure J are set aside for construction of bicycle and pedestrian facilities.

More information: www.ccta.net/_resources/detail/2/1/

One Bay Area Grant Program

The One Bay Area Grant Program (OBAG), managed by the Metropolitan Transportation Commission (MTC), establishes program commitments and policies for investing roughly $800 million over the four-year period that includes fiscal years 2012/13 – 2015/16. The OBAG program is a new funding approach that integrates the region's federal transportation program with California's climate law (Senate Bill 375, Steinberg, 2008) and the Sustainable Communities Strategy. Funding distribution to the counties will consider progress toward achieving local land-use and housing policies based on specifically designated allocation areas and design policies (Complete Streets).

The OBAG program allows flexibility to invest in transportation categories such as Transportation for Livable Communities, bicycle and pedestrian improvements, local streets and roads preservation, and planning activities, while also providing specific funding opportunities for Safe Routes to School (SR2S) and Priority Conservation Areas.

While the previous round of OBAG grants funded projects through FY 2015-16, there is the opportunity for MTC to issue a new call for OBAG applications after the 2015-16 financial year.

More information: http://www.mtc.ca.gov/funding/onebayarea/

Transportation Fund for Clean Air

In Solano County, the Bay Area Air Quality Management District administers the Bay Area Regional Transportation Fund for Clean Air program (TFCA). Funds are provided by a $4 surcharge on motor vehicles registered in the Bay Area, which generates approximately $22 million per year for the program. Projects can be submitted through two channels: the Regional Fund, which administers approximately 60 percent of the TFCA revenue, and the County Program Manager Fund, which administers the remaining 40 percent. Eligible projects include bicycle facility improvements such as bikeways and bicycle parking.

More information: http://www.baaqmd.gov/Divisions/Strategic-Incentives/Funding-Sources/TFCA.aspx

Restoration

Cable TV and telephone companies sometimes need new cable routes within public rights of way. Recently, this has commonly occurred during expansion of fiber optic networks. Since these projects require a significant amount of advance planning and disruption of curb lanes, it may be possible to request reimbursement for affected bicycle facilities to mitigate construction impacts. In cases where cable routes cross undeveloped areas, it may be possible to provide new bikeway facilities following the cable trenching, such as shared use of maintenance roads.

Developer Impact Fees

As a condition for development approval, municipalities can require developers to provide certain infrastructure improvements, which can include bikeway projects. These projects have commonly provided Class 2 facilities for portions of on street, previously planned routes. They can also be used to provide bicycle parking or shower and locker facilities. The type of facility that should be required to be built by developers should reflect the greatest need for the particular project and its local area. Legal challenges to these types of fees have resulted in the requirement to illustrate a clear nexus between the particular project and the mandated improvement and cost.

New Construction

Future road widening and construction projects are one means of providing on street bicycle facilities. To ensure that roadway construction projects provide bike lanes where needed, it is important that the review process includes input pertaining to consistency with the proposed system. In addition, California's 2008 Complete Streets Act and Caltrans's Deputy Directive 64 require that the needs of all roadway users be considered during "all phases of state highway projects, from planning to construction to maintenance and repair."

More information: http://www.dot.ca.gov/hq/tpp/offices/ocp/complete_streets.html

6.4.4 Private Sources

Private funding sources can be acquired by applying through the advocacy groups such as the League of American Bicyclists and the Bikes Belong Coalition. Most of the private funding comes from foundations wanting to enhance and improve bicycle facilities and advocacy. Grant applications will typically be through the advocacy groups as they leverage funding from federal, state and private sources. Below are several examples of private funding opportunities available.

Bikes Belong Grant Program

The Bikes Belong Coalition of bicycle suppliers and retailers has awarded $1.2 million and leveraged an additional $470 million since its inception in 1999. The program funds corridor improvements, mountain bike trails, BMX parks, trails, and park access. It is funded by the Bikes Belong Employee Pro Purchase Program.

More information: http://www.bikesbelong.org/grants/

Bank of America Charitable Foundation, Inc.

The Bank of America Charitable Foundation is one of the largest in the nation. The primary grants program is called Neighborhood Excellence, which seeks to identify critical issues in local communities. Another program that applies to greenways is the Community Development Programs, and specifically the Program Related Investments. This program targets low and moderate income communities and serves to encourage entrepreneurial business development.

More information: http://www.bankofamerica.com/foundation

Robert Wood Johnson Foundation

The Robert Wood Johnson Foundation was established as a national philanthropy in 1972 and today it is the largest U.S. foundation devoted to improving the health and health care of all Americans. Grant making is concentrated in four areas:

- To assure that all Americans have access to basic health care at a reasonable cost
- To improve care and support for people with chronic health conditions
- To promote healthy communities and lifestyles
- To reduce the personal, social and economic harm caused by substance abuse: tobacco, alcohol, and illicit drugs

More information: http://www.rwjf.org/applications/

Community Action for a Renewed Environment (CARE)

CARE is a competitive grant program that offers an innovative way for a community to organize and take action to re-duce toxic pollution in its local environment. Through CARE, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them. By providing financial and technical assistance, EPA helps CARE communities get on the path to a renewed environment. Transportation and "smart-growth" types of projects are eligible. Grants range between $90,000 and $275,000.

More information: http://www.epa.gov/care/

Corporate Donations

Corporate donations are often received in the form of liquid investments (i.e. cash, stock, bonds) and in the form of land. Employers recognize that creating places to bike and walk is one way to build community and attract a quality work force. Bicycling and outdoor recreation businesses often support local projects and programs. Municipalities typically create funds to facilitate and simplify a transaction from a corporation's donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented. Such donations can improve capital budgets and/or projects.

6.4.5 Other Sources

Local sales taxes, fees and permits may be implemented as new funding sources for bicycle projects. However, any of these potential sources would require a local election. Volunteer programs may be developed to substantially reduce the cost of implementing some routes, particularly multi use paths. For example, a local college design class may use such a multi-use route as a student project, working with a local landscape architectural or engineering firm. Work parties could be formed to help clear the right of way for the route. A local construction company may donate or discount services beyond what the volunteers can do. A challenge grant program with local businesses may be a good source of local funding, in which the businesses can "adopt" a route or segment of one to help construct and maintain it.

7. Maintenance

This chapter provides an overview of general bicycle and pedestrian facility maintenance.

7.1 Introduction

Development of a monitoring and maintenance plan is an important step in developing a successful Connector that becomes an attractive asset to the communities. A well maintained Connector facility provides numerous benefits, but also requires considerable work. A well-maintained connection will benefit Lafayette, Contra Costa County and Walnut Creek residents by:

- Improving user safety
- Providing for a more positive user experience
- Protecting the agencies and resident's investment in the Connector by identifying and rectifying issues in a cost-effective and timely manner
- Minimizing liability concerns
- Maintaining positive relations with neighbors and the larger community
- Creating more local pride in the regional trails as a positive community resource

This chapter provides an overview of the major considerations in developing a maintenance and monitoring plan for the Connector, and details the specific facilities that would need to be maintained within each jurisdiction.

7.2 Maintenance Requirements

The purpose of the Connector maintenance plan is to outline the specific tasks, priorities, schedules, responsible parties, and budget needed to keep the facility in the desired condition. The plan should be provided to anyone involved in maintaining the facility, including agency staff and individuals involved in working with volunteers on maintenance activities. Maintenance activities are generally classified as either routine maintenance or remedial maintenance.

- Routine maintenance refers to day-to-day and regularly-scheduled tasks, including trash removal, sweeping, trimming or pruning vegetation along the Connector, repairing minor cracks in the pavement surface, and cleaning out drainage channels.
- Remedial maintenance involves tasks that are of a larger scale, and need to be undertaken less frequently, such as resurfacing the facility, replacing a bridge, or stabilizing a stream bank. Anticipating and budgeting for these expenses can be critical to ensuring that the Connector provides a high quality user experience and avoiding the additional costs in deferred maintenance.

While an agency typically assumes the lead role for maintaining bicycle and pedestrian facilities, many communities rely on partnerships between public agencies and community-based organizations, and have experienced positive results:

- Community members tend to develop a greater sense of pride, ownership, and personal investment in the facility;
- Groups have often added new dimensions to bicycle and pedestrian projects, taking a leadership role in raising funds or supplying labor for projects such as community art or gardens; and
- Public costs required for maintenance activities have been reduced, and the quality of the maintenance has been improved.

Maintenance and management needs are a critical factor in the final Connector design, as they will impact the annual and long-term costs associated with the facility, and its overall usefulness and safety. Determining the specific responsible parties for maintenance and management and responding to their equipment and staff capabilities will be key considerations in Connector design.

7.2.1 Components of the Maintenance Plan

The final Connector maintenance plan should include the following:

- List of maintenance tasks and a schedule that reflects maintenance priorities. Approximate frequencies should be included, where appropriate, for regular activities such as tree pruning, trash pick-up, and crack sealing.
- Inventory of features on the Connector that require regular inspection, particularly structures such as bridges, retaining walls, and culverts. The inventory should also include Connector amenities such as restrooms, picnic tables, benches, and information kiosks.
- Goals and standards for the quality of maintenance, so the expectations for the condition of the Connector features will be clearly understood.
- Forms to be completed as part of inspections to document conditions of each item, and the date and time of the inspections.
- Identify the responsible entities for each aspect of maintenance, and provide contact information for each. This is discussed in more detail below.
- Budget for maintenance activities. If the Connector maintenance budget will be incorporated into a larger budget for facility maintenance (e.g. including other trails or parks), this may impact the costs of various items, but the time and materials required for Connector maintenance should be estimated.
- Emergency access and procedures should be developed in close consultation with police and fire departments; this consideration is particularly important in determining whether bollards or some other type of access control is to be used at intersections of the Connector with streets, as well as the spacing between Connector access points. At least once a year, and after any significant emergency or maintenance event, the policies should be reviewed with staff or volunteer groups.
- Evaluation process for the plan. The maintenance plan should not be treated as a static document. Once the Connector is operational, it will be important to periodically evaluate the success of the plan. This will include reviewing the list of maintenance tasks, the schedule for carrying out these activities, and comparing the maintenance budget to what was actually needed over the course of the previous year. Feedback should be solicited from maintenance crews and/or volunteers involved in helping to carry out the plan.

7.3 Estimating Annual Maintenance Costs

Connector maintenance costs can be challenging to estimate because the facilities overlap into the responsibilities of different departments within each agency, as well as multiple agencies in this case, and the maintenance practices and capabilities vary a great deal from agency to agency. Yet it is important that a regional facility like the proposed Connector have a consistent high level of maintenance.

Connector maintenance cost estimates are provided as a guide to potential cost. They should be subject to review and refinement by the responsible parties from the local agencies as the projects move forward. The estimates include maintenance costs only for the added facilities; not for bicycle or pedestrian facilities that pre-existed or for roadway facilities that were modified but without significant areas.

Table 7-1 presents Connector maintenance cost information provided by other jurisdictions that can be used as a "yardstick" for estimating maintenance costs for the Connector. Some of these include, and break out, costs for operation and management, as opposed to maintenance. Because the Connector is almost entirely in the public road right-of-way it presumably will not need special patrol or management, such as by rangers that trails in open space or greenway settings may require.

Table 7-1: Sample Connector Maintenance and Operation Costs from Other Jurisdictions

Management Entity	Year of Estimate	Estimated Annual Cost	Maintenance and Operation Activities Included in Estimate
City of San Jose[1]	2011	$12,500/mile	Paved pathway
		$12,050/acre	Landscaping adjacent to trails
		$2,000/mile	Trail rangers
East Bay Regional Park District[2]	2011	$25,000/mile	Police patrol, vegetation management, litter pickup and a contribution to a reserve fund for eventual pathway replacement.
City of South Lake Tahoe and the Ski Run Business Improvement District[3]	2011	$14,850 to $15,350/mile	48 pedestrian lighting heads, electric bills for the lighting, water bills, mowing and fertilizing landscaping, and maintaining a 2-mile multi-use path
City of Cupertino[4]	2011	$15,000/pedestrian and bicycle overcrossing	Mary Avenue Bridge: bridge cleaning, graffiti removal, maintenance of electrical devices, and a biennial inspection
Sonoma County Regional Parks[5]	2013	$10,281/mile for Class 1 trails	Regular park ranger site patrol, sweeping, removing debris and graffiti, mowing and pruning, and safety repairs

[1] Email correspondence with Yves Zsutty, Acting Division Manager, Department of Parks, Recreation & Neighborhood Services, City of San Jose, January 18, 2011.

[2] Email correspondence with Jim Townsend, Manager, Trails Development Program, EBRPD, January 13, 2011.

[3] Phone call with Gary Moore, Director, Parks and Recreation Department, South Lake Tahoe, July 27, 2009. Costs have been adjusted for inflation.

[4] Email correspondence with Roger Lee, Assistant Director of Public Works, City of Cupertino, February 3, 2011.

[5] Sonoma County Regional Parks Board Report, March 13, 2013

7.3.1 Maintenance Costs Per Unit

Bike Lanes and Routes

Class II bike lanes and Class III signed/marked routes are an important part of the Olympic Corridor Trail Connector facilities. In much of the corridor these already exist, but with designation as an important regional route a higher level of maintenance is assumed, which consists of additional sweeping. The International City/County Management Association (ICMA) Center for Performance Measurement collects street sweeping and other maintenance cost data from participants across the United States. Eighty-six participants reported street sweeping expenditures per mile swept with an average of $47 and a median of $36 (2010 data report).[6]

A cost of $52.80 per mile swept was used to adjust for inflation, or $10 per 1000 L.F. for the additional sweeping of Class II and III facilities on the route.

Lifespan replacement cost of paved area of bike lanes and routes, as well as medians, curbs and gutters, and traffic signals is assumed to be part of normal maintenance of the roadway.

Class I Paths or Sidepaths

Class I maintenance costs for Class I facilities varied between approximately $10,200 and $25,000 per mile in the data in **Table 7-1**, but this reflects a wide variation in the elements that were included. Adjusted for inflation and the fact that the Olympic Corridor Trail Connector includes no new lighting, a cost of $14,000 per mile, or $2,652 per 1,000 L.F. was assumed for Class I path maintenance.

Lifespan replacement cost of pathways is assumed to be 1/20th of the paving cost per year.

Bridges

Bridges should not require special maintenance, but will require eventual repair and ultimate replacement. An allowance of 1/30th of the bridge construction cost is assumed annually to cover maintenance, repair, and lifespan replacement

Landscaping

Some portions of the route have added landscape strips which also function as stormwater management infiltration swales, a best management practice. These are typically 3 feet wide with low-maintenance, drought-tolerant plants and trees on drip irrigation.

The U. S. Environmental protection Agency's *Resource Conserving Landscaping Cost Calculator*[7] estimated a 2005 landscape maintenance cost of $0.20/S.F.

The cost of maintaining the landscape strip is estimated at $0.30 per S.F. per year. With a typical width of 3 feet, this equates to $900 per 1,000 L.F. per year, or $4,752 per mile per year. This equates to $13,068 per acre compared to the City of San Jose's estimated $12,050 per acre in 2011 to maintain landscaping adjacent to trails.

Signing and Striping

Replacement of signing and striping is assumed to be a factor of 1/10th of the construction cost per year.

[6] http://icma.org/en/icma/knowledge_network/kn/Question/21663

[7] http://www.epa.gov/osw/conserve/tools/greenscapes/tools/landscape.pdf

7.3.2 Maintenance Requirements for Short-Term Improvements

In most cases the Connector facilities already exist; they would be slightly enhanced by the short-term improvement projects with relocated or added lane striping and wayfinding signage. However, formal designation of the route as an important regional Connector implies that a higher level of maintenance, particularly of existing sidepaths, will be provided than is currently exhibited. This primarily impacts Lafayette and Contra Costa County jurisdictions.

Table 7-2 quantifies the facilities that would be maintained by each jurisdiction after the short-term improvements phase. In some cases the facilities are along residential or commercial frontages where the property owner or tenant is at least partly responsible for maintenance.

Table 7-2: Short-Term Improvements Maintenance Responsibilities

SEG.	DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/ YEAR	TOTAL MAINTENANCE COST/ YEAR
1	**Olympic Boulevard, Newell Avenue to S.B. I-680 On/Off Ramps (Lafayette)**			**Subtotal**	**$5,934**
	Bicycle Lanes and Bicycle Route Sweeping	5,256	LF	$10 / 1,000 LF	$53
	Signs, Striping, and Pavement Markings	$58,811	IC	INSTALLATION COST / 10	$5,881
2.1	**Olympic Boulevard, Pleasant Hill Road to Windtree Court (Lafayette)**			**Subtotal**	**$2,803**
	Bicycle Lanes and Bicycle Route Sweeping	1,850	LF	$10 / 1,000 LF	$19
	Signs, Striping, and Pavement Markings	$27,848	IC	INSTALLATION COST / 10	$2,785
2.2	**Olympic Boulevard, Windtree Court to Newell Court (Lafayette/CC County)**			**Subtotal**	**$4,729**
	Bicycle Lanes and Bicycle Route Sweeping	2,200	LF	$10 / 1,000 LF	$22
	Signs, Striping, and Pavement Markings	$47,071	IC	INSTALLATION COST / 10	$4,707
3	**Olympic Boulevard, Newell Court to Tice Valley Boulevard/Boulevard Way (CC County)**			**Subtotal**	**$10,345**
	Bicycle Lanes and Bicycle Route Sweeping	3,955	LF	$10 / 1,000 LF	$40
	Signs, Striping, and Pavement Markings	$97,214	IC	INSTALLATION COST / 10	$9,721
	Sidepath Maintenance	160	LF	$2652 / 1,000 LF	$424
	Sidepath Pavement Maintenance	$3,200	IC	INSTALLATION COST / 20	$160
4	**Olympic Boulevard, Boulevard Way/Tice Valley Boulevard Intersection to Newell Avenue (CC County)**			**Subtotal**	**$16,480**
	Bicycle Lanes and Bicycle Route Sweeping	5,138	LF	$10 / 1,000 LF	$51
	Signs, Striping, and Pavement Markings	$39,212	IC	INSTALLATION COST / 10	$3,921
	Sidepath Maintenance	1,510	LF	$2652 / 1,000 LF	$4,005
	Sidepath Pavement Maintenance	$145,400	IC	INSTALLATION COST / 20	$7,270
	Landscape Maintenance	1,370	LF	$900 / 1,000 LF	$1,233
5	**Olympic Boulevard, Newell Avenue to S.B. I-680 On/Off Ramps (CC County)**			**Subtotal**	**$7,690**
	Bicycle Lanes and Bicycle Route Sweeping	3,746	LF	$10 / 1,000 LF	$37
	Signs, Striping, and Pavement Markings	$76,528	IC	INSTALLATION COST / 10	$7,653
6.1	**Olympic Boulevard, S.B. I-680 On/Off Ramps to Alpine Road (Walnut Creek)**			**Subtotal**	**$7,244**
	Bicycle Lanes and Bicycle Route Sweeping	1,730	LF	$10 / 1,000 LF	$17
	Signs, Striping, and Pavement Markings	$72,267	IC	INSTALLATION COST / 10	$7,227
6.2	**Olympic Boulevard, Alpine Road to S. California Boulevard (Walnut Creek)**			**Subtotal**	**$2,692**
	Bicycle Lanes and Bicycle Route Sweeping	1,780	LF	$10 / 1,000 LF	$18
	Signs, Striping, and Pavement Markings	$26,745	IC	INSTALLATION COST / 10	$2,675
7	**S. California Boulevard, Olympic Boulevard south to Newell Avenue (Walnut Creek)**			**Subtotal**	**$656**
	Signs, Striping, and Pavement Markings	$6,560	IC	INSTALLATION COST / 10	$656
8.1	**Newell Avenue, S. California Boulevard to Main Street (Walnut Creek)**			**Subtotal**	**$90**
	Signs, Striping, and Pavement Markings	$900	IC	INSTALLATION COST / 10	$90
8.2	**Newell Avenue, Main Street to Broadway and the IHT (Walnut Creek)**			**Subtotal**	**$552**
	Signs, Striping, and Pavement Markings	$5,520	IC	INSTALLATION COST / 10	$552
9	**Newell Avenue West of I-680 (CC County/Walnut Creek)**			**Subtotal**	**$804**
	Signs, Striping, and Pavement Markings	$8,040	IC	INSTALLATION COST / 10	$804
10	**Southern Connections to IHT (CC County/Walnut Creek)**			**Subtotal**	**$804**
	Signs, Striping, and Pavement Markings	$8,040	IC	INSTALLATION COST / 10	$804
TOTAL ANNUAL PROJECT MAINTENANCE COST (ROUNDED UP)					**$61,000**

Wide sidewalks and shared-lane markings currently provide some accommodation for bicyclists and pedestrians.

7.3.3 Maintenance Requirements for Long-Term Improvements

Long-term improvements primarily consist of converting areas that are currently vehicle lanes or medians to areas of pedestrian sidewalks or paths, bike paths, or shared-used sidepaths. In almost all cases there is already a facility present that requires maintenance; the long-term improvements scenario increases the area of the bike and pedestrian facility, and moves it out of the street. Maintenance requirements will be increased, especially given the higher standard that should apply to a major regional Connector, but an entirely new maintenance responsibility is not created, except at the two proposed bicycle and pedestrian bridges.

Table 7-3 quantifies the facilities that would be maintained by each jurisdiction after the long-term improvements phase. In some cases the facilities are along residential or commercial frontages where the property owner or tenant is at least partly responsible for maintenance.

Table 7-3: Long-Term Improvements Maintenance Responsibilities

SEG.	DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/ YEAR	TOTAL MAINTENANCE COST/ YEAR
1	**Olympic Boulevard, Newell Avenue to S.B. I-680 On/Off Ramps (Lafayette)**				***No Improvements***
2.1	**Olympic Boulevard, Pleasant Hill Road to Windtree Court (Lafayette)**			**Subtotal**	**$11,782**
	Bicycle Lanes and Bicycle Route Sweeping	2,166	LF	$10 / 1,000 LF	$22
	Signs, Striping, and Pavement Markings	$31,043	IC	INSTALLATION COST / 10	$3,104
	Sidepath Maintenance	1,083	LF	$2652 / 1,000 LF	$2,872
	Sidepath Pavement Maintenance	$108,300	IC	INSTALLATION COST / 20	$5,415
	Landscape Maintenance	410	LF	$900 / 1,000 LF	$369
2.2	**Olympic Boulevard, Windtree Court to Newell Court (Lafayette/CC County)**			**Subtotal**	**$10,625**
	Bicycle Lanes and Bicycle Route Sweeping	2,210	LF	$10 / 1,000 LF	$22
	Signs, Striping, and Pavement Markings	$16,752	IC	INSTALLATION COST / 10	$1,675
	Sidepath Maintenance	1,178	LF	$2652 / 1,000 LF	$3,123
	Sidepath Pavement Maintenance	$116,100	IC	INSTALLATION COST / 20	$5,805
3	**Olympic Boulevard, Newell Court to Tice Valley Boulevard/Boulevard Way (CC County)**			**Subtotal**	**$12,143**
	Sidepath Maintenance	1,792	LF	$2652 / 1,000 LF	$4,752
	Sidepath Pavement Maintenance	$147,825	IC	INSTALLATION COST / 20	$7,391
4	**Olympic Boulevard, Boulevard Way/Tice Valley Boulevard Intersection to Newell Avenue (CC County)**			**Subtotal**	**$18,558**
	Sidepath Maintenance	2,170	LF	$2652 / 1,000 LF	$5,755
	Sidepath Pavement Maintenance	$217,000	IC	INSTALLATION COST / 20	$10,850
	Landscape Maintenance	2,170	LF	$900 / 1,000 LF	$1,953
5	**Olympic Boulevard, Newell Avenue to S.B. I-680 On/Off Ramps (CC County)**			**Subtotal**	**$2,586**
	Bicycle Lanes and Bicycle Route Sweeping	1,890	LF	$10 / 1,000 LF	$19
	Signs, Striping, and Pavement Markings	$14,326	IC	INSTALLATION COST / 10	$1,433
	Sidepath Maintenance	158	LF	$2652 / 1,000 LF	$418
	Sidepath Pavement Maintenance	$14,326	IC	INSTALLATION COST / 20	$716
6.1	**Olympic Boulevard, S.B. I-680 On/Off Ramps to Alpine Road (Walnut Creek)**			**Subtotal**	**$3,963**
	Sidepath Maintenance	370	LF	$2652 / 1,000 LF	$981
	Sidepath Pavement Maintenance	$55,500	IC	INSTALLATION COST / 20	$2,775
	Landscape Maintenance	230	LF	$900 / 1,000 LF	$207
6.2	**[Lane Removal Alternative] Olympic Boulevard, Alpine Road to S. California Boulevard (Walnut Creek)**			**Subtotal**	**$8,583**
	Bicycle Lanes and Bicycle Route Sweeping	850	LF	$10 / 1,000 LF	$9
	Signs, Striping, and Pavement Markings	$6,443	IC	INSTALLATION COST / 10	$644
	Sidepath Maintenance	936	LF	$2652 / 1,000 LF	$2,483
	Sidepath Pavement Maintenance	$93,640	IC	INSTALLATION COST / 20	$4,682
	Landscape Maintenance	850	LF	$900 / 1,000 LF	$765
7	**S. California Boulevard, Olympic Boulevard south to Newell Avenue (Walnut Creek)**			**Subtotal**	**$18,338**
	Signs, Striping, and Pavement Markings	$8,400	IC	INSTALLATION COST / 10	$840
	Sidepath Maintenance	694	LF	$2652 / 1,000 LF	$1,841
	Sidepath Pavement Maintenance	$104,130	IC	INSTALLATION COST / 20	$5,207
	Landscape Maintenance	500	LF	$900 / 1,000 LF	$450
	Bridge Maintenance	$300,000	IC	INSTALLATION COST / 30	$10,000
8.1	**[Sidepath Alternative] Newell Avenue, S. California Boulevard to Main Street (Walnut Creek)**			**Subtotal**	**$7,936**
	Signs, Striping, and Pavement Markings	$30,900	IC	INSTALLATION COST / 10	$3,090
	Sidepath Maintenance	347	LF	$2652 / 1,000 LF	$921
	Sidepath Pavement Maintenance	$67,710	IC	INSTALLATION COST / 20	$3,386
	Landscape Maintenance	600	LF	$900 / 1,000 LF	$540
8.1	**[Lane Removal Alternative] Newell Avenue, S. California Boulevard to Main Street (Walnut Creek)**			**Subtotal**	**$8,801**
	Signs, Striping, and Pavement Markings	$19,950	IC	INSTALLATION COST / 10	$1,995
	Sidepath Maintenance	670	LF	$2652 / 1,000 LF	$1,778
	Sidepath Pavement Maintenance	$100,560	IC	INSTALLATION COST / 20	$5,028
8.2	**[Sidepath Alternative] Newell Avenue, Main Street to Broadway and the IHT (Walnut Creek)**			**Subtotal**	**$13,766**
	Signs, Striping, and Pavement Markings	$60,652	IC	INSTALLATION COST / 10	$6,065
	Sidepath Maintenance	64	LF	$2652 / 1,000 LF	$169
	Sidepath Pavement Maintenance	$13,350	IC	INSTALLATION COST / 20	$668
	Landscape Maintenance	220	LF	$900 / 1,000 LF	$198
	Bridge Maintenance	$200,000	IC	INSTALLATION COST / 30	$6,667
8.2	**[Lane Removal Alternative] Newell Avenue, Main Street to Broadway and the IHT (Walnut Creek)**			**Subtotal**	**$16,386**
	Signs, Striping, and Pavement Markings	$59,320	IC	INSTALLATION COST / 10	$5,932
	Sidepath Maintenance	354	LF	$2652 / 1,000 LF	$938
	Sidepath Pavement Maintenance	$53,040	IC	INSTALLATION COST / 20	$2,652
	Landscape Maintenance	220	LF	$900 / 1,000 LF	$198
	Bridge Maintenance	$200,000	IC	INSTALLATION COST / 30	$6,667
9	**Newell Avenue West of I-680 (CC County/Walnut Creek)**				***No Improvements***
10	**Southern Connections to IHT (CC County/Walnut Creek)**				***No Improvements***
TOTAL ANNUAL PROJECT MAINTENANCE COST - SIDEPATH ALTERNATIVE (ROUNDED UP)					**$108,280**
TOTAL ANNUAL PROJECT MAINTENANCE COST - LANE REMOVAL ALTNERNATIVE (ROUNDED UP)					**$111,765**

Appendix A: Community Input

A.1 Workshop #1

Approximately 35 people attended the first Community Workshop for the Olympic Boulevard Corridor Trail Connector Study, held on December 5, 2013. The workshop began with an open house, during which meeting attendees could review the project posters and ask questions. Following the open house, County staff and consultants presented a project overview, a summary of the project's existing conditions, and the design toolkit. Attendees then worked in small groups to discuss and record their observations and ideas on the maps provided. Table A-1 presents the notes from the Break Out Groups. After this working session, a participant from each table reported out key points from their table. At the close of the meeting, consultants provided a summary of the next steps and upcoming opportunities for public engagement.

Table A-1: Break Out Group Notes

Group 1	
Location	**Notes**
[General]	Polish path example had different pavement types/colors for bikes and pedestrians (photo later provided by commenter)
[General]	Can the maps and plans be posted on a (County?) website?
California (b/w Olympic and Mt. Diablo)	California Boulevard has a third lane b/w Olympic and Mt. Diablo – possible route
Downtown Walnut Creek	Bike parking shortage in Downtown Walnut Creek – more would bike if there were facilities
Mt. Diablo	South of Mt. Diablo= more intense development; north of Newell = lower density development
Mt. Diablo (through Downtown Walnut Creek)	Convert one travel lane into a two-way, physically-separated bikeway [graphic drawn on map]
Mt. Diablo <<->> California (from Main to Olympic)	A lot of extra space [– opportunity for a route]
Newell East (b/w California and Broadway)	Possible improvements proposed as part of Broadway Plaza Redevelopment
Newell West	Will people use an alternative facility to Newell West?
Newell West	Yes, if a Class I separated path and if they are not aggressive / highly competent cyclists
Newell West	Could help school access
Newell West	Newell = narrow, but what can be done to improve student access?
Newell West	1-way Newell w/ cycle track; would residents be OK lighting Newell?
Newell West	Newell as Class III?
Olympic	Road diet on Olympic to extend path
Under I-680	Floating cycle track round-a-bout – a suspended grade separated roundabout per Dutch example

Group 2	
Location	**Notes**
[General]	Preferred off-street facility
[General]	Accommodate bikes, pedestrians, and wheelchairs – increased width to provide comfortable access
[General]	Dedicated bicycle space to reduce stress
[General]	Catering to all ages and users – Class I preferred
[General]	Any safety improvement is a positive
[General]	Families are most underserved by current facility designs
[General]	Let's not only focus on one project
California	Cycle track (connect w/ BART and Kaiser)
Class I path (green line) b/w Newell Court and Tice Valley)	Not part of Lafayette Moraga Trail [crossed out on map]
Creek ROW	Creek has potential for added value, experience
Newell (b/w Olympic and California)	Opportunity for traffic calming?
Newell, Olympic West	Potential for couplet with Newell one-way
Olympic (b/w Newell and I-680)	Challenge area
Olympic (b/w Pleasant Hill and Tice Valley)	45 MPH speed limit?; Speed sign?
S Main (b/w Olympic and Newell)	Cars so slow; feels safer to bike

Group 3	
Location	**Notes**
[General]	Traffic calming may make certain routes more favorable
[General]	Cycle track better for families with kids compared to Class II lanes
[General]	3 miles is the maximum "walkable" distance
Boulevard @ Nicholson, Mt. Diablo, and Oakland	Reported collisions
Downtown Walnut Creek	Route through middle of Downtown might be good or bad (good: access; bad: auto conflicts)
Mt Diablo (b/w Boulevard/I-680 and California)	Feels like I should drive fast along this stretch
Mt. Diablo	Mt. Diablo would feel unsafe due to "extension" of freeway speeds
Mt. Diablo	Fast cars
Mt. Diablo, Olympic, Newell	Mt. Diablo and Olympic have room; less room for improvements on Newell
Newell	Improvements on Newell would benefit kids attending Parkmead, Dorris Eaton, Las Lomas, and Walnut Creek Intermediate
Newell b/w Lilac & Eastwood	Remain 2-way auto traffic
Newell b/w Olympic & Lilac	1-way auto traffic, 2-way cycle track, and raised sidewalk

Location	Notes
Newell West	One-way EB, two-way cycle track, raised sidewalk on south side; two-way east of Lilac
Newell, Lilac	Kaiser uses Newell and Lilac for "Live Well, Be Well" walking – potential source of funding
Olympic @ I-680	Olympic route preferred if I-680 undercrossing significantly improved
Olympic @ I-680	Good route for BART, shopping <IF> safety is significantly improved

Group 4

Location	Notes
[General]	How do different jurisdictions affect the plan? (County, City, etc.)
[General]	Recommend a "Share the Road" initiative upon completion
[General]	Include the BART station as priority destination
[General]	What is the real target market? Unless it's Class I, it's not family-friendly.
[General]	Education for motorists is needed
Arlington	Steep
Boulevard (under I-680)	Consider signing as an alternate route for road cyclists
Broadway (b/w Mt. Diablo and Newell)	Mid-block crosswalk (connection to Iron Horse Trail?)
Creek ROW	Creekside trails preferred for separation when feasible
Dewing Park Rd & Olympic	Possible pedestrian crossing
Eastside of I-680 (b/w Mt. Diablo and Olympic)	Potential route
I-680 & Olympic	Issues with I-680 on- and off-ramps
Juanita & Saranap	Steep
Newell & California	Problematic intersection
Newell East	South side is better [than riding on the north side]
Olympic	Preferred route is Olympic – Class I as much as possible
Olympic (b/w Tice Valley and Newell)	Reported speeding
Olympic @ Bridgefield/King	Crossing used often by kids

A.2 Workshop #2

A second public workshop was held to solicit feedback on the Draft Study on September 16, 2014. Feedback received at this workshop includes:

- I am in favor of such a proposed connection for bikes and pedestrians. Sounds good.
- Please create a safe way to bike and/or walk between the Lafayette/Moraga Trail and the Iron Horse Trail, especially between Olympic Boulevard/Boulevard Way to Olympic Blvd/Pleasant Hill Road. This is especially important for the kids in the community to safely get around town. Thank you! :)
- Email in support of Trail Connector. A Trail Connector is a great idea. There is constant high volume ped and bicycle traffic on the existing trails and a Trail Connector would provide a safer more enjoyable environment for these many resident and visiting trail users. Thus a Trail Connector is certainly a reasonable use of tax payers funds. We appreciate the attention and effort towards this solution.
- Hall Equities Group owns property in the vicinity of Boulevard Way and Saranap Avenue, and is concerned about the potential impacts of a designated bicycle trail to our development plans along our property frontage, and would like to see more information about your plans.
- I am writing to encourage that the connector between the two trails be designed with the safety of the pedestrians and bicyclists who will use it as the primary consideration.
- I live in the Parkmead area off Lancaster that would probably be impacted by this connector. With a small child and avid cyclist I would be in favor and most interested in this study
- I live in the Parkmead neighborhood and am in full support of the proposed Olympic Corridor Trail.
- I prefer the Paulson Rd route. It takes you to one end of town, it's more off the main roads. The direct route to the Lafayette trials is better. I believe you'll have more users.
- I support a trail and/or bike lane connecting the Lafayette-Moraga Trail and the Iron Horse Trail (in the Olympic corridor). This will add a lot of benefit to our community and increase safety of children (in particular) when riding bikes along the busy road! Thank you for working hard to make this happen.
- I support the bike trail on Newell through the Parkmead with some reservations. 1) Newell Avenue is the ONLY access into and out of the Parkmead for several hundred homes. It must remain a two way street because of this. 2) there are already many bicyclists that use Newell. If making this an official bike path will congest Newell with bicyclists and make traffic even more difficult for Parkmead residents than it currently is, why make an "official" bike path? Why not allow it remain less official to ensure a good mix of neighborhood vehicles and bikes?

  Please add me to the elist. Had I known earlier about the Thursday meeting I would have attended.
- I have lived in the Parkmead neighborhood for more than 20 years. I walk on either the Lafayette or Iron horse trails on a daily basis. Both my children attended the Parkmead elementary school. The idea of using Newel Ave., between Olympic and S. California Blvd., as a ""connector"" between these two trails is a very, very bad idea. First, the amount of pedestrian and vehicle traffic on Newell today is significant. Especially at peak hours during school drop off and pickup times, and for the various church events held at Hillside Covenant. For anyone who studies this they will notice that during these peak times the cars often will be lined up, bumper-to-bumper from Lilac to Magnolia. At the same time, there are usually a large number of pedestrians, mostly school kids, walking and playing on the narrow pathway along Newell in both directions.

  Importantly, this pedestrian and vehicle traffic is fundamentally different than the majority of the traffic on and around the Iron Horse and Lafayette trails. In other words, there appears to me to be little overlap between the type of traffic on the trails and the type of traffic on Newell. More importantly, most of the pedestrian traffic on the trails is comprised of joggers, bikers (many are high-speed cyclists in packs) and dog walkers. This type of traffic is not typical of the type of traffic flow in the Parkmead community currently. If this new traffic type is accommodated and welcomed in the Parkmead neighborhood it will change the structure of this family and school oriented community. This will have profound effects on who moves into, and lives in, the Parkmead community. Finally, I believe it would be hard to dispute that if this ""connector"" uses Newell Ave it will have a pronounced effect on the traffic flows and significantly change the character of the Parkmead community as it exists today.
- I would support this project.

- Our family supports expanding the access to the trails for bicycle use. We are active users of both the Lafayette-Moraga and Iron Horse Trails, but often have to use our cars to bring bikes to the trailheads to accommodate our young daughter, who does not like to ride on busy streets. We would definitely use a safe, continuous trail or one with well designated bike paths. I also believe that improved trails would encourage more bicycle use overall and could see many others taking advantage of the trail system.
- Separated bike lanes would be best with raised paving(cycyclotracks). Sharrows are not safe because cycles have to share with cars. There is no competition with autos and bikes. Widening the sidewalks along the Olympic corridor. Newell needs widening sidewalks and clear identification of bike lanes. Cyclotracks are raised pavement so they are clearly marked. Paint the lanes green. Lights with separate signals for bikes and pedestrians at the freeway entrances and exits. The traffic on this corridor is definitely fast so separate bikeways would help calm the traffic. Thanks for giving me the opportunity to offer suggestions.
- This would be a wonder progressive accomplishment that would benefit all, and would help put our city on the cutting edge.
- We ABSOLUTELY should connect these trails. I support it 110% per cent. Please keep me informed via email.
- We need to connect Saranap with the rest of humanity too!!! Especially when we will be adding hundreds of new families with the Saranap Village project in the next few years!
- While I support the OCTCS planning effort to connect the current fragments of trails into a network , the main area within the initial project boundaries - the neighborhood of Saranap - is glaringly absent any proposed class of trails. Our family, and many other we know, see a great need in providing a safe route between Saranap and the Parkmead neighborhoods so children can ride to school safely, and families can enjoy a safe and convenient alternative to using a car.

  I encourage the Contra Costa County Department of Conservation and Development to revise the OCTCS to include a segment connecting the Saranap and Parkmead neighborhoods in the final design of the trail network.
- "Comments: I think the Cycle Route within Walnut Creek should go from Olympic to Mt Diablo Blvd (at CVS) and connect to the IHT at Safeways

  Benefits
  This would make the shopping center of Walnut Creek more walkable by restricting car access along Mt Diablo
  This would enable cyclists to directly access and pass through the downtown area
  This would ease congestion at the corners (Main St and Mt Diablo) – and could even allow the corners to become a piazza space for concerts and sidewalk cafes
  This would make California, Newell, Broadway and Civic the orbital car routes around the city center – keeping cars away from the inner downtown and separating cars from bikes/pedestrians
  This would keep cyclists off the California, Newell, Broadway and Civic the orbital car routes around the city center
  When the CVS lot is redeveloped, a cycle path from Olympic to Mt Diablo could be built (this also could be a piazza)

  Mt Diablo could become a one lane street in each direction allowing space for wide cycle paths and the free bus, with sidewalk cafes, street performers and market stands.

  Disadvantages
  Cars would still need some access to the parking lots and pick up points in downtown"
- I am particularly concerned about the connector between Crawford Ct and Newell. The current sidewalk/dirt path is insufficient to accommodate both cyclists and pedestrians. In addition, the vegetation is overgrown and should be maintained to increase safety and visibility.
- The preferred alignment proposal is a very good solution to enable a safe bike/ped connection between the IHT and the Lafayette-Moraga Trail. It utilizes aggressive shifting of lanes and medians to provide space for a quality trail. Tree replacement should be mitigated at a rate of at least 3-1. Removal of traffic lanes (if pursued) could result in backlash against bike facilities in this area. The staging of the phases from west to east is logical. Generous trail width as planned is appropriate for areas of intense use.
  Congratulations on taking the available "real estate" and reconfiguring it to provide a modern transportation facility for all users! This should be a model for other roads where bike/ped infrastructure is needed.
- I am a regular bicyclist who lives in the Lafayette Trail Neighborhood and works off the Iron Horse Trail; I bike these routes almost every week during the dry season, and i always use Olympic and usually use Newell. I strongly support your efforts to improve both of these routes, as they have a number of dangerous spots (most dangerous of all is Newell by Trader Joes parking lot).
- I am beyond pleased that the possibility of a bike/walking connector is under consideration. On 7/22/11 I was knocked off my bike in front of Whole Foods on Newell, just short of the connection to the Iron Horse. The culpable driver tried to leave the scene, and would have, but for the quick action of my husband, who was riding behind and witnessed the entire incident. Unfortunately, the second responding police officer chose (and I do mean chose) to find "no fault" after making the comment that of course "you must have medical insurance. The driver was, and likely still is, a WCPD contractor, which made the whole situation very suspect. Clearly the construction of a bike path, separate from the roadway, would be beneficial to everyone.
- We are property owners of the home at 1958 Newell Ave , on the northeast corner of Newell and Olympic.

  According to the Olympic Corridor Trail Connector Study, page 26 figure 21, there is a one foot shift to the south along Olympic which would be taken from our property to accommodate more room for the proposed bike lane.

  We strongly object to this part of the plan. Our home is already perilously close to the fast paced traffic on Olympic Boulevard. Currently, our home is only 8 feet from the roadway where cars travel at 40-50 mph. We have experienced a car crashing through our fence, another hitting cars parked in our driveway, and witnessed many times when pedestrians faced danger. We have documents to support many incidents.

  The county originally created this problem by granting a variance to the Public Works Department for an 8 ft. setback to our property along Olympic Boulevard in 1965. (Application No. 531-65, Lot 117). While we understand not seeing the future in 1965, since then Olympic has become as a major thoroughfare. The area continues to develop and the traffic density continues to grow. This creates a very evident safety problem for our residence and poses an unreasonable risk. It is unfair in the face of already moving the roadway too close to our home, that this should happen to this location again.

  Furthermore, setbacks to our property would decrease our property values and make the home difficult to sell as well as creating a risk for public safety and county operation.

  We would like the Department and Project Managers to acknowledge receiving and reading this letter. It is our hope that continued communications and flexibility on both sides can ameliorate the unfairness of the situation and fully create a safe and attractive bike connector without financial loss or risk to either parties.
- My primary concern with the Olympic corridor is @ Bridgefield and Olympic - either turning left from Bridgefield onto Olympic or turning left onto Bridgefiled from Olympic. It is almost blind turning onto Olympic from Bridgefield (when making a left). Cars speed along that corridor and, due to slight curve in road, you take your life in your hands when trying to turn left. From Olympic to Bridgefield (making left) drivers get very angry (road rage angry) when they are behind you waiting for you to turn. They try to go around (but they can't). A light or some way to halt traffic for Bridgefield comings and goings would make the area safer for everyone. It is also difficult for pedestrians to get to middle trail without light - and many of those pedestrians are (1) kids or (2) adults with small children/infants.
- The current right turn from Olympic to Newell is very unsafe for bikes. The narrow turn area should be widened to 3 feet or more in a way to still prevent cars from accessing Newell.
- First of all, Thank you for your hard work and planning on this project . All of the staff that I have interacted with at the various meetings and workshops have been wonderful. As a Home Owner on Cottage Lane, an avid bicycle commuter, and neighborhood pedestrian I fully support the development the Olympic corridor bicycle connector, It is a critical part of making Walnut Creek (and the region) a vital cycling and pedestrian community with supporting infrastructure. My children love cycling and we use the Olympic corridor multiple times a day. When we travel to downtown Walnut Creek, my children frequently ask if we can ride bike. This infrastructure is being built for them, and they want it.

  My top priority for the project is protected bike lanes and bike paths the separate cars and bicycles and pedestrians. This promotes walking and cycling by making casual pedestrians and cyclists feel safer and more comfortable. These paths should be on both sides of the street to reduce crossing and support the daily movement of children to the local schools. In support of these objective I would specifically like to see are: Physical barriers, such as guardrails along the bike path to prevent bikes from leaving the path and entering the road (and vice versa), scramble periods during the light cycles to allow bikes to cross the intersection diagonally when the bike path switches sides of the road, and, specifically at the Tice Valley Blvd / Olympic Blvd intersection, dedicated pedestrian crossing times with flashing yellow lights at the intersections that indicate when a pedestrian is crossing the street.

  Finally, although I understand that it is beyond the scope of the Olympic development, it is important to point out that the development of bike and pedestrian infrastructure along Boulevard way is important for connecting the Olympic corridor to the Saranap neighborhood and the Saranap Village being developed.

Appendix B: Detailed Cost Estimates

B.1 Unit Cost Assumptions

Table B-1: Unit Cost Assumptions for Capital Improvements

DESCRIPTION	UNIT	UNIT COST OR RATE
MOBILIZATION	**LS**	**5%**
GENERAL CONDITIONS, BONDS AND INSURANCE	**LS**	**2%**
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	**LS**	**5%**
TRAFFIC CONTROL	**LS**	**10%**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.		
Sawcut pavement	LF	$5.00
Remove AC pavement	SF	$0.80
Remove concrete pavement	SF	$10.00
Remove fence	LF	$10.00
Relocate existing utility pole	EA	$8,000.00
Remove and relocate existing light standard	EA	$2,000.00
Remove existing storm drain culvert	EA	$1,000.00
Remove and relocate utility or signal cabinets (up to three)	EA	$3,000.00
Remove curb/gutter	LF	$10.00
Remove pavement markings	SF	$7.00
Tree removal	EA	$500.00
Remove existing striping	LF	$2.00
Modify existing concrete retaining (at I-680 undercrossing)	EA	$5,000.00
Earthwork		
Clearing and grubbing	SF	$0.25
Excavation and grading	CY	$50.00
Embankment, import borrow	CY	$30.00
Soil for new landscape areas	CY	$20.00
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath		
Construct curb & gutter	LF	$55.00
Construct AC curb	LF	$12.00
Construct 4" PCC sidewalk	SF	$15.00
Construct 4" AC over 6" AB	SF	$10.00
Construct new inlet to existing storm drain	EA	$3,000.00
Aggregate base and shoulder rock	CY	$50.00
Curb ramp with truncated dome surface	EA	$1,400.00
Curb extension with decorative pavers	SF	$15.00
Colored stamped asphalt or concrete	SF	$15.00
Extend existing storm drain system	EA	$1,000.00
Construct CMP storm drain pipe	LF	$60.00
Construct wide curb ramp with truncated dome surface	EA	$2,000.00
Hot mix asphalt	SF	$2.00
Concrete block retaining wall- 3' high	LF	$150.00
Decomposed Granite - includes trails and surfaced areas with base rock, geotextile fabric, binder, and compaction	SF	$5.00
Planting		
24" box trees with root barriers, tree grates, and irrigation	EA	$2,200.00
15 gallon trees with protective posts and root barriers, irrigation	EA	$1,600.00
Landscaping (1 gallon shrubs, 5 gallon shrubs, irrigation)	SF	$6.50
Irrigation meter/connection, backflow, and controller	EA	$15,000.00
Retaining Walls		
Concrete retaining wall	SF	$150.00
Site Furnishings		
Benches (bench, footings)	EA	$1,000.00
Pedestrian light Type 1 (streetlamp style, placed near intersections)	EA	$6,000.00
Pedestrian light Type 2	EA	$2,000.00
Chain link fence - 4' vinyl coated	LF	$25.00
Timber barrier/wheel stop 8'x8"x8"	EA	$50.00
R.O.W. fence - 5-strand barbed wire with mesh (dog exclusion)	LF	$20.00
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.		
High visibility crosswalk	LF	$35.00
Repaint stop bars and markings	EA	$800.00
Painted pedestrian walkway - per 30' with associated signage	EA	$1,060.00
Buffered bike lane and pavement markings	LF	$7.58
Bike lane and pavement markings	LF	$5.25
Miscellaneous Class I trail striping, signage and bollards	MI	$5,000.00
HAWK/RRFB	EA	$22,250.00
Gateway monument sign	EA	$5,000.00
Greenback sharrow	EA	$300.00
Miscellaneous 4" thermoplastic stripe	LF	$3.00
Wayfinding signage	EA	$1,340.00
Yield pavement marking	SF	$7.00
Green conflict markings	LF	$14.81
Bridges		
Provide and install pre-manufactured steel bridge (130'x12')	LS	$300,000.00
Provide and install pre-manufactured steel bridge (75'x12')	LS	$200,000.00
Right of Way Acquisition		
Acquire easements for bridge approach	SF	$50.00
CONTINGENCY	**LS**	**20%**
SURVEYING	**LS**	**5%**
PLANS, SPECIFICATIONS AND ENGINEERING	**LS**	**15%**
ENVIRONMENTAL DOCUMENTATION, PERMITTING	**LS**	**10%**
TECH STUDIES, MITIGATION	**LS**	**2.5%**
CONSTRUCTION ENGINEERING/ADMIN.	**LS**	**15%**

B.2 Segment 1: Olympic Boulevard – Lafayette Moraga Trail to Pleasant Hill Road

Table B-2: Short-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$3,422
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$1,369
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	5%	$3,422
TRAFFIC CONTROL	1	LS	10%	$6,843
Subtotal				**$15,055**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Sawcut pavement	100	LF	$5.00	$500
Remove AC pavement	80	SF	$0.80	$64
Remove curb/gutter	40	LF	$10.00	$400
Remove existing striping (no lead present)	3,089	LF	$2.00	$6,178
Subtotal				**$7,142**
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct AC curb	40	LF	$12.00	$480
Construct 4" AC over 6" AB	200	SF	$10.00	$2,000
Subtotal				**$2,480**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
High visibility crosswalk	95	LF	$35.00	$3,325
Repaint stop bars and markings	6	EA	$800.00	$4,800
Buffered bike lane, pavement markings, and signs	5,256	LF	$7.58	$39,840
Wayfinding Signage	8	EA	$1,340.00	$10,720
Yield pavement marking	18	SF	$7.00	$126
Subtotal				**$58,811**
CONSTRUCTION SUBTOTAL				$83,489
CONTINGENCY			20%	$16,698
SURVEYING			5%	$4,174
PLANS, SPECIFICATIONS AND ESTIMATE			15%	$12,523
CONSTRUCTION ENGINEERING/ADMIN.			15%	$12,523
TOTAL				**$130,000**

Table B-3: Annual Maintenance Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/YEAR	TOTAL MAINTENANCE COST/YEAR
Short-Term improvement Concept				
Bicycle Lanes and Bicycle Route Sweeping	5,256	LF	$10/1,000 LF	$53
Signs, Striping, and Pavement Markings	$58,811	IC	Installation Cost/10	$5,881

B.3 Segment 2.1: Olympic Boulevard – Pleasant Hill Road to Windtree Court

Table B-4: Short-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$1,762
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$705
TRAFFIC CONTROL	1	LS	10%	$3,525
Subtotal				**$5,992**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Remove existing striping (no lead present)	3,700	LF	$2.00	$7,400
Subtotal				**$7,400**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
Buffered bike lane, pavement markings, and signs	1,850	LF	$7.58	$14,023
Miscellaneous 4" thermoplastic stripe	3,700	LF	$3.00	$11,100
Green conflict markings	184	LF	$14.81	$2,725
Subtotal				**$27,848**
CONSTRUCTION SUBTOTAL				$41,240
CONTINGENCY			20%	$8,248
SURVEYING			5%	$2,062
PLANS, SPECIFICATIONS AND ESTIMATE			15%	$6,186
CONSTRUCTION ENGINEERING/ADMIN.			15%	$6,186
TOTAL				**$64,000**

Table B-5: Long-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$30,569
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$12,228
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	5%	$30,569
TRAFFIC CONTROL	1	LS	10%	$61,138
Subtotal				**$134,503**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Sawcut pavement	1903	LF	$5.00	$9,515
Remove AC pavement	6,498	SF	$0.80	$5,198
Remove fence	400	LF	$10.00	$4,000
Relocate existing utility pole	1	EA	$8,000.00	$8,000
Remove curb/gutter	925	LF	$10.00	$9,250
Remove existing striping	3,700	LF	$2.00	$7,400
Subtotal				**$43,363**
Earthwork				
Clearing and grubbing	3,700	SF	$0.25	$925
Excavation and grading	205	CY	$50.00	$10,250
Subtotal				**$11,175**

DESCRIPTION	QTY	UNIT	UNIT COST	COST
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct curb & gutter	1,903	LF	$55.00	$104,665
Construct 4" AC over 6" AB	10,830	SF	$10.00	$108,300
Subtotal				**$212,965**
Planting				
Landscaping (1 gallon shrubs, 5 gallon shrubs, irrigation)	820	SF	$6.50	$5,330
Subtotal				**$5,330**
Retaining Walls				
Concrete retaining wall	2,050	SF	$150.00	$307,500
Subtotal				**$307,500**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
Repaint stop bars and markings	1	EA	$800.00	$800
Buffered bike lane and pavement markings	2,166	LF	$7.58	$16,418
Miscellaneous 4" thermoplastic stripe	3,700	LF	$3.00	$11,100
Green conflict markings	184	LF	$14.81	$2,725
Subtotal				**$31,043**
CONSTRUCTION SUBTOTAL				$745,880
CONTINGENCY			20%	$149,176
SURVEYING			5%	$37,294
PLANS, SPECIFICATIONS AND ENGINEERING			15%	$111,882
ENVIRONMENTAL DOCUMENTATION, PERMITTING			10%	$74,588
TECH STUDIES, MITIGATION			2.5%	$18,647
CONSTRUCTION ENGINEERING/ADMIN.			15%	$111,882
TOTAL				**$1,250,000**

Table B-6: Annual Maintenance Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/YEAR	TOTAL MAINTENANCE COST/YEAR
Short-Term improvement Concept				
Bicycle Lanes and Bicycle Route Sweeping	1,850	LF	$10 / 1,000 LF	**$19**
Signs, Striping, and Pavement Markings	$27,848	IC	Installation Cost / 10	**$2,785**
Long-Term Improvement Concept				
Bicycle Lanes and Bicycle Route Sweeping	2,166	LF	$10 / 1,000 LF	**$22**
Signs, Striping, and Pavement Markings	$31,043	IC	Installation Cost / 10	**$3,104**
Sidepath Maintenance	1,083	LF	$2652 / 1,000 LF	**$2,872**
Sidepath Pavement Maintenance	$108,300	IC	Installation Cost / 20	**$5,415**
Landscape Maintenance	410	LF	$900 / 1,000 LF	**$369**

B.4 Segment 2.2: Olympic Boulevard – Windtree Court to Newell Court

Table B-7: Short-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$3,238
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$1,295
TRAFFIC CONTROL	1	LS	10%	$6,475
Subtotal				**$11,008**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Remove existing striping (no lead present)	8,840	LF	$2.00	$17,680
Subtotal				**$17,680**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
High visibility crosswalk	155	LF	$35.00	$5,425
Repaint stop bars and markings	3	EA	$800.00	$2,400
Buffered bike lane, pavement markings, and signs	2,200	LF	$7.58	$16,676
Miscellaneous 4" thermoplastic stripe	6,630	LF	$3.00	$19,890
Wayfinding signage	2	EA	$1,340.00	$2,680
Subtotal				**$47,071**
CONSTRUCTION SUBTOTAL				$75,759
CONTINGENCY			20%	$15,152
SURVEYING			5%	$3,788
PLANS, SPECIFICATIONS AND ESTIMATE			15%	$11,364
CONSTRUCTION ENGINEERING/ADMIN.			15%	$11,364
TOTAL				**$118,000**

Table B-8: Long-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$11,971
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$4,788
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	5%	$11,971
TRAFFIC CONTROL	1	LS	10%	$23,942
Subtotal				**$52,673**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Sawcut pavement	1,161	LF	$5.00	$5,805
Remove concrete pavement	100	SF	$10.00	$1,000
Remove curb/gutter	1,161	LF	$10.00	$11,610
Remove existing striping	6,966	LF	$2.00	$13,932
Subtotal				**$32,347**
Earthwork				
Clearing and grubbing	3,483	SF	$0.25	$871
Subtotal				**$871**

DESCRIPTION	QTY	UNIT	UNIT COST	COST
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct curb & gutter	1,161	LF	$55.00	$63,855
Construct 4" PCC sidewalk	100	SF	$15.00	$1,500
Construct 4" AC over 6" AB	1,1610	SF	$10.00	$116,100
Construct wide curb ramp with truncated dome surface	4	EA	$2,000.00	$8,000
Subtotal				**$189,455**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
Buffered bike lane and pavement markings	2,210	LF	$7.58	$16,752
Subtotal				**$16,752**
CONSTRUCTION SUBTOTAL				$292,098
CONTINGENCY			20%	$58,420
SURVEYING			5%	$14,605
PLANS, SPECIFICATIONS AND ENGINEERING			15%	$43,815
ENVIRONMENTAL DOCUMENTATION, PERMITTING			10%	$29,210
TECH STUDIES, MITIGATION			2.5%	$7,302
CONSTRUCTION ENGINEERING/ADMIN.			15%	$43,814
TOTAL				**$490,000**

Table B-9: Annual Maintenance Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/YEAR	TOTAL MAINTENANCE COST/YEAR
Short-Term improvement Concept				
Bicycle Lanes and Bicycle Route Sweeping	2,200	LF	$10 / 1,000 LF	$22
Signs, Striping, and Pavement Markings	$47,071	IC	Installation Cost / 10	$4,707
Long-Term Improvement Concept				
Bicycle Lanes and Bicycle Route Sweeping	2,210	LF	$10 / 1,000 LF	$22
Signs, Striping, and Pavement Markings	$16,752	IC	Installation Cost / 10	$1,675
Sidepath Maintenance	1,178	LF	$2652 / 1,000 LF	$3,123
Sidepath Pavement Maintenance	$116,100	IC	Installation Cost / 20	$5,805

B.5 Segment 3: Olympic Boulevard – Newell Court to Boulevard Way/Tice Valley Boulevard

Table B-10: Short-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$6,018
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$2,407
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	2%	$2,407
TRAFFIC CONTROL	1	LS	10%	$12,037
Subtotal				**$22,870**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Sawcut pavement	160	LF	$5.00	$800
Remove concrete pavement	48	SF	$1.00	$48
Remove pavement markings	120	SF	$7.00	$840
Remove existing striping (no lead present)	5,372	LF	$2.00	$10,744
Subtotal				**$12,432**
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct AC curb	160	LF	$12.00	$1,920
Construct 4" AC over 6" AB	320	SF	$10.00	$3,200
Curb Ramp with truncated dome surface	4	EA	$1,400.00	$5,600
Subtotal				**$10,720**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
High visibility crosswalk	371	LF	$35.00	$12,985
Repaint stop bars and markings	5	EA	$800.00	$4,000
Buffered bike lane, pavement markings, and signs	3,955	LF	$7.58	$29,979
Bike lane, pavement markings, and signs	190	LF	$5.25	$998
HAWK/RRFB	2	EA	$22,250.00	$44,500
Wayfinding signage	2	EA	$1,340.00	$2,680
Yield pavement marking	38	SF	$7.00	$266
Green conflict markings	122	LF	$14.81	$1,807
Subtotal				**$97,214**
CONSTRUCTION SUBTOTAL				$143,236
CONTINGENCY			20%	$28,647
SURVEYING			5%	$7,162
PLANS, SPECIFICATIONS AND ESTIMATE			15%	$21,485
CONSTRUCTION ENGINEERING/ADMIN.			15%	$21,485
TOTAL				**$223,000**

Table B-11: Long-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$15,012
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$6,005
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	5%	$15,012
TRAFFIC CONTROL	1	LS	10%	$30,025
Subtotal				**$66,054**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Sawcut pavement	1,170	LF	$5.00	$5,850
Remove AC pavement	1,125	SF	$0.80	$900
Remove concrete pavement	200	SF	$10.00	$2,000
Remove existing storm drain culvert	1	EA	$1,000.00	$1,000
Remove and relocate utility or signal cabinets (up to three)	2	EA	$3,000.00	$6,000
Remove curb/gutter	1,170	LF	$10.00	$11,700
Tree removal	11	EA	$500.00	$5,500
Remove existing striping	1,170	LF	$2.00	$2,340
Subtotal				**$35,290**
Earthwork				
Clearing and grubbing	8,730	SF	$0.25	$2,183
Subtotal				**$2,183**
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct curb & gutter	2,010	LF	$55.00	$110,550
Construct 4" PCC sidewalk	9,855	SF	$15.00	$147,825
Construct new inlet to existing storm drain	1	EA	$3,000.00	$3,000
Curb ramp with truncated dome surface	1	EA	$1,400.00	$1,400
Subtotal				**$262,775**
CONSTRUCTION SUBTOTAL				$366,302
CONTINGENCY			20%	$73,260
SURVEYING			5%	$18,315
PLANS, SPECIFICATIONS AND ENGINEERING			15%	$54,945
ENVIRONMENTAL DOCUMENTATION, PERMITTING			10%	$36,630
TECH STUDIES, MITIGATION			2.5%	$9,158
CONSTRUCTION ENGINEERING/ADMIN.			15%	$54,945
TOTAL				**$613,556**

Table B-12: Annual Maintenance Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/YEAR	TOTAL MAINTENANCE COST/YEAR
Short-Term improvement Concept				
Bicycle Lanes and Bicycle Route Sweeping	3,955	LF	$10 / 1,000 LF	$40
Signs, Striping, and Pavement Markings	$97,214	IC	Installation Cost / 10	$9,721
Sidepath Maintenance	160	LF	$2652 / 1,000 LF	$424
Sidepath Pavement Maintenance	$3,200	IC	Installation Cost / 20	$160
Long-Term Improvement Concept				
Sidepath Maintenance	1,792	LF	$2652 / 1,000 LF	$4,752
Sidepath Pavement Maintenance	$147,825	IC	Installation Cost / 20	$7,391

B.6 Segment 4: Olympic Boulevard – Boulevard Way/Tice Valley Boulevard to Newell Avenue

Table B-13: Short-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$17,042
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$6,817
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	5%	$17,042
TRAFFIC CONTROL	1	LS	10%	$34,083
Subtotal				**$74,983**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Sawcut pavement	1,370	LF	$5.00	$6,850
Remove AC pavement	8,780	SF	$0.80	$7,024
Remove concrete pavement	560	SF	$1.00	$560
Remove curb/gutter	1,370	LF	$10.00	$13,700
Remove existing striping (no lead present)	2,740	LF	$2.00	$5,480
Subtotal				**$33,614**
Earthwork				
Soil for new landscape areas	152	CY	$20.00	$3,040
Subtotal				**$3,040**
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct curb & gutter	1,390	LF	$55.00	$76,450
Construct 4" AC over 6" AB	14,540	SF	$10.00	$145,400
Curb Ramp with truncated dome surface	1	EA	$1,400.00	$1,400
Subtotal				**$223,250**
Planting				
Landscaping (1 gallon shrubs, 15 gallon trees, irrigation)	4,110	SF	$6.50	$26,715
Irrigation meter/connection, backflow, and controller	1	EA	$15,000.00	$15,000
Subtotal				**$41,715**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
Bike lane, pavement markings, and signs	5,138	LF	$5.25	$26,972
Miscellaneous 4" thermoplastic stripe	2,740	LF	$3.00	$8,220
Wayfinding signage	3	EA	$1,340.00	$4,020
Subtotal				**$39,212**
CONSTRUCTION SUBTOTAL				$415,814
CONTINGENCY			20%	$83,163
SURVEYING			5%	$20,791
PLANS, SPECIFICATIONS AND ESTIMATE			15%	$62,372
CONSTRUCTION ENGINEERING/ADMIN.			15%	$62,372
TOTAL				**$645,000**

Table B-14: Long-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$15,445
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$6,178
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	5%	$15,445
TRAFFIC CONTROL	1	LS	10%	$30,890
Subtotal				**$67,958**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Sawcut pavement	158	LF	$5.00	$790
Remove AC pavement	13,020	SF	$0.80	$10,416
Remove concrete pavement	200	SF	$10.00	$2,000
Remove curb/gutter	158	LF	$10.00	$1,580
Subtotal				**$14,786**
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct curb & gutter	158	LF	$55.00	$8,690
Construct 4" PCC sidewalk	474	SF	$15.00	$7,110
Construct 4" AC over 6" AB	21,700	SF	$10.00	$217,000
Extend existing storm drain system	4	EA	$1,000.00	$4,000
Subtotal				**$236,800**
Planting				
Landscaping (1 gallon shrubs, 5 gallon shrubs, irrigation)	6,510	SF	$6.50	$42,315
Irrigation meter/connection, backflow, and controller	1	EA	$15,000.00	$15,000
Subtotal				**$57,315**
CONSTRUCTION SUBTOTAL				$376,859
CONTINGENCY			20%	$75,372
SURVEYING			5%	$18,843
PLANS, SPECIFICATIONS AND ENGINEERING			15%	$56,529
ENVIRONMENTAL DOCUMENTATION, PERMITTING			10%	$37,686
TECH STUDIES, MITIGATION			2.5%	$9,421
CONSTRUCTION ENGINEERING/ADMIN.			15%	$56,529
TOTAL				**$632,000**

Table B-15: Annual Maintenance Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/YEAR	TOTAL MAINTENANCE COST/YEAR
Short-Term improvement Concept				
Bicycle Lanes and Bicycle Route Sweeping	5,138	LF	$10 / 1,000 LF	$51
Signs, Striping, and Pavement Markings	$39,212	IC	Installation Cost / 10	$3,921
Sidepath Maintenance	1,510	LF	$2652 / 1,000 LF	$4,005
Sidepath Pavement Maintenance	$145,400	IC	Installation Cost / 20	$7,270
Landscape Maintenance	1,370	LF	$900 / 1,000 LF	$1,233
Long-Term Improvement Concept				
Sidepath Maintenance	2,170	LF	$2652 / 1,000 LF	$5,755
Sidepath Pavement Maintenance	$217,000	IC	Installation Cost / 20	$10,850
Landscape Maintenance	2,170	LF	$900 / 1,000 LF	$1,953

B.7 Segment 5: Olympic Boulevard – Newell Avenue to I-680

Table B-16: Short-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$4,4256
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$1,770
TRAFFIC CONTROL	1	LS	10%	$8,852
Subtotal				**$15,048**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Remove existing striping (no lead present)	5,994	LF	$2.00	$11,987
Subtotal				**$11,987**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
Bike lane, pavement markings, and signs	3,746	LF	$5.25	$19,667
HAWK/RRFB	2	EA	$22,250.00	$44,500
Miscellaneous 4" thermoplastic stripe	4,121	LF	$3.00	$12,362
Subtotal				**$76,528**
CONSTRUCTION SUBTOTAL				$103,563
CONTINGENCY			20%	$20,713
SURVEYING			5%	$5,178
PLANS, SPECIFICATIONS AND ESTIMATE			15%	$15,534
CONSTRUCTION ENGINEERING/ADMIN.			15%	$15,534
TOTAL				**$161,000**

Table B-17: Long-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$40,624
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$16,249
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	5%	$40,624
TRAFFIC CONTROL	1	LS	10%	$81,247
Subtotal				**$178,744**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Sawcut pavement	5,919	LF	$5.00	$29,595
Remove AC pavement	9,450	SF	$0.80	$7,560
Remove concrete pavement	18,900	SF	$5.00	$94,500
Remove and relocate existing light standard	5	EA	$2,000.00	$10,000
Remove and relocate utility or signal cabinets (up to three)	1	EA	$3,000.00	$3,000
Remove curb/gutter	5,919	LF	$10.00	$59,190
Tree removal	6	EA	$500.00	$3,000
Remove existing striping	7,560	LF	$2.00	$15,120
Subtotal				**$221,965**

DESCRIPTION	QTY	UNIT	UNIT COST	COST
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct curb & gutter	5,919	LF	$55.00	$325,545
Construct 4" PCC sidewalk	9,450	SF	$15.00	$141,750
Construct new inlet to existing storm drain	5	EA	$3,000.00	$15,000
Colored stamped asphalt or concrete	5,619	SF	$15.00	$84,285
Subtotal				**$566,580**
Planting				
15 gallon trees with protective posts and root barriers, irrigation	6	EA	$1,600.00	$9,600
Subtotal				**$9,600**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
Buffered bike lane and pavement markings	1,890	LF	$7.58	$14,326
Subtotal				**$14,326**
CONSTRUCTION SUBTOTAL				$991,215
CONTINGENCY			20%	$198,243
SURVEYING			5%	$49,561
PLANS, SPECIFICATIONS AND ENGINEERING			15%	$148,682
ENVIRONMENTAL DOCUMENTATION, PERMITTING			10%	$99,121
TECH STUDIES, MITIGATION			2.5%	$24,780
CONSTRUCTION ENGINEERING/ADMIN.			15%	$148,682
TOTAL				**$1,661,000**

Table B-18: Annual Maintenance Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/YEAR	TOTAL MAINTENANCE COST/YEAR
Short-Term improvement Concept				
Bicycle Lanes and Bicycle Route Sweeping	3,746	LF	$10 / 1,000 LF	$37.46
Signs, Striping, and Pavement Markings	$76,528	IC	Installation Cost / 10	$7,653
Long-Term Improvement Concept				
Bicycle Lanes and Bicycle Route Sweeping	1,890	LF	$10 / 1,000 LF	$19
Signs, Striping, and Pavement Markings	$14,326	IC	Installation Cost / 10	$1,433
Sidepath Maintenance	158	LF	$2652 / 1,000 LF	$418
Sidepath Pavement Maintenance	$14,326	IC	Installation Cost / 20	$716

B.8 Segment 6.1: Olympic Boulevard – I-680 to Alpine Road

Table B-19: Short-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$3,960
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$1,584
TRAFFIC CONTROL	1	LS	10%	$7,921
Subtotal				**$13,465**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Remove existing striping (no lead present)	3,470	LF	$2.00	$6,940
Subtotal				**$6,940**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
High visibility crosswalk	770	LF	$35.00	$26,950
Bike lane, pavement markings, and signs	1,730	LF	$5.25	$9,083
Gateway monument sign	6	EA	$5,000.00	$30,000
Wayfinding signage	2	EA	$1,340.00	$2,680
Green conflict markings	240	LF	$14.81	$3,554
Subtotal				**$72,267**
SUBTOTAL				$92,672
CONTINGENCY			20%	$18,534
SURVEYING			5%	$4,634
PLANS, SPECIFICATIONS AND ESTIMATE			15%	$13,901
CONSTRUCTION ENGINEERING/ADMIN.			15%	$13,901
TOTAL				**$144,000**

Table B-20: Long Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$31,072
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$12,429
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	5%	$31,072
TRAFFIC CONTROL	1	LS	10%	$62,144
Subtotal				**$136,717**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Remove concrete pavement	3,160	SF	$10.00	$31,600
Remove and relocate utility or signal cabinets (up to three)	2	EA	$3,000.00	$6,000
Remove curb/gutter	160	LF	$10.00	$1,600
Modify existing concrete retaining (at I-680 undercrossing)	1	EA	$5,000.00	$5,000
Subtotal				**$44,200**

DESCRIPTION	QTY	UNIT	UNIT COST	COST
Earthwork				
Excavation and grading	425	CY	$50.00	$21,250
Subtotal				**$21,250**
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct 4" PCC sidewalk	3,700	SF	$15.00	$55,500
Colored stamped asphalt or concrete	7,700	SF	$15.00	$115,500
Construct wide curb ramp with truncated dome surface	8	EA	$2,000.00	$16,000
Subtotal				**$187,000**
Planting				
Landscaping (1 gallon shrubs, 5 gallon shrubs, irrigation)	460	SF	$6.50	$2,990
Subtotal				**$2,990**
Retaining Walls				
Concrete retaining wall	2,440	SF	$150.00	$366,000
Subtotal				**$366,000**
CONSTRUCTION SUBTOTAL				$758,157
CONTINGENCY			20%	$151,631
SURVEYING			5%	$37,908
PLANS, SPECIFICATIONS AND ENGINEERING			15%	$113,724
ENVIRONMENTAL DOCUMENTATION, PERMITTING			10%	$75,816
TECH STUDIES, MITIGATION			2.5%	$18,954
CONSTRUCTION ENGINEERING/ADMIN.			15%	$113,724
TOTAL				**$1,270,000**

Table B-21: Annual Maintenance Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/YEAR	TOTAL MAINTENANCE COST/YEAR
Short-Term improvement Concept				
Bicycle Lanes and Bicycle Route Sweeping	1,730	LF	$10 / 1,000 LF	$17
Signs, Striping, and Pavement Markings	$72,267	IC	Installation Cost / 10	$7,227
Long-Term Improvement Concept				
Sidepath Maintenance	370	LF	$2652 / 1,000 LF	$981
Sidepath Pavement Maintenance	$55,500	IC	Installation Cost / 20	$2,775
Landscape Maintenance	230	LF	$900 / 1,000 LF	$207

B.9 Segment 6.2: Olympic Boulevard – Alpine Road to S. California Boulevard

Table B-22: Short-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$2,043
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$817
TRAFFIC CONTROL	1	LS	10%	$4,086
Subtotal				**$6,945**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Remove existing striping (no lead present)	7,055	LF	$2.00	$14,110
Subtotal				**$14,110**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
High visibility crosswalk	360	LF	$35.00	$12,600
Buffered bike lane, pavement markings, and signs	1,340	LF	$7.58	$10,157
Bike lane, pavement markings, and signs	390	LF	$5.25	$2,048
Greenback sharrow	4	EA	$300.00	$1,200
Green conflict markings	50	LF	$14.81	$741
Subtotal				**$26,745**
CONSTRUCTION SUBTOTAL				$47,801
CONTINGENCY			20%	$9,560
SURVEYING			5%	$2,390
PLANS, SPECIFICATIONS AND ESTIMATE			15%	$7,170
CONSTRUCTION ENGINEERING/ADMIN.			15%	$7,170
TOTAL				**$75,000**

Table B-23: Long-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$11,250
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$4,500
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	5%	$11,250
TRAFFIC CONTROL	1	LS	10%	$22,500
Subtotal				**$49,500**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Sawcut pavement	910	LF	$5.00	$4,550
Remove AC pavement	8,500	SF	$0.80	$6,800
Remove concrete pavement	864	SF	$10.00	$8,640
Remove curb/gutter	850	LF	$10.00	$8,500
Remove existing striping	2,550	LF	$2.00	$5,100
Subtotal				**$33,590**

DESCRIPTION	QTY	UNIT	UNIT COST	COST
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct curb & gutter	850	LF	$55.00	$46,750
Construct 4" AC over 6" AB	9,364	SF	$10.00	$93,640
Construct new inlet to existing storm drain	3	EA	$3,000.00	$9,000
Construct wide curb ramp with truncated dome surface	2	EA	$2,000.00	$4,000
Subtotal				**$153,390**
Planting				
Landscaping (1 gallon shrubs, 5 gallon shrubs, irrigation)	2,550	SF	$6.50	$16,575
Irrigation meter/connection, backflow, and controller	1	EA	$15,000.00	$15,000
Subtotal				**$31,575**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
Buffered bike lane and pavement markings	850	LF	$7.58	$6,443
Subtotal				**$6,443**
CONSTRUCTION SUBTOTAL				$274,498
CONTINGENCY			20%	$54,900
SURVEYING			5%	$13,725
PLANS, SPECIFICATIONS AND ENGINEERING			15%	$41,175
ENVIRONMENTAL DOCUMENTATION, PERMITTING			10%	$27,450
TECH STUDIES, MITIGATION			2.5%	$6,862
CONSTRUCTION ENGINEERING/ADMIN.			15%	$41,175
TOTAL				**$460,000**

Table B-24: Annual Maintenance Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/YEAR	TOTAL MAINTENANCE COST/YEAR
Short-Term improvement Concept				
Bicycle Lanes and Bicycle Route Sweeping	1,780	LF	$10 / 1,000 LF	$18
Signs, Striping, and Pavement Markings	$26,745	IC	Installation Cost / 10	$2,675
Long-Term Improvement Concept				
Bicycle Lanes and Bicycle Route Sweeping	850	LF	$10 / 1,000 LF	$9
Signs, Striping, and Pavement Markings	$6,443	IC	Installation Cost / 10	$644
Sidepath Maintenance	936	LF	$2652 / 1,000 LF	$2,483
Sidepath Pavement Maintenance	$93,640	IC	Installation Cost / 20	$4,682
Landscape Maintenance	850	LF	$900 / 1,000 LF	$765

B.10 Segment 7: S. California Boulevard – Olympic Boulevard to Newell Avenue

Table B-25: Short-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$328
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$131
TRAFFIC CONTROL	1	LS	10%	$656
Subtotal				**$1,115**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
Greenback sharrow	4	EA	$300.00	$1,200
Wayfinding signage	4	EA	$1,340.00	$5,360
Subtotal				**$6,560**
CONSTRUCTION SUBTOTAL				$7,675
CONTINGENCY			20%	$1,535
SURVEYING			5%	$384
PLANS, SPECIFICATIONS AND ESTIMATE			15%	$1,151
CONSTRUCTION ENGINEERING/ADMIN.			15%	$1,151
TOTAL				**$12,000**

Table B-26: Long-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$28,309
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$11,324
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	5%	$28,309
TRAFFIC CONTROL	1	LS	10%	$56,618
Subtotal				**$124,560**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Sawcut pavement	250	LF	$5.00	$1,250
Remove AC pavement	1,730	SF	$0.80	$1,384
Remove concrete pavement	4,240	SF	$10.00	$42,400
Relocate existing utility pole	2	EA	$8,000.00	$16,000
Remove and relocate existing light standard	5	EA	$2,000.00	$10,000
Remove and relocate utility or signal cabinets (up to three)	2	EA	$3,000.00	$6,000
Remove curb/gutter	490	LF	$10.00	$4,900
Tree removal	14	EA	$500.00	$7,000
Subtotal				**$88,934**
Earthwork				
Soil for new landscape areas	55	CY	$20.00	$1,100
Subtotal				**$1,100**

DESCRIPTION	QTY	UNIT	UNIT COST	COST
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct curb & gutter	410	LF	$55.00	$22,550
Construct AC curb	160	LF	$12.00	$1,920
Construct 4" PCC sidewalk	6,942	SF	$15.00	$104,130
Construct new inlet to existing storm drain	1	EA	$3,000.00	$3,000
Construct wide curb ramp with truncated dome surface	2	EA	$2,000.00	$4,000
Subtotal				**$135,600**
Planting				
15 gallon trees with protective posts and root barriers, irrigation	14	EA	$1,600.00	$22,400
Landscaping (1 gallon shrubs, 5 gallon shrubs, irrigation)	1,500	SF	$6.50	$9,750
Subtotal				**$32,150**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
High visibility crosswalk	240	LF	$35.00	$8,400
Subtotal				**$8,400**
Bridges				
Provide and install pre-manufactured steel bridge (130'x12')	1	LS	$300,000.00	$300,000
Subtotal				**$300,000**
Right of Way Acquisition				
Acquire easements for bridge approach	1,000	SF	$50.00	$50,000
Subtotal				$50,000
CONSTRUCTION SUBTOTAL				$740,744
CONTINGENCY			20%	$148,149
SURVEYING			5%	$37,037
PLANS, SPECIFICATIONS AND ENGINEERING			15%	$111,112
ENVIRONMENTAL DOCUMENTATION, PERMITTING			10%	$74,074
TECH STUDIES, MITIGATION			2.5%	$18,519
CONSTRUCTION ENGINEERING/ADMIN.			15%	$111,112
TOTAL				**$1,241,000**

Table B-27: Annual Maintenance Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/YEAR	TOTAL MAINTENANCE COST/YEAR
Short-Term improvement Concept				
Signs, Striping, and Pavement Markings	$6,560	IC	Installation Cost / 10	$656
Long-Term Improvement Concept				
Signs, Striping, and Pavement Markings	$8,400	IC	Installation Cost / 10	$840
Sidepath Maintenance	694	LF	$2652 / 1,000 LF	$1,841
Sidepath Pavement Maintenance	$104,130	IC	Installation Cost / 20	$5,207
Landscape Maintenance	500	LF	$900 / 1,000 LF	$450
Bridge Maintenance	$300,000	IC	Installation Cost / 30	$10,000

B.11 Segment 8.1: Newell Avenue – S. California Boulevard to S. Main Street

Table B-28: Short-Term Improvements Concept

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$45
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$18
TRAFFIC CONTROL	1	LS	10%	$90
Subtotal				**$153**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
Greenback sharrow	3	EA	$300.00	$900
Subtotal				**$900**
CONSTRUCTION SUBTOTAL				$1,053
CONTINGENCY			20%	$211
SURVEYING			5%	$53
PLANS, SPECIFICATIONS AND ESTIMATE			15%	$158
CONSTRUCTION ENGINEERING/ADMIN.			15%	$158
TOTAL				**$2,000**

Table B-29: Long-Term Improvements Cost Estimate – Sidepath Alternative

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$12,387
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$4,955
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	5%	$12,387
TRAFFIC CONTROL	1	LS	10%	$24,774
Subtotal				**$54,503**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Sawcut pavement	830	LF	$5.00	$4,150
Remove AC pavement	3,650	SF	$0.80	$2,920
Remove concrete pavement	1,314	SF	$10.00	$13,140
Relocate existing utility pole	2	EA	$8,000.00	$16,000
Remove and relocate existing light standard	2	EA	$2,000.00	$4,000
Remove and relocate utility or signal cabinets (up to three)	1	EA	$3,000.00	$3,000
Remove curb/gutter	730	LF	$10.00	$7,300
Tree removal	3	EA	$500.00	$1,500
Remove existing striping	3,650	LF	$2.00	$7,300
Subtotal				**$59,310**
Earthwork				
Soil for new landscape areas	66	CY	$20.00	$1,320
Subtotal				**$1,320**

DESCRIPTION	QTY	UNIT	UNIT COST	COST
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct curb & gutter	950	LF	$55.00	$52,250
Construct 4" PCC sidewalk	4,514	SF	$15.00	$67,710
Construct new inlet to existing storm drain	2	EA	$3,000.00	$6,000
Colored stamped asphalt or concrete	330	SF	$15.00	$4,950
Construct wide curb ramp with truncated dome surface	2	EA	$2,000.00	$4,000
Subtotal				**$134,910**
Planting				
15 gallon trees with protective posts and root barriers, irrigation	6	EA	$1,600.00	$9,600
Landscaping (1 gallon shrubs, 5 gallon shrubs, irrigation)	1,800	SF	$6.50	$11,700
Subtotal				**$21,300**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
High visibility crosswalk	570	LF	$35.00	$19,950
Miscellaneous 4" thermoplastic stripe	3,650	LF	$3.00	$10,950
Subtotal				**$30,900**
CONSTRUCTION SUBTOTAL				$302,243
CONTINGENCY			20%	$60,449
SURVEYING			5%	$15,112
PLANS, SPECIFICATIONS AND ENGINEERING			15%	$45,336
ENVIRONMENTAL DOCUMENTATION, PERMITTING			10%	$30,224
TECH STUDIES, MITIGATION			2.5%	$7,556
CONSTRUCTION ENGINEERING/ADMIN.			15%	$45,336
TOTAL				**$507,000**

Table B-30: Long-Term Improvements Cost Estimate – Lane Removal Alternative

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$11,098
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$4,439
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	5%	$11,098
TRAFFIC CONTROL	1	LS	10%	$22,195
Subtotal				**$48,830**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Remove AC pavement	4,380	SF	$0.80	$3,504
Remove concrete pavement	1,314	SF	$10.00	$13,140
Remove and relocate utility or signal cabinets (up to three)	1	EA	$3,000.00	$3,000
Remove curb/gutter	730	LF	$10.00	$7,300
Remove existing striping	3,650	LF	$2.00	$7,300
Subtotal				**$34,244**

DESCRIPTION	QTY	UNIT	UNIT COST	COST
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct curb & gutter	950	LF	$55.00	$52,250
Construct 4" PCC sidewalk	6,704	SF	$15.00	$100,560
Construct new inlet to existing storm drain	2	EA	$3,000.00	$6,000
Colored stamped asphalt or concrete	330	SF	$15.00	$4,950
Construct wide curb ramp with truncated dome surface	2	EA	$2,000.00	$4,000
Subtotal				**$167,760**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
High visibility crosswalk	570	LF	$35.00	$19,950
Subtotal				**$19,950**
CONSTRUCTION SUBTOTAL				$270,784
CONTINGENCY			20%	$54,157
SURVEYING			5%	$13,539
PLANS, SPECIFICATIONS AND ENGINEERING			15%	$40,618
ENVIRONMENTAL DOCUMENTATION, PERMITTING			10%	$27,078
TECH STUDIES, MITIGATION			2.5%	$6,770
CONSTRUCTION ENGINEERING/ADMIN.			15%	$40,618
TOTAL				**$454,000**

Table B-31: Annual Maintenance Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/YEAR	TOTAL MAINTENANCE COST/YEAR
Short-Term improvement Concept				
Signs, Striping, and Pavement Markings	$900	IC	Installation Cost / 10	$90
Long-Term Improvement Concept – Sidepath Alternative				
Signs, Striping, and Pavement Markings	$30,900	IC	Installation Cost / 10	$3,090
Sidepath Maintenance	347	LF	$2652 / 1,000 LF	$921
Sidepath Pavement Maintenance	$67,710	IC	Installation Cost / 20	$3,386
Landscape Maintenance	600	LF	$900 / 1,000 LF	$540
Long-Term Improvement Concept – Lane Removal Alternative				
Signs, Striping, and Pavement Markings	$19,950	IC	Installation Cost / 10	$1,995
Sidepath Maintenance	670	LF	$2652 / 1,000 LF	$1,778
Sidepath Pavement Maintenance	$100,560	IC	Installation Cost / 20	$5,028

B.12 Segment 8.2: Newell Avenue – S. Main Street to Broadway Avenue/Iron Horse Trail

Table B-32: Short-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$276
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$110
TRAFFIC CONTROL	1	LS	10%	$552
Subtotal				**$938**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
Greenback sharrow	5	EA	$300.00	$1,500
Wayfinding signage	3	EA	$1,340.00	$4,020
Subtotal				**$5,520**
CONSTRUCTION SUBTOTAL				$6,458
CONTINGENCY			20%	$1,292
SURVEYING			5%	$323
PLANS, SPECIFICATIONS AND ESTIMATE			15%	$969
CONSTRUCTION ENGINEERING/ADMIN.			15%	$969
TOTAL				**$11,000**

Table B-33: Long-Term Improvements Cost Estimate – Sidepath Alternative

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$20,903
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$8,361
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	5%	$20,903
TRAFFIC CONTROL	1	LS	10%	$41,807
Subtotal				**$91,974**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Sawcut pavement	850	LF	$5.00	$4,250
Remove AC pavement	1,000	SF	$0.80	$800
Remove concrete pavement	1,825	SF	$10.00	$18,250
Remove and relocate existing light standard	2	EA	$2,000.00	$4,000
Remove curb/gutter	850	LF	$10.00	$8,500
Tree removal	6	EA	$500.00	$3,000
Remove existing striping	1,184	LF	$2.00	$2,368
Subtotal				**$41,168**
Earthwork				
Soil for new landscape areas	24	CY	$20.00	$480
Subtotal				**$480**
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct curb & gutter	850	LF	$55.00	$46,750
Construct 4" PCC sidewalk	890	SF	$15.00	$13,350
Construct new inlet to existing storm drain	1	EA	$3,000.00	$3,000
Colored stamped asphalt or concrete	1,185	SF	$15.00	$17,775
Construct wide curb ramp with truncated dome surface	3	EA	$2,000.00	$6,000
Subtotal				**$86,875**
Planting				
15 gallon trees with protective posts and root barriers, irrigation	6	EA	$1,600.00	$9,600
Landscaping (1 gallon shrubs, 5 gallon shrubs, irrigation)	660	SF	$6.50	$4,290
Irrigation meter/connection, backflow, and controller	1	EA	$15,000.00	$15,000
Subtotal				**$28,890**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
High visibility crosswalk	360	LF	$35.00	$12,600
HAWK/RRFB	2	EA	$22,250.00	$44,500
Miscellaneous 4" thermoplastic stripe	1,184	LF	$3.00	$3,552
Subtotal				**$60,652**
Bridges				
Provide and install pre-manufactured steel bridge (75'x12')	1	LS	$200,000.00	$200,000
Subtotal				**$200,000**
Right of Way Acquisition				
Acquire easements for bridge approach	1,000	SF	$50.00	$50,000
Subtotal				**$50,000**
CONSTRUCTION SUBTOTAL				$560,039
CONTINGENCY			20%	$112,008
SURVEYING			5%	$28,002
PLANS, SPECIFICATIONS AND ENGINEERING			15%	$84,006
ENVIRONMENTAL DOCUMENTATION, PERMITTING			10%	$56,004
TECH STUDIES, MITIGATION			2.5%	$14,001
CONSTRUCTION ENGINEERING/ADMIN.			15%	$84,006
TOTAL				**$939,000**

Table B-34: Long-Term Improvements Cost Estimate – Lane Removal Alternative

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$20,639
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$8,256
EROSION CONTROL - INCLUDES ALL BMPS, SWPPP AND REPORTING	1	LS	5%	$20,639
TRAFFIC CONTROL	1	LS	10%	$41,279
Subtotal				**$90,813**
Sitework, Demolition and Removal - includes all demolition, site preparation for all construction; relocation or re-setting of utilities; temporary construction fencing.				
Sawcut pavement	250	LF	$5.00	$1,250
Remove AC pavement	2,500	SF	$0.80	$2,000
Remove concrete pavement	240	SF	$10.00	$2,400
Remove existing striping	740	LF	$2.00	$1,480
Subtotal				**$7,130**
Earthwork				
Soil for new landscape areas	24	CY	$20.00	$480
Subtotal				**$480**
Concrete Work and Asphalt Paving - includes concrete curbs, 4" PCC sidewalk, Type I pedestrian ramps, concrete pads, Sidepath				
Construct curb & gutter	850	LF	$55.00	$46,750.
Construct 4" PCC sidewalk	3,536	SF	$15.00	$53,040
Construct new inlet to existing storm drain	1	EA	$3,000.00	$3,000
Colored stamped asphalt or concrete	1,185	SF	$15.00	$17,775
Construct wide curb ramp with truncated dome surface	3	EA	$2,000.00	$6,000
Subtotal				**$126,565**
Planting				
Landscaping (1 gallon shrubs, 5 gallon shrubs, irrigation)	660	SF	$6.50	$4,290
Irrigation meter/connection, backflow, and controller	1	EA	$15,000.00	$15,000
Subtotal				**$19,290**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
High visibility crosswalk	360	LF	$35.00	$12,600
HAWK/RRFB	2	EA	$22,250.00	$44,500
Miscellaneous 4" thermoplastic stripe	740	LF	$3.00	$2,220
Subtotal				**$59,320**
Bridges				
Provide and install pre-manufactured steel bridge (75'x12')	1	LS	$200,000.00	$200,000
Subtotal				**$200,000**
Right of Way Acquisition				
Acquire easements for bridge approach	1,000	SF	$50.00	$50,000
Subtotal				**$50,000**
CONSTRUCTION SUBTOTAL				$553,598
CONTINGENCY			20%	$110,720
SURVEYING			5%	$27,680
PLANS, SPECIFICATIONS AND ENGINEERING			15%	$83,040
ENVIRONMENTAL DOCUMENTATION, PERMITTING			10%	$55,360
TECH STUDIES, MITIGATION			2.5%	$13,840
CONSTRUCTION ENGINEERING/ADMIN.			15%	$83,040
TOTAL				**$928,000**

Table B-35: Annual Maintenance Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/YEAR	TOTAL MAINTENANCE COST/YEAR
Short-Term improvement Concept				
Signs, Striping, and Pavement Markings	$5,520	IC	Installation Cost / 10	$552
Long-Term Improvement Concept – Sidepath Alternative				
Signs, Striping, and Pavement Markings	$60,652	IC	Installation Cost / 10	$6,065
Sidepath Maintenance	64	LF	$2652 / 1,000 LF	$169
Sidepath Pavement Maintenance	$13,350	IC	Installation Cost / 20	$668
Landscape Maintenance	220	LF	$900 / 1,000 LF	$198
Bridge Maintenance	$200,000	IC	Installation Cost / 30	$6,667
Long-Term Improvement Concept – Lane Removal Alternative				
Signs, Striping, and Pavement Markings	$59,320	IC	Installation Cost / 10	$5,932
Sidepath Maintenance	354	LF	$2652 / 1,000 LF	$938
Sidepath Pavement Maintenance	$53,040	IC	Installation Cost / 20	$2,652
Landscape Maintenance	220	LF	$900 / 1,000 LF	$198
Bridge Maintenance	$200,000	IC	Installation Cost / 30	$6,667

B.13 Segment 9: Newell Avenue – west of I-680

Table B-36: Short-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
MOBILIZATION	1	LS	5%	$402.
GENERAL CONDITIONS, BONDS AND INSURANCE	1	LS	2%	$161
TRAFFIC CONTROL	1	LS	10%	$804
Subtotal				**$1,367**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
Wayfinding signage	6	EA	$1,340.00	$8,040
Subtotal				**$8,040**
CONSTRUCTION SUBTOTAL				$9,407
CONTINGENCY			20%	$1,881
SURVEYING			5%	$470
PLANS, SPECIFICATIONS AND ESTIMATE			15%	$1,411
CONSTRUCTION ENGINEERING/ADMIN.			15%	$1,411
TOTAL				**$15,000**

Table B-37: Annual Maintenance Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/YEAR	TOTAL MAINTENANCE COST/YEAR
Short-Term improvement Concept				
Signs, Striping, and Pavement Markings	$8,040	IC	Installation Cost / 10	$804

B.14 Segment 10: Southern connections to the Iron Horse Trail

Table B-38: Short-Term Improvements Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT COST	COST
Mobilization	1	LS	5%	$402
General Conditions, Bonds and Insurance	1	LS	2%	$161
Traffic Control	1	LS	10%	$804
Subtotal				**$1,367**
Signs and Pavement Markings - includes painted traffic lines and markings on pavement, and traffic signage.				
Wayfinding signage	6	EA	$1,340.00	$8,040
Subtotal				**$8,040**
CONSTRUCTION SUBTOTAL				$9,407
CONTINGENCY			20%	$1,881
SURVEYING			5%	$470
PLANS, SPECIFICATIONS AND ESTIMATE			15%	$1,411
CONSTRUCTION ENGINEERING/ADMIN.			15%	$1,411
TOTAL				**$15,000**

Table B-39: Annual Maintenance Cost Estimate

DESCRIPTION	QTY	UNIT	UNIT MAINTENANCE COST/YEAR	TOTAL MAINTENANCE COST/YEAR
Short-Term improvement Concept				
Signs, Striping, and Pavement Markings	$8,040	IC	Installation Cost / 10	$804