

monterey bay sanctuary
SCENIC TRAIL NETWORK
MASTER PLAN

Prepared for the:
SANTA CRUZ COUNTY REGIONAL
TRANSPORTATION COMMISSION

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Welcome to the Monterey Bay Sanctuary Scenic Trail Network Master Plan!

Completion of this Monterey Bay Sanctuary Scenic Trail Network (Trail Network) Master Plan brings us all one step closer to realizing our long-standing dream of providing greater access and use of transportation corridors to connect Santa Cruz County with the Monterey Bay National Marine Sanctuary and other regional attractions. With the rail corridor as a tremendous new public resource, the Santa Cruz County Regional Transportation Commission is in a unique position to provide a continuous and separated bicycle and pedestrian path as the spine of a braided Trail Network. The primary corridor will link coastal access to schools, retail centers, residences and other destinations in our vibrant community. The rail right-of-way will also serve freight and passenger rail service thereby expanding travel options and providing unprecedented integration of bicycle, pedestrian and transit options.

I challenge you to join me in working to bring all segments of this continuous Trail Network to fruition. And thank you for helping to make Santa Cruz County a great place to live, work, thrive and to get around.

Regards,



Sam Farr

ACKNOWLEDGMENTS

Congressman Sam Farr

California Coastal Conservancy

Santa Cruz County Sanctuary Interagency Task Force

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Cover photo - View from Manresa State Beach looking south

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Congressman Sam Farr

I. EXECUTIVE SUMMARY

I.I OVERVIEW

The Monterey Bay Sanctuary Scenic Trail Network (MBSST Network) is a two-county pedestrian and bicycle pathway project that was initially conceived by the Santa Cruz County Sanctuary Interagency Task Force and championed by Congressman Sam Farr to foster appreciation for the Monterey Bay National Marine Sanctuary and provide a non-motorized coastal path for walkers, joggers, cyclists, people with mobility impairments, families, locals, and visitors.

The Monterey Bay Sanctuary Scenic Trail Network Master Plan (Master Plan) is the result of a directed effort by the Santa Cruz County Regional Transportation Commission (RTC) to develop a braided bicycle/pedestrian MBSST Network along Santa Cruz County's coast. The Santa Cruz Branch Rail Line corridor, which includes the proposed Coastal Rail Trail, will serve the MBSST Network's continuous multi-use trail "spine" to provide alternative transportation and coastal access. The spine, or primary alignment, of the MBSST Network will be built parallel to (not in place of) the operational rail line, within the rail right-of-way, to the extent possible so freight service can continue and future passenger rail service may be provided.

The Coastal Rail Trail promises to be a highly valuable asset to the Santa Cruz County community for transportation, recreation, education, health, eco-tourism, coastal access, economic vitality, and other visitor-serving purposes. Implementation of this key 32-mile-long transportation corridor will allow greater transportation options to 88 parks, 42 schools, and over half of the county's population who live within one mile of the corridor (per 2010 Census tract information). The full MBSST Network will also serve as the California Coastal Trail, although additional facilities may be added.

I.II MASTER PLAN PURPOSE

The purpose of this Master Plan is to establish the continuous alignment and set of design standards for the Coastal Rail Trail and its associated spur trails within the context of existing physical constraints of the railroad, coastal access requirements, highway, and public street rights-of-way. The Master Plan identifies planning issues associated with the Coastal Rail Trail's construction and presents feasible solutions for its design and long-term operation and maintenance.

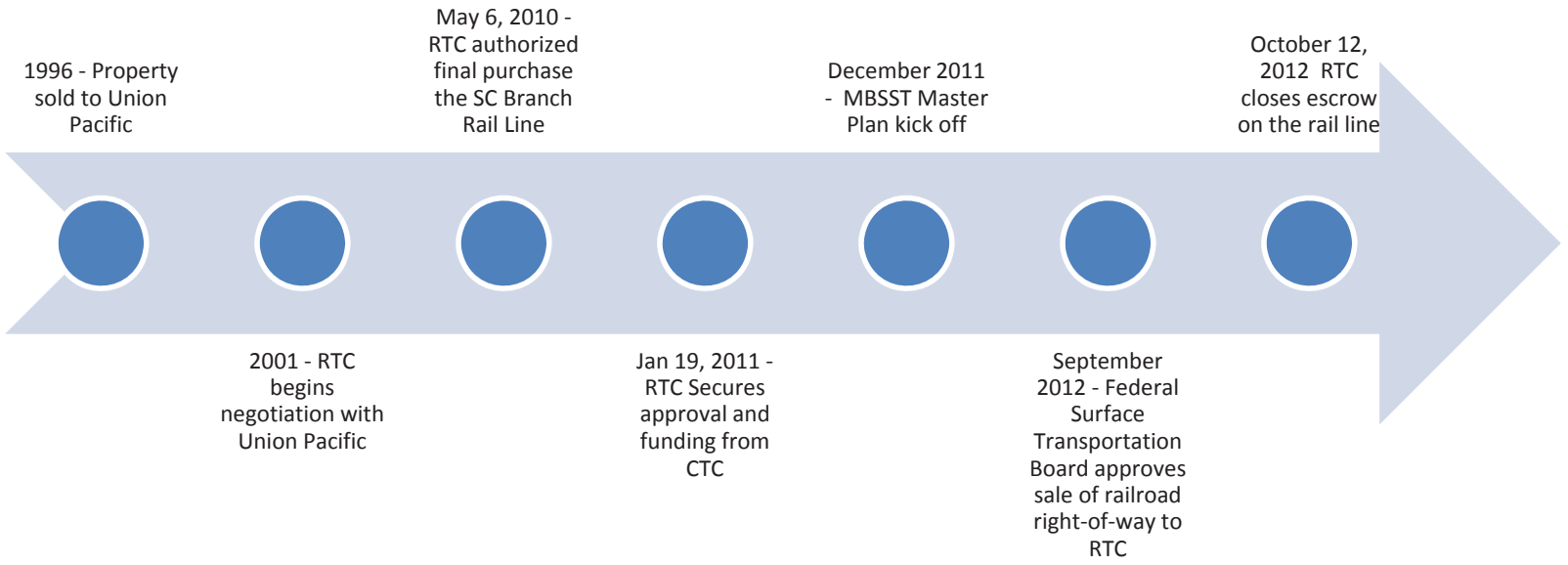
The focus of this Master Plan is on the proposed alignment of the 32-mile-long Coastal Rail Trail as the spine of the broader MBSST Network with additional spur trails and natural surface paths providing connectivity to the coast and to activity centers.

These trails and other existing on-road bicycle and pedestrian facilities form the braided network of trails that is the MBSST Network project. The continuous MBSST Network also proposes gap closures within the project area and access to other desirable destinations, as well as to the coast. These trails, on-street facilities, and natural surface paths will form the approximately 50-mile bike/pedestrian MBSST Network.

I.III PROJECT HISTORY

The Coastal Rail Trail, serving as the system's spine, is a result of a 20-year-long effort to purchase the Santa Cruz Branch Rail Line, which was first established in 1876. In the early 1990s, the RTC began efforts to purchase the Santa Cruz Branch Rail Line right-of-way. Originally owned by Southern Pacific, the property was sold to Union Pacific in 1996. In 2001, the RTC officially began negotiating with then-owner Union Pacific. Over the next decade, negotiations and due diligence work were conducted. On May 6, 2010, the RTC decided to purchase 31 miles of the 32-mile Santa Cruz Branch Rail Line from Union Pacific for $14.2 million, with $11 million coming from the California voter-approved Proposition 116. On January 19, 2011, the RTC secured approval and funding from the California Transportation Commission for the purchase of the Santa Cruz Branch Rail Line. On October 12, 2012, the RTC successfully closed escrow, placing title of the branch line into public ownership with the commitment of facilitating passenger and freight service, as well as creating a multi-use bicycle and pedestrian trail.

Iowa Pacific runs the line as the Santa Cruz & Monterey Bay Railway. The Chicago-based railroad company is responsible for maintenance, though not for the work that needs to be done to upgrade the line. Iowa Pacific owns a 20-foot-wide easement along the length of the rail line for rail operations and maintenance.



I.IV PROJECT GOALS

Through a collaborative planning process, the following goals were developed to guide the development of the Master Plan. They are designed to enhance non-motorized mobility and improve safety, access, traffic congestion, air quality, and the quality of life for Santa Cruz County residents, workers, and visitors. The goals are meant to function as the common framework that integrates the countywide rail trail to new and existing bicycle and pedestrian facilities.

GOAL 1: TRAIL SYSTEM DEVELOPMENT

Define a continuous trail alignment that maximizes opportunities for a multi-use bicycle and pedestrian trail separate from roadway vehicle traffic.

GOAL 2: ENHANCE APPRECIATION OF THE COASTAL ENVIRONMENT

Develop public trail access along the Monterey Bay National Marine Sanctuary to enhance appreciation, understanding, and protection of this special resource.

GOAL 3: EDUCATION AND AWARENESS

Promote awareness of the trail, trail opportunities, and trail user responsibilities.

GOAL 4: IMPLEMENTATION

Develop a long- and short-term program to achieve the policies set forth by this Master Plan through a combination of public and private funding, regulatory methods, and other strategies.

GOAL 5: OPERATION AND MAINTENANCE

Develop the necessary organizational staffing and funding mechanisms to ensure that all trail segments, trailheads, and accessory features are safe, well-maintained, and well-managed.



I.V PUBLIC INPUT

The planning effort for the Master Plan has been conducted within the framework of an extensive public outreach program designed to involve all those interested and affected by the proposed trail. It does not consider use of private property, does not presume eminent domain actions, and does not prohibit continued agricultural and rail operations.

STAKEHOLDER INTERVIEWS

The majority of the interviews were conducted over a three-day period (October 25, 26, and 27, 2011) at the Santa Cruz County Regional Transportation Commission's office. Following the initial meeting series, two additional stakeholder groups were interviewed—one on November 16, 2011 at RRM Design Group's office and the other on December 1, 2011 via telephone.

A total of 68 people representing 52 stakeholder groups were interviewed. The interviews began with a summary of the project by RTC staff. Following this introduction, the consulting planning team discussed with each stakeholder group their interest in the project, specific technical issues, perceived opportunities and constraints, and, finally, their key desired outcomes. The stakeholder's comments were noted on interview forms by planning team members.

WORKSHOP SERIES #1

This workshop series occurred on three consecutive evenings in north, mid and south county locations from December 13, 2011 to December 15, 2011; approximately 200 members of the public attended. The goal of the workshop series was to bring the community into the MBSST Network development early in the process, with the focus on soliciting ideas for new alignment opportunities, connection points, and design elements.

Workshops began with an overview by RTC staff of the Master Plan's evolution and goals, followed by an update from the consultant on the field work, corridor analysis and initial trail alignment effort completed so far. Following this introduction, the MBSST Network was defined to help illustrate the concept of a "braided" trail system with a well-defined, off-street, paved, multi-use trail following the rail corridor, and serving as the spine for the MBSST Network. With the MBSST Network defined, the consultant team then presented constraints, opportunities, and the emerging trail alignment(s) within the Master Plan area.

WORKSHOP SERIES #2

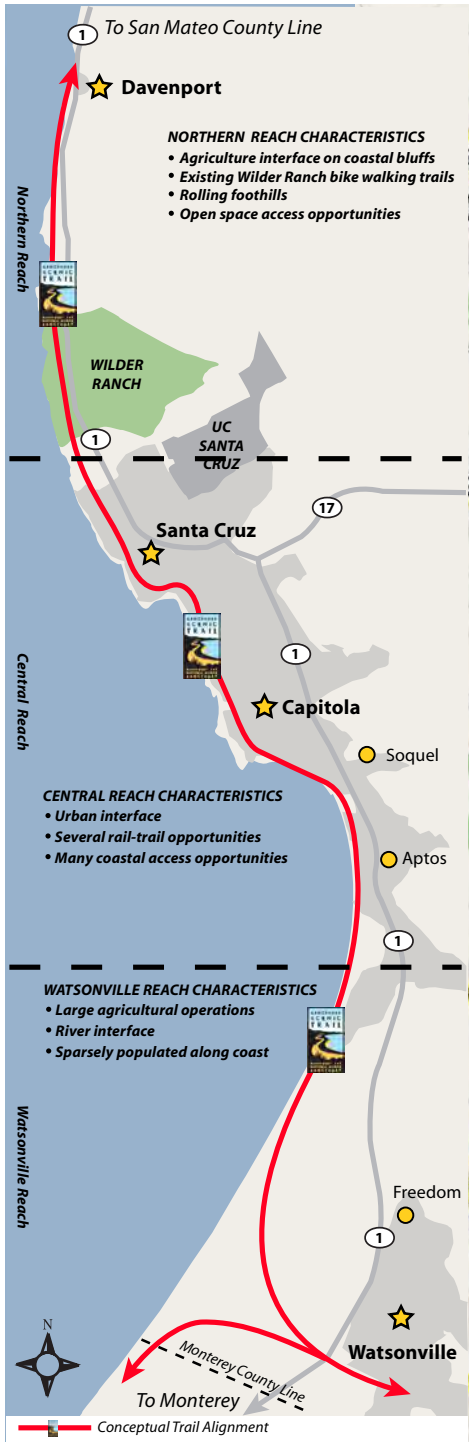
This workshop series occurred on four consecutive evenings in north, mid and south county locations from November 26, 2012 to November 29, 2012. The workshops were attended by approximately 300 members of the public. The workshop series' goal was to provide an overview of the Draft Master Plan, demonstrate how community input provided at the first workshop influenced the trail alignments, and solicit the community's preferences for trail segment implementation prioritization.

Workshops began with an overview by RTC Staff of the Master Plan's evolution and goals, followed by a summary from the consultant of the field work, corridor analysis, trail alignment development, design standards establishment, and cost analysis efforts completed for the Draft Master Plan. Following this introduction, the organizational structure of the Draft Master Plan was presented along with a synopsis of each section contained within the document. With the Draft Master Plan's contents presented, the consultant team then described the "look and feel" of the MBSST Network's various components through renderings and photographs to help workshop participants visualize the project's build-out.

Following the presentation, workshop participants were provided segment priority preference surveys and asked to list their first and second segment priorities for implementation. To facilitate this exercise, RTC and consultant team members staffed Trail Reach Stations set up around the perimeter of each workshop room. Community members were invited to visit their geographical area (or reach) of interest to ask questions and gather additional information about trail segments before listing their prioritization preferences.

As a result of this interactive process, Table 6.9 in Section 6 was developed to represent community preferences. Table 6.10 includes the cumulative sum of each participating community member's top two preferences. Community input was one of nine prioritization criteria utilized to determine the top segments per trail reach.





I.VI PROJECT AREA DESCRIPTION

The Master Plan organizes the proposed trail alignment into two categories: reaches and segments.

A reach is defined as a geographic area identified by regional similarities, such as the urbanized areas of Santa Cruz, Capitola, and Aptos. The Master Plan area is divided into the Northern, Central, and Watsonville Reaches, which are further explained in Sections 3.3 through 3.5.

Segments are defined as potential trail projects with logical beginning and end points. The Master Plan trail alignment is divided into 20 segments with the intent that each segment will be funded, designed, and constructed in part or as a whole.

NORTHERN REACH DESCRIPTION

The defined Northern Reach of the MBSST Network begins where Highway 1 crosses the San Mateo/Santa Cruz County line, just north of the Waddell Bluffs, and continues south to the northern Santa Cruz city limit near Schaffer Road. The Northern Reach consists primarily of narrow, steep coastal bluffs from Waddell Creek to Yellow Bank Beach at Coast Dairies, and transitions to rural agricultural land and natural coastal mesas south to Schaffer Road. There are numerous small coves and beach strands with mostly informal footpaths down to the beach shore. Large sections of the coastal edge are owned by California State Parks, with several scenic rest stops along Highway 1 that include passive recreation access to beaches, coastal bluffs, and inland parkland trails. Much of the land between Highway 1 and the coastal bluffs is managed under agricultural leases with intermittent public coastal access adjacent to the agricultural land. These intermittent access points vary from paved parking lots with restrooms, potable water, and scenic overlooks to unpaved informal roadway pullouts with difficult access to steep coastal bluff tops and beaches.

An existing multi-use paved path runs parallel between the railroad corridor and Highway 1, heading north just over one mile from Schaffer Road to Wilder Ranch trailhead parking off Highway 1. Many of the other public access points along the Northern Reach have limited signage and provide limited trail access along the coast. The railroad corridor parallels the coastal side of Highway 1 from Schaffer Road to Davenport, where the tracks cross Highway 1 to the inland side before ending one mile north of Davenport. Except for the crossing in Davenport, the railroad's offset from Highway 1 varies from 100 feet to 1/4 mile from Schaffer Road to Scaroni Road, then parallels Highway 1 at a distance of 50 to 100 feet as the coastal bluffs steepen and narrow toward Davenport. The rail tracks cross several small drainages with both wood trestles and box culverts in the Northern Reach. Much of the land south of Coast Dairies is flat, with intermittent rolling hills giving way to steep coastal cliffs further north. Sensitive biological areas exist along perennial creeks and drainages, and near coastal bluffs and sand dunes. The Northern Reach is comprised of Segments 1-5.

CENTRAL REACH DESCRIPTION

Beginning at Santa Cruz's northern city limit near Schaffer Road and extending southeast to Seascape Park just south of Aptos, this reach of the rail corridor traverses through densely populated coastal urban areas. The combination of intense urban development and the steep coastal edge in the Central Reach creates many physical challenges. However, the central reach has the highest potential to improve bicycle and pedestrian access to key destinations and reduce the number of vehicle miles traveled and associated greenhouse gas emissions.

Within the Santa Cruz city limits, the rail corridor parallels many existing segments of the core route of the Monterey Bay Sanctuary Scenic Trail (MBSST) alignment. Much of the original alignment in the Central Reach is made up of on-road facilities, sidewalks, bike lanes or coastal edge pedestrian boardwalks with beach access and interpretive signs. Some sections are strictly in the street as Class III bike routes with no sidewalks. The rail corridor parallels the entire length of the existing MBSST alignment and could serve as an alternate off-street, multi-use route connecting communities north and south to the regional network.

Other challenges along the Central Reach are the many existing large rail bridge and trestle structure crossings. These structures are old, narrow in width, and span steep drainages and roadways. In one scenario the structure spans across a historic district in Capitola. The southern portion of the Central Reach parallels the coast meandering atop the steep coastal bluffs and multiple residential and resort areas. Equestrian use may be provided in Segment 6 of the reach. The Central Reach connects over six state beaches, numerous coastal access points, parks, schools, and provides future connection opportunities for countless communities along the corridor. The Central Reach is comprised of Segments 6-14.

WATSONVILLE REACH DESCRIPTION

The Watsonville Reach of the Monterey Bay Sanctuary Scenic Trail begins at railroad mile marker 10 near Seascape Park, and ends over the Santa Cruz and Monterey County border at the Pajaro River and at Railroad Avenue in Monterey County. This reach only parallels the coastal edge for about one mile before it begins following the San Andreas Road alignment inland as it heads south and east. The landscape is primarily open space, with some residential areas near Manresa and tapers off to rural farm and agricultural lands further to the south. The rail alignment eventually drifts away from San Andreas Road just south of railroad mile maker 7 and follows the inland side of a steep sloping mesa.

The Watsonville Reach stretch of the corridor travels through native woodlands, flanked on the west by agricultural land on top of the mesa and to the east, rural land sloping away to the Gallighan Slough below. The Harkins Slough is an impressive wetland crossing with wide open fields flooded throughout the year. The rail crossing at the Harkins Slough is on a stretch of raised earthen dike. The rail line then crosses Watsonville Slough and passes through the center of the agricultural fields, just west of the city of Watsonville, eventually connecting to city park land and the downtown street network at Walker Street. The rail line crosses the Pajaro River to the south and ends at Railroad Avenue in the town of Pajaro. The Watsonville Reach is comprised of Segments 15-20.

I.VII PROJECT COSTS AND FUNDING

Through Congressman Sam Farr's leadership and effort, the project was solidified as a two-county system in order to establish a trail around the full arc of the Monterey Bay. Congressman Farr secured $9 million through federal appropriations and earmarks towards the project to be split equally between the two counties. Through the RTC's discretionary funding sources, an additional $2.2 million was designated for the project. Finally, the California Coastal Conservancy granted the RTC $250,000 toward the preparation of the Master Plan so the trail will span the length of the Santa Cruz County coast from the San Mateo County line to the Monterey County line. Federal transportation dollars mandate the Trail Network serve the mobility needs of bicyclists and pedestrians. Additional funding will need to be identified to bring the project into full implementation. Figure A includes a cost breakdown summary associated with completing the MBSST Network.

NORTHERN REACH PROJECTS AND COSTS

The Northern Reach includes Segments 1-5. Table A prioritizes the segments by the number of points they received through nine project prioritization criteria (proximity to activity center, coastal access connectivity, trail segment cost, trail segment length, minimal or no bridge crossings, limited right-of-way constraints, gap closures, public input, and population density). The segments that received the most number of points are considered the most feasible for implementing within a short time frame. This includes Segments 5, 1, and 2 (in that order) as the top three segments within this reach.

These segments provide gap closures to existing MBSST Network segments, provide access to numerous activity centers, connect to the coastal edge and beaches, and provide connectivity to other existing local and regional bikeway and pedestrian facilities. Segments 3 and 4 may require a bit more lead time to resolve physical design constraints, right-of-way conflicts, complex coastal connections, and other budgetary challenges. However, these segments serve to close the gap in the overall MBSST Network, which will help elevate their importance for funding. Segment 5 is particularly in a good position for implementation as it falls within the railroad right-of-way corridor with minimal private land interference or significant environmental impacts. Also, equestrian use is appropriate for the Northern Reach, particularly in Segments 5 and 6.

TABLE A - Northern Reach Projects

Points	Segment	Length	Proposed Improvements	Cost Estimate	Document Reference Page
33	5.1 - Davenport and Wilder Ranch	2.75 miles	**Subsegment 5.1 proposed improvements include:** • 1.49 miles (7,890 LF) multi-use paved path (Class I) along the coastal-side rail right-of-way • 1.26 miles (6,680 LF) native soil coastal bluff trails and coastal access between Davenport Beach and Yellow Bank Beach (this distance is comprised of Segments 5A, 5B, and 5C) • One (1) rail crossing at spur trail connecting Davenport parking lot to rail trail, parking lot improvements to existing dirt lot, coastal side of Highway 1 in Davenport near the Davenport Overlook • One (1) new signalized at-grade road crossing of Highway 1 in Davenport • One (1) rail crossing at the Highway 1 crossing • One (1) private road crossing • Fencing may be considered when project is implemented	$3,365,904	4-25 to 4-34
	5.2 - Davenport and Wilder Ranch	4.18 miles	**Subsegment 5.2 proposed improvements include:** • 2.58 miles (13,630 LF) multi-use paved path (Class I) along the coastal side rail right-of-way • 1.60 miles (8,430 LF) native soil coastal bluff trails (this distance is comprised of Segments 5D and 5E) • One (1) rail crossing at upper Scaroni Rd. • One (1) road crossing of upper Scaroni Rd. and two (2) additional private crossings • Fencing may be considered when project is implemented	$4,997,232	4-25 to 4-34
	5.3 - Davenport and Wilder Ranch	3.62 miles	**Subsegment 5.3 proposed improvements include:** • 3.51 miles (18,520 LF) multi-use path (Class I) along the coastal side rail right-of-way • 0.11 miles (570 LF) native soil coastal bluff trails (Segment 5F) • One (1) rail crossing at lower Scaroni Rd. • One (1) road crossing of lower Scaroni Rd. and eleven (11) additional private crossings • Fencing may be considered when project is implemented	$6,643,648	4-25 to 4-34

TABLE A - Northern Reach Projects Continued

Points	Segment	Length	Proposed Improvements	Cost Estimate	Document Reference Page
24	1 - Waddell Bluffs	1.06 miles	• 0.87 miles (4,600 LF) Class III on-street/road shoulder bike route • 0.19 miles (1,000 LF) unpaved native soil trail • Unpaved roadway shoulder on coastal side of Highway 1 • Fencing may be considered when project is implemented	$107,120	4-5 to 4-8
24	2 - Greyhound Rock/Cal Poly Bluffs	4.77 miles	• 4.77 miles of primarily existing road shoulder improvements due to limited available space and adjacent public land on the coastal side of State Highway 1 • Routine road edge clearing, signs, and shoulder pavement striping • Fencing may be considered when project is implemented	$308,032	4-9 to 4-14
21	4 - Davenport Landing/End of Railroad Tracks	3.64 miles	• 1.38 miles (7,300 LF) multi-use rail trail (Class I) • 1.41 miles (7,470 LF) bluff trail (Segment 4A) • 0.85 miles (4,510 LF) on-street bike lanes (Segment 4B) • One (1) Highway 1 crossing at Davenport Landing Rd. • One (1) rail crossing in front of cement plant • Three (3) road crossings • Fencing may be considered when project is implemented	$2,685,424	4-21 to 4-24
15	3 - Upper Coast Dairies at Scott Creek	1.11 miles	• 1.11 miles (5,870 LF) multi-use paved path (Class I) • One (1) preengineered bike/pedestrian bridge, 150-foot span • Fencing may be considered when project is implemented	$2,550,096	4-15 to 4-20
	TOTALS	**21.13 miles**		**$20,657,456**	

CENTRAL REACH PROJECTS AND COSTS

The Central Reach includes Segments 6-14. Table B prioritizes the segments by the number of points they received. The segments that received the most number of points are considered the most feasible for implementing within a short time frame. This includes Segments 7, 9, and 8 (in that order) as the top three segments.

These segments provide gap closures to existing MBSST Network segments, provide access to numerous activity centers, connect to the coastal edge and beaches, and provide connectivity to other existing local and regional bikeway and pedestrian facilities. These segments are located in some of the most densely populated areas of the MBSST Network and provide ideal start/end points from residential neighborhoods. Some of the segments that received a lower number of points did so due to influences such as: high cost of construction, difficult or numerous rail crossings, narrow right-of-way, minimal access to greater population, and other limiting factors. However, these segments serve to close gaps in the overall MBSST Network, which will help elevate their importance for funding.

TABLE B - Central Reach Projects

Points	Segment	Length	Proposed Improvements	Cost Estimate	Document Reference Page
33	7 - Coastal Santa Cruz	3.10 miles	• 2.17 miles (11,450 LF) multi-use paved path (Class I) along rail right-of-way • 0.08 miles (410 LF) on-street bike route • 0.85 miles (4,480 LF) multi-use paved path (Class I) along the coastal side of the rail right-of-way (Segment 7A) • Fourteen (14) street crossings • Three (3) rail crossings and one (1) additional private crossing • One (1) preengineered bike bridge (Moore Creek crossing) • Existing staging area at Depot Park • Fencing may be considered when project is implemented	$11,218,016	4-39 to 4-44
31	9 - Twin Lakes	1.73 miles	• 1.53 miles (8,100 LF) multi-use paved path (Class I) • 0.20 miles (1,040 LF) on-street facilities (Segments 9A and 9B) • One (1) new preengineered bike/pedestrian bridge crossings over the harbor • One (1) new preengineered bike/pedestrian bridge crossing Upper Schwan Lagoon • One (1) new preengineered bike/pedestrian bridge crossing (rail culvert crossing) near El Dorado Ave. • Four (4) road crossings (Mott Ave., Seabright Ave., 7th Ave.) • Two (2) rail crossings (trail spur at El Dorado Ave., 7th Ave.) • Fencing may be considered when project is implemented	$11,914,384	4-51 to 4-56

TABLE B - Central Reach Projects Continued

Points	Segment	Length	Proposed Improvements	Cost Estimate	Document Reference Page
30	8 - Santa Cruz Beach Boardwalk	0.77 miles	• 0.77 miles (4,070 LF) existing Class II bike lanes • One (1) new preengineered bike and pedestrian bridge, 400-foot span • Improvements of striping to existing cycle track with future roadway roundabout at Pacific Ave. and Beach St. (2000 LF) • Upgrade existing rail trail to the minimum 8-foot standard from Depot Park to the intersection of Pacific Ave. and Beach St. • One (1) rail crossing with upgrades to Beach St. and Pacific Ave. intersection • Two (2) street crossings with upgrades to Beach St. and Pacific Ave. intersection • Fencing may be considered when project is implemented	$10,314,240	4-45 to 4-50
28	6 - Wilder Ranch Trailhead/Shaffer Road	1.49 miles	• 1.36 miles (7,160 LF) multi-use paved path (Class I) along the coastal side of the rail right-of-way • 0.13 miles (670 LF) native soil coastal bluff trails (Segment 6A) • One (1) road crossing of Schaffer Rd. • Two (2) culvert crossings up the coast from Wilder Ranch trailhead and three (3) additional private crossings • Fencing may be considered when project is implemented	$3,114,224	4-35 to 4-38
28	11 - Capitola-Seacliff	3.20 miles	• 3.20 miles (16,880 LF) multi-use paved path (Class I) along the rail right-of-way • Bike and pedestrian facilities to be included in any design plans for new rail bridge replacement of the Soquel Creek rail crossing • Two (2) preengineered bike/pedestrian bridges (one [1] at New Brighton State Beach parking lot and one [1] at Borregas Creek) • Five (5) at-grade street crossings (47th St., Monterey Ave., New Brighton Rd., Estates Dr., Mar Vista Dr.) • One (1) private at-grade street crossing (Grove Ln.), one (1) private at-grade crossing at 48th St., and one (1) additional private crossing • One (1) rail crossing at 47th St. • Fencing may be considered when project is implemented	$8,868,336	4-61 to 4-66

TABLE B - Central Reach Projects Continued

Points	Segment	Length	Proposed Improvements	Cost Estimate	Document Reference Page
24	10 - Live Oak/Jade St Park	1.50 miles	• 1.50 miles (7,940 LF) multi-use paved path (Class I) along the rail right-of-way • Relocation of approximately 1.0 mile (5,280 LF) of rail track and signal arm assemblies • One (1) preengineered bike/pedestrian bridge crossing at Rodeo Gulch Creek 200-foot span • Four (4) non-signalized street crossings (17th Ave., 30th Ave., 38th Ave., 41st Ave.) • One (1) at-grade rail crossing • Fencing may be considered when project is implemented	$9,707,440	4-57 to 4-60
22	14 - Seascape	1.17 miles	• 1.17 miles (6,160 LF) multi-use paved path (Class I) along the inland rail right-of-way • Two (2) at-grade road crossings (Clubhouse Dr., Seascape Blvd.) • One (1) trail undercrossing of the existing rail bridge at Hidden Beach • Fencing may be considered when project is implemented	$2,079,872	4-79 to 4-82
17	13 - Rio Del Mar-Hidden Beach	0.85 miles	• 0.85 miles (4,510 LF) multi-use paved path (Class I) along the coastal side rail right-of-way • One (1) undercrossing connection to Rio Del Mar Blvd. • One (1) preengineered bike/pedestrian bridge, 200-foot span • One (1) existing staging area at Hidden Beach • Fencing may be considered when project is implemented	$3,306,112	4-73 to 4-78
17	12 - Aptos Village	1.14 miles	• 1.14 miles (6,030 LF) multi-use paved path (Class I) along the rail right-of-way • Three (3) preengineered bike/pedestrian bridges (bridge spans vary) • One (1) retrofit of northern Highway 1 concrete bridge for bike and pedestrian facility • Three (3) at-grade street crossings (State Park Dr., Aptos Creek Rd., Trout Gulch Rd.) • One (1) rail crossing at Trout Gulch Rd. • Fencing may be considered when project is implemented	$10,831,696	4-67 to 4-72
	TOTALS	**14.95 miles**		**$71,354,320**	

WATSONVILLE REACH PROJECTS AND COSTS

The Watsonville Reach includes Segments 15-20. Table C prioritizes the segments by the number of points they received. The segments that received the most number of points are considered the most feasible for implementing within a short time frame. This includes Segments 18, 19, and 20 (in that order) as the top three segments.

These segments provide gap closures to existing MBSST Network segments, provide access to numerous activity centers, and provide connectivity to other existing local and regional bikeway and pedestrian facilities. These segments are located in some of the most densely populated areas of the Watsonville Reach and provide ideal start/end points from residential neighborhoods and the city of Watsonville. Segments 16 and 15 may require a bit more lead time to resolve physical design constraints, right-of-way conflicts, bridge design and construction issues, and other budgetary challenges. However, these segments serve to close gaps in the overall MBSST Network, which will help elevate their importance for funding.

TABLE C - Watsonville Reach Projects

Points	Segment	Length	Proposed Improvements	Cost Estimate	Document Reference Page
26	18 - Watsonville Slough Open Space Trails	4.01 miles	• 1.20 miles (6,350 LF) multi-use paved path (Class I) along the inland rail right-of-way • 2.81 miles (14,820 LF) Class II bike lanes (Segments 18A and 18B) • One (1) rail culvert crossing • Two (2) road crossings (one [1] at Lee Rd. and one [1] at Ohlone Pkwy.) • This segment also includes fencing for agricultural operations and safety; additional fencing may be considered when project is implemented	$3,010,720	4-99 to 4-104
23	19 - Walker Street, City of Watsonville	0.47 miles	• 0.29 miles (1,510 LF) existing Class II bike lane along Walker St. right-of-way • 0.18 miles (950 LF) proposed Class II bike lane along Walker St. right-of-way (Segment 19A) • New sidewalks on the inland side of Walker St. from the intersection of W. Riverside Dr. to the end of Walker St., connecting to the Pajaro River • One (1) at-grade street crossing at Riverside Dr. • Additional fencing may be considered when project is implemented	$381,280	4-105 to 4-108
20	20 - Pajaro River	0.74 miles	• 0.74 miles (3,930 LF) multi-use paved path (Class I) along the inland rail right-of-way • One (1) new preengineered bike/pedestrian bridge at the Pajaro River crossing, 200-foot span • 3,930 feet of fencing for agricultural operations and safety; additional fencing may be considered when project is implemented	$3,009,136	4-109 to 4-112

TABLE C - Watsonville Reach Projects Continued

Points	Segment	Length	Proposed Improvements	Cost Estimate	Document Reference Page
20	16 - Ellicott Slough	2.66 miles	• 1.78 miles (9,400 LF) multi-use paved path (Class I) along the rail right-of-way • 0.40 miles (2,100 LF) multi-use paved path (Class I) coastal trail (Segment 16A) • 0.48 miles (2,530 LF) Class II bike lanes (Segment 16B) • Two (2) at-grade road crossings (Spring Valley Rd., Peaceful Valley Rd.) • One (1) at-grade rail crossing (Spring Valley Rd.) • Fencing may be considered when project is implemented	$3,613,600	4-89 to 4-92
20	15 - Manresa State Beach	1.37 miles	• 1.37 miles (7,240 LF) multi-use paved path (Class I) along the inland rail right-of-way • Two (2) at-grade road crossings (Sumner Ave., Camino Al Mar) and two (2) additional private crossings • Two (2) preengineered rail bridge crossings (one [1] 300-foot span at La Selva, and one [1] 225-foot span at San Andreas Rd.) • One (1) rail at-grade crossing (Camino Al Mar) • Fencing may be considered when project is implemented	$4,735,680	4-83 to 4-88
14	17 - Harkins Slough	4.0 miles	• 4.0 miles (21,140 LF) multi-use paved path (Class I) along the inland rail right-of-way • Seven (7) rail bridge/culvert crossings of varying lengths • One (1) private farm road crossing (1/2 mile west of Lee Rd.) • One (1) private road crossing at Buena Vista Dr. and one (1) additional private crossing • This segment also includes fencing for agricultural operations and safety; additional fencing may be considered when project is implemented	$19,961,888	4-93 to 4-98
	TOTALS	**13.25 miles**		**$34,712,304**	

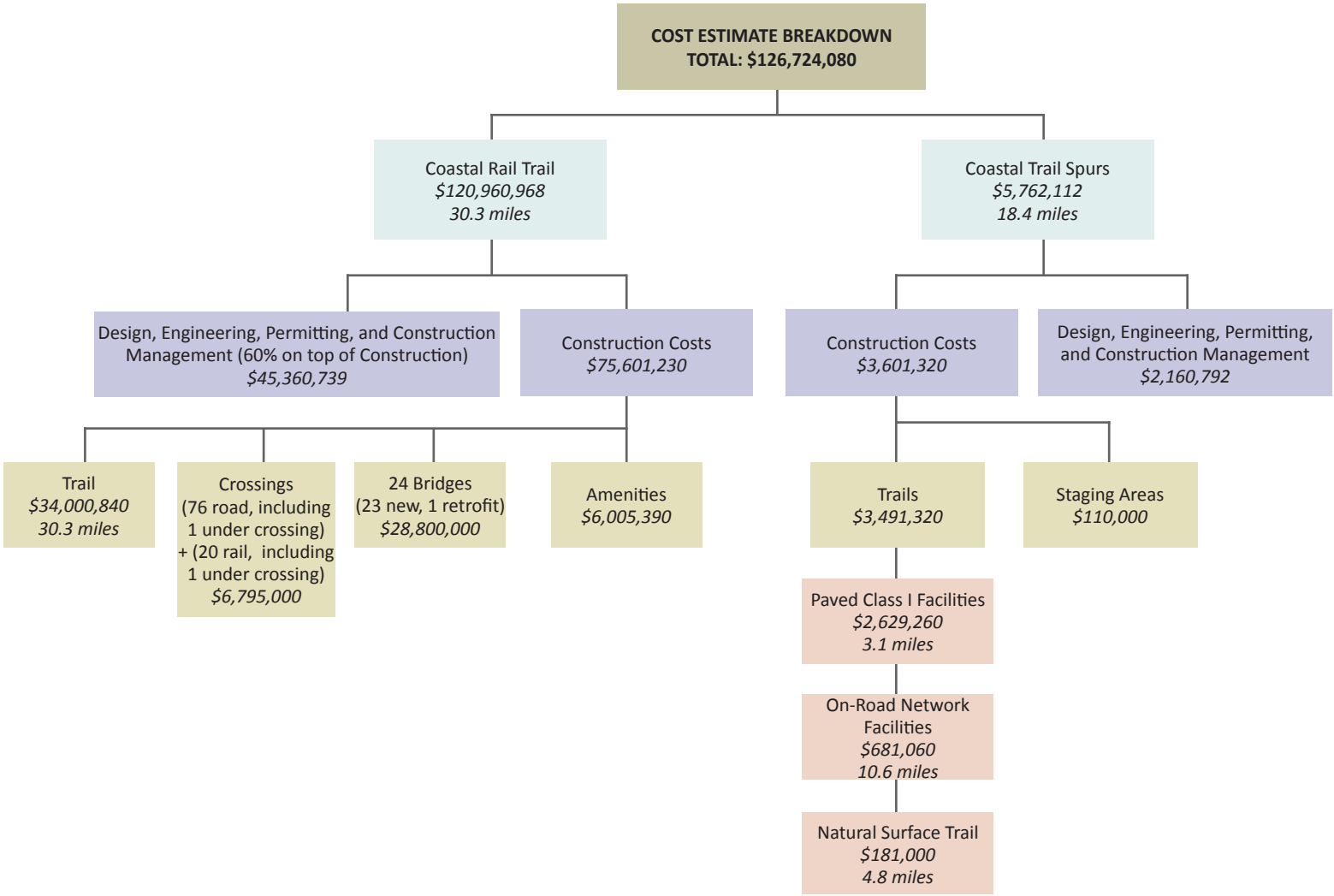


Figure A Summary of cost by trail facility type

I.VIII PROJECT IMPLEMENTATION

In regard to MBSST Network improvements, the main role of the RTC is to provide ongoing coordination services and funding for implementation of the MBSST Network. The RTC will take the lead in preparing memoranda of understanding (MOUs) between itself and implementing entities to clarify roles, responsibilities for design, development, construction, monitoring, and maintenance of the MBSST Network. The RTC may itself act as the implementing entity and construction manager.

The following describes the RTC's implementation responsibilities in greater detail:

- Phasing - Taking many considerations into account, including the prioritization provided in Section 6.3, the RTC will coordinate with implementing entities to identify segments that are to be implemented.
- Funding - Upon identification of a segment, the RTC will organize a funding strategy to design, construct, and maintain the segment. RTC staff will assist implementing entities in developing fundable projects, matching projects with funding sources, and helping to complete competitive funding applications. In some cases, RTC may act as the project sponsor or co-sponsor.
- Progress - Through board presentations, website notifications, and other venues, the RTC will provide regular updates to the public regarding the status of the MBSST Network development.
- Oversight - The RTC will work closely with implementing entities, Planning, Parks, and Public Works staff to implement MBSST Network segments.
- Coordination - Finally, should the RTC incur additional operating expenses to coordinate implementation, maintenance, operation, and liability of the MBSST Network through agreements with implementing entities, funding will need to be identified.

The following describes implementing entities' responsibilities in greater detail:

- Once the segment as been identified and funded, the RTC and/or implementing entities may employ in-house staff or retain a qualified bicycle and pedestrian trail planning consultant to design the MBSST Network construction documents. After review by the RTC's advisory committees and implementing entities, boards, and committees, the RTC will review and approve of all MBSST Network designs submitted by the implementing entities.
- In conjunction with implementing entities and/or a trail planning consultant, a series of workshops should be conducted to introduce the project to the public and to identify any new information not included in this Master Plan.
- Implementing entities will be responsible for overseeing any necessary environmental clearance. The implementing entities will obtain the necessary planning, environmental, and development permits.
- The RTC may oversee project construction in consultation with the implementing entity and/or trail planning consultant.
- The RTC will also coordinate, or provide coordination assistance, between rail and agricultural operations to ensure minimal service disruptions.

I.IX NEXT STEPS

This Master Plan is a planning-level study of the location and configuration of the MBSST Network. Implementation of actual MBSST Network projects will require additional site-specific study, planning, and design. Each project will require thorough environmental study and documentation, review, and permitting consistent with the complexity of the improvements, sensitive resources, and regulatory and easement requirements. A primary objective of the Master Plan is to identify and, if possible, avoid significant constraints, and address the anticipated implementation criteria and requirements.

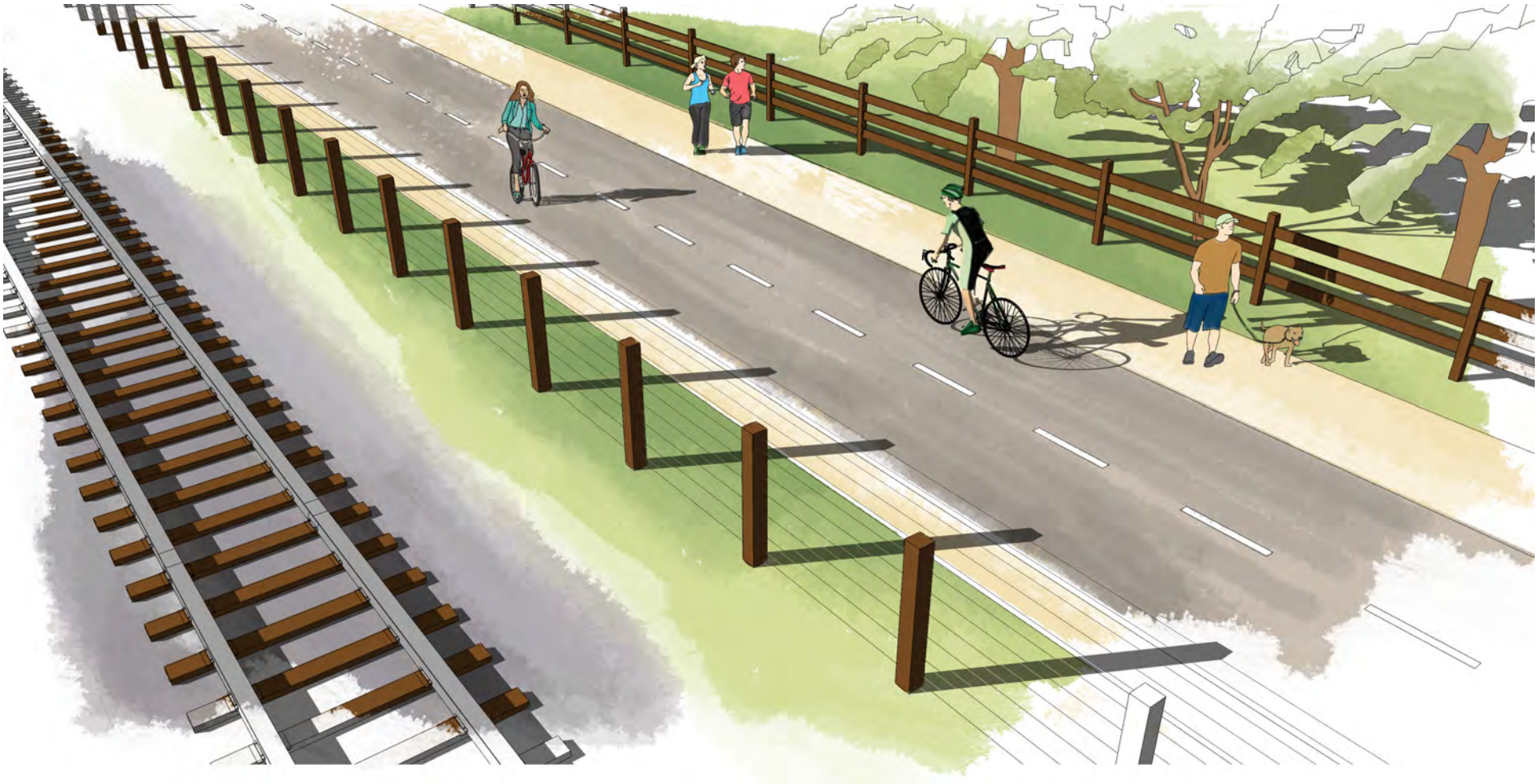


SECTION ONE CONTENTS

1.1	Project Introduction	1-3
1.2	Document Organization	1-9
1.3	Relationship to Other Plans and Policies	1-11
1.4	Public Outreach	1-11

This section presents the project's history and the process that led to the Santa Cruz County Regional Transportation Commission's planning efforts.

SECTION ONE
INTRODUCTION



Rail with trail concept



Congressman Sam Farr

Implementation of this key 32-mile-long transportation corridor will allow greater transportation options to 88 parks, 42 schools, and over half of the county's population ...

... the rail corridor [will serve] as the "spine" to which all other facilities will connect.

1.1 PROJECT INTRODUCTION

1.1.1 OVERVIEW

The Monterey Bay Sanctuary Scenic Trail Network (MBSST Network) is a two-county pedestrian and bicycle pathway project that is envisioned to run from the Santa Cruz/San Mateo County line to Pacific Grove in Monterey County. It was initially conceived by the Santa Cruz Sanctuary Interagency Task Force (Task Force) and championed by Congressman Sam Farr to foster appreciation for the Monterey Bay National Marine Sanctuary (MBNMS) and provide a non-motorized coastal path for walkers, joggers, cyclists, people with mobility impairments, families, locals, and visitors.

The Transportation Agency for Monterey County is responsible for Monterey County segments (starting from Lover's Point in Pacific Grove), while the Santa Cruz County Regional Transportation Commission (RTC) is responsible for the segments in Santa Cruz County in partnership with various local government entities. This document, the Monterey Bay Sanctuary Scenic Trail Network Master Plan (Master Plan), is the result of a directed effort by the RTC to develop the braided bicycle/pedestrian MBSST Network along Santa Cruz County's coast.

The MBSST Network can be differentiated into the Coastal Rail Trail portion and associated spur trails. The proposed Coastal Rail Trail portion of the network will be located within the right-of-way of the Santa Cruz Branch Rail Line corridor, and will serve the MBSST Network's continuous trail "spine" to provide multi-use alternative transportation and coastal access. The spine, or primary alignment, of the MBSST Network will be built parallel to (not in place of) the operational rail line, within the rail right-of-way, so that freight rail and future passenger rail service may be provided. A network of associated spur trails is identified that will connect the spine with other origins, destinations, and activity sites in the region. Unless otherwise noted, the terms "trails" and "paths" in this document are used synonymously to refer to paved bike/pedestrian multi-use facilities defined by Caltrans as a "Class I Bikeways (Bike Paths)" in the Caltrans Highway Design Manual, Chapter 1000, Bicycle Transportation Design, Topic 1003 - Bikeway Design Criteria.

The Coastal Rail Trail promises to be a highly valuable asset to the Santa Cruz County community for transportation, recreation, education, health, eco-tourism, coastal access, economic vitality, and other visitor-serving purposes. Implementation of this key 32-mile-long transportation corridor will allow greater transportation options to 88 parks, 42 schools, and over half of the county's population who live within one mile of the corridor (per 2010 Census tract information).

1.1.2 MASTER PLAN

The purpose of this Master Plan is to establish the continuous alignment and set of design standards for the Coastal Rail Trail and its associated spur trails within the context of existing physical constraints of the railroad, coastal access requirements, highway, and public street rights-of-way. The Master Plan identifies planning issues associated with the Coastal Rail Trail's construction and presents feasible solutions for its design and long-term operation and maintenance. In addition, a preliminary set of costs has been identified for each of the trail segments based on the higher-altitude level of analysis in this Master Plan.

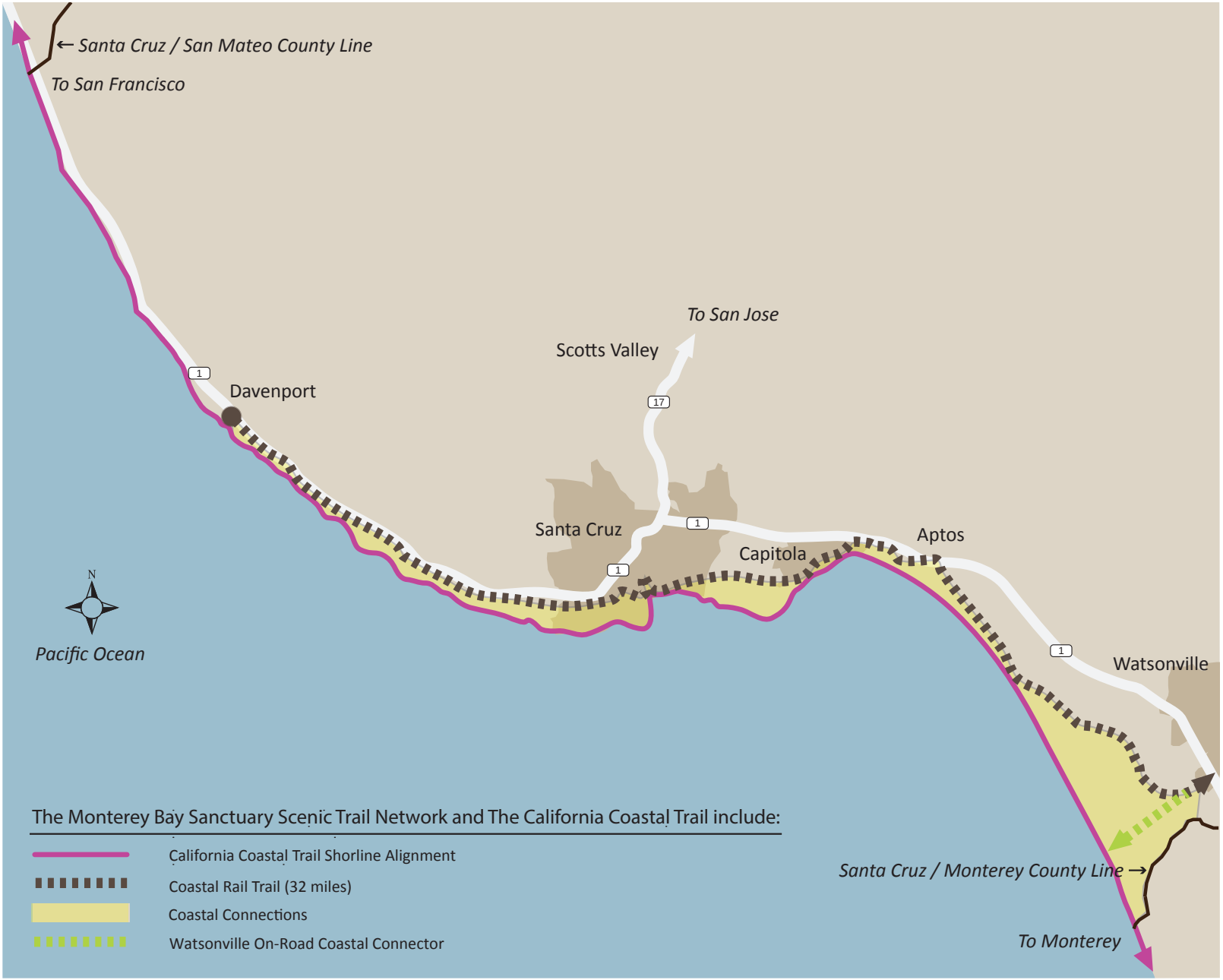


Figure 1-1 Braided trail network

The Master Plan has been developed through an extensive public outreach program designed to involve all those interested and affected by the proposed MBSST Network. It does not consider use of private property, does not presume any eminent domain actions, and does not prohibit continued agricultural and rail operations.

The focus of this Master Plan is on the proposed alignment of the 31-mile-long Coastal Rail Trail in Santa Cruz County as the spine of the broader Monterey Bay Sanctuary Scenic Trail Network (MBSST Network), with additional spur trails and natural surface paths providing connectivity to the coast and to activity centers which will bring the total of bike/pedestrian trails in the MBSST Network to approximately 50 miles. These trails and other existing on-road bicycle and pedestrian facilities form the braided network of trails that is the MBSST Network project.

The planning effort for the Master Plan has been conducted within the framework of an extensive public outreach program designed to involve all those interested and affected by the proposed trail. It does not consider use of private property, does not presume eminent domain actions, and does not prohibit continued agricultural and rail operations.

1.1.3 EARLY PLANNING EFFORT

The County of Santa Cruz established a Sanctuary Scenic Trail Interagency Task Force (Task Force) in 1993, following federal designation of the Monterey Bay National Marine Sanctuary (MBNMS) in 1992. The early vision was to bring public agencies and key partners together to identify and promote a continuous coastal trail within Santa Cruz County as the primary means for maximizing the positive economic, educational, and interpretive benefits of the nationally recognized bay. Members included the following:

- Congressman Sam Farr
- then-Supervisor Gary Patton
- then-State Senator Bruce McPherson
- then-State Senator Henry Mello
- then-Assembly Member Fred Keeley
- then-Assembly Member John Laird
- elected officials and staff from Santa Cruz County, and the cities of Capitola and Santa Cruz
- City of Santa Cruz Redevelopment Agency and Parks and Recreation Department
- Santa Cruz Port District
- California State Parks - Santa Cruz District
- County of Santa Cruz Parks
- Santa Cruz County Office of Education
- Santa Cruz County Convention and Visitors Council
- Monterey Bay National Marine Sanctuary (administered by the National Oceanic and Atmospheric Agency)
- Seymour Discovery Center at UC Santa Cruz Long Marine Laboratory
- Save Our Shores
- Santa Cruz Seaside Company
- Santa Cruz County Regional Transportation Commission
- California Coastal Commission
- and many others



The Task Force met over a period of ten years and established various strategies by which to maximize access to the coast—one of which was to designate and develop a trail system that will bring the public as close to the coast as possible and provide interpretive displays to feature local highlights. The Task Force also produced a Sanctuary Scenic Trail Standards Manual that was to serve as the blueprint for the system's implementation, as well as types and locations of interpretive and wayfinding signage.

1.1.4 FUNDING

Through Congressman Sam Farr's leadership and effort, the project was solidified as a two-county system in order to establish a trail around the full arc of the Monterey Bay. Congressman Farr secured $9 million through federal appropriations and earmarks towards the project to be split equally between the two counties. Through the RTC's discretionary funding sources, an additional $2.2 million was designated for the project. Finally, the California Coastal Conservancy granted the RTC $250,000 toward the preparation of the Master Plan so the trail will span the length of the Santa Cruz County coast from the San Mateo County line to the Monterey County line. Federal transportation dollars mandate the Trail Network serve the mobility needs of bicyclists and pedestrians. Additional funding will need to be identified to bring the project into full implementation.

Through Congressman Farr's leadership and effort, the project was solidified as a two-county system in order to establish a trail around the full arc of the Monterey Bay.

1.1.5 CONSOLIDATION OF MULTIPLE PROJECTS INTO A TRAIL NETWORK UMBRELLA

Once federal transportation funds were dedicated to the project and the RTC became the lead agency for implementation, the RTC consolidated a number of other funded, proposed, and/or constructed trails into one umbrella project. Those projects included the Coastal Rail Trail, the California Coastal Trail, and the original 11-mile alignment of the MBSST Network.

All these projects shared the goal of developing accessible bicycle and pedestrian trail facilities on or near the coast. For improved planning, administration, coordination with state and federal entities, connectivity to existing facilities, and to benefit from the economies of scale, the MBSST Network was identified. This approach provides many benefits from a comprehensive system-wide planning perspective, as well as for administrative costs.

1.1.6 CALIFORNIA COASTAL TRAIL

The MBSST Network will serve as the California Coastal Trail (CCT) through Santa Cruz County. Additional alignments will also be identified to serve as the CCT by the State Coastal Conservancy, Coastal Commission, State Department of Parks and Recreation, and State Department of Transportation—the state agencies responsible for assisting local communities in completing and signing the MBSST Network. Since not all existing or planned foot paths are shown, more detailed follow-up mapping will be necessary to more completely document and plan the pedestrian strands of the CCT system, most notably where it is located seaward of the Coastal Rail Trail corridor.

The MBSST Network will serve as the California Coastal Trail through Santa Cruz County.

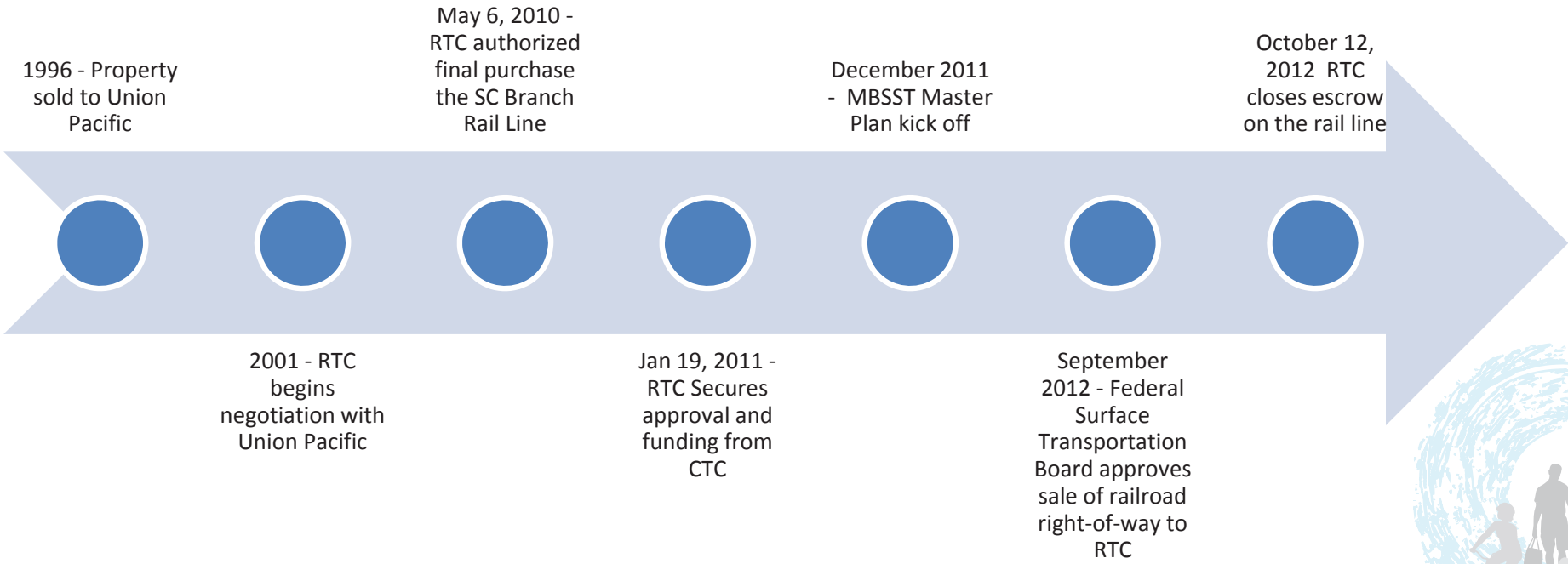


The Coastal Rail Trail, serving as the system's spine, is a result of a 20-year-long effort to purchase the Santa Cruz Branch Rail Line, which was established in 1876.

1.1.7 RTC PURCHASE OF THE SANTA CRUZ BRANCH RAIL LINE

The Coastal Rail Trail, serving as the system's spine, is a result of a 20-year-long effort to purchase the over 135-year-old Santa Cruz Branch Rail Line. In the early 1990s, the RTC began efforts to purchase the Santa Cruz Branch Rail Line right-of-way. Originally owned by Southern Pacific, the property was sold to Union Pacific in 1996. In 2001, the RTC officially began negotiating with then-owner Union Pacific. Over the next decade, negotiations and due diligence work were conducted. On May 6, 2010 the RTC board took action to approve purchasing 31 miles of the 32-mile Santa Cruz Branch Rail Line from Union Pacific for $14.2 million, of which $11 million came from the California voter-approved Proposition 116. On January 19, 2011, the RTC secured approval and funding from the California Transportation Commission for purchase of the Santa Cruz Branch Rail Line. On October 12, 2012, the RTC successfully closed escrow, placing title of the branch line into public ownership with the commitment of supporting passenger and freight service, as well as creating a coastal trail. As part of the agreement, the RTC also secured approximately $5 million in state funding to upgrade some rail structures.

Iowa Pacific Holdings was selected as the railroad operator and is doing business locally as the Santa Cruz & Monterey Bay Railway. According to the agreement with the RTC, the Chicago-based railroad company owns a 20-foot-wide easement along the length of the rail line for rail operations and is responsible for ongoing maintenance an all railroad infrastructure. The RTC will work to maintain and further develop existing freight and recreational rail service. The RTC will also investigate future uses of the rail corridor including commuter passenger service.



1.1.8 PROJECT BENEFITS

The proposed Coastal Rail Trail and its network of connecting trails will open up a popular new way to appreciate the extraordinary coastline and the coastal areas of Santa Cruz County. Residents and tourists alike will benefit as both will be drawn to this pleasant new form of access "to and along the coast" (a significant goal of the California Coastal Act). Along with agriculture, tourism is one of Santa Cruz's two largest economic sectors, whether measured by annual revenues or by employment. The Coastal Rail Trail as proposed by the Draft Master Plan will be a boon to tourism and, therefore, to the local economy.

[The trail will be] a boon to tourism and, therefore, to the local economy.

A lifestyle in which motorized transportation has largely replaced non-motorized trips has created a sharply adverse trend in health. Thirty-seven percent (37%) of U.S. adults are now obese, roughly double the percentage only three decades ago. Obesity has also become prevalent at a remarkably young age. Seventeen percent (17%) of children and adolescents in the U.S. are already obese, and that percentage has roughly tripled in the past three decades. Obesity is a major contributor to medical problems, including heart disease, stroke, type 2 diabetes, and several kinds of cancer. It thus contributes not only to reduced quality of life and mortality, it also raises medical costs as obese individuals incur medical costs approximately 42% higher than do persons of normal weight. Nationally, that adds up to $147 billion in additional medical costs per year attributable to obesity. The proposed MBSST Network, by making non-motorized transportation and recreation available and attractive to a broad spectrum of the community, can produce very real benefits in improved health, improved quality of life, and reduced medical costs.

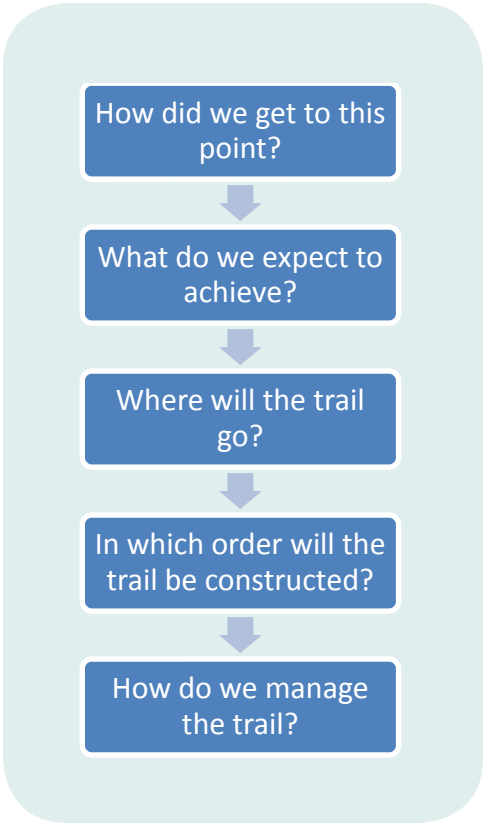
The United States Department of Transportation (US DOT) estimates that about 40% of all car trips are three miles or less. These short trips also use more fuel per mile, generate more emissions per mile, and, most notably, cause more climate change per mile than any other trips. It is these shorter trips that can most readily be converted, given facilities attractive to the general population, to non-motorized alternatives. Particularly given California's tightening limits on climate-changing emissions (Assembly Bill 32 and subsequent legislation and regulations), a project such as this that reduces local greenhouse gas emissions, and does so in the sector that generates most of the local emissions (transportation), offers many benefits to the local economy, as well as to the environment.

... the number of local trip origins and destinations the proposed Coastal Rail Trail will potentially serve is enormous.

With roughly half of the County's total population living within a mile of the Watsonville-to-Davenport rail line, the number of local trip origins and destinations the proposed Coastal Rail Trail will potentially serve is enormous. For its entire length, the Coastal Rail Trail corridor is a route that is separate from motor vehicle traffic and offers a gentle gradient. Separation from vehicles and gentle gradients are two characteristics necessary to make non-motorized local trips an attractive alternative to driving. The MBSST Network offers considerable potential for reduced congestion on local streets, time savings, improved efficiency, and enhanced quality of life.

The MBSST Network offers considerable potential for reduced congestion on local streets.





1.2 DOCUMENT ORGANIZATION

This Master Plan document describes, in detailed terms, the proposed alignment, how the bicycle/pedestrian facilities are proposed to be built, the order in which they should be built, and how the segments will be financed. This Master Plan is divided into seven sections. The content of each section is as follows:

SECTION ONE - INTRODUCTION

This section briefly presents the project's history and the process that led to the Regional Transportation Commission's planning efforts.

SECTION TWO - GOALS, OBJECTIVES, AND POLICIES

This section provides the framework around which the Master Plan will be implemented.

SECTION THREE - MASTER PLAN SETTING

This section provides a detailed description of the Master Plan area with supporting key maps identifying the three overarching reach maps. This section summarizes the major opportunities and constraints and identifies each segment's proximity to 13 different types of activity centers.

SECTION FOUR - TRAIL ALIGNMENT

This section focuses on the recommended trail alignment maps. The recommended alignment has been studied to determine the most appropriate, functional, and cost-effective option for each trail segment. Potential "spur" routes have also been identified, such as connections to scenic vistas, retail destinations, employment generators, transit, residential, trails, and other origin/destination areas.

SECTION FIVE - TRAIL DESIGN STANDARDS

This section establishes trail facility design standards, such as typical path construction and layout, wayfinding signage and marking, rail and road crossings, rail-with-trail design standards, on- and off-road bikeways, security and landscape fencing, lighting, bridges and crossings, habitat enhancement, and any operational and management specifics that might be warranted as result of proximity to sensitive biological resources. The design standards are presented in list form and are supported with photos, graphic sections, and elevations.



SECTION SIX - PROJECT PRIORITIZATION AND COSTS

This section consists of matrices and tables that describe each potential trail segment, its character, major opportunities or constraints, connections to other facilities, permit requirements, nature of property ownership, etc. This section provides information necessary to evaluate, rank, and recommend the "most promising" trail alignments. The type of trail that is feasible has been identified for each segment. Each trail segment has a designated priority listing, cost breakdown, potential funding source, and other key project information in a user-friendly reference table.

SECTION SEVEN - OPERATION AND MAINTENANCE

This section addresses the strategies the RTC could employ to identify and implement portions of the project over time, working toward the completion of the MBSST Network. Specifically, this section includes information such as the following:

- Trail operation and management
- Agricultural and rail service operations interface
- Operating responsibilities and procedures
- Relationship with adjacent property owners
- Administration and cost
- Implementation memoranda of understanding

Appendices follow the Master Plan and include a summary of the documents reviewed in preparation of this Master Plan, opportunity and constraints maps, and detailed cost analysis.

APPENDIX A - EXISTING JURISDICTIONAL GOALS
APPENDIX B - MASTER PLAN RELATIONSHIP TO EXISTING DOCUMENTS SUMMARY
APPENDIX C - TRAIL SEGMENT COSTS
APPENDIX D - TRAIL CROSSINGS DESCRIPTIONS
APPENDIX E - TRAIL FUNDING SOURCES
APPENDIX F - CUSTOM CROSSING TREATMENTS
APPENDIX G - CALIFORNIA COASTAL COMMISSION AND CONSERVANCY ACCESSIBILITY STANDARDS
APPENDIX H - RAILS-WITH-TRAILS SUPPORTING DOCUMENTS
APPENDIX I - REVISED SEGMENT 17





Workshop participants providing input regarding potential trail alignment



Several stations for the public to review trail information



Many bike advocates attended the workshop series

1.3 RELATIONSHIP TO OTHER PLANS AND POLICIES

Information used in the preparation of this Master Plan includes existing general plans, circulation elements, local coastal programs, master plans, parks and recreation plans, bikeway master plans, rail service plans, environmental documents, demographic and land use data, traffic volumes, and other reports and plans. A summary of each relevant plan is presented in Section 2.4 and in Appendix B of this document.

The need to fit within the framework of these guiding documents is taken into consideration in the creation of this Master Plan. Where local ordinances and codes do not address the specific design and development standards for trail facilities, this Master Plan will function as a means to bridge that gap, and will become the appropriate tool for each community's implementation of a regional transportation effort.

The Master Plan supports other plans and elements by focusing on development of the rail corridor as the "spine" to which all other facilities will connect.

1.4 PUBLIC OUTREACH

The information gleaned from the outreach identified below was used by the planning team to refine the opportunities and constraints analysis, evaluate alignment alternatives, and inform project prioritization criteria.

STAKEHOLDER INTERVIEWS

The majority of the interviews were conducted over a three-day period (October 25, 26, and 27, 2011) at the Santa Cruz County Regional Transportation Commission's office. Following the initial meeting series, two additional stakeholder groups were interviewed—one on November 16, 2011 at RRM Design Group's office and the other on December 1, 2011 via telephone.

A total of 68 people representing 52 stakeholder groups were interviewed. The interviews began with a summary of the project by RTC staff. Following this introduction, the consulting planning team discussed with each stakeholder group their interest in the project, specific technical issues, perceived opportunities and constraints, and, finally, their key desired outcomes. The stakeholder's comments were noted on interview forms by planning team members.

The information received ranged from specific trail design standard suggestions, alignment ideas, and destination linkages to adjacent land use compatibility issues, safety concerns, and natural resource protection needs. Overall, the interviews yielded useful information for the planning team to consider in the draft alignment plan. The interviews also afforded a unique opportunity to meet and talk with the trail corridor's key participants.

WORKSHOP SERIES #1

This workshop series occurred on three consecutive evenings in north, mid and south county locations from December 13, 2011 to December 15, 2011; approximately 200 members of the public attended. The goal of the workshop series was to bring the community into the MBSST Network development early in the process, with the focus on soliciting ideas for new alignment opportunities, connection points, and design elements.

Workshops began with an overview by RTC staff of the Master Plan's evolution and goals, followed by an update from the consultant on the field work, corridor analysis and initial trail alignment effort completed so far. Following this introduction, the MBSST Network was defined to help illustrate the concept of a "braided" trail system with a well-defined, off-street, paved, multi-use trail following the rail corridor, and serving as the spine for the MBSST Network. With the MBSST Network defined, the consultant team then presented constraints, opportunities, and the emerging trail alignment(s) within the Master Plan area.

Following the presentation, workshop participants were invited to join break-out groups to share their ideas for refining the trail alignments, identify additional key connections to and from the trail, and to discuss and map further constraints or opportunities. This exercise was valuable in that each of the break-out group facilitators was able to talk one-on-one with participants and record pertinent information directly on the preliminary alignment maps. As a result of interaction in the break-out groups, the planning team was able to confirm the following key items about each of the three projects' reaches:

NORTHERN REACH (SAN MATEO COUNTY LINE TO WESTERN SANTA CRUZ CITY LIMIT)

- Overall, the alignments shown were supported by workshop participants.
- Participants liked the idea of continuing a paved multi-use trail all the way up to Davenport along the rail right-of-way.
- Some refinement is necessary between Waddell Bluffs and Davenport with respect to coastal access.
- Clear mapping of the off-street, multi-use trail is needed from the rail right-of-way to West Cliff Drive.

CENTRAL REACH (WESTERN SANTA CRUZ CITY LIMIT TO SEASCAPE BOULEVARD)

- Overall, the alignments shown were supported by workshop participants.
- Participants strongly supported developing a paved multi-use trail along the rail right-of-way.
- Getting over Soquel Creek utilizing either the existing bridge or a new bridge is imperative because of the steep grades.
- There is a need to look seriously at adding new bike/pedestrian crossings over the rail line in dense, urban areas.



Evaluating trail opportunities and constraints



Public workshop participants in Watsonville



Sanctuary Scenic Trail advocates in Watsonville



Workshop participants young and old



Evaluating the Watsonville Reach



Workshop crowd

WATSONVILLE REACH (SEASCAPE BOULEVARD TO MONTEREY COUNTY LINE)

- Overall, the alignments shown were supported by workshop participants.
- Participants strongly supported developing a paved, multi-use trail along the rail right-of-way to provide a direct connection between Watsonville and Santa Cruz County's other coastal communities.
- Where the rail right-of-way and San Andreas Road are adjacent, there is a need to explore a creative approach to allow for a paved multi-use trail in this area.
- Participants encouraged exploring a levee-top alignment to the beach.

At the conclusion of the break-out session, workshop participants regrouped and were asked to provide any additional comments and ideas to help guide the Master Plan's development. Their comments and ideas were recorded by the planning team for reference in preparing the Draft Master Plan. RTC staff then discussed the project's next steps and tentative project schedule. The workshop adjourned with an invitation to attend the next workshop series.

WORKSHOP SERIES #2

This workshop series occurred on four consecutive evenings in north, mid and south county locations from November 26, 2012 to November 29, 2012. The workshops were attended by approximately 300 members of the public. The workshop series' goal was to provide an overview of the Draft Master Plan, demonstrate how community input provided at the first workshop influenced the trail alignments, and solicit the community's preferences for trail segment implementation prioritization.

Workshops began with an overview by RTC staff of the Master Plan's evolution and goals, followed by a summary from the consultant of the field work, corridor analysis, trail alignment development, design standards establishment, and cost analysis efforts completed for the Draft Master Plan. Following this introduction, the organizational structure of the Draft Master Plan was presented along with a synopsis of each section contained within the document. With the Draft Master Plan's contents presented, the consultant team then described the "look and feel" of the MBSST Network's various components through renderings and photographs to help workshop participants visualize the project's build-out.

The consultants then presented the MBSST Network system's implementation priority. First, they discussed how and why the trail was broken into 20 segments, and then identified each segment's reach location (Northern, Central, or Watsonville), boundaries, and general characteristics. Next, segment implementation prioritization criteria were described to the workshop participants. Finally, each of the 20 segments was presented in order from highest to lowest priority based on their prioritization analysis scores.

Following the presentation, workshop participants were provided segment priority preference surveys and asked to list their first and second segment priorities for implementation. To facilitate this exercise, RTC and consultant team members staffed Trail Reach Stations set up around the perimeter of each workshop room. Community members were invited to visit their geographical area (or reach) of interest to ask questions and gather additional information about trail segments before listing their prioritization preferences.

As a result of this interactive process, Table 6.9 in Section 6 was developed to represent community preferences. Table 6.10 includes the cumulative sum of each participating community member's top two preferences. Community input was one of nine prioritization criteria utilized to determine the top segments per trail reach.

The community's priority preferences per trail reach were as follows:

NORTHERN REACH (SAN MATEO COUNTY LINE TO WESTERN SANTA CRUZ CITY LIMIT)

Segment 5, followed by Segment 4, followed by Segment 2, followed by Segment 1, followed by Segment 3

CENTRAL REACH (WESTERN SANTA CRUZ CITY LIMIT TO SEASCAPE BOULEVARD)

Segment 9, followed by Segment 11, followed by Segment 10, followed by Segment 8, followed by Segment 12, followed by Segment 7, followed by Segment 13, followed by Segment 14, followed by Segment 6

WATSONVILLE REACH (SEASCAPE BOULEVARD TO MONTEREY COUNTY LINE)

Segment 18, followed by Segment 17, followed by Segment 20, followed by Segment 15, followed by Segment 16, followed by Segment 19.

At the conclusion of the break-out session, workshop participants regrouped and were asked to provide any additional comments and ideas to help guide the Master Plan's development. Their comments and ideas were recorded by the consulting team for reference in preparing the Draft Master Plan. RTC staff then discussed the project's next steps and tentative project schedule.



SECTION TWO CONTENTS

2.1	Introduction	2-2
2.2	Definitions	2-2
2.3	Goals, Objectives, and Policies	2-3
2.4	Planning and Policy Context	2-11

This section provides the framework around which the Master Plan will be formed.

SECTION TWO
GOALS, OBJECTIVES, AND POLICIES

2.1 INTRODUCTION

Through a collaborative planning process, the following goals, objectives, and policies were developed to guide the development of the Master Plan. They were designed to enhance non-motorized mobility and improve safety, access, traffic congestion, air quality, and the quality of life for Santa Cruz County residents, workers, and visitors. The goals are meant to function as the common framework that integrates the countywide rail trail with new and existing bicycle and pedestrian facilities. Additional objectives and policies for each county jurisdiction are included in their individual plans and are summarized in Section 2.4 and Appendix A of this Master Plan.

2.2 DEFINITIONS

The following definitions are provided to explain the intent of each goal, objective, policy, and implementing action.

GOAL

A general statement of desired community outcome

OBJECTIVE

A subset of a goal, an objective is more specific and provides measurable strategies

POLICY

Actions that a community will undertake to meet the goals and objectives

IMPLEMENTING ACTION

A recommended action necessary to implement the Master Plan policies

The goals are meant to function as the common framework that integrates the countywide rail trail to new and existing bicycle and pedestrian facilities.



2.3 GOALS, OBJECTIVES, AND POLICIES

GOAL 1: TRAIL SYSTEM DEVELOPMENT

DEFINE A CONTINUOUS TRAIL ALIGNMENT THAT MAXIMIZES OPPORTUNITIES FOR A MULTI-USE BICYCLE AND PEDESTRIAN TRAIL SEPARATE FROM ROADWAY VEHICLE TRAFFIC.

Objective 1.1 ***Provide a continuous public trail along the Santa Cruz Branch Line railroad corridor and connecting spur trails within Santa Cruz County.***

Policy 1.1.1 Prioritize funding and implementation for gaps in the MBSST Network that serve multiple population and activity centers.

Policy 1.1.2 Maximize ocean views and scenic coastal vistas, and emphasize connections to existing and proposed local trail systems with frequent vertical access opportunities for different user groups from the Coastal Rail Trail to the beach, vista points, interpretive facilities, and other activity centers along the way.

Policy 1.1.3 Use existing built trails, roadways, and other transportation facilities to the fullest extent possible to provide for the primary trail alignment and spur trails.

Policy 1.1.4 Promote segments affording coastal views as primary means for experiencing and interpreting the Monterey Bay National Marine Sanctuary.

Policy 1.1.5 Pursue contiguous trail development to maximize continuous trail utilization in areas with high numbers of activity centers and population density.



Objective 1.2: ***Make the trail functional as a transportation facility.***

Policy 1.2.1 Link trails to regionally significant activity centers such as parks, open space, commercial centers, schools, and universities via the main trail alignment or trail connectors.

Policy 1.2.2 Provide safe, direct linkages between trails and paved pathways, bike lanes, transit terminals, bus stops, and parking facilities (for motor vehicles and bicycles).

Policy 1.2.3 Construct the trail according to Caltrans bikeway standards as described in the Caltrans Highway Design Manual, Chapter 1000, Bikeway Planning and Design, and other standards manuals.

Policy 1.2.4 Develop trails in such a way so that future rail transit services along the corridor are not precluded.

Objective 1.3: ***Make the trail recognizable as a continuous facility.***

Policy 1.3.1 Develop a wayfinding identity and regulatory signage system that is visually clear and cohesive, as well as physically durable to reduce maintenance requirements.

Policy 1.3.2 Ensure wayfinding identity and regulatory signage is consistent with and complements the previously developed Monterey Bay Sanctuary Scenic Trail Standards Manual.

Policy 1.3.3 Provide a sense of continuity along the entire trail route through unifying visual elements identified in the landscape design standards incorporated in the Master Plan.

Policy 1.3.4 Preserve the integrity of the MBSST Network's identity by focusing on the development of a cohesive spine trail.

Objective 1.4: ***Minimize the environmental impacts of the complete trail system.***

Policy 1.4.1 Avoid sensitive habitat areas and special-status plant and animal species to the maximum extent feasible when identifying, designing, and constructing new trail segments.

Policy 1.4.2 Coordinate with local planning and Coastal Commission staff to design and construct the MBSST Network to comply with the Coastal Act and local coastal program requirements. Coordinate with designation of the California Coastal Trail.

Policy 1.4.3 Identify potential habitat enhancement projects and mitigation strategies in association with all new trail development plans and designs.

Policy 1.4.4 Establish positive working relationships with state/federal wildlife and environmental resource protection officials and staff.

Objective 1.5: ***Minimize trail impacts to private lands including agricultural, residential, and other land uses.***

Policy 1.5.1 Avoid trail development on private lands where a feasible alternative alignment exists on adjacent public properties.

Policy 1.5.2 Document all costs of modifications to land owner operations, access controls, etc. associated with trail development, and incorporate such costs into public cost estimates for the project.

GOAL 2: ENHANCE APPRECIATION OF THE COASTAL ENVIRONMENT

DEVELOP PUBLIC TRAIL ACCESS ALONG THE MONTEREY BAY NATIONAL MARINE SANCTUARY TO ENHANCE APPRECIATION, UNDERSTANDING, AND PROTECTION OF THIS SPECIAL RESOURCE.

Objective 2.1: ***Use interpretive guidelines and exhibits to promote coastal alignments as the primary means for experiencing and interpreting the sanctuary, and historical and agricultural landscapes.***

Policy 2.1.1 Continue work documented in the Monterey Bay Sanctuary Scenic Trail Standards Manual, and the Draft Long Range Interpretive Plan when developing interpretive materials, where appropriate.

Policy 2.1.2 Establish interpretive design and content guidelines via a memorandum of understanding (MOU) or other formal written agreement between implementing entities, as needed.

Policy 2.1.3 Provide relevant, engaging interpretation and information of the railroad, the Monterey Bay National Marine Sanctuary, the coastal environment, agriculture, local history, and affected communities.



GOAL 3: EDUCATION AND AWARENESS

PROMOTE AWARENESS OF THE TRAIL, TRAIL OPPORTUNITIES, AND TRAIL USER RESPONSIBILITIES.

Objective 3.1: ***Promote the benefits of trail usage such as economic, transportation, safety, recreation, connectivity, community image, environmental stewardship and health.***

Policy 3.1.1 Acknowledge existing trail designations such as the California Coastal Trail.

Policy 3.1.2 Create a trail identity through use of logos, maps, signage, and brochures.

Policy 3.1.3 Develop trail promotional materials presenting the facility as alternative transportation and to draw travelers out of their cars.

Policy 3.1.4 Establish complementary educational and regulatory programs that emphasize respect for natural resources, private property, and other trail users.

Policy 3.1.5 Use technology to promote trail awareness and opportunities such as: development of a mobile phone application with maps, opportunities to report trail maintenance, and to receive reports regarding trail conditions or closures; provision of QR codes along the trail to access additional interpretive information; and a social media presence for trail-related events or other current news.

Objective 3.2: ***Encourage use of the trail for Safe Routes to School programs.***

Policy 3.2.1 Coordinate with local schools to use the MBSST Network as part of existing and proposed Safe Routes to Schools programs.

Policy 3.2.2 Coordinate with law enforcement on all relevant safety concerns including traffic at road crossings.

Policy 3.2.3 Provide signage that designates use of the trail for Safe Routes to School programs.



Interpretive signage example



Monterey Bay National Marine Sanctuary information sign at Manresa State Beach

GOAL 4: IMPLEMENTATION

DEVELOP A LONG- AND SHORT-TERM PROGRAM TO ACHIEVE THE POLICIES SET FORTH IN THIS MASTER PLAN THROUGH A COMBINATION OF PUBLIC AND PRIVATE FUNDING, REGULATORY METHODS, AND OTHER STRATEGIES.

Objective 4.1: ***Identify costs associated with each defined segment and for overall improvements required to create a continuous trail.***

Policy 4.1.1 Develop and maintain accurate, current construction unit costs for all major elements of the recommended trail facility.

Policy 4.1.2 Develop and maintain accurate, current land costs where acquisition of right-of-way and/or easements is required for trail implementation.

Policy 4.1.3 Provide implementing entities with funding to develop trail segments.

Objective 4.2: ***Ensure that sponsors of the Monterey Bay Sanctuary Scenic Trail Network (MBSST Network) pursue all potential state, federal, regional, local, and other funding sources.***

Policy 4.2.1 Allocate staff, retain grant writing volunteers, and/or retain consultants to pursue funding for direct, matching, and challenge grants from other agencies and sources for implementation of the MBSST Network.

Policy 4.2.2 Develop and maintain a matrix of appropriate state and federal grant sources for specific trail segments, trail access points, and associated projects.

Objective 4.3: ***Utilize ordinances and park conservation or trail easements to ensure significant trail development opportunities.***

Policy 4.3.1 Work with City and County Planning staff to seek out opportunities as part of new development proposals.



Objective 4.4: ***Utilize existing lands owned by various government entities, open space groups, institutions, and other sources to develop the trail.***

Policy 4.4.1. Update and reevaluate inventory of all public agency-owned lands (RTC, county, city, other district, state, federal, etc.) and analyze for trail development opportunities.

Policy 4.4.2 Investigate partnerships for current or future collaboration on both private and public lands.

Policy 4.4.3 Explore property transfers, trades, donations, partial purchases, joint purchases, easements, long-term leases, encroachment permits, and a variety of other means from willing sellers or property owners.

Objective 4.5: ***Seek financial and other support for the trail.***

Policy 4.5.1 Seek methods to acquire funding and contributions of land including wills and bequests, stocks, gifts of life insurance, charitable remainder trusts, and maintenance endowments.

Policy 4.5.2 Investigate methods for land acquisition including life estates, contributions of surplus real estate, sequential donations or purchases, and purchase and leaseback programs with landowners.

Policy 4.5.3 Develop an active volunteer program with service clubs, community groups, and citizens. Identify interested corporations, clubs, or individuals, and create an action plan tailored to fit the adopting organization's budget and interest. Such entities may be helpful in purchasing trail furnishings such as benches, trash cans, water fountains, and lighting. Other entities may volunteer time for trail maintenance.

Objective 4.6: ***Maximize funding for the project.***

Policy 4.6.1 Develop and position the Master Plan for use as a source of documentation for competitive funding programs, and pursue funding from as many sources as resources permit.

Policy 4.6.2 Focus on funding sources for which RTC will qualify best and be able to implement.

Policy 4.6.3 Assist implementing entities in seeking independent funding.

Policy 4.6.4 Consider allocating funding over which the RTC has local control.

GOAL 5: OPERATION AND MAINTENANCE

DEVELOP THE NECESSARY ORGANIZATIONAL STAFFING AND FUNDING MECHANISMS TO ENSURE THAT ALL TRAIL SEGMENTS, TRAILHEADS, AND ACCESSORY FEATURES ARE SAFE, WELL-MAINTAINED, AND WELL-MANAGED.

Objective 5.1: ***Consider establishing a shared maintenance agreement between local, county, and state agencies and assigning management responsibilities for individual trail segments.***

Policy 5.1.1 Engage managers and maintenance staff for existing built segments of the trail (e.g., Wilder Ranch) to determine existing maintenance standards and costs.

Policy 5.1.2 Support implementing entities in developing maintenance agreements for each new trail segment.

Policy 5.1.3 Establish operation and maintenance standards through a memorandum of understanding (MOU) or other formal document for uniform application by all participating entities.

Objective 5.2: ***Ensure adequate revenue for the maintenance of all trail segments and related facilities.***

Policy 5.2.1 Accurately forecast and plan for the short- and long-term operation and maintenance of the overall trail system as an initial step in estimating implementation cost.

Policy 5.2.2 Update the maintenance and operations budget sufficient for the level of trail system development in any given year, to be funded through a reliable source.

Policy 5.2.3 As an initial step in planning each trail segment project, accurately estimate the operations and maintenance impact of each new project and develop a realistic strategy and funding for its success.



Objective 5.3: Provide for secure, safe, pleasant, and accessible use of trail facilities.

Policy 5.3.1 Maintain facilities at appropriate levels of the written maintenance program.

Policy 5.3.2 Establish positive working relationships with local and county fire agencies, law enforcement officials, and staff.

Policy 5.3.3 Establish and foster a “Trail Watch” program in cooperation with local law enforcement officials and local advocacy groups.

Policy 5.3.4 Engage volunteers for trail patrols to help inform and satisfy maintenance needs.

Policy 5.3.5 Post user guidelines for bikes, pedestrians, and other forms of non-motorized transportation to inform users of safety and interaction protocol, thereby minimizing user conflict.

Policy 5.3.6 Establish an emergency locator system with emergency locator markers placed at every 1/8 mile.

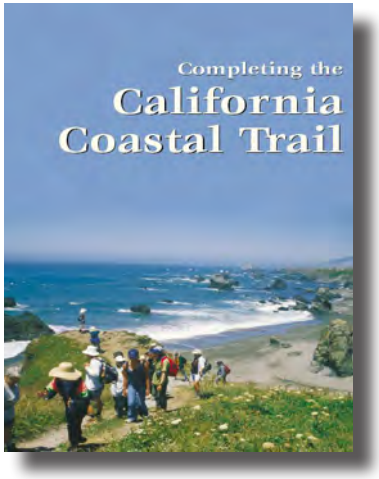


2.4 PLANNING AND POLICY CONTEXT

The following documents were reviewed in preparation of the Master Plan trail alignment and development of the Master Plan goals, objectives, and policies. Appendix B provides a comprehensive list of relevant documents and their relationship to the Master Plan. Appendix A includes these same documents and highlights relevant goals, objectives, and policies.

2.4.1 FEDERAL AND STATE PLANS

COMPLETING THE CALIFORNIA COASTAL TRAIL



In late 2001, the California State Legislature, by way of SB 908, directed the State Coastal Conservancy to determine what was needed to implement a proposed pedestrian trail that will stretch 1,300 miles along the entire California coast and across dozens of political jurisdictions. The California Coastal Conservancy will pursue this mandate in part by awarding grants to public agencies and nonprofit organizations to acquire land or any interest therein, or to develop, operate, or manage lands for public access purposes to and along the coast.

Most recently, in 2007, the Governor signed Senate Bill 1396 directing the California Coastal Conservancy to coordinate development of the California Coastal Trail (CCT) with the Department of Transportation (Caltrans). This bill also requires local transportation planning agencies whose jurisdiction includes a portion of the CCT or property designated for the trail to coordinate with the Coastal Conservancy, California Coastal Commission, and Caltrans regarding development of the trail.

The MBSST Network will serve as the CCT through Santa Cruz County. Additional alignments will also be identified to serve as the CCT by the State Coastal Conservancy, Coastal Commission, State Department of Parks and Recreation, and Caltrans—the state agencies responsible for assisting local communities in completing and signing the MBSST Network.

CALIFORNIA COASTAL ACT OF 1976



The California Coastal Commission, in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone. Development activities, which are broadly defined by the California Coastal Act to include construction of buildings, divisions of land, and activities that change the intensity of use of land or public access to coastal waters, generally require a coastal permit from either the California Coastal Commission or the local government.

The California Coastal Act includes specific policies that address issues such as shoreline public access and recreation, lower-cost visitor accommodations, terrestrial and marine habitat protection, visual resources, landform alteration, agricultural lands, commercial fisheries, industrial uses, water quality, offshore oil and gas development, transportation, development design, power plants, ports, and public works. The policies of the California Coastal Act constitute the statutory standards applied to planning and regulatory decisions made by the Coastal Commission and by local governments, pursuant to the California Coastal Act.

CALIFORNIA COASTAL NATIONAL MONUMENT RESOURCE MANAGEMENT PLAN

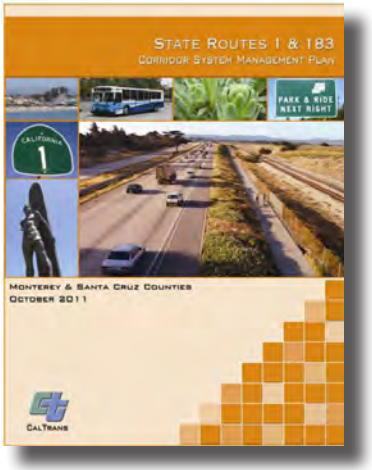
The purpose of the California Coastal National Monument (CCNM) Resources Management Plan (RMP) is to establish guidance, objectives, policies, and management actions for the public lands of the CCNM administered by the U.S. Department of the Interior's Bureau of Land Management (BLM). The RMP attempts to resolve a wide range of natural resource and land use issues within the CCNM area in a comprehensive manner. The document addresses and integrates, where possible, the numerous related management issues of the various current and potential future coastal partners who are included in the planning effort.



2.4.2 REGIONAL PLANS

CALTRANS STATE ROUTES 1 &183 CORRIDOR SYSTEM MANAGEMENT PLAN (CSMP)

The purpose of the CSMP is to create a partnership planning process and resultant guidance document which focuses on system management strategies that coordinate all the individual transportation modes and that includes performance measures to track the effectiveness of the strategies and projects. The goal of the CSMP is to improve mobility along the State Route 1 corridor by the integrated management of the transportation network including the selected highway, parallel/connector roadways, transit, bicycle, and travel demand management components of the corridor.

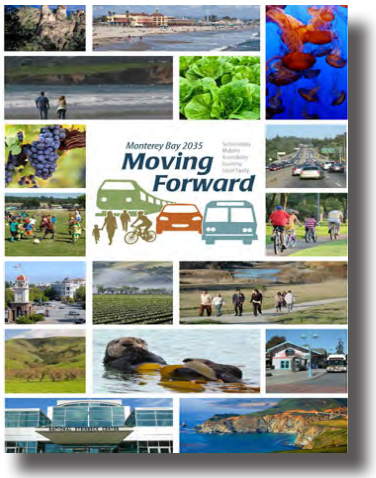


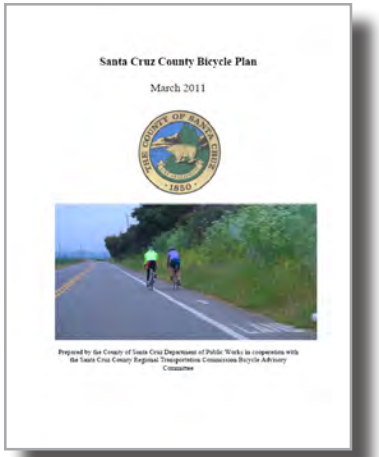
CALTRANS STATE ROUTE 1 TRANSPORTATION CONCEPT REPORT

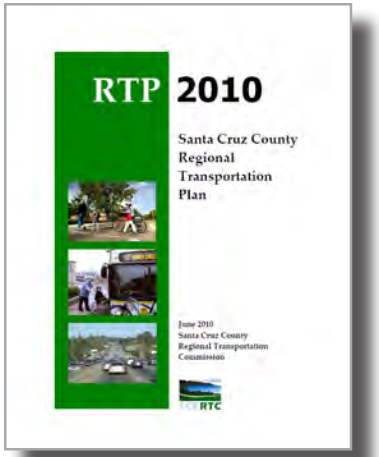
The Transportation Concept Report (TCR) is the long-term planning document for State Route 1 (Route 1 or SR 1) in District 5 of the California Department of Transportation (Caltrans). The TCR: (1) evaluates current and projected conditions along the route; (2) establishes a 20-year planning vision or concept; and (3) recommends long- and short-term improvements to achieve the concept. The TCR reflects regional plans for accommodating travel demand on SR 1, as well as local concerns and priorities.

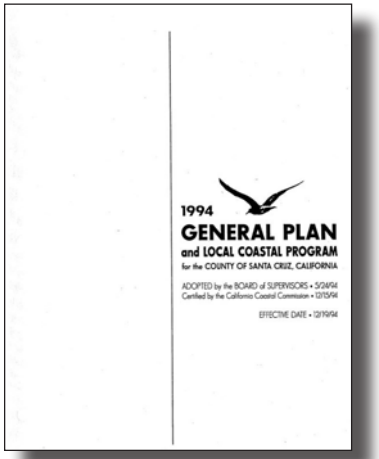
MOVING FORWARD MONTEREY BAY 2035

Federal regulations require the Association of Monterey Bay Area Governments (AMBAG) to develop a long-range transportation plan for the three-county Monterey Bay metropolitan region that is both financially constrained and falls under the on-road motor vehicle emissions budget included in the Federal Air Quality Maintenance Plan. The AMBAG region is currently in compliance with its vehicle emissions budget. State legislation—Senate Bill 375—calls for metropolitan planning organizations (MPOs) to prepare a sustainable communities strategy (SCS) to be used to synchronize and coordinate both the metropolitan transportation planning process and the regional housing needs allocation process. Programs and projects listed in this plan serve the stated goals and objectives, as well as address the transportation needs and deficiencies. Programs and projects are first proposed and adopted in the respective Regional Transportation Plans (RTPs) of the three Monterey Bay area counties: Monterey, San Benito, and Santa Cruz. The project lists from each RTP are then incorporated, in their entirety, into the Metropolitan Transportation Plan (MTP). The project lists provide all funded projects and potential projects (should funding become available) from 2010 to 2035. The AMBAG SCS/MTP and RTC's RTP updates are currently under development and scheduled for adoption in 2014.









2.4.3 COUNTY PLANS

SANTA CRUZ COUNTY BICYCLE PLAN

The purpose of this plan is to consolidate into one document all bicycle-related County plans and projects that are currently identified in the County General Plan, the Santa Cruz County Regional Transportation Plan, and other local documents. Although not a part of the General Plan, the Santa Cruz County Bicycle Plan is consistent with and implements action statements of the Circulation Element of the General Plan and/or County and regional plans. The Bicycle Plan is intended to aid County planners and engineers in selecting and implementing bicycle improvements with the goal of increasing bicycle commuting.

SANTA CRUZ COUNTY REGIONAL TRANSPORTATION PLAN

This 2010 Regional Transportation Plan (called the 2010 RTP) is a minor update of the last version, completed in 2005, and provides guidance for transportation policy and projects through the year 2035. The 2010 RTP is the RTC's comprehensive planning document, which identifies the goals, projects, and programs that will maintain and improve transportation systems over the next 25 years. Individual projects listed in the 2010 RTP must still undergo separate design and environmental processes, and can only be implemented as local, state, and federal funds become available. The RTC is currently undergoing a major update to the 2010 RTP which is scheduled for adoption in 2014.

SANTA CRUZ COUNTY GENERAL PLAN LOCAL COASTAL PROGRAM (LCP)

The Local Coastal Program (LCP) is part of the Santa Cruz County General Plan and is comprised of the Land Use Plan, implementing policies and ordinances, and maps applicable to the coastal zone portions of the county to preserve unique coastal resources pursuant to the requirements of the California Coastal Act. The County last prepared and adopted its LCP as a part of the General Plan in 1994.

SANTA CRUZ COUNTY GENERAL PLAN CIRCULATION ELEMENT

The Circulation Element is intended to be the key policy statement of the County regarding transportation facilities and programs serving the unincorporated areas. It is an integral part of the General Plan and LCP Land Use Plans that provides a basis for transportation-related decisions and complements the other General Plan and LCP Land Use Plan elements. Specifically, the Circulation Element clarifies transportation issues raised in other General Plan elements and offers guidance toward solutions.

SANTA CRUZ COUNTY TRANSIT CORRIDORS PLAN

The Transit Corridors Plan for Santa Cruz County is currently under development. Once completed, the Transit Corridors Plan will integrate the County's land use and transportation policies in a way that protects environmental resources, supports economic growth, and increases access to opportunity for all county residents.

2.4.4 LOCAL PLANS AND TECHNICAL REPORTS

ARANA GULCH MASTER PLAN

The City of Santa Cruz acquired Arana Gulch in 1994 as one of the greenbelt lands and, shortly thereafter, opened the property to the public. While popular with hikers strolling along the meadow, bicyclists riding to the Upper Harbor, and visitors of all ages enjoying the scenery and wildlife, recreational use on the property is limited to earthen trails—most of which existed prior to the City's ownership. Only two visitor entrances currently exist and there are no visitor facilities, except trails and associated signage. The intent of the Arana Gulch Master Plan is to establish a vision and goals that will shape the future of Arana Gulch as a unique open space within the city of Santa Cruz that includes amenities such as a bicycle and pedestrian path. In addition, the Master Plan identifies recreational uses and resource management guidelines to direct future management and enhancement of this natural area.

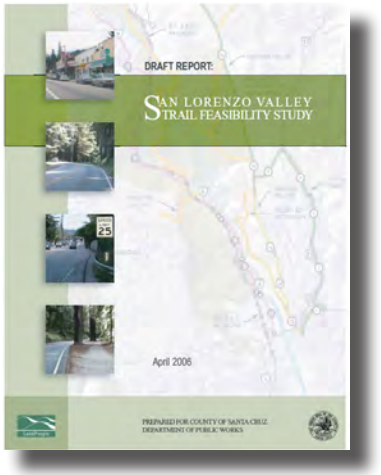


SEACLIFF VILLAGE PLAN

The Seacliff Village Plan was prepared by the community and Planning Department staff to establish land use, circulation, and design standards for the Seacliff Village Plan Area. The Seacliff Village Plan provides a more detailed examination of planning issues and recommends more specific solutions than can be provided in a general plan.

SAN LORENZO VALLEY TRAIL FEASIBILITY STUDY

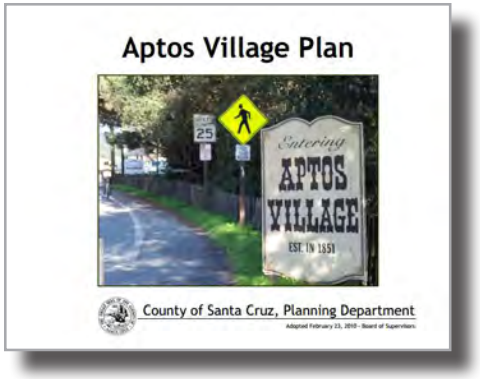
Improved bicycle and pedestrian routes have been discussed in the San Lorenzo Valley for many years. In the past few years, the San Lorenzo Valley Trail Committee formed and conducted field studies to focus on this objective. In 2001, the Santa Cruz County Public Works Department and the Rails-To-Trails Conservancy collaborated on an application submitted for a Caltrans Community-Based Transportation Planning Grant. In May 2002, Caltrans approved the grant to conduct a feasibility study of a trail along the San Lorenzo Valley/Highway 9 corridor between Santa Cruz and Boulder Creek (approximately 15 miles), including an assessment of the potential to use the Big Trees/Roaring Camp Railroad line as part of the trail.

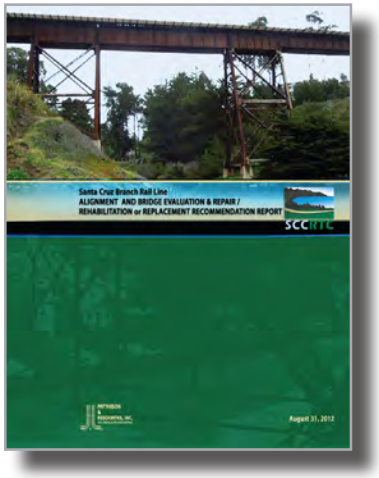


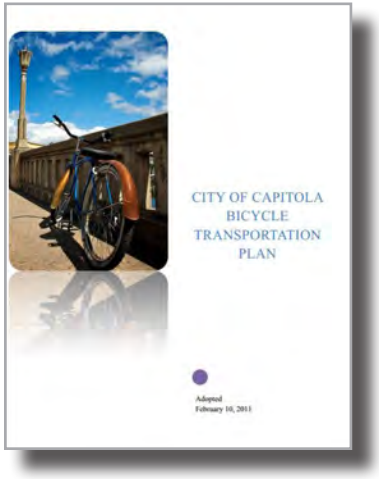
SANTA CRUZ INDUSTRIAL LEAD SUPPLEMENTAL STRUCTURAL ASSESSMENT REPORT

This report provides a structural assessment of selected structures on the Santa Cruz Industrial Lead. The Supplemental Structural Assessment Report supplements previously completed structural assessments of railroad trestles completed by other consultants in July 2005 and August 2005. The July 2005 Structural Assessment and August 2005 La Selva Trestle Supplemental Reports highlighted specific structures that were in need of additional structural assessment "due to a Poor Condition Rating, advance age of the structure, importance/visibility of the structure, and/or potentially high capital and maintenance costs of the structure." The purpose of the Supplemental Structural Assessment Report is to present findings from HNTB's structural assessment of those specific structures.









APTOS VILLAGE PLAN

The Aptos Village Plan provides a planning framework to guide future public and private improvements in the Aptos Village. It addresses development issues related to land use, circulation, design, and improvements in the village area.

SANTA CRUZ BRANCH RAIL LINE ALIGNMENT AND BRIDGE EVALUATION REPORT

J.L. Patterson & Associates (JLP) assisted the RTC in identifying, reassessing and prioritizing $6 million in capital improvements. The $6 million is generally directed towards maintaining and expanding freight and recreational rail service on the Santa Cruz Branch Rail Line and includes project cost analysis and budgeting for those investments that are most cost-beneficial for extending the useful life of the rail line. JLP reviewed previously prepared inspection, conditions, environmental, and other related reports, and conducted supplemental data collection, field inspections, testing, and analysis as needed to determine the overall scope of required rehabilitation, reconstruction, and other improvements. Next, JLP prioritized the most important repairs needed that can be performed within the $6 million construction budget.

CITY OF CAPITOLA GENERAL PLAN CIRCULATION ELEMENT

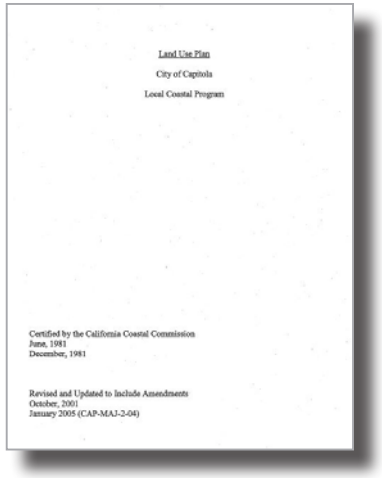
The City of Capitola General Plan Circulation Element contains objectives, policies, and implementation measures. An update is currently under development.

CITY OF CAPITOLA BICYCLE TRANSPORTATION PLAN

The City of Capitola Bicycle Transportation Plan (BTP) assesses commuter needs, identifies funding sources and directs the future development of bicycle facilities in the city. It also seeks to carry out the “Five E’s” used by the League of American Bicyclists to identify and rank Bicycle Friendly CommunitiesSM. The “Five E’s” are: Evaluation, Engineering, Education, Encouragement, and Enforcement. The Capitola BTP sets goals and objectives for the purpose of increasing the safety and convenience of bicycle commuting in the area. The BTP is an update of the 2005 City of Capitola Bicycle Transportation Plan. It includes or expands upon the goals and objectives put forth in 2005 to improve network connectivity, address dangerous or hazardous areas, and increase education and bicycle resources. In addition to remaining consistent with major City planning documents, the BTP implements the policies and programs of the Circulation Element of the General Plan. The BTP is intended to aid the Capitola City planners and engineers in prioritization of bicycle improvement projects with the goal of increasing bicycle commuting, recreation, tourism, and safety. The BTP complies with the requirements and guidelines articulated in Section 891.2 of the California Streets and Highways Code. By complying with this element of the Code, the BTP meets the requirements of the Bicycle Transportation Account (BTA)—a Caltrans funding source for bicycle improvements projects.

CITY OF CAPITOLA CERTIFIED LOCAL COASTAL PROGRAM (LCP)

The City of Capitola's Certified Local Coastal Program consists of a Land Use Plan and Implementation Plan. The Land Use Plan is a comprehensive long-term plan for land use and physical development within the city's coastal zone. The plan consists of policies and recommendations for land use designations that are consistent with the provisions of the California Coastal Act. The Implementation Plan includes zoning, regulations, and other programs needed to carry out the goals, policies, and land use designations of the Land Use Plan.



CITY OF SANTA CRUZ GENERAL PLAN 2030 MOBILITY CHAPTER

This chapter corresponds to the required circulation element under state law. Its purpose is to set forth policies and ways to ease the ability of people and vehicles to move into, around, and out of the city in the long term, through 2030. This chapter includes goals, policies, and actions that guide city bodies in making decisions related to the city's transportation and road systems as well as implementing the actions recommended in this chapter.

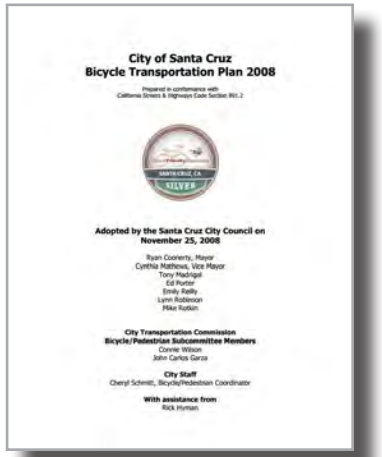
CITY OF SANTA CRUZ BICYCLE TRANSPORTATION PLAN 2008

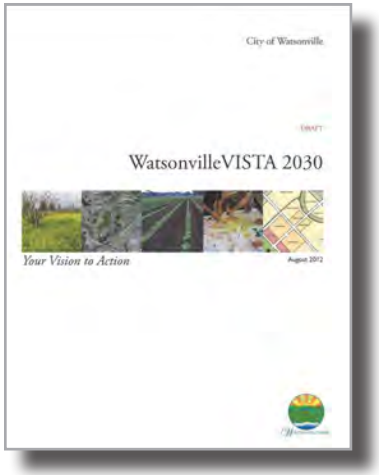
The emphasis of the 2008 Bicycle Transportation Plan (BTP) is shifted from that of the 2000 and 2004 plans. Many of the significant projects from those plans have been completed—Bay Street, Beach Street, High Street, Soquel Avenue, and major portions of the San Lorenzo River Path. The 2008 BTP focused on creating a detailed network of routes to give bicyclists a greater range of choices. There is potential to develop a multi-purpose trail for bicyclists and pedestrians within the Santa Cruz Branch Rail right-of-way. The City of Santa Cruz should establish and maintain access to the rail right-of-way and potential new transportation facilities when considering new development projects. This BTP includes a wider variety of bicycle facilities, not just bike lanes and bike paths, but signed bike routes, traffic-calmed bike boulevards, shared pavement markings or "sharrows," and developed multi-purpose trails. The 2008 BTP supports the grand scale of the regional MBSST Network, as well as the small scale of simple cut-through easements for access and improved railroad crossings. The BTP complies with the requirements and guidelines articulated in Section 891.2 of the California Streets and Highways Code. By complying with this element of the Code, the BTP meets the requirements of the Bicycle Transportation Account (BTA)—a Caltrans funding source for bicycle improvements projects.

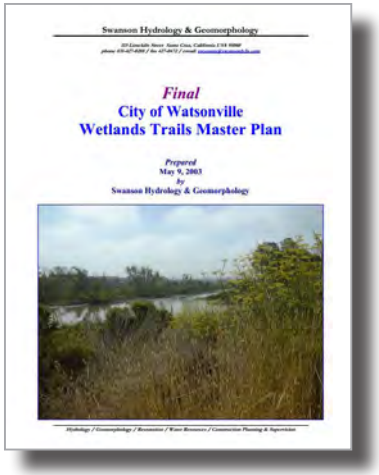


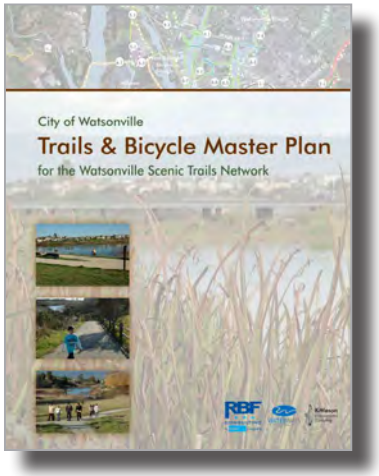
CITY OF SANTA CRUZ LOCAL COASTAL PROGRAM (LCP)

The past LCP for the city of Santa Cruz had been integrated in the past update of the General Plan. The General Plan 2030 update separates out the LCP into a separate entity, which will provide an additional layer of policy for parcels located within the city's Coastal Zone. However, the LCP is still under development and will be released once completed.









WATSONVILLE VISTA 2030 GENERAL PLAN CIRCULATION ELEMENT

The October 2012 update to the Vista 2030 General Plan includes updates to the Circulation Element policies. These policies are consistent with the Watsonville Bicycle Plan and County RTP policies and contain objectives, policies, and implementation measures.

CITY OF WATSONVILLE WETLANDS TRAILS MASTER PLAN

The Trails Master Plan for the City of Watsonville was prepared to improve public access and recreation to areas surrounding Watsonville and Struve Sloughs. The Watsonville Wetlands Trails Master Plan system provides a rich variety of natural wetland and other habitats within the city and outlying unincorporated areas of Santa Cruz County. A well-designed network of trails will allow for better public access to the sloughs and promote greater community awareness of its assets. This Wetlands Trails Master Plan calls for a system of paved pedestrian footpaths that will incorporate bicycle use and access for disabled users. The Wetlands Trails Master Plan was developed considering a host of factors, including various means of travel, Americans with Disabilities Act requirements, public safety concerns, biological and water quality impacts, erosion control, and construction and maintenance costs. Trail alignment, grade, type, construction, and design have also been considered in producing the Wetlands Trails Master Plan. The Wetlands Trails Master Plan complies with the requirements and guidelines articulated in Section 891.2 of the California Streets and Highways Code. By complying with this element of the Code, the Wetlands Trails Master Plan meets the requirements of the Bicycle Transportation Account (BTA)—a Caltrans funding source for bicycle improvements projects.

CITY OF WATSONVILLE TRAILS & BICYCLE MASTER PLAN

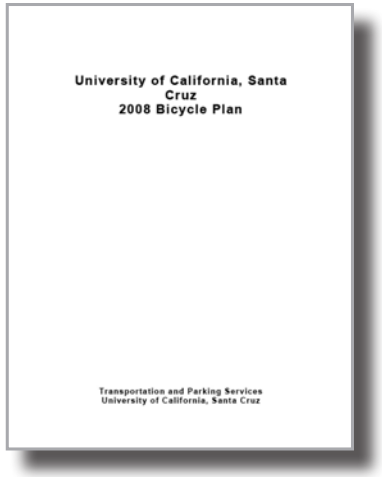
The purpose of the Watsonville Trails & Bicycle Master Plan, contained within the City of Watsonville Urban Greening Plan, is to develop a framework for building an integrated system of pathways and bikeways that will link residents to the outdoors. The future network will provide residents of Watsonville and the greater region with close-to-home and close-to-work access to bicycle and pedestrian trails that connect to the city's most popular destinations and surrounding natural areas, including the vast network of sloughs that are unique to south Santa Cruz County. The trails and greenways will serve as non-vehicular transportation and recreation needs and will help to encourage quality, sustainable economic growth. The Watsonville Trails & Bicycle Master Plan will also serve as the Bicycle Transportation Plan. The Watsonville Trails & Bicycle Master Plan complies with the requirements and guidelines articulated in Section 891.2 of the California Streets and Highways Code. By complying with this element of the Code, the Watsonville Trails & Bicycle Master Plan meets the requirements of the Bicycle Transportation Account (BTA)—a Caltrans funding source for bicycle improvements projects.

CITY OF WATSONVILLE 2005 LOCAL COASTAL PROGRAM (LCP)

The Watsonville 2005 LCP contains policies that have been adopted by the City Council and certified by the California Coastal Commission to ensure carefully planned development, consistent with coastal resource protection, of lands lying within the six areas where the Watsonville city limits overlap the coastal zone. The policies have important relationships with the Watsonville General Plan and Zoning Ordinance, the California Coastal Act, and with the plans of individual property owners.

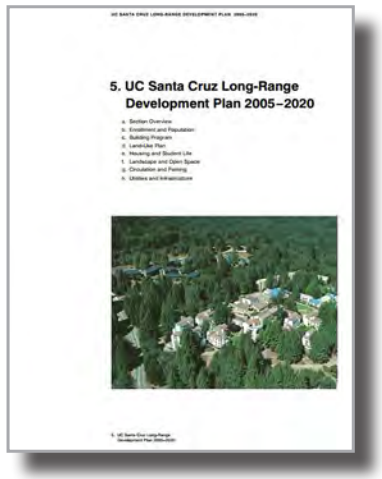
UNIVERSITY OF CALIFORNIA, SANTA CRUZ 2008 BICYCLE PLAN

The purpose of the UC Santa Cruz 2008 Bicycle Plan is to serve as a guide for improving bicycling conditions and to continue to encourage and support bicycling as a sustainable transportation mode on, to, and from the campus. As such, this document describes the existing policies and facilities related to bicycling in the campus context, and it includes a list of projects and programs intended to improve bicycling as a viable commute mode in the future. The plan complies with the requirements and guidelines articulated in Section 891.2 of the California Streets and Highways Code. By complying with this element of the Code, the 2008 Bicycle Plan meets the requirements of the Bicycle Transportation Account (BTA)—a Caltrans funding source for bicycle improvements projects. The 2008 Bicycle Plan is not intended to serve as a standards manual for design and construction of bicycle facilities.



UNIVERSITY OF CALIFORNIA, SANTA CRUZ LONG-RANGE DEVELOPMENT PLAN (UCSC LRDP) 2005-2020

Similar to the 1963 founding plan for the campus and subsequent UCSC LRDPs, the 2005 LRDP identifies the need to extend development to the north to meet the academic, research, and housing needs of the campus as it matures. The LRDP balances development opportunity with conservation of natural resources and open space by clustering new potential development areas and recognizing that additional density can be added to existing developed areas. The LRDP also identifies circulation patterns and improvements.

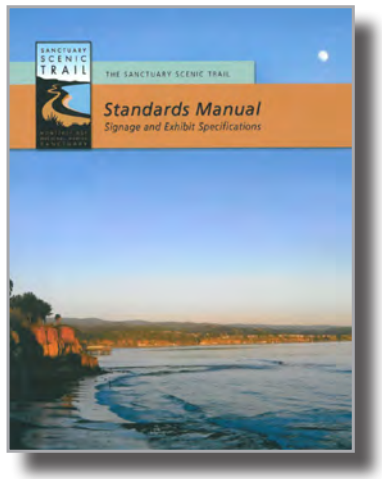


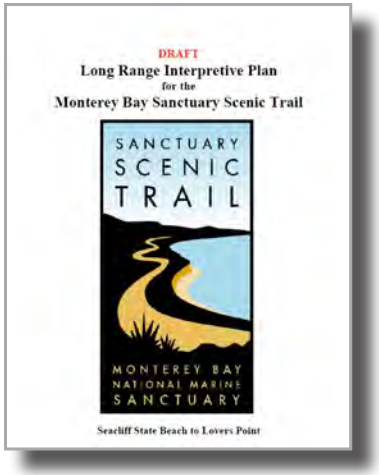
SANCTUARY SCENIC TRAIL STANDARDS MANUAL

This Standards Manual contains the guidelines, specifications, and construction documents for the signage and exhibit program along the 11-mile original alignment of the Monterey Bay Sanctuary Scenic Trail in Santa Cruz County. The purpose of the Standards Manual is to assist participating jurisdictions when they create and install trail elements and exhibits along their segment of the trail. It describes sites, placement, site preparation, sign types, content, and frequency of signs.

This "blueprint" has been accepted by officials in each of the jurisdictions along the 11-mile trail segment in Santa Cruz County. It should be referred to when developing signs and exhibits by each of these jurisdictions. Within the broad framework of the guidelines established in this manual, each jurisdiction will have the latitude to determine content, exact siting, and contextual details.

The Standards Manual establishes guidelines to make each site consistent with the overall trail plan. Each jurisdiction will be responsible for following these guidelines. The Standards Manual outlines this process to make it as easy as possible to implement the overall plan.







DRAFT LONG RANGE INTERPRETIVE PLAN FOR THE MONTEREY BAY SANCTUARY SCENIC TRAIL

This Long Range Interpretive Plan was created for two purposes: (1) to help guide the future alignment of the Monterey Bay Sanctuary Scenic Trail toward resources worthy of appreciation and protection, and (2) to give local entities direction for developing interpretive features within their jurisdiction by describing the significance of features along the trail and translating those into a set of compelling stories or themes. The plan offers a "blueprint" for interpretation that is comprehensive, site-appropriate, and meaningful throughout the trail corridor.

CALTRANS HIGHWAY DESIGN MANUAL, CHAPTER 1000 - BICYCLE TRANSPORTATION DESIGN

The needs of non-motorized transportation are an essential part of all highway projects. Mobility for all travel modes is recognized as an integral element of the transportation system. Chapter 1000 includes design guidance for Class I bike paths, Class II bike lanes, and Class III bike routes. Design guidance that addresses the mobility needs of bicyclists on all roads is distributed throughout the manual where appropriate.

ADMINISTRATION AND COORDINATION LICENSE AGREEMENT BETWEEN THE SANTA CRUZ COUNTY REGIONAL TRANSPORTATION COMMISSION AND SANTA CRUZ AND MONTEREY BAY RAILWAY COMPANY

The administration and coordination license agreement between the Santa Cruz County Regional Transportation Commission (RTC) and Santa Cruz and Monterey Bay Railway Company establishes the respective rights and obligations with respect to the property and the freight easement along the rail corridor. The RTC granted the rail operator the exclusive right and obligation to use, maintain, repair, and operate all of the railroad facilities for freight service purposes, and a non-exclusive licence to use a partial portion of railroad facilities for railway tourist service.

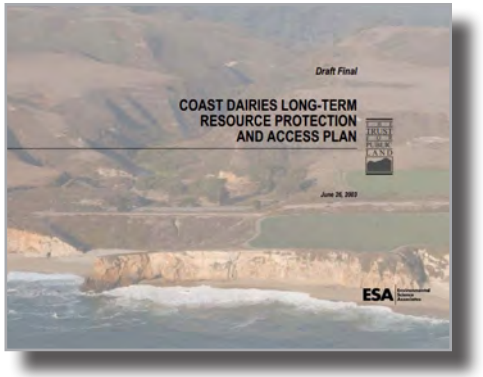
2.4.5 STATE PARK PLANS

BIG BASIN REDWOODS STATE PARK GENERAL PLAN

The Big Basin Redwoods State Park General Plan is the primary management document for a park within the California State Parks system, establishing its purpose and a management direction for the future. By providing a defined purpose and vision with long-term goals and guidelines, it provides the framework for a unit's resource stewardship, interpretation, visitor use, operation, and development. Subsequently, this established framework helps guide daily decision making and serves as the basis for developing more detailed management and site-specific project plans.

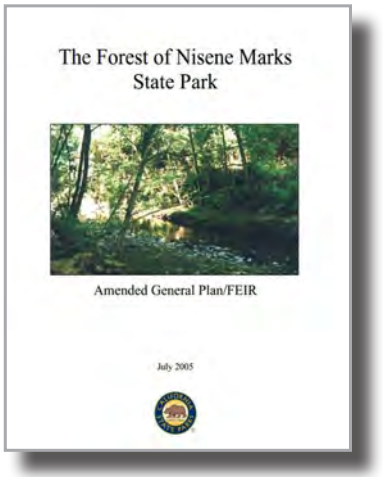
COAST DAIRIES LONG-TERM RESOURCE PROTECTION AND ACCESS PLAN

The specific purpose of the Coast Dairies Plan is to provide direction and guidance on how best to manage natural and physical resources, visitor use, development and use of lands and facilities, and resource protection of the property. This Coast Dairies Plan will be the basis for the proposed action for subsequent National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) analysis, and is expected to be adopted as a State Park General Plan and as a BLM Resource Management Plan Amendment. Once completed, the Coast Dairies Plan will be used as a template against which future project implementation plans are reviewed to determine whether such projects will protect and enhance the values of the property.



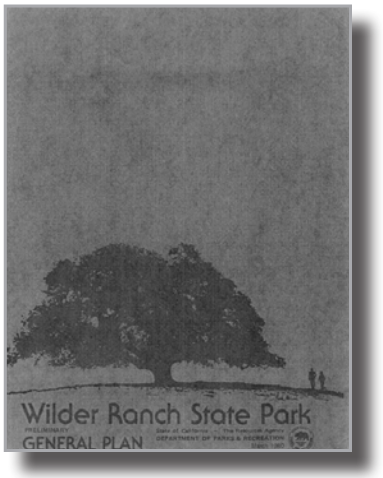
THE FOREST OF NISENE MARKS STATE PARK GENERAL PLAN

The General Plan for The Forest of Nisene Marks State Park provides a vision for the park. Although broad in scope, the State Park General Plan does identify and analyze park resources in order to provide an assessment of potential environmental impacts as a result of the State Park General Plan's implementation. In order to do so, the State Park General Plan recommends the development of a comprehensive trails plan and a resource management plan that will guide future needs. These guidelines propose improvements for land use compatibility, the nature and location of possible future developments, possible acquisition, and other specific actions.



WILDER RANCH STATE PARK GENERAL PLAN

The Wilder Ranch State Park General Plan recognizes the potential of Wilder Ranch State Park to help meet California's critical recreation demands. At the same time, it provides for the preservation of those natural and cultural resources that are of special significance and for the proper protection of all resources.





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This section provides a detailed description of the Master Plan area with supporting key maps identifying the trail network segments.

SECTION THREE
MASTER PLAN SETTING





Harkins Slough

3.1 INTRODUCTION

The Master Plan area stretches the entire length of Santa Cruz County from the Pajaro River in Watsonville to the San Mateo County line north of Davenport. The trail has the opportunity to connect the scenic coastal bluffs in the north county to the urban areas of Santa Cruz, Capitola, and Aptos, and to traverse the rural agricultural and open space lands of south county. As shown in Figure 3-1, the Master Plan area is organized into three large subareas or "reaches:" Northern Reach, Central Reach, and Watsonville Reach.

The Santa Cruz Branch Line right-of-way, now owned by the Santa Cruz County Regional Transportation Commission (RTC), is a defining feature of the area. The railroad corridor will provide the primary spine for the Monterey Bay Sanctuary Scenic Trail Network (MBSST Network) through Santa Cruz County.

The railroad generally runs along the coast, parallel to the Pacific Ocean, except where it turns inland near Manresa State Beach. From there, the tracks run inland toward Watsonville, and ultimately end at the Watsonville Junction in Monterey County. The railroad right-of-way, which is the subject of this Master Plan, is a 32-mile continuous stretch of travel corridor, providing a unique opportunity to create a transportation and recreational link between existing trails and transportation facilities in Santa Cruz County. In addition to the rail corridor, new trails along the coast were also identified, as were on-street facilities, in order to provide connectivity to desirable destinations for bicyclists, pedestrians, and people with mobility impairments.



Santa Cruz Beach Boardwalk



Scenic bluffs north of Santa Cruz

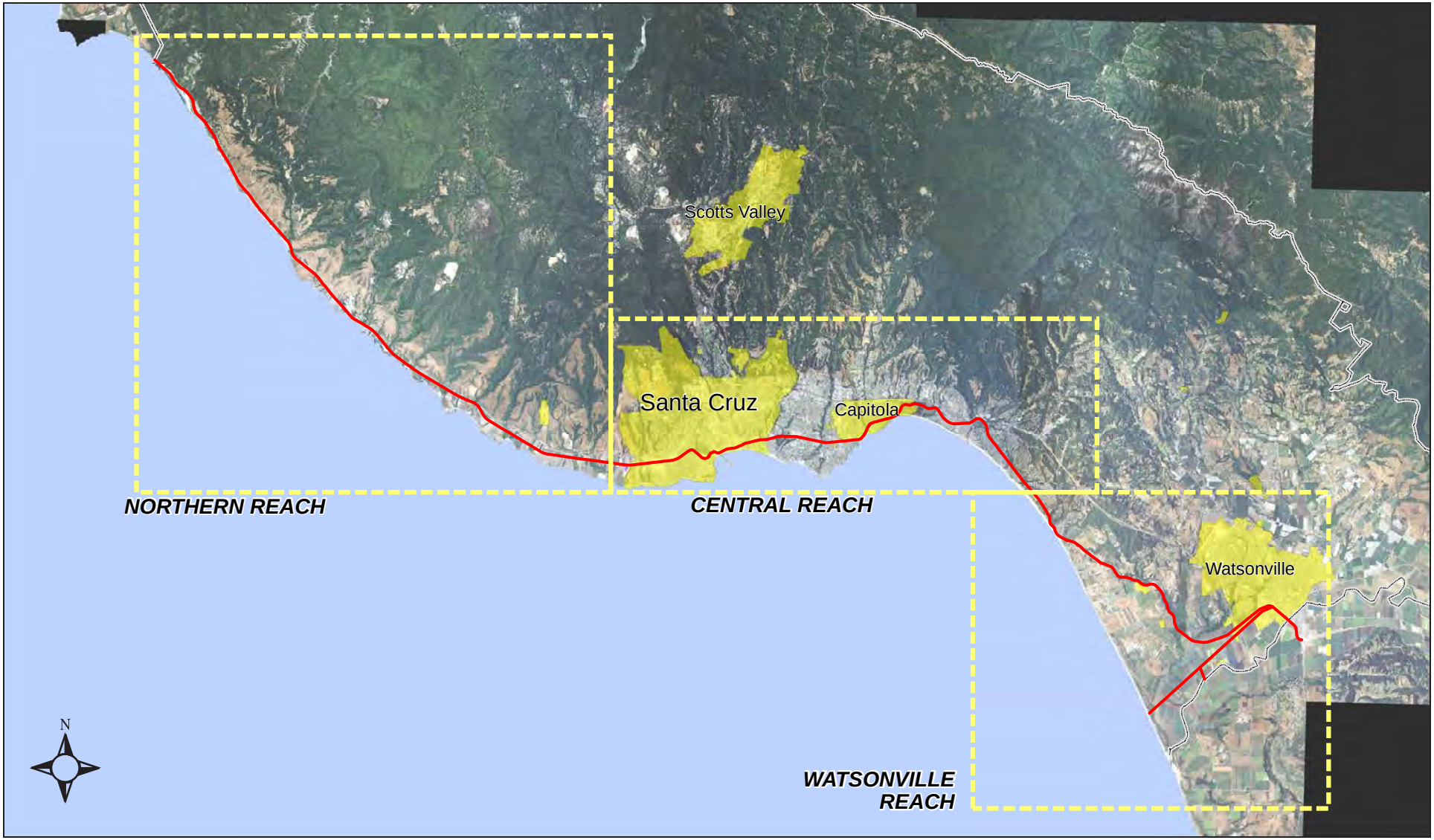


Figure 3-1 Master Plan area

3.1.1 EXISTING BICYCLE TRAILS

Santa Cruz County boasts 215 miles of bikeways, of which 190 miles are bidirectional bike lanes and 25 miles are separated paths. Several projects that benefit bicyclists were constructed over the past decade including a new bike/pedestrian bridge over the San Lorenzo River adjacent to Highway 1, a two-way bike lane on Beach Street, Soquel Avenue bike lanes, and several segments of the Watsonville wetland trails. Additional bicycle projects are under development that will fill critical links in the bicycle network. These include the Broadway/Brommer bicycle and pedestrian path through Arana Gulch, 38th Avenue bicycle lanes in Capitola, and a countywide bicycle route signage and wayfinding program.

Each of the jurisdictions found within the trail plan area have prepared bicycle plans identifying existing routes. Currently, the unincorporated areas of Santa Cruz County have approximately 92 miles of bike lanes and 4 miles of bike paths. The city of Capitola has approximately 14 miles of bike lanes and less than 1 mile of Class I bike paths. The city of Santa Cruz has 48 miles of Class II bike lanes and approximately 10 miles of Class I bike paths. The city of Watsonville has approximately 18 miles of Class II bike lanes and 9 miles of Class I bike paths. The proposed alignment described in Section 4 has taken into consideration the existing trails and recommends connections wherever possible, with the intent of linking as many trails as feasible along one continuous alignment.



Wilder Ranch multi-use trail

3.1.2 EXISTING TRAIL NETWORKS

CALIFORNIA COASTAL TRAIL

The California Coastal Trail is defined as a continuous public right-of-way along the California coastline—a trail designed to foster appreciation and stewardship of the scenic and natural resources of the coast through hiking and other complementary modes of non-motorized transportation. Some of the California Coastal Trail's key objectives are: to provide a continuous trail as close to the ocean as possible with connections to the shoreline, to provide sufficient transportation access to encourage public use, to create linkages to other trail systems, and to use the California Coastal Trail system to increase accessibility to coastal resources from urban population centers. The California Coastal Trail network alignment was developed by the California State Coastal Conservancy in conjunction with the California Coastal Commission, the California Department of Parks and Recreation, and Coastwalk California. The California Coastal Trail network alignment has been incorporated into this Master Plan as shown in the alignment maps in Section 4. The MBSST Network will serve as the California Coastal Trail in Santa Cruz County.



Railroad tracks and Highway 1

MONTEREY BAY SANCTUARY SCENIC TRAIL

The main goal of the Monterey Bay Sanctuary Scenic Trail (MBSST) is to provide a safe bicycle and pedestrian route between Monterey and Santa Cruz Counties, spanning the entire arc of the Monterey Bay National Marine Sanctuary. The route was initially conceived by the Santa Cruz County Sanctuary Interagency Task Force as an 11-mile project from Wilder Ranch to Seacliff Beach State Park to highlight the nationally designated bay. The Sanctuary Scenic Trail Standards Manual (June 2005) identified interpretive opportunities and signage types to highlight surrounding communities, marine environments, adjacent farmlands, and natural habitats. This



Existing Monterey Bay Sanctuary Scenic Trail interpretive signage



Pacific Coast Bike Route



Iowa Pacific Holdings train



Existing multi-use trail south of Depot Park

initially defined "core alignment" has been incorporated into this Master Plan as shown on the alignment maps in Section 4. The MBSST was later expanded into a trail network plan by the RTC to include additional transportation alignments, namely the 32-mile Santa Cruz Branch Line Railroad right-of-way, as well as on-street facilities, to ensure coastal and community connectivity. The vision of the project is to create a continuous, safe and accessible scenic trail for pedestrians, bicycles, and people with mobility impairments that is separated from automobile traffic. Parts of the trail already exist in Monterey and Santa Cruz Counties, yet vital links exist.

PACIFIC COAST BIKE ROUTE

In 1976, in honor of the nation's bicentennial, the American Revolution Bicentennial Commission of California and the California Department of Transportation (Caltrans) developed the Pacific Coast Bicentennial Bike Route. The designated route began on Highway 101 at the California/Oregon state line and ended adjacent to Interstate 5 at the Mexican border. In the early 1990s, the California State Legislature designated this route as the Pacific Coast Bike Route. In Santa Cruz County, Highway 1 is recognized as the Pacific Coast Bike Route. The route generally follows Highway 1 north of the city of Santa Cruz, surface streets in the cities and county urbanized areas, and along rural surface streets south of Aptos. Due to its spectacular scenery, the route draws many recreational bicycle riders, mountain bikers, charity ride participants, group riders, bike delivery operations, triathlons, and bicycle races. The Pacific Coast Bike Route has been incorporated into this Master Plan as shown on the alignment maps in Section 4.

3.1.3 EXISTING RAIL LINE

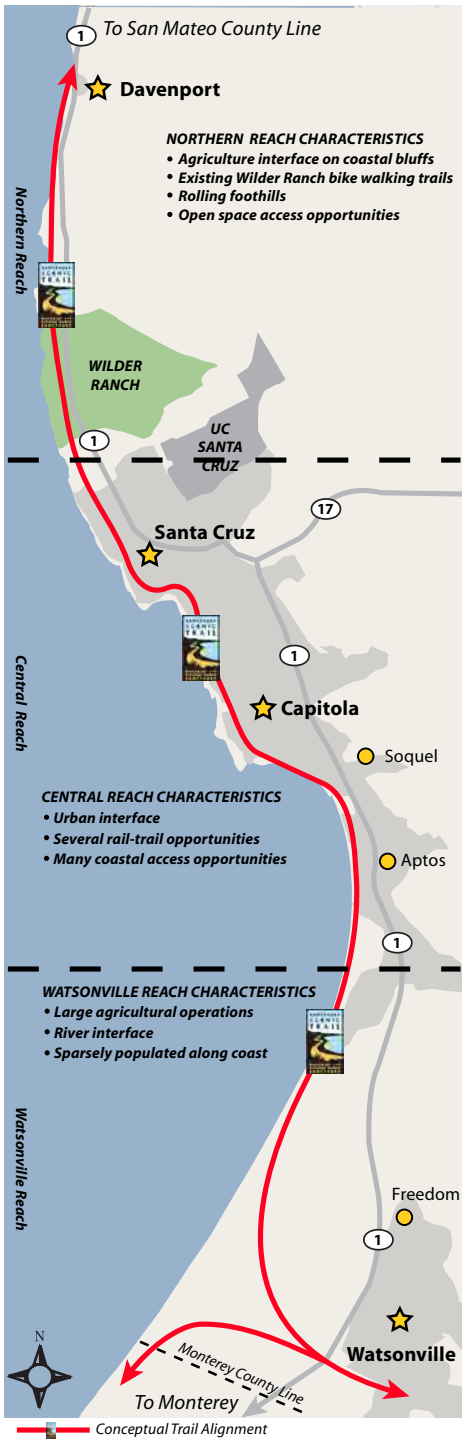
The Santa Cruz Branch Rail Line corridor, first established in 1876, parallels Highway 1 extending almost 32 miles from the town of Pajaro in Monterey County to Davenport in Santa Cruz County. The right-of-way is generally 70 feet wide with 37 bridges, including major crossings of the Pajaro River, Highway 1, Soquel Creek, the Santa Cruz Yacht Harbor, and the San Lorenzo River. The corridor links major tourism and activity centers as it traverses downtown Watsonville, Aptos Village, Capitola Village, and the Santa Cruz Beach area near downtown Santa Cruz.

The Santa Cruz Branch Rail Line has historically transported lumber, quarried material, and agricultural products out of the Santa Cruz area. Incoming freight included coal and gypsum for delivery to the cement factory located in Davenport. Following the closure of the cement plant in 2010, freight business on the rail line was reduced by 90 percent. Currently, there is no daily freight service on the rail line outside of the city of Watsonville. A seasonal passenger rail service operates between the city of Santa Cruz and the northern reach, south of Davenport. This seasonal service operates two to four passenger trains per day, with a higher number of trips on weekends. Seasonal service is also planned from Watsonville to south of Manresa State Beach. Within the Watsonville/Pajaro area, there are freight trips as needed. These trips are localized and do not extend outside of the Watsonville/Pajaro area. The rail line in Watsonville is used to transport perishables (including raspberries, strawberries, and other agricultural products), lumber, and biofuels. There is currently no rail operation between Watsonville and Santa Cruz, except when needs arise for a special movement of equipment.

Iowa Pacific Holdings, operating as Santa Cruz and Monterey Bay Railway, owns a 20-foot-wide easement for train service and maintenance along the entire rail line. Iowa Pacific Holdings and Monterey Bay Railway will operate freight, and will implement freight, passenger, and recreational rail service. Iowa Pacific Holdings intends to run trains twice per week to serve existing freight customers. While passenger service is initially planned from Santa Cruz to Davenport, Iowa Pacific Holdings and the RTC are exploring the possibility of service throughout the entire county and possibly beyond. Constructing a trail along the Santa Cruz Branch Rail Line corridor can double the value the local community derives from the rail corridor by providing citizens with a greater number of transportation options. Additionally, the rail corridors maximum gradient of 2.5% make it an appealing option for bicycle commuters, pedestrians, wheelchair users, and runners.



Breathtaking vista looking at the Northern Reach of the trail alignment



3.2 OPPORTUNITY AND CONSTRAINT METHODOLOGY

The Master Plan area presents a range of opportunities and constraints for the proposed multi-use trail. Opportunities are defined as unique conditions that will facilitate implementation and/or enhance the operations and user experience of the trail. Constraints are defined as conditions that may negatively impact the feasibility, enjoyment, and/or operation of the trail. The project team gathered data for development of opportunities and constraints maps using the methodologies described below.

FIELD RESEARCH

The project team conducted an extensive study of the Master Plan area that included development of field notes per trail segment, digital photography, ground truthing of aerial photography, and identification of potential alignment opportunities.

STAKEHOLDER AND PUBLIC INPUT

The RTC and project team collected input from agency and implementing entities staff and community stakeholders, including railroad staff, community groups, and business leaders. In addition, three countywide community workshops were conducted and over 200 members of the public attended. These workshops provided the opportunity for members of the public to comment on the draft opportunity and constraints analysis and maps.

DOCUMENT RESEARCH

Over two dozen documents were reviewed by the project team in order to incorporate opportunities and constraints information prepared by others. This information was used in development of the proposed alignment.

3.2.1 REACH VS. SEGMENT

The Master Plan organizes the proposed trail alignment into two categories: reaches and segments. A reach is defined as a geographic area identified by regional similarities, such as the urbanized areas of Santa Cruz, Capitola, and Aptos. The Master Plan area is divided into Northern, Central, and Watsonville Reaches, which are further explained in Sections 3.3 through 3.5.

Segments are defined as potential trail projects with logical beginning and end points. The Master Plan trail alignment is divided into 20 segments with the intent that each segment will be funded, designed, and constructed as a whole. However, funding or other constraints may result in portions of segments being constructed independently. Each segment is described and mapped in Section 4.

3.3 NORTHERN REACH DESCRIPTION

The defined Northern Reach of the MBSST Network begins where Highway 1 crosses the San Mateo/Santa Cruz County line, just north of the Waddell Bluffs, and continues south to the northern Santa Cruz city limit near Schaffer Road. The Northern Reach consists primarily of narrow, steep coastal bluffs from Waddell Creek to Yellow Bank Beach at Coast Dairies, and transitions to rural agricultural land and natural coastal mesas south to Schaffer Road. There are numerous small coves and beach strands with mostly informal footpaths down to the beach shore. Large sections of the coastal edge are owned by California State Parks, with several scenic rest stops along Highway 1 that include passive recreation access to beaches, coastal bluffs, and inland parkland trails. Much of the land between Highway 1 and the coastal bluffs is managed under agricultural leases with intermittent public coastal access adjacent to the agricultural land. These intermittent access points vary from paved parking lots with restrooms, potable water, and scenic overlooks to unpaved informal roadway pullouts with difficult access to steep coastal bluff tops and beaches.



Coastal bluffs in the Northern Reach

An existing multi-use paved path runs parallel between the railroad corridor and Highway 1, heading north just over one mile from Schaffer Road to Wilder Ranch trailhead parking off Highway 1. Many of the other public access points along the Northern Reach have limited signage and provide limited trail access along the coast. The railroad corridor parallels the coastal side of Highway 1 from Schaffer Road to Davenport, where the tracks cross Highway 1 to the inland side before ending one mile north of Davenport. Except for the crossing in Davenport, the railroad's offset from Highway 1 varies from 100 feet to 1/4 mile from Schaffer Road to Scaroni Road, then parallels Highway 1 at a distance of 50 to 100 feet as the coastal bluffs steepen and narrow toward Davenport. The rail tracks cross several small drainages with both wood trestles and box culverts in the Northern Reach. Much of the land south of Coast Dairies is flat, with intermittent rolling hills giving way to steep coastal cliffs further north. Sensitive biological areas exist along perennial creeks and drainages, and near coastal bluffs and sand dunes. The Northern Reach is comprised of Segments 1-5.



Picnic facilities near Greyhound Rock



Rail tracks adjacent to Highway 1 looking south



Figure 3-2 Northern Reach location map

3.4 CENTRAL REACH DESCRIPTION

Beginning at Santa Cruz's northern city limit near Schaffer Road and extending southeast to Seascape Park just south of Aptos, this reach of the rail corridor traverses through densely populated coastal urban areas. The combination of intense urban development and the steep coastal edge in the Central Reach creates many physical challenges. However, the central reach has the highest potential to improve bicycle and pedestrian access to key destinations and reduce the number of vehicle miles traveled and associated greenhouse gas emissions.

Within the Santa Cruz city limits, the rail corridor parallels many existing segments of the core route of the Monterey Bay Sanctuary Scenic Trail (MBSST) alignment. Much of the original alignment in the Central Reach is made up of on-road facilities, sidewalks, bike lanes or coastal edge pedestrian boardwalks with beach access and interpretive signs. Some sections are strictly in the street as Class III bike routes with no sidewalks. The rail corridor parallels the entire length of the existing MBSST alignment and could serve as an alternate off-street, multi-use route connecting communities north and south to the regional network.

Other challenges along the Central Reach are the many existing large rail bridge and trestle structure crossings. These structures are old, narrow in width, and span steep drainages and roadways. In one scenario the structure spans across a historic district in Capitola. The southern portion of the Central Reach parallels the coast meandering atop the steep coastal bluffs and multiple residential and resort areas. The Central Reach connects over six state beaches, numerous coastal access points, parks, schools, and provides future connection opportunities for countless communities along the corridor. The Central Reach is comprised of Segments 6-14.



Santa Cruz Harbor



New Brighton State Beach



View of Capitola from the historic train trestle

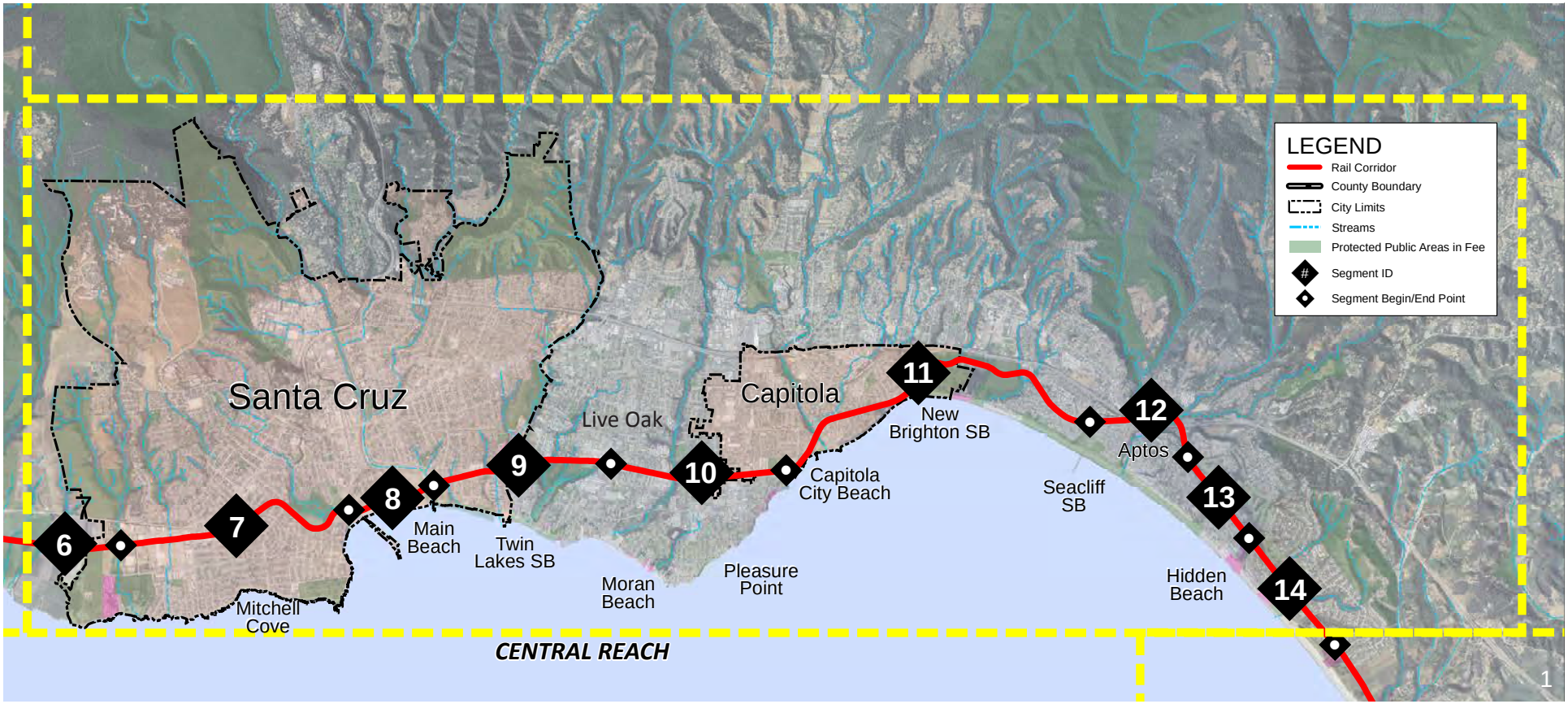


Figure 3-3 Central Reach location map

3.5 WATSONVILLE REACH DESCRIPTION

The Watsonville Reach of the Monterey Bay Sanctuary Scenic Trail begins at railroad mile marker 10 near Seascape Park, and ends over the Santa Cruz and Monterey County border at the Pajaro River and at Railroad Avenue in Monterey County. This reach only parallels the coastal edge for about one mile before it begins following the San Andreas Road alignment inland as it heads south and east. The landscape is primarily open space, with some residential areas near Manresa and tapers off to rural farm and agricultural lands further to the south. The rail alignment eventually drifts away from San Andreas Road just south of railroad mile maker 7 and follows the inland side of a steep sloping mesa.

The Watsonville Reach stretch of the corridor travels through native woodlands, flanked on the west by agricultural land on top of the mesa and to the east, rural land sloping away to the Gallighan Slough below. The Harkins Slough is an impressive wetland crossing with wide open fields flooded throughout the year. The rail crossing at the Harkins Slough is on a stretch of raised earthen dike. The rail line then crosses Watsonville Slough and passes through the center of the agricultural fields, just west of the city of Watsonville, eventually connecting to city park land and the downtown street network at Walker Street. The rail line crosses the Pajaro River to the south and ends at Railroad Avenue in the town of Pajaro. The Watsonville Reach is comprised of Segments 15-20.



View of Manresa State Beach parking lot from railroad tracks



Railroad tracks in Watsonville



Train trestle spanning the Pajaro River in Watsonville

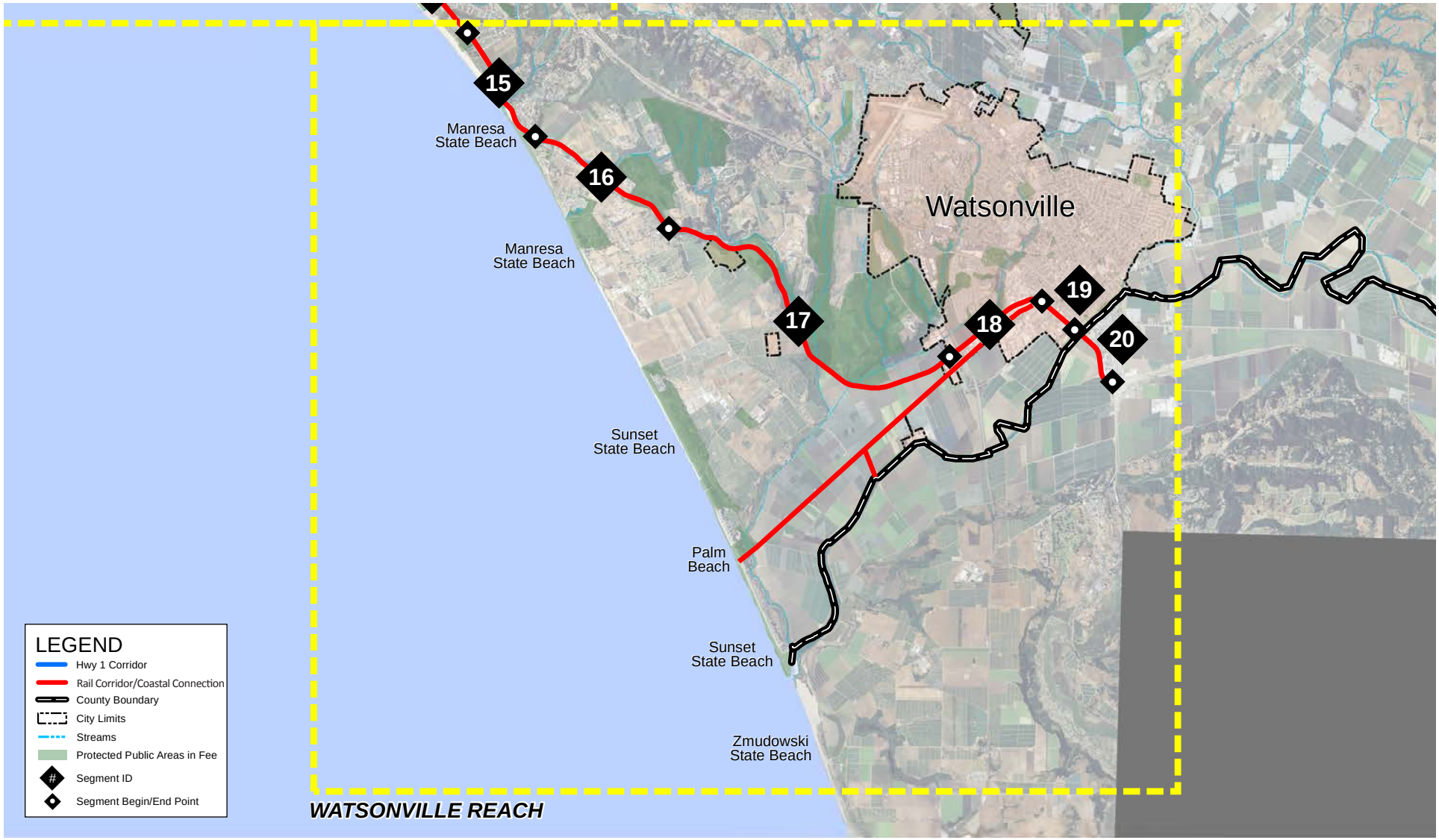


Figure 3-4 Watsonville Reach location map

3.6 EXISTING ACTIVITY CENTERS

Significant public investment will be required to implement and maintain the proposed trail alignments. Therefore, the trail should link as many users as possible to achieve the maximum public benefit. The identification of activity centers is important to ensure that the planned trail routes connect people to the planned trail alignment. An activity center is defined as any place that can attract trail users, including recreational, civic, and educational centers that are located within 1/4 mile (for pedestrians) to 1 mile (for bicyclists) of the proposed trail alignment. Existing activity centers and their relationships to the trail planning area are listed below and identified on Table 3-1.

BEACHES AND STATE BEACHES

- Waddell Beach
- Greyhound Rock Beach
- Scott Creek Beach
- Davenport Landing Beach
- Davenport Beach
- Bonny Doon Beach
- Yellowbank Beach
- Three Mile Beach
- Four Mile Beach
- Natural Bridges State Beach
- Lighthouse Field State Beach
- Main Beach
- Seabright State Beach
- Twin Lakes State Beach
- Pleasure Point
- Capitola State Beach
- New Brighton Beach
- Seacliff State Beach
- La Selva Beach
- Manresa State Beach

PUBLIC PARKS AND STATE PARKS (PARTIAL LIST - 88 TOTAL)

- Big Basin Redwoods State Park
- Forest of Nisene Marks State Park
- Wilder Ranch State Park
- Wetlands of Watsonville City Trail Network
- Ellicott Slough
- Seascape Park
- Aptos Village Park
- Seaview Park
- River Park
- Twin Lakes Park
- Depot Park
- Neary Lagoon Park
- Coast Dairies
- Sand Hills Bluffs
- Ramsay Park



Natural Bridges State Beach



Rio del Mar Beach with updated signage



View of Harkins Slough from railroad tracks

SCHOOLS

- 42 schools are located within one mile of the proposed trail alignment

CIVIC FACILITIES

- Simpkins Swim Center
- Santa Cruz Visitor Center

MAJOR EMPLOYMENT CENTERS

- City of Watsonville
- Granite Construction
- Santa Cruz Beach Boardwalk
- Santa Cruz City/County Government Center
- University of California, Santa Cruz
- Cabrillo College
- Downtown Santa Cruz
- Westside Santa Cruz

MAJOR COMMERCIAL SHOPPING AREAS

- Capitola Mall
- Downtown Santa Cruz
- Capitola Village
- Aptos Village
- Downtown Watsonville
- Rancho Del Mar

CAMPING

- Sunset State Beach Campground
- Santa Cruz/Monterey Bay KOA Campground
- New Brighton State Beach Camping
- Seacliff State Beach
- Mansera Uplands

MAJOR TOURIST DESTINATIONS

- Santa Cruz Beach Boardwalk
- Pleasure Point
- Roaring Camp & Santa Cruz Railroads
- Steamer Lane Surfing
- Capitola Wharf
- Seacliff State Park Cement Ship
- Seascape Resort
- Santa Cruz Harbor
- Santa Cruz Wharf
- Lighthouse Point
- Davenport Overlook
- Monterey Bay National Marine Sanctuary Exploration Center
- Watsonville Sloughs Nature Center



Santa Cruz Harbor



Monterey Bay National Marine Sanctuary Exploration Center Photo Credit: NOAA



Pleasure Point surfing

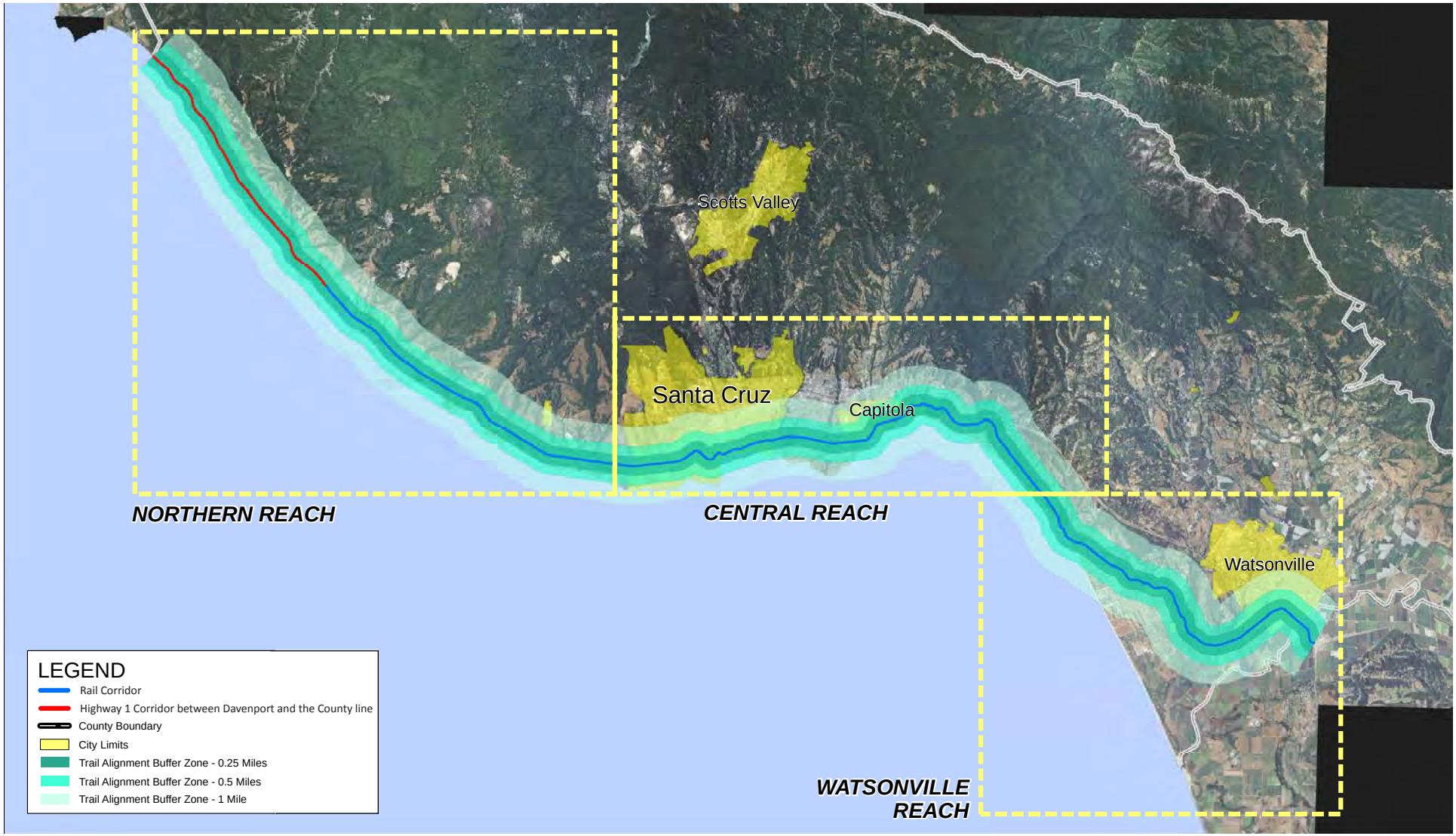


Figure 3-5 Activity center map illustrating 1/4-, 1/2-, and 1-mile distances from the Coastal Rail Trail

ACTIVITY CENTER TABLE

Table 3.1 identifies the activities found within each trail network segment. Activity centers have been separated into 1/4-mile, 1/2-mile, and 1-mile distances from the proposed trail alignment. The numbers within each column represent the number of instances the activity center occurs. This table corresponds with Figure 3-5.

Activity centers were identified using Google Earth in order to determine the most prominent locations where people travel. Several destinations may qualify for multiple points (for example, the Capitola Mall on 41st Avenue qualifies as both a major commercial center and an employment center), however duplication of points assigned was avoided. Table 3.1 was prepared as a guiding exercise to inform the Project Priority Matrix, Table 6.10.

TABLE 3.1 - Activity Center Type Per Segment

Trail Segment	1			2			3			4			5			6			7			8			9			10			11			12			13			14			15			16			17			18			19			20		
	Northern Reach																					Central Reach																Watsonville Reach																								
ACTIVITY CENTER	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1	1/4	1/2	1
Beach	1			7			1			2			5			3			3			2	3		4	4	4	5				1			1						1			1																	
State Beach																1	1	1		1		1	2		2			4				1			1	1		1			1			1						2								
Elementary School										1									2			2	5	1	1	2		1	1	1		1				1	1						1			1	1	2				1			1	1	2			
Junior/Senior High School																				3	1		2	2	3								1						1	2	2									4	1				
College																			1									1																													
Major Retail/ Shopping Areas													1										1			1			1																												
Market																			3			2			1	4		2			1	1		1										1												
Employment Center										1																																	3														
Public Facility																				1		2	1		3	1			1														1		1							4					
Public Park							1												2	2	3	10	7	3	6	5	2	5	3	1	1			1			1						1						2				2	1	3		
State Park	1	1	1													1	1	1				1	1	1				1		1		1					1						1						1								
Tourist Destination	1	1	1							1									1		3	1	1		1			4		1	1			1			1	1				1														
Trail Connection	2	2	2													8			5			2			2			2						1			1			3	4		2			3			1			1					
TOTAL	**5**	**4**	**4**	**7**	**0**	**0**	**2**	**0**	**0**	**5**	**0**	**0**	**6**	**0**	**0**	**13**	**2**	**2**	**17**	**7**	**7**	**23**	**23**	**7**	**23**	**17**	**6**	**25**	**6**	**4**	**3**	**5**	**1**	**6**	**2**	**1**	**5**	**2**	**0**	**5**	**5**		**7**	**0**	**0**	**9**	**3**	**7**	**4**	**0**	**0**	**6**	**0**	**0**	**6**	**3**	**7**	**5**	**0**	**0**



Two-way cycle track adjacent to the sidewalk near the Santa Cruz Beach Boardwalk



This section focuses on the recommended trail alignment maps. The recommended alignment has been studied to determine the most appropriate, functional, and cost-effective option for each trail segment. Potential "spur" routes have also been identified, such as connections to scenic vistas, retail destinations, employment generators, transit, residential, trails, and other recreational areas.

Alignments are conceptual and subject to change based on landscape, topography, additional environmental analysis constraints, design requirements, costs, etc.

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SECTION FOUR
TRAIL ALIGNMENT

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Lighthouse Field State Beach, Steamer Lane, and the Santa Cruz Surfing Museum



Two-way cycle track on Beach Street near Santa Cruz Beach Boardwalk



Bicycle with surfboard carrier attachment



Scenic forest in Capitola

4.0 TRAIL ALIGNMENT OVERVIEW

The alignments described in this section represent the preferred trail alignment along the railroad right-of-way and connections to existing and proposed on-street facilities, in the context of the project goals for the MBSST Network alignment through Santa Cruz County. The methodology used to identify the preferred alignment included the following criteria and objectives:

- Available width on railroad right-of-way
- Physical obstructions on railroad right-of-way including crossings
- Trail network for non-motorized modes of travel
- Adjacent land uses and accessibility
- Number and type of grade crossings
- Traffic volumes and speeds on adjacent roadways
- Access to major activity centers
- Integration into existing bicycle routes and pedestrian facilities
- Railroad grade crossings minimization
- Ability to utilize existing facilities
- Cost factors

The MBSST Network alignment along the upper coast of the county along State Highway 1 and the railroad right-of-way, and down the coast from Davenport to Watsonville has been divided into 20 segments with logical beginning and end points. The intent of this approach is to encourage each segment to be independently funded, designed, and constructed as a complete system until the adjacent segment phases are added to the MBSST Network. In some instances, a segment may cross jurisdictional boundaries, in which case the Santa Cruz County Regional Transportation Commission (RTC) will work with the appropriate jurisdictions to develop a coordination process and plan. In other instances, development of an interim alignment may be a necessary solution before reaching the long-term preferred alignment goal. In other instances still, only a portion of a segment may be built due to various constraints.

Each segment contains a brief statement on the boundary determination rationale which provides details on how the segment start and end points were determined. Segment boundaries were developed as a result of the opportunities and constraints analysis. This is followed by a detailed description of the existing and proposed facilities within the segment reach, including trail alignments, prominent geographical features, safety and hazards, access, amenities, and other physical points of interest.

The segments feature the alignment of the 32-mile Coastal Rail Trail, along with spur trails, and incorporate sections of the California Coastal Trail and the originally defined 11-mile core alignment found in the Monterey Bay Sanctuary Scenic Trail Standards Manual.

All trail segments include one or more of the following trail types:

MULTI-USE PAVED PATH (CLASS I)

A multi-use paved path is based on the Caltrans-defined Class I bikeway. A Class I bike path provides bicycle travel on a paved right-of-way, completely separated from any street or highway. Virtually all of the Coastal Rail Trail will be a Class I facility. A multi-use paved path permits a variety of users, in addition to bicyclists, including walkers, joggers, wheelchair users, and non-motorized scooter users. Other forms of Class I pathways may include boardwalks usually used in wet lowlands, sensitive terrain, or sand dune areas. Bridge and culvert structures of varying size and spans are used to cross canyons, creeks, rivers, and other various steep terrain. Unless otherwise noted, the terms "trails" and "paths" in this document are used synonymously to refer to paved bike/pedestrian multi-use facilities, defined by Caltrans as a "Class I Bikeways (Bike Paths)" in the Caltrans Highway Design Manual, Chapter 1000, Bicycle Transportation Design, Topic 1003 - Bikeway Design Criteria.

DESIGNATED BICYCLE LANE (CLASS II)

Designated bicycle lanes are synonymous with Caltrans-defined Class II bike lanes. Often referred to as a "bike lane," an on-street bike lane provides a signed, striped, and stenciled lane for one-way travel on a street or highway.

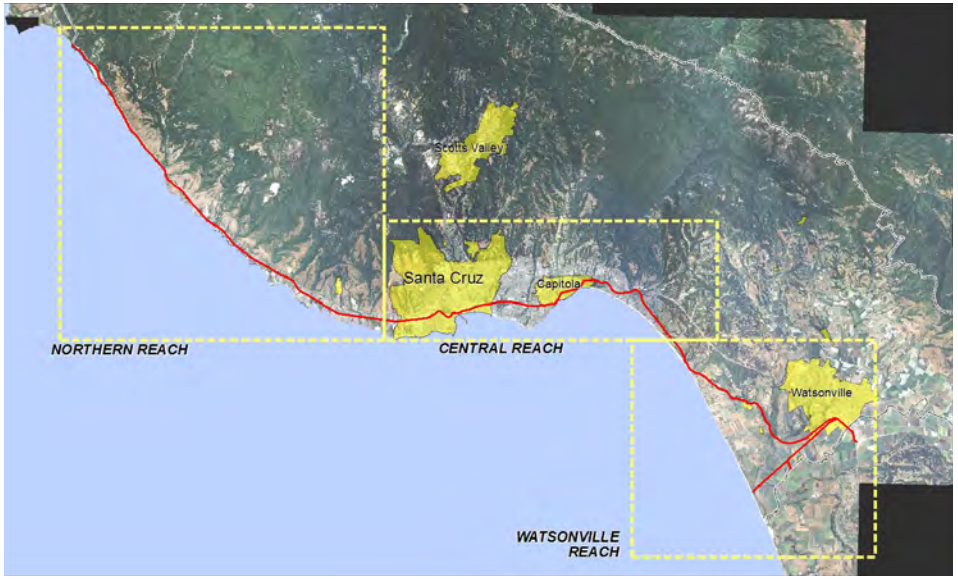
ON-STREET BIKE ROUTE (CLASS III)

On-street bike routes are synonymous with Caltrans-defined Class III bike routes. Generally referred to as a "bike route," an on-street bike route provides for shared use with motor vehicle traffic and is identified only by signing. Optional shared roadway bicycle marking pavement stencils are also available for use on Class III bike routes. Bikes may use the full lane, though signs may be needed to indicate sharing of the roadway.

UNPAVED TRAIL SURFACE

Unpaved trail surfaces are located in the remote areas of the corridor, including the northernmost portion of the Northern Reach and the southernmost portion of the Watsonville Reach. Unpaved trails are typically five to six (5-6) feet wide through steep terrain or sensitive areas. To keep the trail as maintenance-free as possible, these trails are designed to avoid exceeding grades greater than twelve percent (12%) when possible. Unpaved trails may require some hand-tooled segments with drainage crossings that blend with the site character and slope as much as possible.

For more information regarding trail types, see Section 5.2.



Master Plan area showing reaches and overall trail



Trail types legend for segment maps

AT-GRADE RAIL AND ROAD CROSSINGS

Most segments include some combination of at-grade rail and/or road crossings. These crossings standards are located in Section 5.3.2. Custom crossing treatments are found in Appendix F.



Waddell Bluffs looking north



Waddell Bluffs



Año Nuevo Bay

4.1 SEGMENT 1 - WADDELL BLUFFS

Length: 1.06 miles (5,600 LF) - north county line to Waddell Beach parking

4.1.1 SEGMENT 1 BOUNDARY DETERMINATION

The northern and southernmost boundaries of Segment 1 were determined by the existing short stretch of narrow beachfront cliffs on the coastal side of Highway 1, the steep Waddell Bluffs inland of Highway 1, and the overall limited road right-of-way. The Waddell Bluffs geological erosion hazards define this short segment, posing safety challenges for all modes of travel from the northern Santa Cruz County line down the coast to Waddell Beach. The MBSST Network is constrained to the coastal side of the Highway 1 right-of-way which is limited to a narrow, paved road shoulder.

4.1.2 SEGMENT 1 DESCRIPTION

Segment 1 is the northernmost point of the MBSST Network in Santa Cruz County. The Highway 1 right-of-way is severely limited in width by the narrow sea cliffs on the coastal side of Highway 1 and the steep eroding cliffs above the roadway on the inland edge known as the Waddell Bluffs. This segment of the proposed alignment will consist of the existing paved road shoulders for bikes as a Class III facility along Highway 1 and limited room for a proposed unpaved shoulder for pedestrians on the coastal side of Highway 1. At present, in accordance with its coastal permit for seasonal sediment disposal, Caltrans dresses the unpaved seaward shoulder for pedestrian travel.

The eroding cliff faces of the Waddell Bluffs are considered a geological hazard that will be a long-term constraint for possible enhancements for the inland side of Highway 1 in this area. The main parking at Waddell Beach, down the coast from the Waddell Bluffs, is a safer and more feasible location for the trail's beginning and ending points in the north county. Waddell Beach currently provides vehicular parking, a regional bus stop, restroom facilities, drinking water, coastal access, scenic coastal views, and a junction point for the Skyline-to-the-Sea Trail system in Big Basin Redwoods State Park, on the inland side of Highway 1. It is anticipated that the new Big Basin Redwoods State Park General Plan will call for an underpass to safely connect Waddell Beach to inland portions of the park. Caltrans expects to replace the outmoded Waddell Creek Bridge on Highway 1 at an indefinite time in the future, as funds become available. This will present an opportunity to provide an underpass facility as recommended by the State Park General Plan. This segment is in proximity to thirteen (13) activity centers identified in Table 3.1.

Segment 1 proposed improvements include:

- 0.87 miles (4,600 LF) Class III on-street/road shoulder bike route
- 0.19 miles (1,000 LF) unpaved native soil trail
- Unpaved roadway shoulder on coastal side of Highway 1
- Fencing may be considered when project is implemented

TABLE 4.1 Segment 1 - Waddell Bluffs

Segment Length	**1.06 miles (5,600 feet) - Waddell Bluffs**
Rail Trail Portion	0.0 miles (0 LF)
Coastal Trail Portion	1.06 miles (5,600 LF)
Segment Cost	**$107,120**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$31,550
Bridge Structures	0	Each	Varies	$0
At-Grade Crossings (Rail Tracks or Streets)	0	Each	Varies	$0
			Rail Trail Construction SUBTOTAL	**$31,550**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	1,000	Linear Feet	Varies	$7,800
On Street Facilites (Unpaved Shoulder)	4,600	Linear Feet	$6	$27,600
			Coastal Trail Construction SUBTOTAL	**$35,400**

COST SUMMARY	
Construction TOTAL	**$66,950**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$10,043
Environmental Permitting (10%)	$6,695
Construction Management (15%)	$10,043
Contingency (20%)	$13,390
SEGMENT TOTAL COST	**$107,120**

Segment Features	Description	Quantity
Segment Jurisdictional Area	Caltrans Right-Of-Way	-
Major Drainage	Waddell Creek	1
Existing Staging Areas/Rest Stops	Waddell Beach Parking Lot	1
Connection To Other Trails	Skyline to the Sea Trail, Big Basin State Park	1
Connection to Public Beach	Waddell Beach	1
Connection to Passive Park	Big Basin State Park	1



Waddell Bluffs overlook



Waddell Beach parking, restrooms, and trailhead



Waddell Creek looking northeast

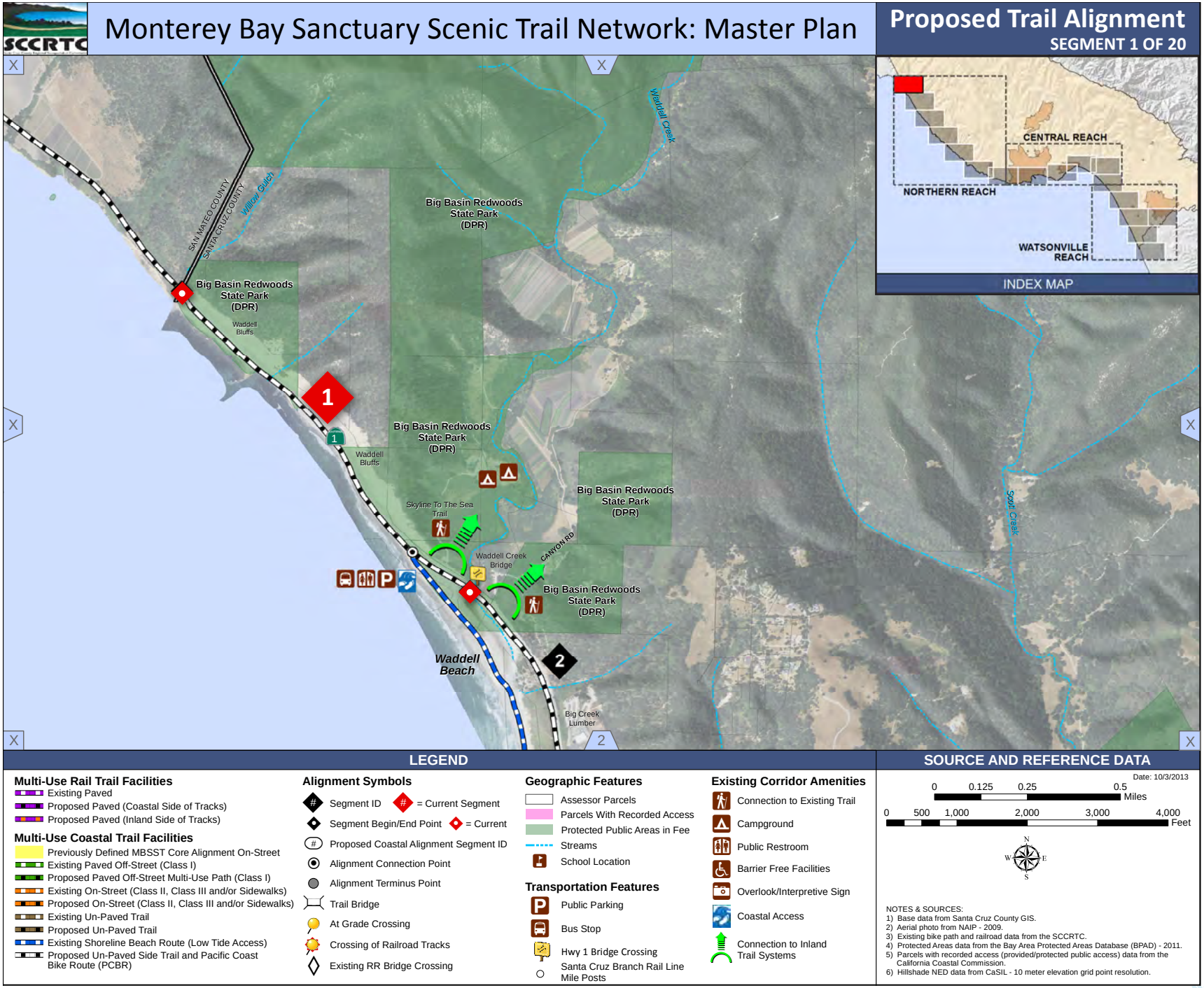


Figure 4-1 Segment 1 proposed trail alignment

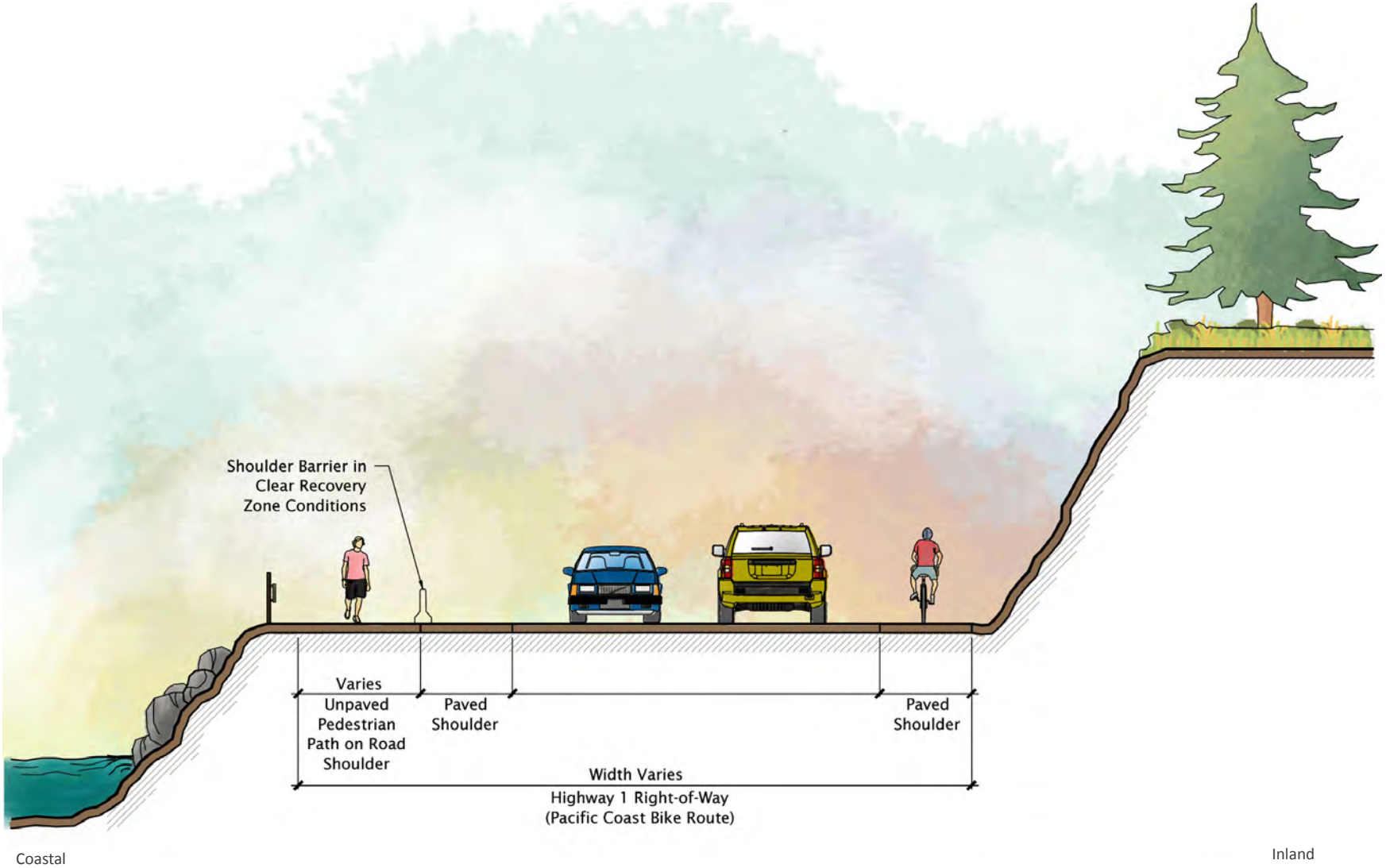


Figure 4-2 Segment 1 trail section - North of Waddell Creek



Waddell Creek Bridge - too narrow for bicyclists



Greyhound Rock Beach



Picnic facilities at Greyhound Rock Beach

4.2 SEGMENT 2 - GREYHOUND ROCK - CAL POLY BLUFFS

Length: 4.77 miles (25,170 LF) - Waddell Beach parking to Scott Creek

4.2.1 SEGMENT 2 BOUNDARY DETERMINATION

The Segment 2 boundary is determined by the existing Waddell Creek/Highway 1 bridge crossing down the coast to the existing Scott Creek Beach/Highway 1 bridge crossing. The corridor is consistently narrow, and may potentially require similar design improvement measures to link the publicly held lands from Greyhound Rock Beach down the coast to Scott Creek Beach. The trail alignment opportunity could include sharing portions of the coastal-side edge of Highway 1 Caltrans right-of-way and optional bluff-top trails within the Big Basin Redwoods State Park lands.

4.2.2 SEGMENT 2 DESCRIPTION

Segment 2 starts with the Highway 1/Waddell Creek Bridge crossing. The existing concrete bridge across Waddell Creek is narrow with no room to safely include adequate shoulders for bike access or pedestrian sidewalks. The future plans for the Highway 1 bridge replacement should consider at minimum, an eight- (8-) foot-wide shoulder and four- (4-) foot-wide sidewalks for safe bicycle/pedestrian access. The new bridge may be realigned to the inland side of the existing location so the old bridge can be repurposed as a multi-use path crossing for Waddell Creek. The private land on the coastal side of Highway 1, down the coast from Waddell Beach, limits the trail alignment to the Highway 1 right-of-way. This scenario continues for roughly one-quarter (1/4) mile down the coast to the Greyhound Rock Beach park boundary. Greyhound Rock Beach currently provides accessible parking, public restrooms, drinking water, a scenic overlook, and moderately difficult coastal access.

Along the coastal bluffs on the coastal side of Highway 1, there are areas between the coastal bluffs and the roadway edge for future trail facilities within Greyhound Rock Beach land. However, the land ownership changes from public to private roughly one-half (1/2) mile down the coast from the Greyhound Rock Beach public parking lot. There are three to four (3-4) locations where the road shoulder edge is adjacent to the coastal cliffs with no room for off-street trail facilities. These sporadic, narrow, cliff-edge locations range from one hundred (100) to several hundred LF. The existing paved road shoulders continue down the coast to Scott Creek Beach County Park; however, the existing narrow Highway 1 bridge crossing at Scott Creek does not include adequate paved shoulders for safe bicycle/pedestrian access. The road right-of-way at the bridge abutment has steep shoulders at the bridge approach, and Scott Creek meanders several hundred feet north along the coastal side of Highway 1 as it approaches the sea, leaving little to no room for an off-road trail connection in this stretch. Scott Creek Beach County Park currently provides visitor parking, coastal access, and a transit stop. The MBSST Network up the coast the from Scott Creek is forced into the State Highway 1 right-of-way due to both private land on the coastal side of Highway 1 and/or coastal cliff adjacency to the roadway shoulder. The feasibility of a sidepath on the coastal side of Highway 1 will be dependant primarily on available stable land and Caltrans' design standards. Side paths within the Highway 1 right-of-way and clear recovery zone distances will vary due to limited space between the coastal cliffs and the available room adjacent to the road shoulder. In many areas along Segment 2 between Scott Creek and Greyhound Rock Beach, there are areas where even a road shoulder is hardly achievable due to the narrow and eroding coastal bluffs. There are short stretches of side paths along the coastal side of Highway 1 where a shoulder may be possible. Most of this reach of the coast has existing road shoulders adjacent to steep sloping cliffs. Caltrans may require wider recovery zones where sidepaths are possible. Caltrans also requires a barrier for sidepaths in areas where the recovery zone is at a minimum distance or less. Caltrans indicates a preference for the use of traditional concrete or steel barriers with cable barriers allowable in certain circumstances between the recovery zone and path. This segment has close proximity to seven (7) activity centers identified in Table 3.1.

Segment 2 proposed improvements include:

- 4.77 miles of primarily existing road shoulder improvements due to limited available space and adjacent public land on the coastal side of State Highway 1
- Routine road edge clearing, signs, and shoulder pavement striping
- Fencing may be considered when project is implemented

TABLE 4.2 Segment 2 - Greyhound Rock to Cal Poly Bluffs

Segment Length	**4.77 miles (25,170 feet) - Greyhound Rock to Cal Poly Bluffs**
Rail Trail Portion	0.0 miles (0 LF)
Coastal Trail Portion	4.77 miles (25,170 LF)
Segment Cost	**$308,032**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$41,500
Bridge Structures	0	Each	Varies	$0
At-Grade Crossings (Rail Tracks or Streets)	0	Each	Varies	$0
			Rail Trail Construction SUBTOTAL	**$41,500**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Unpaved Shoulder)	25,170	Linear Feet	$6	$151,020
			Coastal Trail Construction SUBTOTAL	**$151,020**

COST SUMMARY	
Construction TOTAL	**$192,520**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$28,878
Environmental Permitting (10%)	$19,252
Construction Management (15%)	$28,878
Contingency (20%)	$38,504
SEGMENT TOTAL COST	**$308,032**

Segment Features	Description	Quantity
Segment Jurisdictional Area	Caltrans Right-of-Way, State Park Lands	-
Major Drainage	Waddell Creek, Scott Creek	2
Existing Staging Areas/Rest Stops	Greyhound Rock Beach Parking/Scott Creek Beach	2
Connection To Other Trails	Bluff-top trails at Greyhound Rock Beach Park	2
Connection to Public Beach	Greyhound Rock State Beach/Scott Creek Beach	2



View from Greyhound Rock Beach overlook



Public access to Greyhound Rock Beach



Caltrans-approved cable barrier

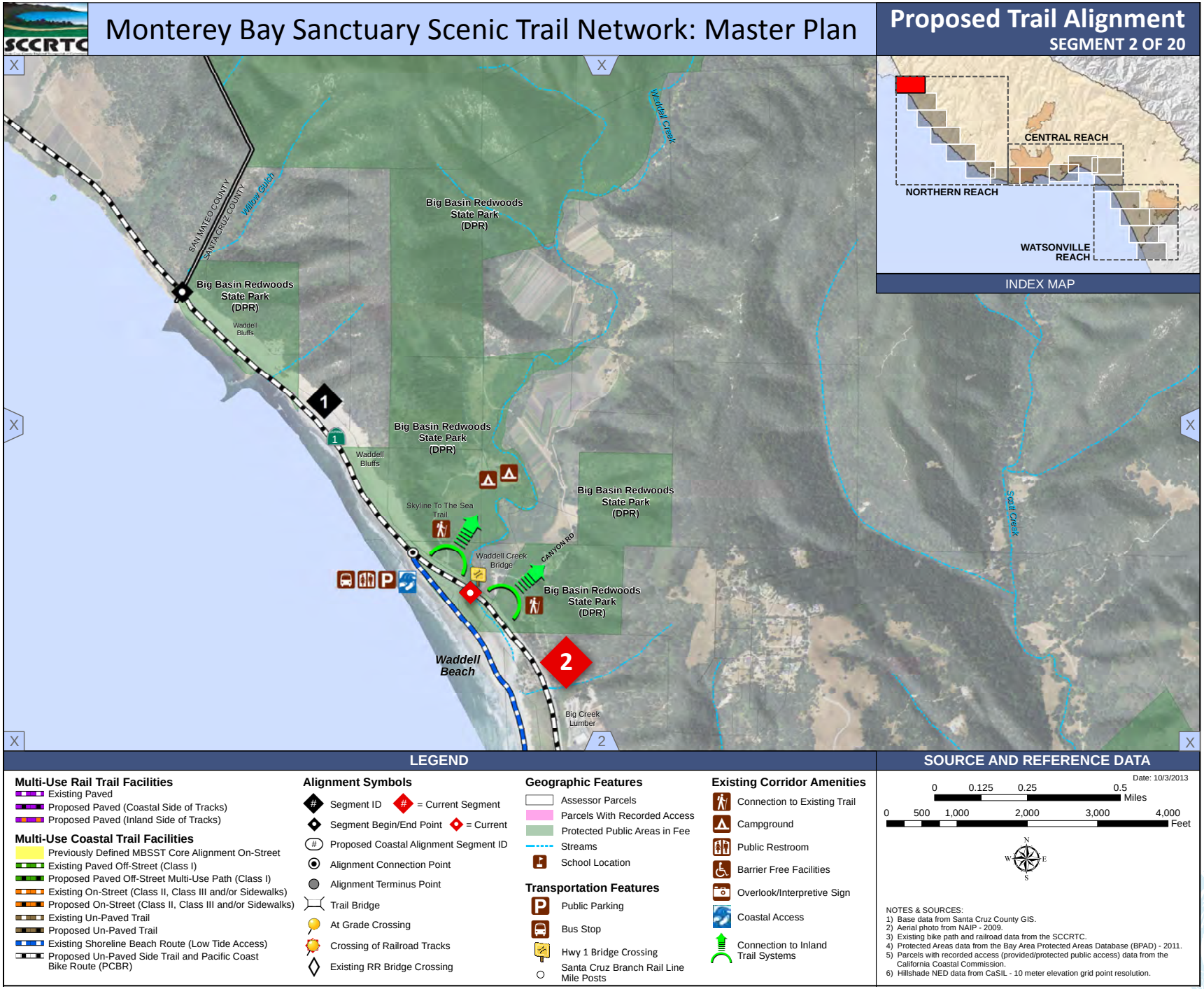


Figure 4-3 Segment 2 proposed trail alignment

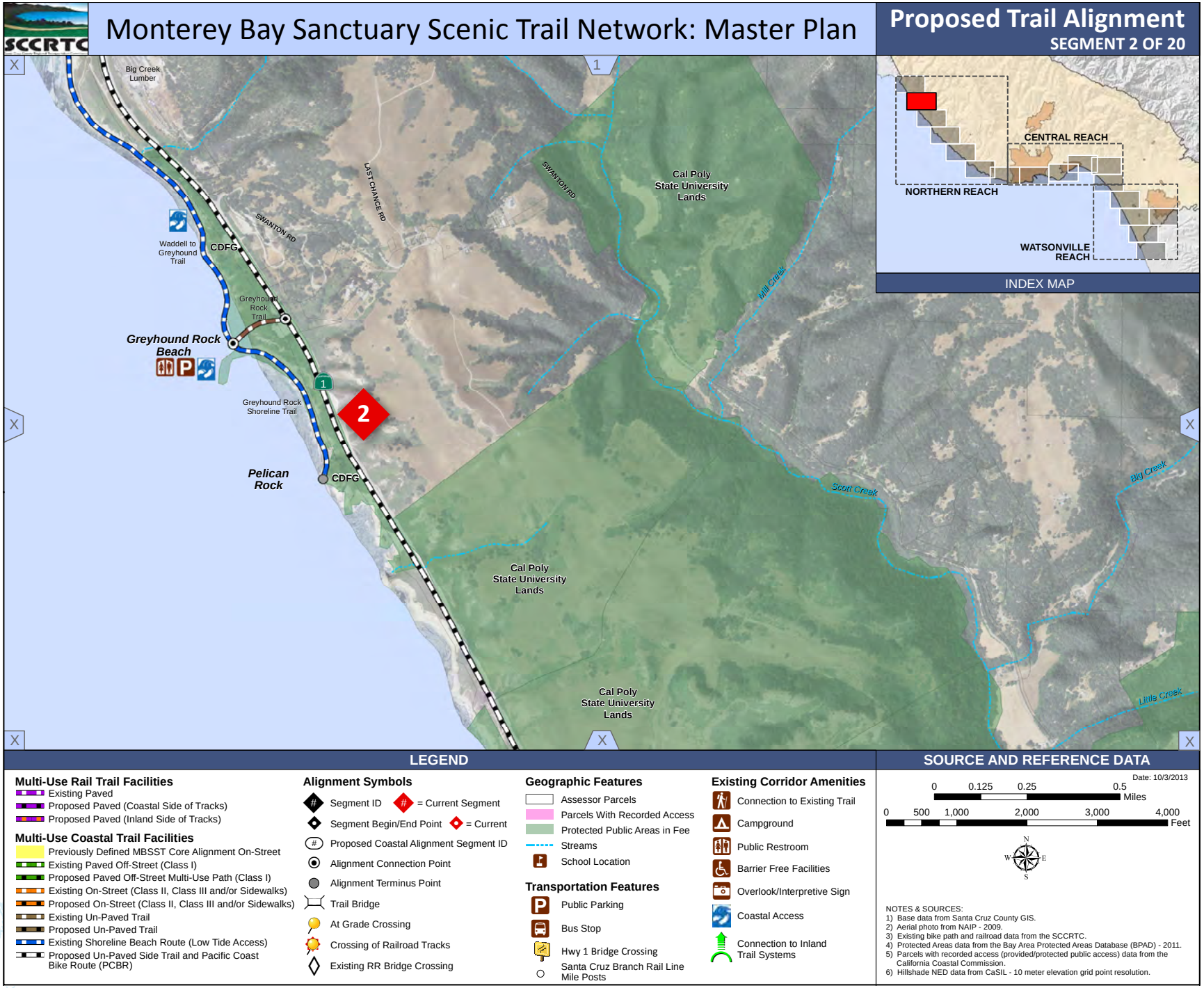


Figure 4-4 Segment 2 proposed trail alignment (continued)

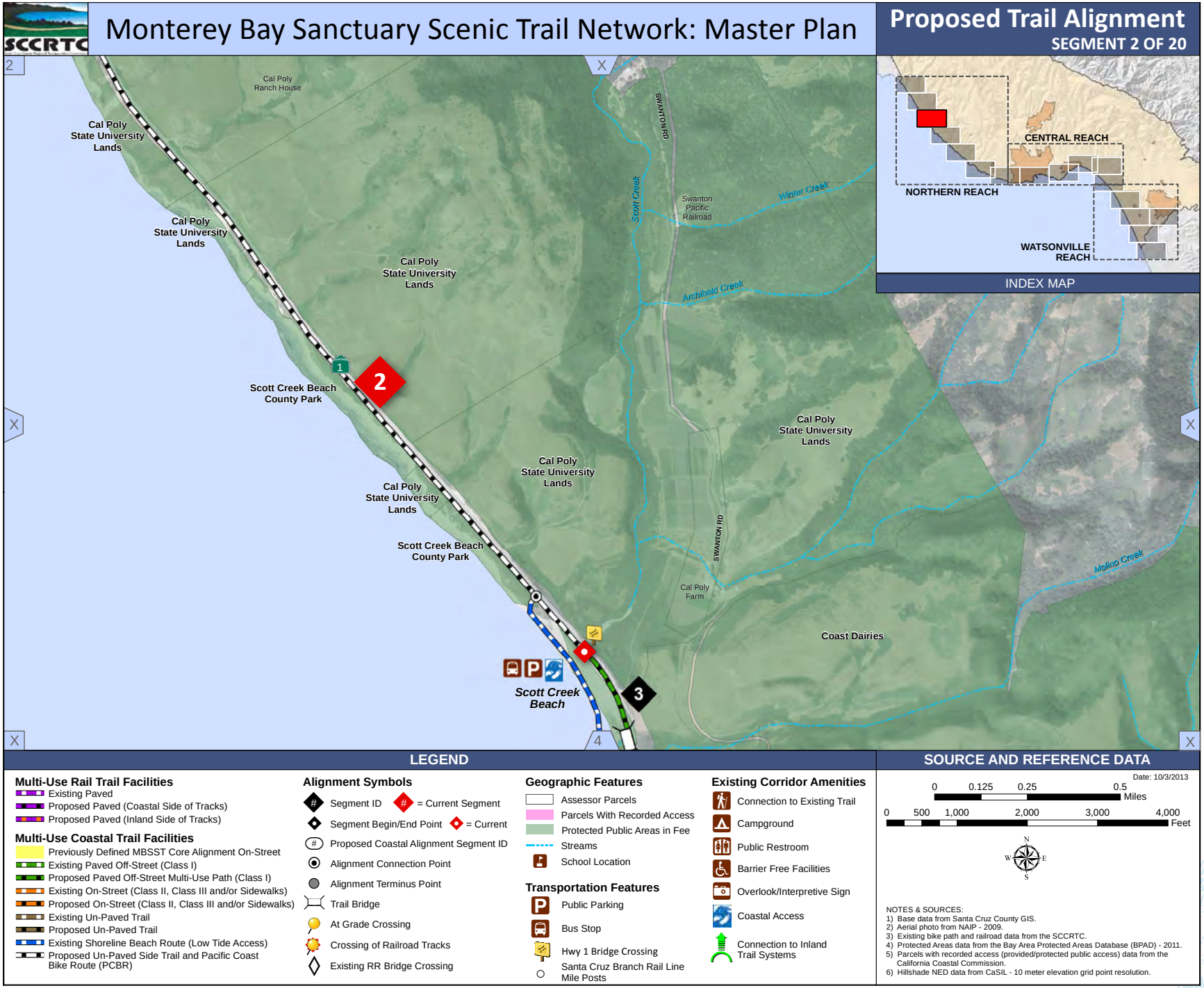


Figure 4-5 Segment 2 proposed trail alignment (continued)

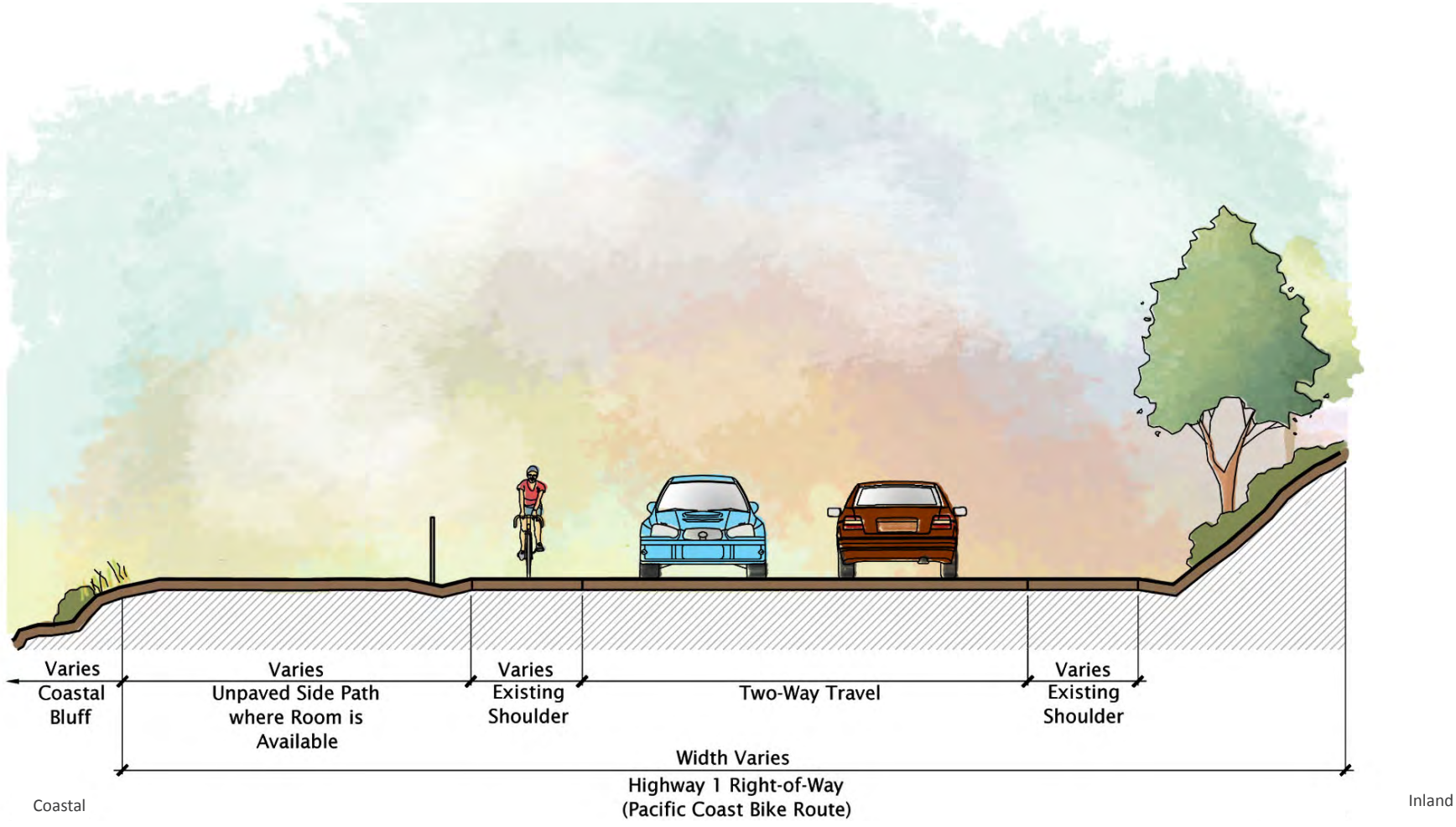


Figure 4-6 Segment 2 trail section



Public restrooms and beach access at Davenport Landing Road



Public parking at Davenport Landing Road



Trail access to Davenport Landing Beach

4.3 SEGMENT 3 - UPPER COAST DAIRIES AT SCOTT CREEK

Length: 1.11 miles (5,870 LF) - Scott Creek Beach Park to Davenport Landing Road

4.3.1 SEGMENT 3 BOUNDARY DETERMINATION

The boundary for Segment 3 is determined by the small northern stretch of Coast Dairies property from the Scott Creek Beach boundary to Davenport Landing Road. This segment is the first stretch where the publicly held coastal land is wider and offers more room for trail alignment options. The southernmost boundary terminates at the southern intersection of Davenport Landing Road and Highway 1. This intersection is the beginning point for the connection to the railroad corridor alignment down the coast from the Davenport Landing Road intersection.

4.3.2 SEGMENT 3 DESCRIPTION

The Highway 1 corridor travels inland away from the coastal bluffs as it continues down the coast from Scott Creek Beach to the upper Coast Dairies property. The existing Highway 1 bridge over Scott Creek is narrow, lacking a standard width shoulder or sidewalk for non-motorized access across Scott Creek. It is recommended that plans for new highway bridge replacement should include bridge designs with road shoulders and sidewalks for safe bicycle and pedestrian access across Scott Creek. Down the coast from the Scott Creek Beach parking area, the corridor provides room for future off-street, multi-use facilities on the coastal side of Highway 1 down the coast to the intersection of Davenport Landing Road and Highway 1. This proposed multi-use facility follows an old rail bed. The abandoned rail bed falls away to the beach in one location where a new one-hundred-and-fifty- (150-) foot-long preengineered bridge will need to be installed to continue the path down the coast to Davenport Landing Road. Davenport Landing Road is narrow with steep slopes on the coastal side of the road and private homes on the inland side of the road as it curves downhill to the coastal access at Davenport Landing Beach. Davenport Landing Beach currently provides restrooms, coastal access, and public parking. This segment is in proximity of two (2) activity centers identified on Table 3.1

Segment 3 proposed improvements include:

- 1.11 miles (5,870 LF) multi-use paved path (Class I)
- One (1) preengineered bike/pedestrian bridge, one-hundred-and-fifty- (150-) foot span
- Fencing may be considered when project is implemented

TABLE 4.3 Segment 3 - Upper Coast Dairies at Scott Creek

Segment Length	**1.11 miles (5,870 LF) - Upper Coast Dairies at Scott Creek**
Rail Trail Portion	1.11 miles (5,870 LF)
Coastal Trail Portion	0.0 miles (0 LF)
Segment Cost	**$2,550,096**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$242,870
Bridge Structures	1	Each	Varies	$400,000
At-Grade Crossings (Rail Tracks or Streets)	0	Each	Varies	$0
			Rail Trail Construction SUBTOTAL	**$642,870**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	5,870	Linear Feet	Varies	$950,940
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II, III, and Sidewalks)	0	Linear Feet	Varies	$0
			Coastal Trail Construction SUBTOTAL	**$950,940**

COST SUMMARY	
Construction TOTAL	**$1,593,810**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$239,072
Environmental Permitting (10%)	$159,381
Construction Management (15%)	$239,072
Contingency (20%)	$318,762
SEGMENT TOTAL COST	**$2,550,096**

Segment Features	Description	Quantity
Segment Jurisdictional Area	Caltrans, State Parks	2
Existing Staging Areas/Rest Stops	Scott Creek Beach/Davenport Landing Beach	2
Connection To Other Trails	Bluff-top trails	2
Connection to Public Beaches	Scott Creek Beach/Davenport Landing Beach	2



Coast Dairies trail access



Davenport Roadhouse Restaurant and Inn



Davenport Beach

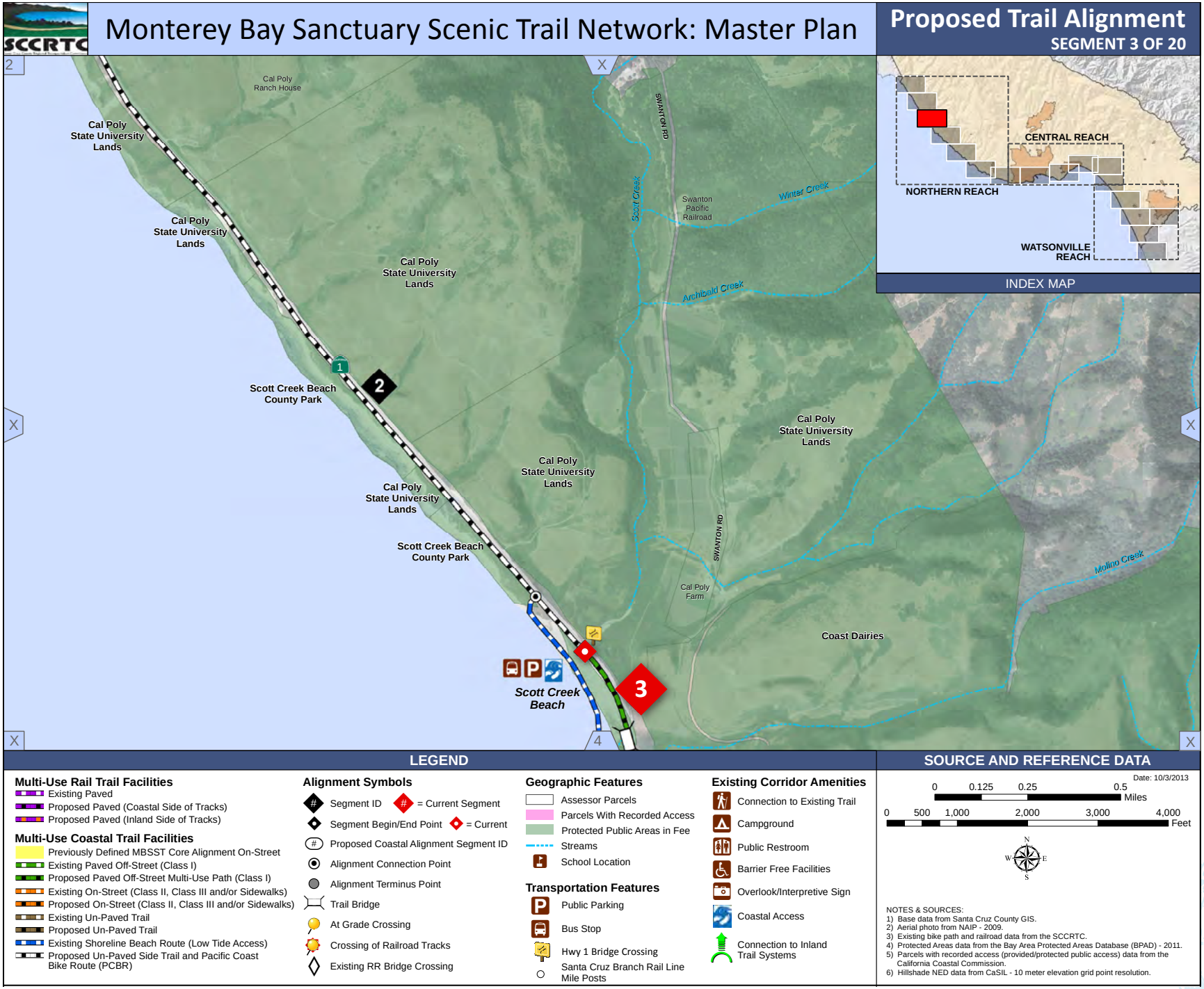


Figure 4-7 Segment 3 proposed trail alignment

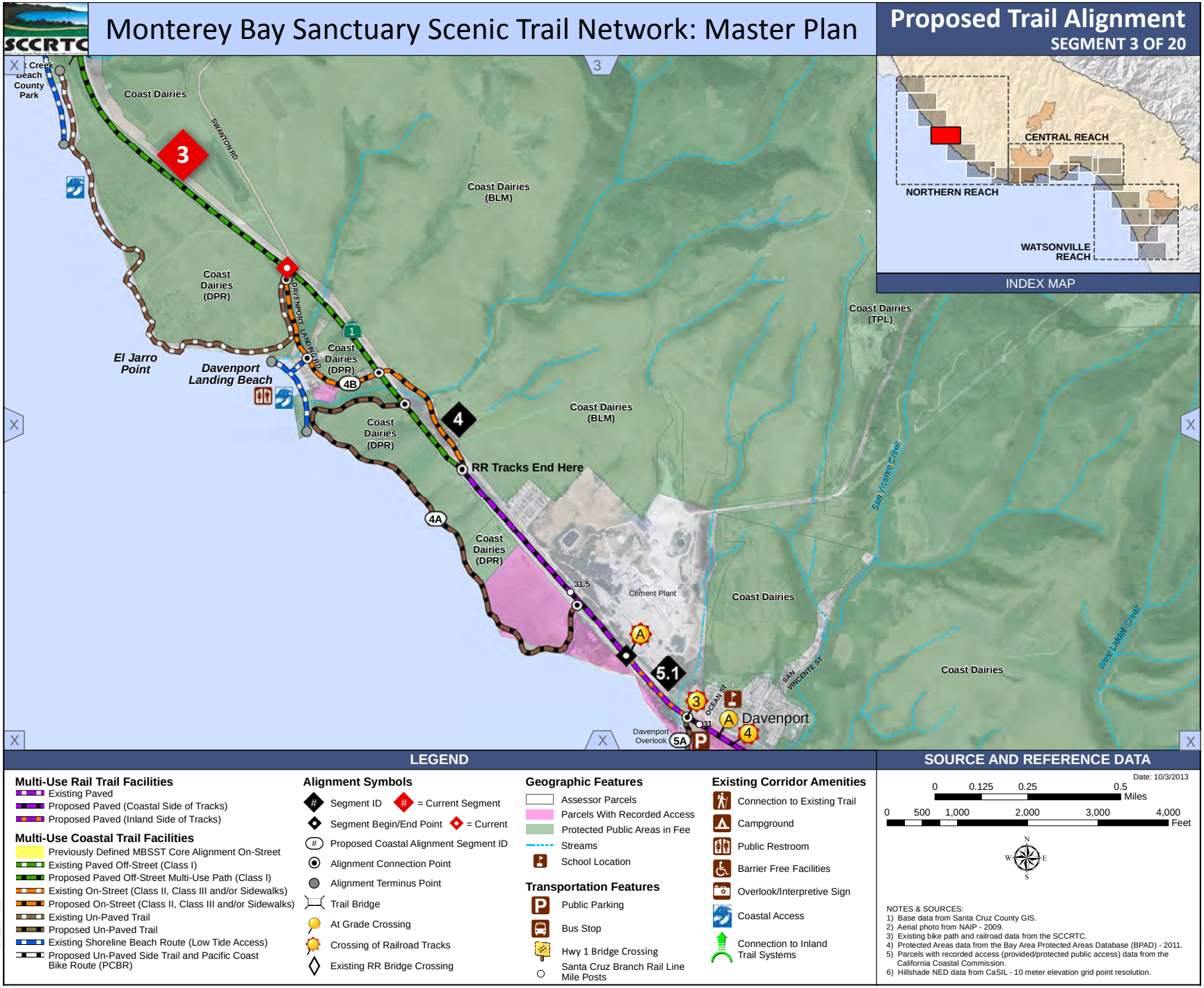


Figure 4-8 Segment 3 proposed trail alignment (continued)

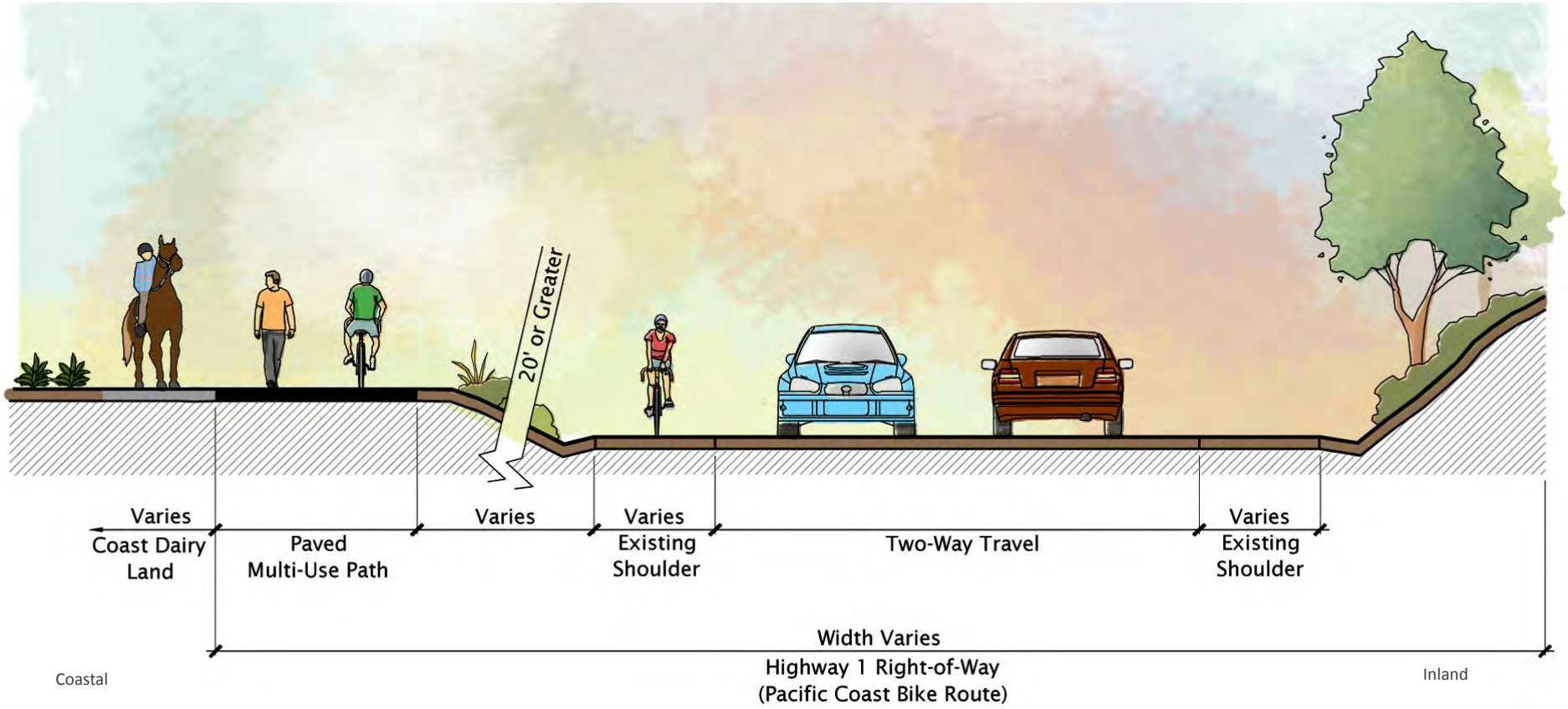


Figure 4-9 Segment 3 trail section



The community of Davenport with rail corridor and coastal trail



Rail maintenance road looking north



Rail maintenance road looking south



Trail access to Davenport Landing Beach

4.4 SEGMENT 4 - DAVENPORT LANDING/END OF RAILROAD TRACKS

Length: 3.64 miles (19,280 LF) - Coast Dairies south to end of railroad tracks

4.4.1 SEGMENT 4 BOUNDARY DETERMINATION

The northernmost and southernmost boundaries for Segment 4 are determined by logical transition points from the Davenport Landing Road intersections with Highway 1 and Swanton Road. This offers a possible Highway 1 crossing point for the trail alignment and eventual connection to the railroad right-of-way on the inland side of Highway 1, just down the coast from Davenport Landing Road, Highway 1, and the Cement Plant Road intersections. The trail becomes a rail trail at this location and will follow the rail corridor down the coast to the Segment 4 terminus at the Highway 1 crossing of the railroad tracks.

4.4.2 SEGMENT 4 DESCRIPTION

The Coast Dairies land from Davenport Landing Road down the coast to the cement plant provides an opportunity for coastal bluff trails and a possible off-street, multi-use facility on the coastal side of the Highway 1 right-of-way. This area of Coast Dairies has existing agricultural operations with intermittent agricultural vehicle access roads and fences throughout. The upper portion of Segment 4 follows along the rail tracks beginning on the coastal side of the track between Highway 1 and the tracks. The Highway 1 rail crossing just before Davenport is at an acute angle as it crosses to the coastal side of Highway 1. The intersection has train warning signal lights and crossing arms for both northbound and southbound vehicle traffic. The coastal edge in this location primarily consists of steep cliffs with difficult and limited access to small coves and beaches down the coast from the town of Davenport. Coastal access is available through two (2) existing spur trail connections on Davenport Landing Road, and along a proposed bluff trail within the Coast Dairies property, down the coast from Davenport Landing Beach. This segment has proximity to five (5) activity centers identified in Table 3.1.

Segment 4 proposed improvements include:

- 1.38 miles (7,300 LF) multi-use rail trail (Class I)
- 1.41 miles (7,470 LF) bluff trail (Segment 4A)
- 0.85 miles (4,510 LF) on-street bike lanes (Segment 4B)
- One (1) Highway 1 crossing at Davenport Landing Road
- One (1) rail crossing in front of cement plant
- Three (3) road crossings
- Fencing may be considered when project is implemented

TABLE 4.4 Segment 4 - Davenport Landing/End of Railroad Tracks

Segment Length	**3.64 miles (19,280 LF) - Davenport Landing/End of Railroad Tracks**
Rail Trail Portion	1.38 miles (7,300 LF)
Coastal Trail Portion	2.26 miles (11,980 LF)
Segment Cost	**$2,685,424**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	7,300	Linear Feet	$162	$1,182,600
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$113,300
Bridge Structures	0	Each	Varies	$0
At-Grade Crossings (Rail Tracks or Streets)	5	Each	Varies	$240,000
			Rail Trail Construction SUBTOTAL	**$1,535,900**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	7,470	Linear Feet	$7	$52,290
On Street Facilites (Class II, III, and Sidewalks)	4,510	Linear Feet	$20	$90,200
			Coastal Trail Construction SUBTOTAL	**$142,490**

COST SUMMARY	
Construction TOTAL	**$1,678,390**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$251,759
Environmental Permitting (10%)	$167,839
Construction Management (15%)	$251,759
Contingency (20%)	$335,678
SEGMENT TOTAL COST	**$2,685,424**

Segment Features	Description	Quantity
Segment Jurisdictional Area	Caltrans Right-of-Way, State Park Lands	-
State Highway Crossings	Davenport Landing Road and Cement Plant Road	2
Minor Roadway Crossings	Cement Plant Road Crossing	1
Trail At-Grade Railroad Crossings	Davenport	1
Existing Staging Areas/Rest Stops	Davenport Landing Beach	1
Connection To Other Trails	Bluff-top Trails at Coast Dairies	2
Connection to Public Beach	Davenport Landing Beach	1
Connection to Residential Area	Davenport Landing Community	1
Connection to Passive Park	Coast Dairies	1



Bluff trail to scenic overlook



Coastal views from bluff trail



Davenport Landing Beach

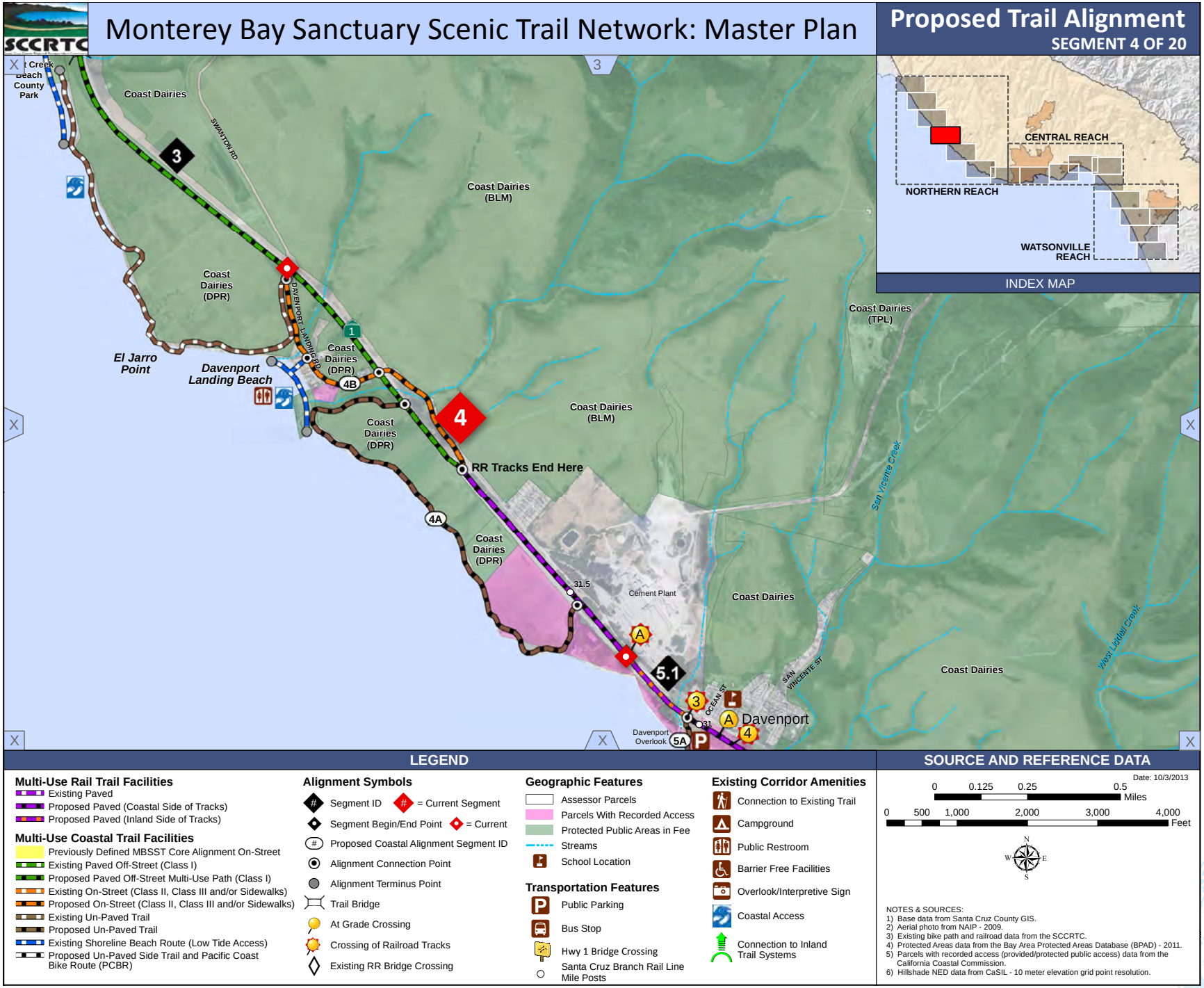


Figure 4-10 Segment 4 proposed trail alignment

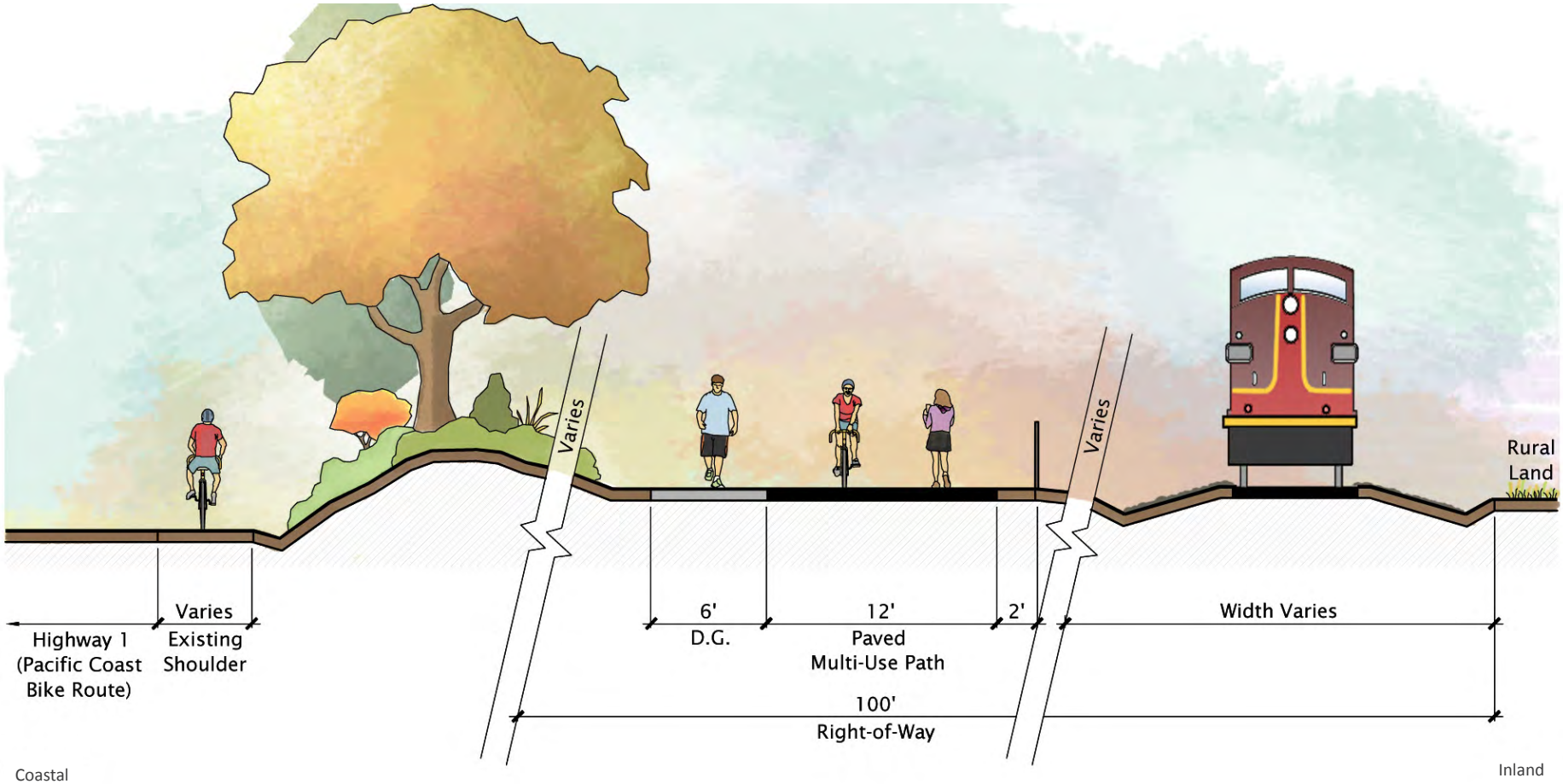


Figure 4-11 Segment 4 trail section



Coast Dairies trail access



Wilder Ranch multi-use path



Wilder Ranch State Park signage

4.5 SEGMENT 5 - DAVENPORT AND WILDER RANCH

Total Length: 10.55 miles (55,720 LF)

4.5.1 SEGMENT 5 BOUNDARY DETERMINATION

The boundary for Segment 5 stretches for 7.5 miles from Davenport to the existing Wilder Ranch staging area and trailhead parking lot. Natural surface paths make up the difference to connect to the coast. This segment is broken up into three subsegments (5.1, 5.2, and 5.3) due to both the overall distance of the segment and the similar site characteristics throughout the total segment length. Since the length of this segment spans a great distance, it may be financially more feasible to break it down into the following three subsegments in the planning efforts to manage the implementation efforts. The entire length of trail Segment 5, which includes all three subsegments, will essentially connect Davenport to the existing trail facilities in the city of Santa Cruz with a 10.5-mile trail. Segment 5 and Segment 6 of the trail system will provide equestrian connection from Wilder Ranch to Davenport. Existing equestrian parking and other support facilities are currently available down the coast at the Wilder Ranch trailhead. The new Coastal Rail Trail corridor will provide equestrian access from Wilder Ranch to Davenport. The equestrian use will include all of Segment 5 including each subsegment, and Segment 6 where existing use occurs presently.

4.5.2 SEGMENT 5 DESCRIPTIONS (SUBSEGMENTS 5.1, 5.2, 5.3)

SUBSEGMENT 5.1 (2.75 MILES)

This subsegment starts at the Highway 1 rail crossing (inland side of Highway 1) just up the coast from Downtown Davenport and ends at the existing Highway 1 informal pull-off parking area at Bonny Doon Beach. The entire town of Davenport is located on the inland side of Highway 1. On the coastal side of Highway 1, directly across the street from the town center, are two (2) large, empty dirt lots used as visitor parking. These pull-off areas are also used as parking to access the coastal cliffs and Davenport Overlook on the coastal side of the railroad tracks. There are no formal pathways or legal rail crossings to the coastal cliffs at this location. Beach users and tourists also use these informal access points to get down to Davenport Beach. Pedestrian access across Highway 1 to Downtown Davenport from the dirt parking lot lacks any signal-controlled pedestrian crossings or striped crosswalks. The northbound Highway 1 approach to Davenport is on an incline, with some site view constraints for people crossing to and from the dirt parking lots on the coastal side of Highway 1 to Davenport town center on the inland side of Highway 1. The rail tracks are on the coastal side of State Highway 1, and the proposed trail alignment will occur on the coastal side of the rail tracks. The rail tracks cross Highway 1 up the coast from Davenport, near the cement plant entrance. The existing rail crossing is currently equipped with signal warning lights and stop arms for the northbound and southbound traffic. The railroad bed runs parallel about one hundred (100) feet from the coastal side of Highway 1 fairly consistently as it heads down the coast along the Coast Dairies property. This segment continues one (1) mile south of Davenport to Bonny Doon Beach, with an informal paved public parking area including bike racks and coastal access to Bonny Doon Beach. Bonny Doon Beach is a small, sandy cove closed in by steep sea cliffs along the beach. The coastal side of the railroad bed has a fairly steep slope along this stretch with open views to the beach below. There are proposed unpaved coastal bluff trail options (Segment 5A on Figure 4-12 and Segments

5B and 5C on Figure 4-13) which provide additional access, overlooks, and pathway connections along the coastal edge of Coast Dairies (DPR - California Department of Parks and Recreation) property on Subsegment 5.1.

Subegment 5.1 proposed improvements include:

- 1.49 miles (7,890 LF) multi-use paved path (Class I) along the coastal side rail right-of-way
- 1.26 miles (6,680 LF) native soil coastal bluff trails and coastal access between Davenport Beach and Yellow Bank Beach (this distance is comprised of Segments 5A, 5B, and 5C)
- One (1) rail crossing at spur trail connecting Davenport parking lot to rail trail, parking lot improvements to existing dirt lot, coastal side of Highway 1 in Davenport near the Davenport Overlook
- One (1) new signalized at-grade road crossing of Highway 1 in Davenport
- One (1) rail crossing at the Highway 1 crossing
- One (1) private road crossing
- Fencing may be considered when project is implemented



Trail maintenance may include removing sand from trail and rail right-of-way

SUBSEGMENT 5.2 (4.18 MILES)

This subsegment starts at Bonny Doon Beach parking lot and continues down the coast to Scaroni Road. The rail line parallels Highway 1 past Yellow Bank Beach. The proposed alignment will follow the coastal side of the Coastal Rail Trail corridor heading down the coast. Yellow Bank Beach is another small sandy beach cove with informal parking off of Highway 1, and non-formalized access across the rail tracks to the beach and coastal bluffs. As Highway 1 and the rail line continue down the coast, the two (2) corridors start to pull away from the coastal bluffs through Coast Dairies. The proposed Coastal Rail Trail will continue along the coastal side of the tracks. As the rail and Highway 1 corridor pulls farther from the coastal edge, it offers more opportunities for secondary coastal bluff trails along the Coast Dairies property. These proposed unpaved native soil trails (Segments 5D and 5E on Figure 4-13) offer alternate coastal access, scenic views, and other recreational opportunities linked by the proposed main rail trail spine. As the Coastal Rail Trail heads down the coast from the Coast Dairies property, it diverts away from its parallel track on Highway 1 as it crosses Scaroni Road, the rail tracks, and Majors Creek. This begins Subsegment 5.3 where the proposed trail approaches the larger coastal mesas and agricultural land within Wilder Ranch State Park.



Agricultural roads sometimes encroach into the rail right-of-way

Subsegment 5.2 proposed improvements include:

- 2.58 miles (13,630 LF) multi-use paved path (Class I) along the coastal side rail right-of-way
- 1.60 miles (8,430 LF) native soil coastal bluff trails (this distance is comprised of Segments 5D and 5E)
- One (1) rail crossing at upper Scaroni Road
- One (1) road crossing of upper Scaroni Road and two (2) additional private crossings
- Fencing may be considered when project is implemented



The Coastal Rail Trail should connect to existing trails whenever possible



Coast Dairies coastal trail

SUBSEGMENT 5.3 (3.62 MILES)

This subsegment begins at upper Scaroni Road and ends at the existing Wilder Ranch staging area. There are up to fifteen (15) at-grade vehicle crossings along the rail tracks from Scaroni Road to the Wilder Ranch State Park trailhead. The proposed trail alignment will continue down the coast along the coastal side rail right-of-way. From the beginning point of Subsegment 5.3 at upper Scaroni Road, there is a section of the rail right-of-way that is only twenty (20) feet wide. The twenty- (20-) foot rail right-of-way continues for a short stretch from upper Scaroni Road down the coast to mile marker 27 near lower Scaroni Road where it widens back to one hundred and twenty (120) feet. A more accurate and detailed survey of this narrow segment may help determine if the adjacent land is privately owned or part of the Wilder Ranch landholdings. If the adjacent land is privately owned, one (1) option to address this narrow right-of-way section will be to have the trail cross over to the inland side of the rail tracks at lower Scaroni Road and coordinate with Caltrans to share some of Highway 1 right-of-way to accommodate the trail. Once past the narrow section, the trail crosses back to the coastal side of the rail tracks at upper Scaroni Road and continues along the wider rail right-of-way. Further down the coast from Scaroni Road, existing rail crossings from Wilder Ranch will function as they have historically, with improvements consisting of warning signs along the proposed trail alignment at key trail access points and agricultural crossings. Fencing along the trail will be negotiated and coordinated with the State Parks Department, agricultural operators, and the RTC. Trail Subsegment 5.3 connects to multiple, existing, unpaved bluff-top trails along the edge of the agricultural fields and the coastal edge. There are several optional unpaved subsegment connector trails (Segment 5F on Figure 4-14) that will join existing gaps in the bluff trail. Equestrian use is already occurring in Wilder Ranch and the new rail trail will need to accommodate equestrian use as it connects through Wilder Ranch. The equestrian facilities may include soft-surface trail connectors adjacent to the paved path and signs addressing multi-use path etiquette and wayfinding. Current rules and regulations for equestrian use in Wilder Ranch will be applicable with the new multi-use paved path all the way to Davenport.

Subsegment 5.3 proposed improvements include:

- 3.51 miles (18,520 LF) multi-use path (Class I) along the coastal side rail right-of-way
- 0.11 miles (570 LF) native soil coastal bluff trails (Segment 5F)
- One (1) rail crossing at lower Scaroni Road
- One (1) road crossing of lower Scaroni Road and eleven (11) additional private crossings
- Fencing may be considered when project is implemented

TABLE 4.5 Segment 5 - Davenport and Wilder Ranch

Segment Length	**10.55 miles (55,720 LF) - Davenport and Wilder Ranch**
Rail Trail Portion	7.58 miles (40,040 LF)
Coastal Trail Portion	2.97 miles (15,680)
Segment Cost	**$15,006,784**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	40,040	Linear Feet	$162	$6,486,480
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$1,369,220
Bridge Structures	0	Each	Varies	$0
At-Grade Crossings (Rail Tracks or Streets)	21	Each	Varies	$1,410,000
			Rail Trail Construction SUBTOTAL	**$9,265,700**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	16,220	Linear Feet	$7	$113,540
On Street Facilites (Class II, III, and Sidewalks)	0	Linear Feet	Varies	$0
			Coastal Trail Construction SUBTOTAL	**$113,540**

COST SUMMARY	
Construction TOTAL	**$9,379,240**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$1,406,886
Environmental Permitting (10%)	$937,924
Construction Management (15%)	$1,406,886
Contingency (20%)	$1,875,848
SEGMENT TOTAL COST	**$15,006,784**

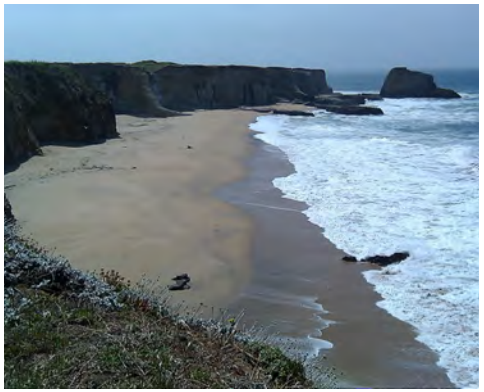
Segment Features	Description	Quantity
Segment Jurisdictional Area	State Parks, RTC - Rail ROW Owner, Caltrans	2
Minor Roadway Crossings	Scaroni Road, North and South	2
Private Road Crossings	Various non-paved Agricultural Roads	20
Trail At-Grade Railroad Crossings	Davenport, two (2) between mile markers 29.4 and 30.4	3
Rail Bridge Crossing (Wood Trestle)	Old Dairy Gulch	2
Minor Drainage	Multiple	14
Existing Staging Areas/Rest Stops	Bonny Doon Beach, Yellowbank Beach, Wilder Ranch	5
Connection To Other Trails	Wilder Ranch Trail System, Inland and Coastal Bluffs	2
Connection to Public Beaches	Davenport, Bonny Doon, Yellowbank, Laguna Creek Beach, Red-White-and-Blue, 4-Mile, 3-Mile, Sand Plant and Wilder Beaches	9
Connection to Passive Park		1



Potential trail alignment adjacent to railroad tracks



Wilder Ranch trailhead with restrooms, drinking water, vehicle parking, and bike racks



Scenic overlook from coastal bluff trail

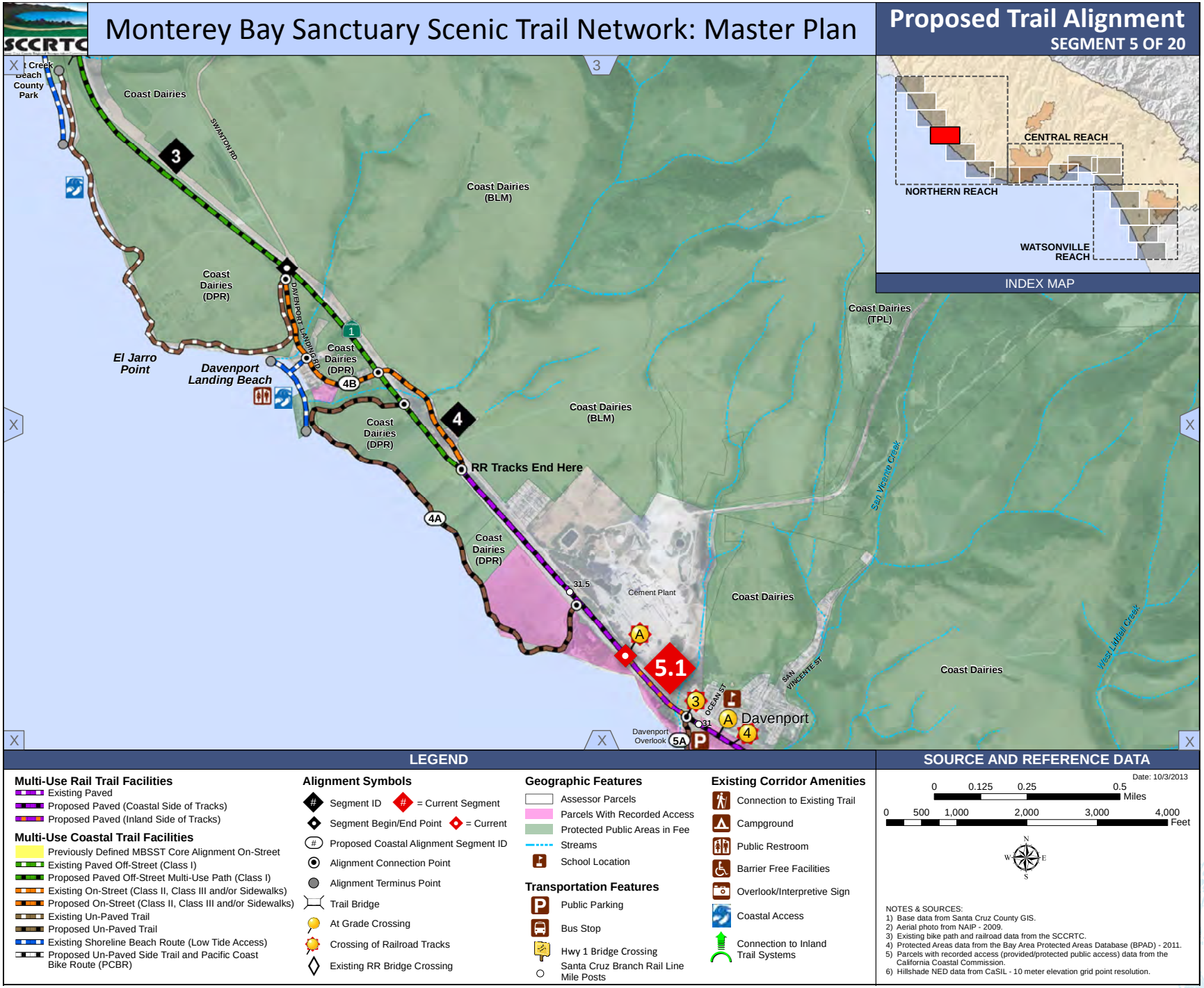


Figure 4-12 Segment 5 proposed trail alignment

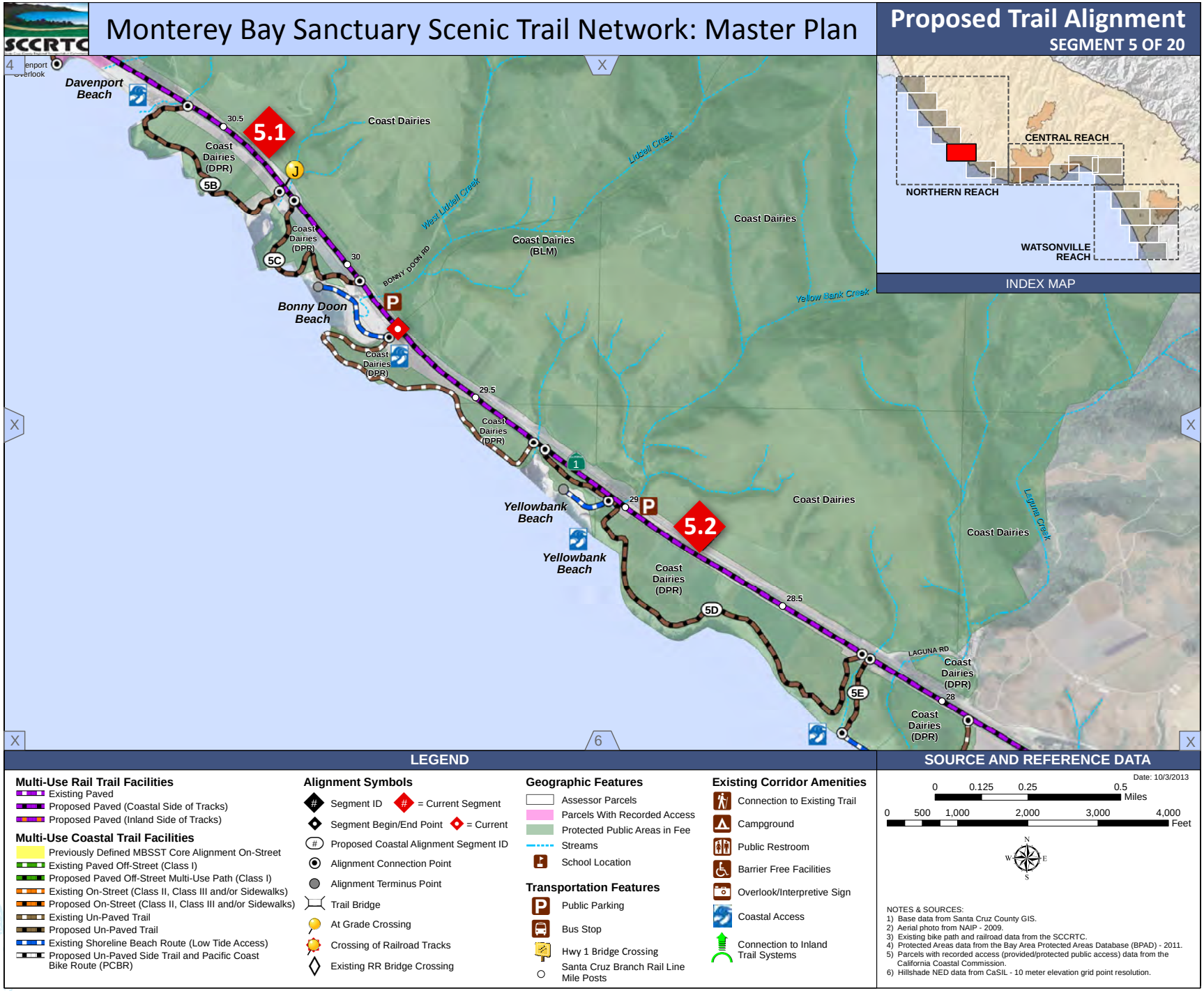


Figure 4-13 Segment 5 proposed trail alignment (continued)

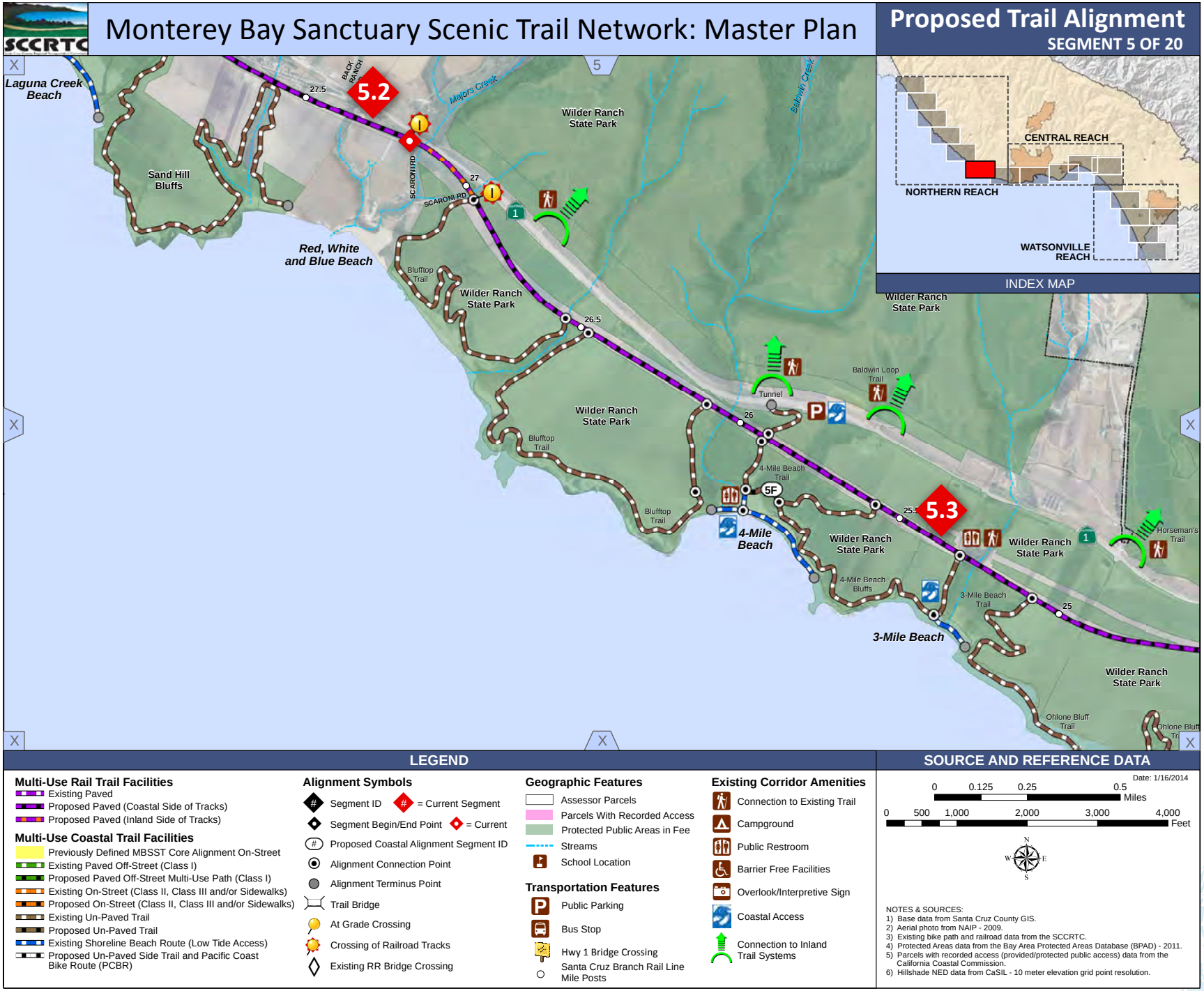


Figure 4-14 Segment 5 proposed trail alignment (continued)

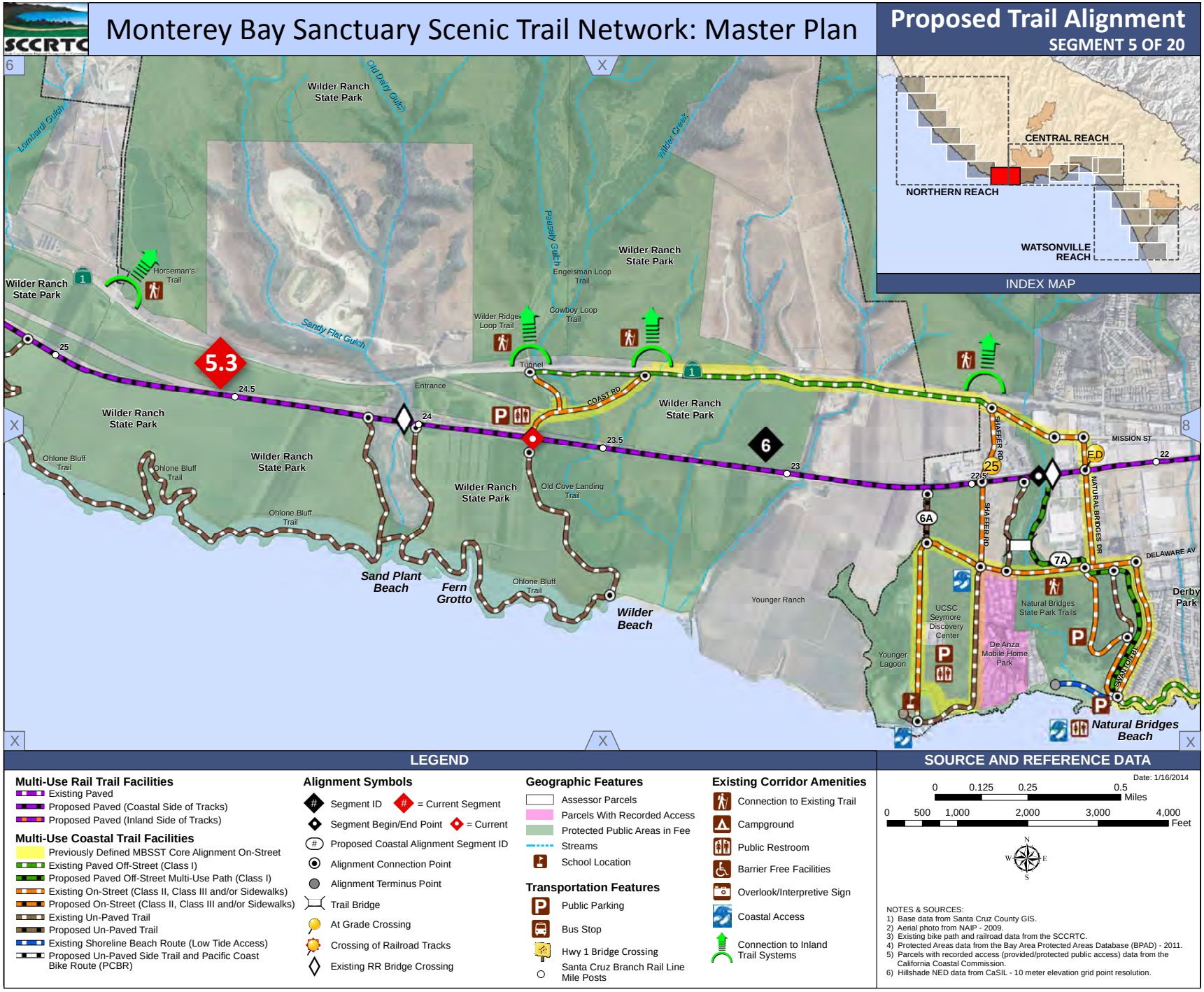


Figure 4-15 Segment 5 proposed trail alignment (continued)

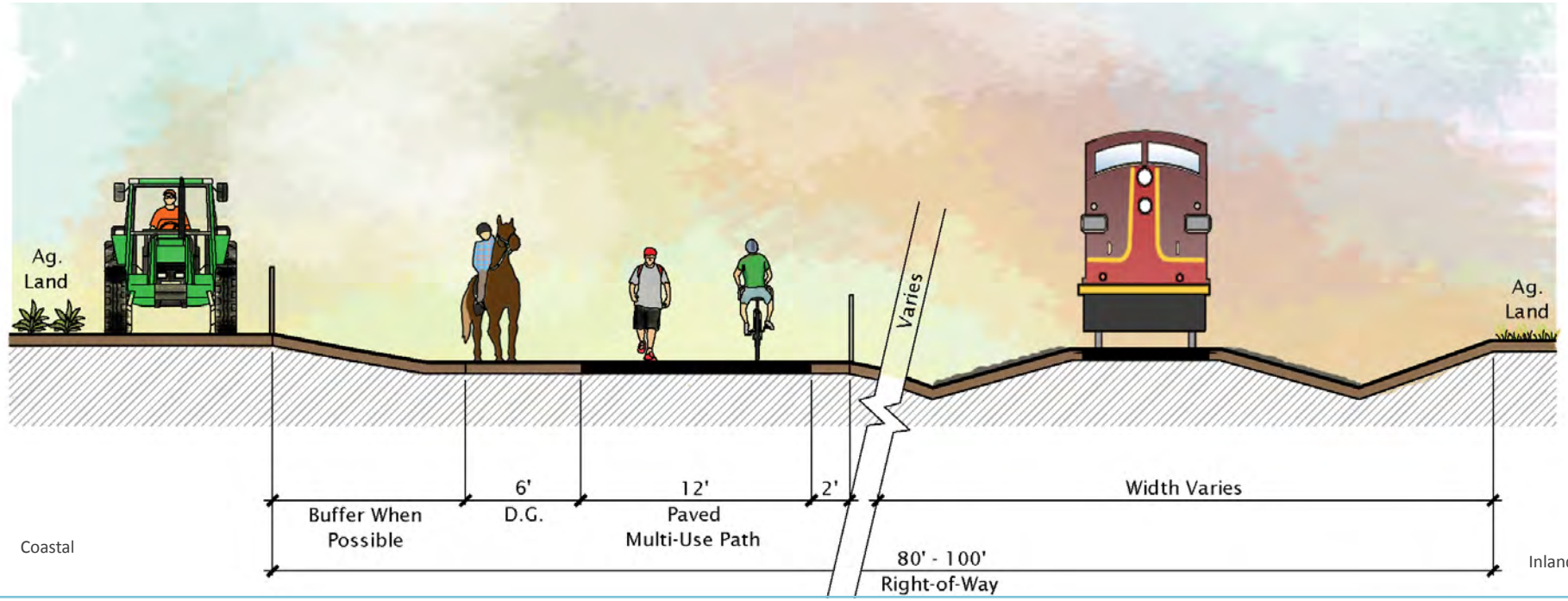


Figure 4-16a Segment 5 trail section

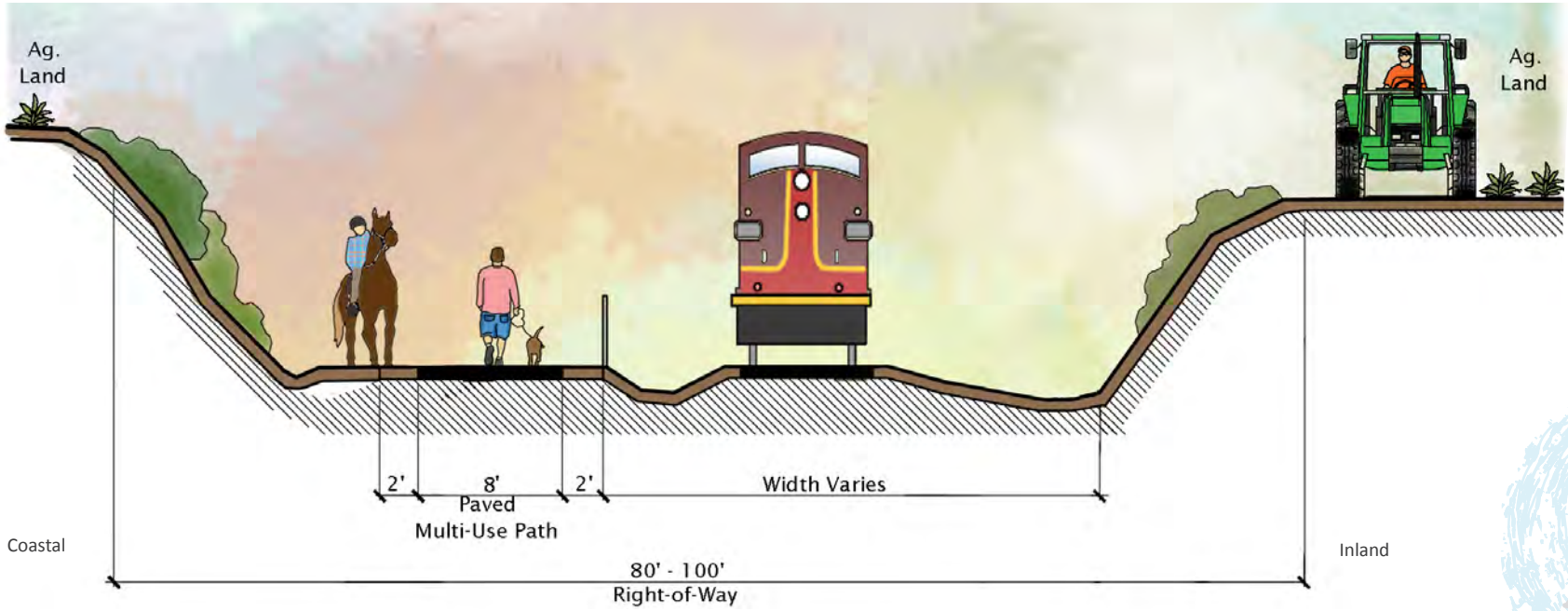


Figure 4-16b Segment 5 trail section with slope constraint



Wilder Ranch trailhead, coastal trail, and railroad tracks



Bridge crossing over Antonelli Pond - needs new bridge to accommodate bikes and pedestrians



Antonelli Pond from the Moore Creek rail trestle bridge



Highway 1 proximity to railroad tracks - looking south

4.6 SEGMENT 6 - WILDER RANCH TRAILHEAD TO SHAFFER ROAD

Length: 1.49 miles (7,830 LF) - Wilder Ranch trailhead to Moore Creek

4.6.1 SEGMENT 6 BOUNDARY DETERMINATION

The Segment 6 boundary is delineated by both the existing trailhead facilities at Wilder Ranch and the existing, parallel multi-use trail system from Wilder Ranch trailhead down the coast past Shaffer Road, connecting to an existing unpaved trail at upper Antonelli Pond. This segment of the proposed Coastal Rail Trail has some level of duplication with the existing Wilder Ranch Class I multi-use facilities running parallel to the proposed Segment 6 along the coastal side of Highway 1. The northern connection point for Segment 6 occurs at the existing Old Cove Landing rail crossing from the Wilder Ranch trailhead. This is a good starting point for bikes and pedestrians to connect to the proposed Coastal Rail Trail. The existing Wilder Ranch staging area provides equestrian parking and a connection to 1.4 miles of equestrian trail facilities located within Segment 6. The Wilder Ranch trailhead also provides a regional rest stop with water, restrooms, and other trail support facilities. The terminus point for Segment 6 occurs down the coast to Shaffer Road on the northernmost side of Moore Creek rail bridge trestle crossing near Antonelli Pond.

4.6.2 SEGMENT 6 DESCRIPTION

Wilder Ranch State Park offers multiple existing trail alignments from its regional trailhead out to the coastal bluff tops and beaches. The trails connect to beaches within Wilder Ranch State Park up and down the coastal edge. Panther Beach at the mouth of Majors Creek; 4 Mile Beach at the mouth of Baldwin Creek; 3 Mile Beach, Sand Plant Beach, Fern Grotto, and Wilder Beach at the south end of the state park. A trail bridge crossing option is proposed across Antonelli Pond closer to Delaware Avenue, providing a shorter bridge span shown in Segment 6A. The proposed Segment 6 trail alignment continues down the coast through the center of Wilder Ranch State Park as it crosses Shaffer Road to the upper edge of the Moore Creek train trestle. The Wilder Ranch State Park trailhead provides parking, restrooms, and equestrian parking, and serves both travelers arriving by car or along the existing multi-use trail. An existing below-grade tunnel crossing of Highway 1 provides connectivity to existing trails leading to inland portions of the Wilder Ranch State Park trail network and the University of California Santa Cruz campus land. This segment is in proximity to seventeen (17) activity centers identified in Table 3.1. Although not evaluated as part of the project, a boardwalk-type treatment may be considered at a later date for a crossing over Antonelli Pond.

Segment 6 proposed improvements include:

- 1.36 miles (7,160 LF) multi-use paved path (Class I) along the coastal side of the rail right-of-way
- 0.13 miles (670 LF) native soil coastal bluff trails (Segment 6A)
- One (1) road crossing of Schaffer Road
- Two (2) culvert crossings up the coast from Wilder Ranch trailhead and three (3) additional private crossings
- Fencing may be considered when project is implemented

TABLE 4.6 Segment 6 - Wilder Ranch Trailhead/Shaffer Road

Segment Length	**1.49 miles (7,830 LF) - Wilder Ranch Trailhead/Shaffer Road**
Rail Trail Portion	1.36 miles (7,160 LF)
Coastal Trail Portion	0.13 miles (670 LF)
Segment Cost	**$3,114,224**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	7,160	Linear Feet	$162	$1,159,920
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$469,100
Bridge Structures	0	Each	Varies	$0
At-Grade Crossings (Rail Tracks or Streets)	6	Each	Varies	$310,000
			Rail Trail Construction SUBTOTAL	**$1,939,020**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	670	Linear Feet	$11	$7,370
On Street Facilites (Class II, III, and Sidewalks)	0	Linear Feet	Varies	$0
			Coastal Trail Construction SUBTOTAL	**$7,370**

COST SUMMARY	
Construction TOTAL	**$1,946,390**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$291,959
Environmental Permitting (10%)	$194,639
Construction Management (15%)	$291,959
Contingency (20%)	$389,278
SEGMENT TOTAL COST	**$3,114,224**

Segment Features	Description	Quantity
Segment Jurisdictional Area	State Parks, RTC - Rail ROW Owner	2
Private Road Crossings	Un-paved access roads	3
Major Drainage	Antonelli Pond/Moore Creek	1
Minor Drainage	Various	3
Existing Staging Areas/Rest Stops	Wilder Ranch	1
Connection To Other Trails	Wilder Ranch Trail System	3
Connection to Public Beaches	Wilder Beach, Younger Lagoon	2
Connection to Passive Park	Wilder Ranch State Park/Antonelli Pond	2
Connection to Sports Park		



Antonelli Pond trail sign



Old Cove Landing Trail sign


Informal crossing at Shaffer Road

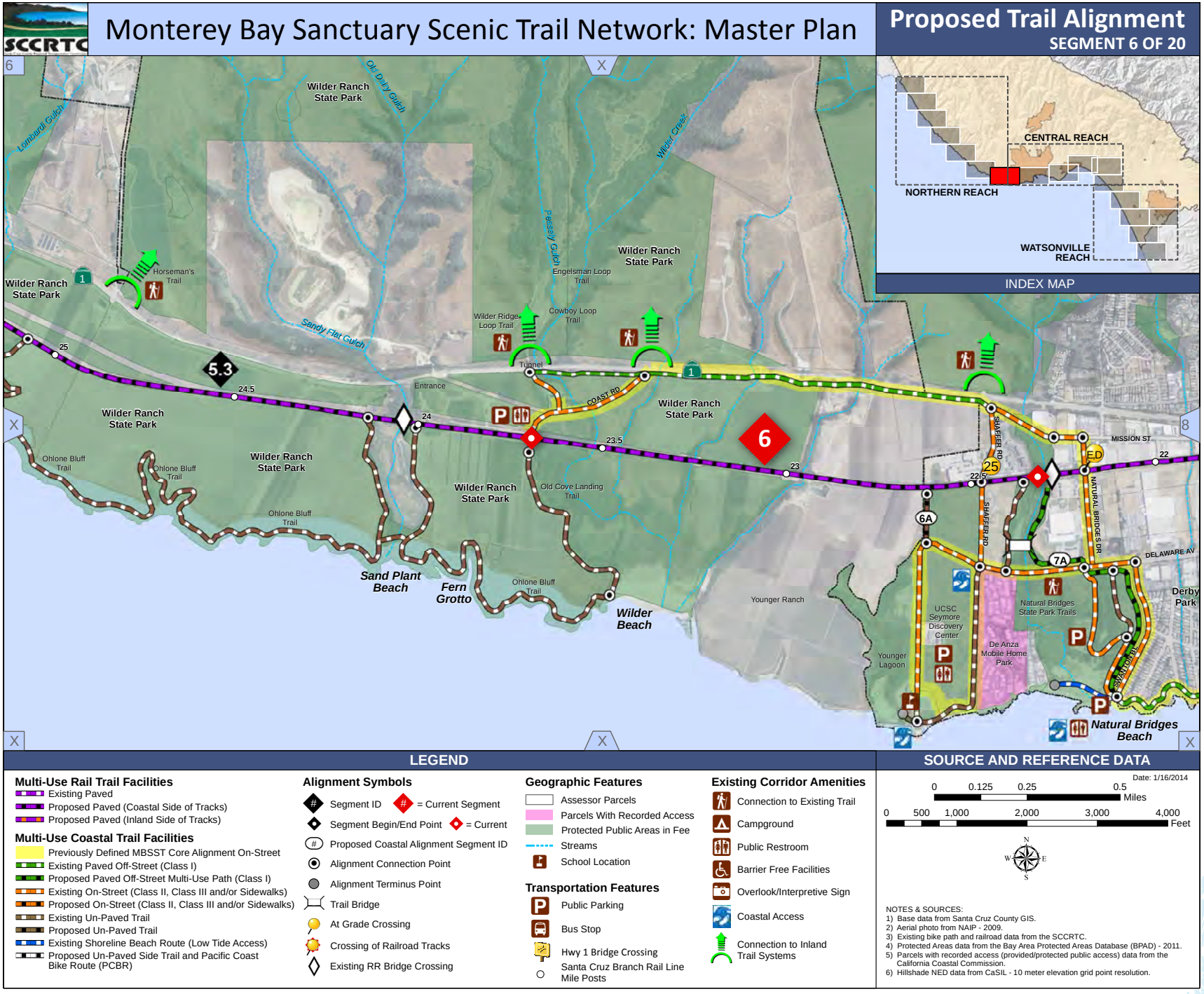


Figure 4-17 Segment 6 proposed trail alignment

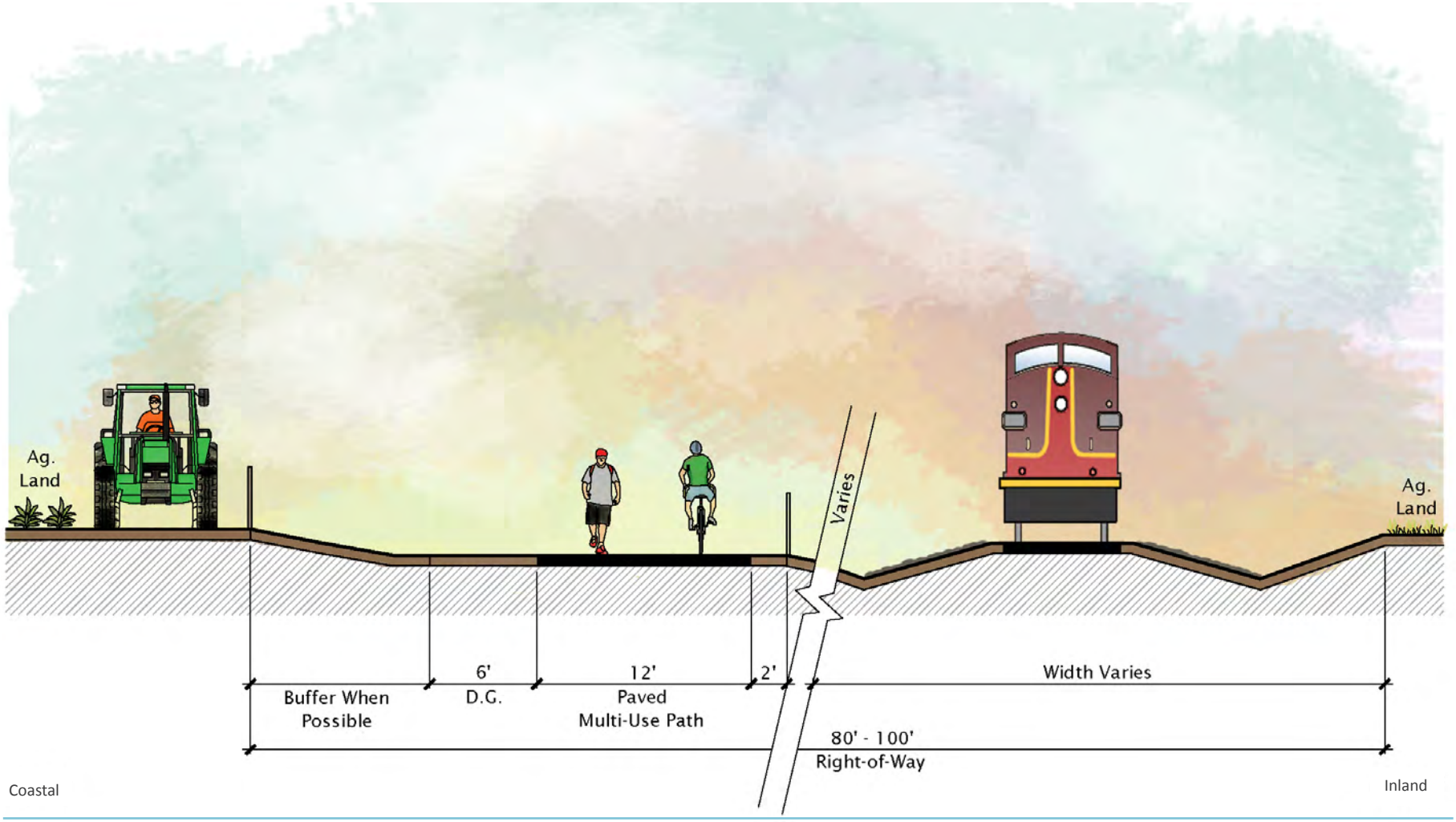


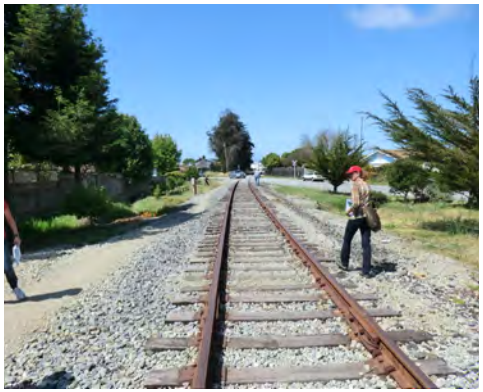
Figure 4-18 Segment 6 trail section



Areas with excess right-of-way or underutilized land have potential to become trail staging areas



Vacant parcel south of the intersection of Rankin Street at Almar Avenue



Rail right-of-way at Seaside Street

4.7 SEGMENT 7 - COASTAL SANTA CRUZ

Length: 3.10 miles (16,340 LF) - Antonelli Pond to Pacific Avenue and Beach Street intersection

4.7.1 SEGMENT 7 BOUNDARY DETERMINATION

The boundary for Segment 7 was determined due to its proximity to the Moore Creek rail trestle bridge, which serves as a logical segment start/end point as it presents a significant funding constraint. A parallel preengineered bridge on the coastal side of the rail trestle will be needed to cross Moore Creek. The segment terminus occurs down the coast near Depot Park in the city of Santa Cruz at the intersection of Beach Street and Coastal Cliff Drive. The Depot Park area includes a trailhead with vehicle parking, bicycle racks, playground, train depot, and trail connection to the Monterey Bay National Marine Exploration Center. The existing trailhead amenities provide an ideal start/end point that connects residential neighborhoods, schools, commercial, tourist destinations, coastal access, and industrial employment centers.

4.7.2 SEGMENT 7 DESCRIPTION

The rail alignment setting changes significantly in this segment of the Central Reach. This segment of the proposed Coastal Rail Trail is at the epicenter of several existing trail system networks, as well as recreational facilities such as Wilder Ranch State Park, Younger Lagoon Reserve, Antonelli Pond Park, and Natural Bridges State Beach, and connectors to the Cliff Drive coastal walk. Beginning at the Moore Creek rail trestle bridge and heading down the coast, the rail line crosses an existing at-grade street crossing at Natural Bridges Drive and then travels down the coast through industrial, commercial, and residential areas for the next several miles. This segment of the rail line is flat and open with numerous at-grade street crossings. The proposed trail facility will follow within the rail right-of-way on the coastal side of the rail tracks with at-grade crossings at Swift Street, Fair Avenue, Almar Avenue, and Rankin Street. The Rankin Street at-grade crossing will provide an opportunity for the trail to cross from the coastal side of the tracks to the inland side and parallel the inland side rail right-of-way toward Neary Lagoon Park. The Rankin Street to Neary Lagoon stretch will involve up to six (6) additional at-grade residential street crossings. These residential streets are characterized by fairly slow vehicle speeds and low-volume traffic. The trail facility will follow the inland rail right-of-way to Neary Lagoon Park, where it will eventually cross two (2) diverter rail tracks to connect with the existing rail trail at Depot Park. The rail tracks are elevated above where Neary Lagoon is likely to flood during winter. The Coastal Rail Trail should also be elevated to the level of the rail to avoid flooding of the trail during winter. The two (2) diverter track crossings at Neary Lagoon Park will be incorporated with two (2) existing unsignalized maintenance vehicle rail at-grade crossings in the same general location. The proposed Coastal Rail Trail will connect with the existing Depot Park staging area. The existing Coastal Rail Trail from Depot Park parallels the rail track on the inland side, connects to the new Monterey Bay National Marine Sanctuary Exploration Center, and terminates at the Pacific Avenue and Beach Street intersection. The portion of the existing Coastal Rail Trail that is adjacent to the Exploration Center is only six (6) feet wide and will require upgrades to match the proposed minimum standard width of eight (8) feet when this segment of the trail facility is implemented. Segment 7 is in proximity to nine (9) different activity centers identified in Table 3.1.

Segment 7 proposed improvements include:

- 2.17 miles (11,450 LF) multi-use paved path (Class I) along rail right-of-way
- 0.08 miles (410 LF) on-street bike route
- 0.85 miles (4,480 LF) multi-use paved path (Class I) along the coastal side of the rail right-of-way (Segment 7A)
- Fourteen (14) street crossings
- Three (3) rail crossings and one (1) additional private crossing
- One (1) preengineered bike bridge (Moore Creek crossing)
- Existing staging area at Depot Park
- Fencing may be considered when project is implemented

TABLE 4.7 Segment 7 - Coastal Santa Cruz

Segment Length	**3.10 miles (16,340 LF) - Coastal Santa Cruz**
Rail Trail Portion	2.17 miles (11,450)
Coastal Trail Portion	0.93 miles (4,890 LF)
Segment Cost	**$11,218,016**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	11,450	Linear Feet	Varies	$1,854,900
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$580,600
Bridge Structures	1	Each	Varies	$2,500,000
Staging Area Access	1	Each	$80,000	$80,000
At-Grade Crossings (Rail Tracks or Streets)	18	Each	Varies	$1,270,000
			Rail Trail Construction SUBTOTAL	**$6,285,500**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	4,480	Linear Feet	Varies	$725,760
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II, III, and Sidewalks)	0	Linear Feet	$20	$0
			Coastal Trail Construction SUBTOTAL	**$725,760**

COST SUMMARY	
Construction TOTAL	**$7,011,260**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$1,051,689
Environmental Permitting (10%)	$701,126
Construction Management (15%)	$1,051,689
Contingency (20%)	$1,402,252
SEGMENT TOTAL COST	**$11,218,016**

Segment Features	Description	Quantity
Segment Jurisdictional Area	State Parks, RTC - Rail ROW Owner, City of Santa Cruz	3
Major Roadway Crossings	Natural Bridges Drive, Rankin Street	3
Minor Roadway Crossings	Various residential streets	11
Trail At-Grade Railroad Crossings	Rankin Street/Two crossings at Depot Park	3
Major Drainage	Antonelli Pond/ Moore Creek	1
Minor Drainage	Various	3
Rail Bridge Crossing (Wood Trestle)	Antonelli Pond/Moore Creek	1
Existing Staging Areas/Rest Stops	Wilder Ranch	1
Connection To Other Trails	Wilder Ranch Trail System	3
Within 1/4 mile of Public School	Pacific Collegiate School, Gateway School, United Methodist Church School, Bayview Elementary	5
Connection to Public Beach	Wilder Beach, Younger Lagoon	2
Connection to Commercial Area	Multiple	5
Connection to Residential Area	Multiple	4
Connection to Passive Park	Wilder Ranch/Neary Lagoon Park/Depot Site Park	3



Intersection of Beach Street with Front Street, Marine Sanctuary Exploration Center in the background



Safety challenges are present at the intersection of Beach Street and Pacific Ave



Two-way cycle track separated from vehicles and pedestrians

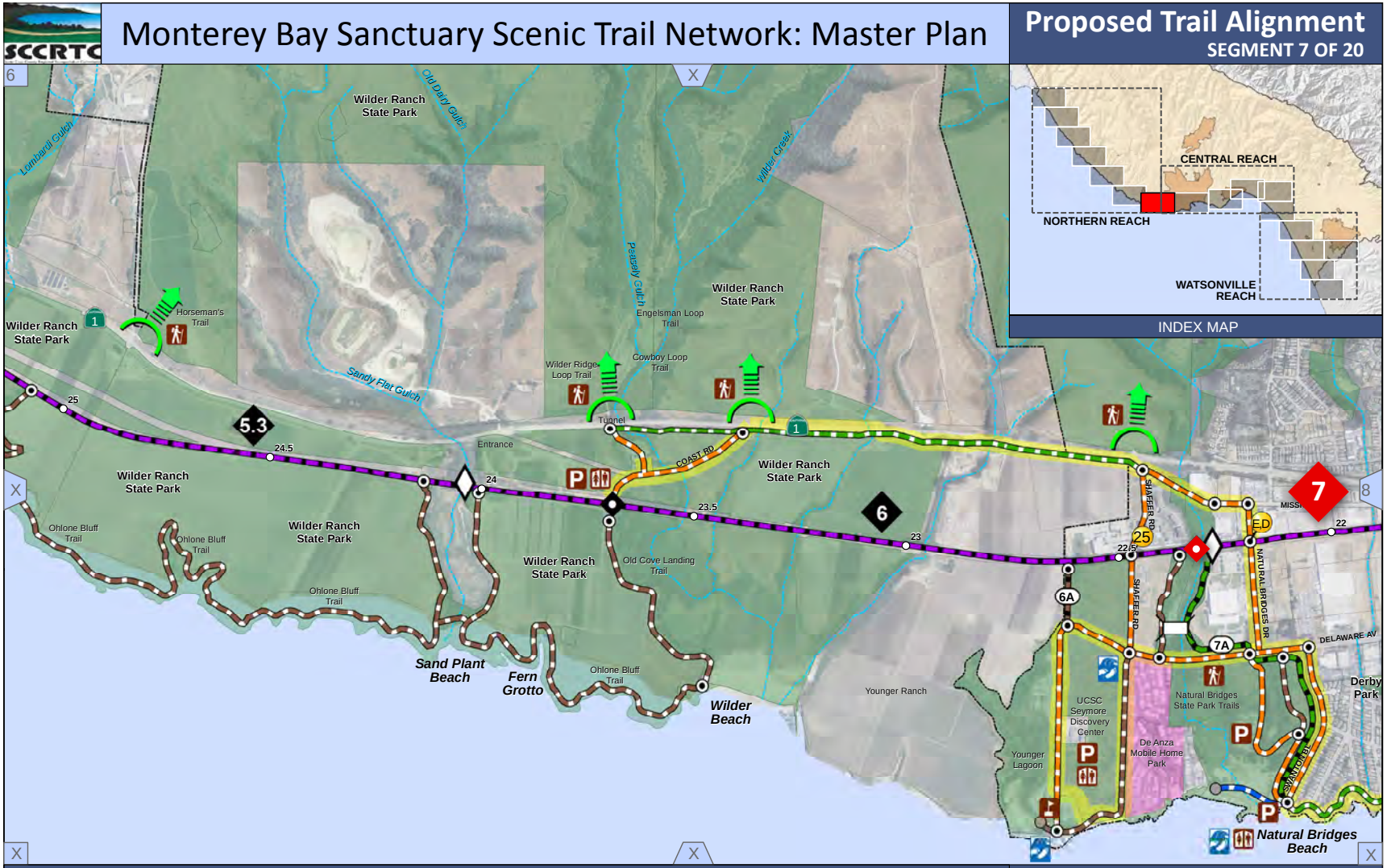


Figure 4-19 Segment 7 proposed trail alignment

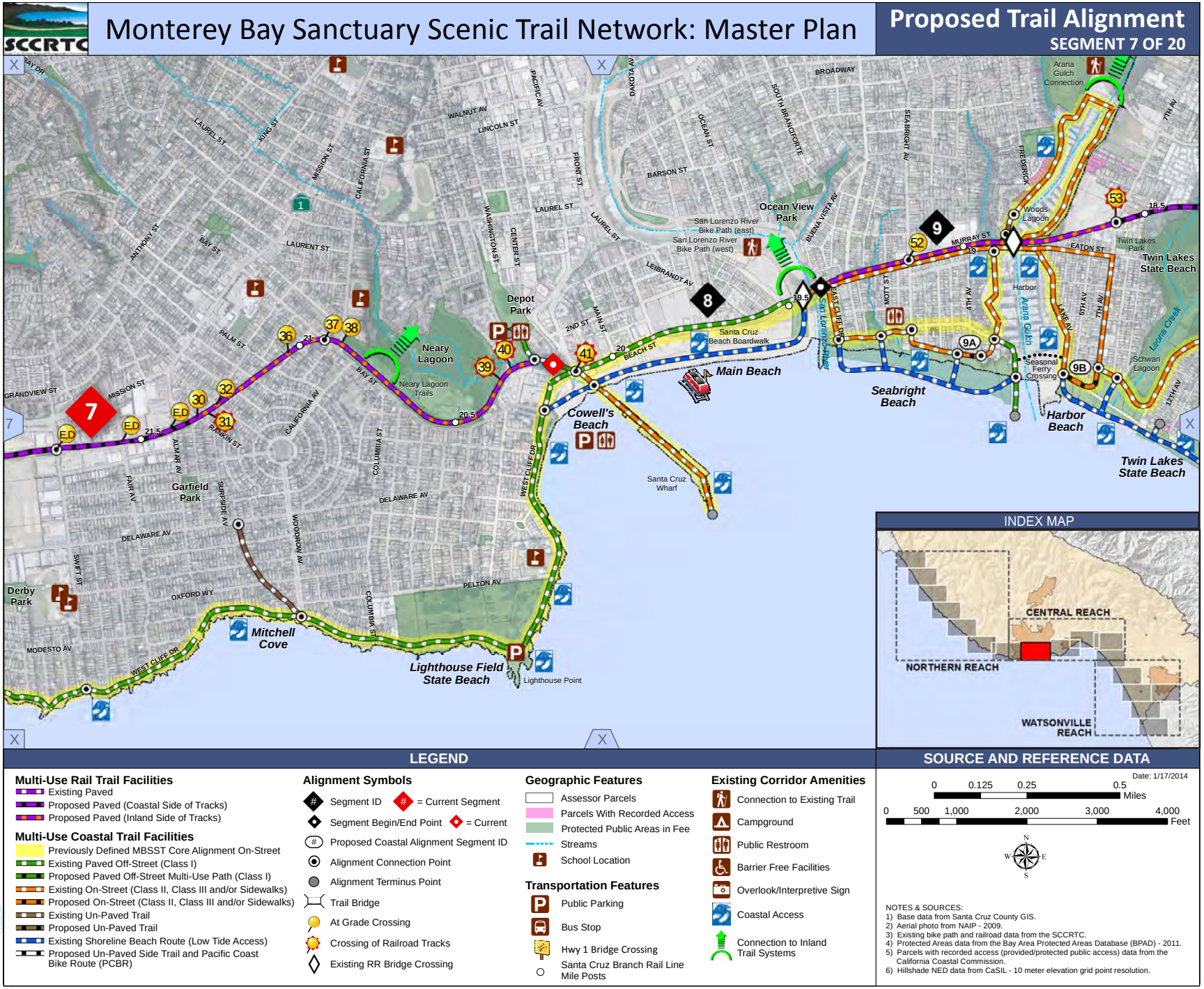


Figure 4-20 Segment 7 proposed trail alignment (continued)

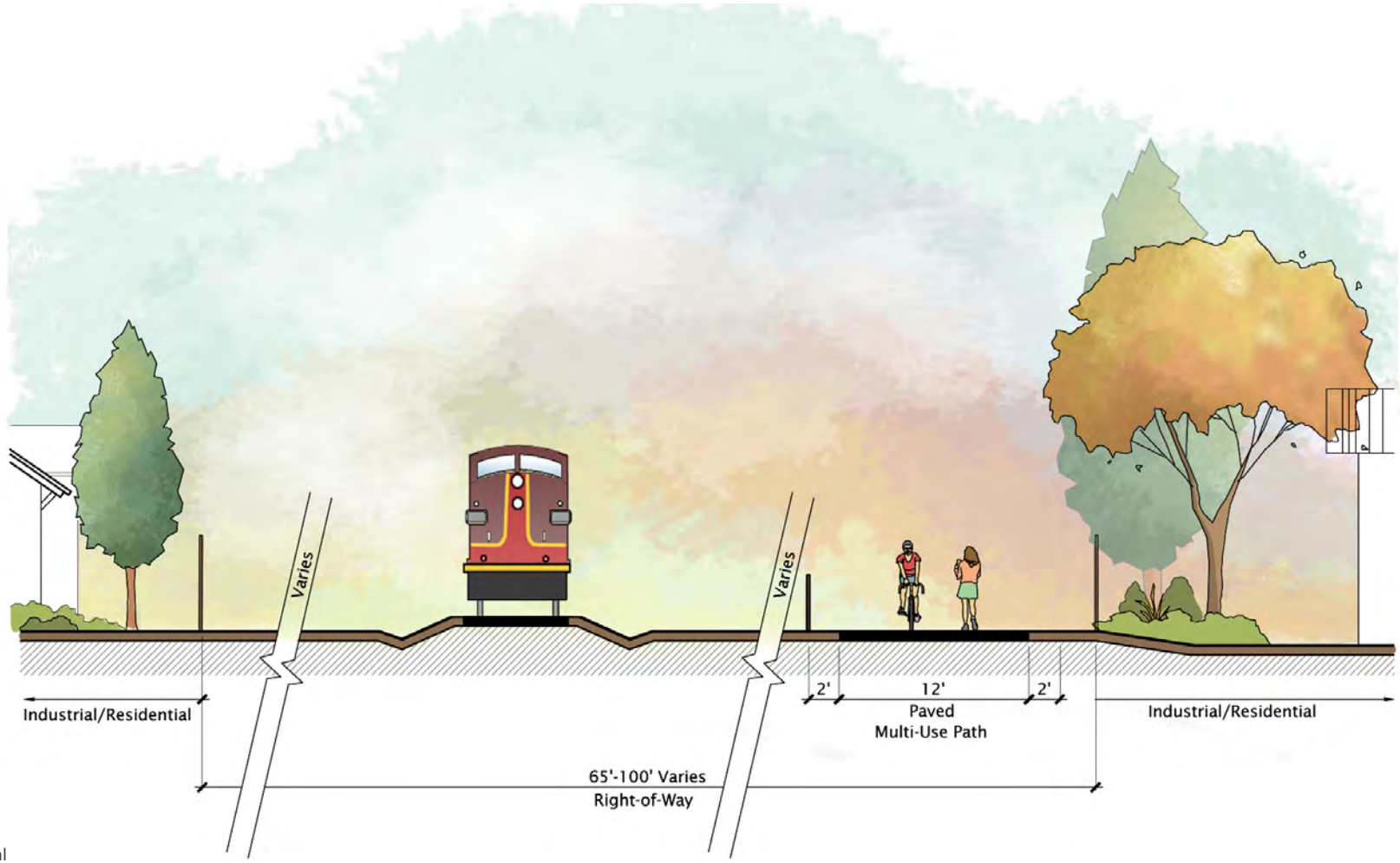


Figure 4-21 Segment 7 trail section



Cowell's Beach with railroad tracks emerging from trees



Santa Cruz Beach Boardwalk


Bike racks at the Santa Cruz Beach Boardwalk



Two-way cycle track adjacent to Santa Cruz Beach Boardwalk

4.8 SEGMENT 8 - SANTA CRUZ BEACH BOARDWALK

Length: 0.77 miles (4,070 LF) - Beach Street intersection to San Lorenzo Rail Bridge Crossing

4.8.1 SEGMENT 8 BOUNDARY DETERMINATION

The boundaries for Segment 8 are determined by a well-defined existing facility that runs along Beach Street and the Santa Cruz Beach Boardwalk. It extends from Beach Street and the Pacific Street intersection to the San Lorenzo River Railroad Bridge.

4.8.2 SEGMENT 8 DESCRIPTION

This existing segment of the trail alignment consists of a two-way cycle track, which follows the coastal side of Beach Street to the San Lorenzo River Rail Bridge. The two-way cycle track continues between the pedestrian beach boardwalk and the one-way travel lanes along Beach Street. The rail tracks traverse down the middle of Beach Street's two-lane, one-way street. The bike path crosses the rail tracks mid-block as the rail line merges to the rail bridge crossing of the San Lorenzo River. The existing bike path currently crosses the train tracks at an extreme angle, posing a problem for bike tires crossing the rail track openings and creating poor visibility of cyclist and train operators where the tracks and trail converge. The existing cycle track terminates at Beach Street and 3rd Street with a short gap through a public parking lot to connect to the San Lorenzo River Trail system. Bicyclist and pedestrians continue down the coast and across the San Lorenzo River using the existing, narrow, rail bridge pedestrian crossing. A new preengineered bike and pedestrian bridge will be proposed to cross the San Lorenzo River. There are up to fifty-three (53) activity centers in proximity of Segment 8. Details can be found in Table 3.1

Segment 8 proposed improvements include:

- 0.77 miles (4,070 LF) existing Class II bike lanes
- One (1) new preengineered bike and pedestrian bridge, four hundred- (400-) foot span
- Improvements of striping to existing cycle track with future roadway roundabout at Pacific Avenue and Beach Street (2000 LF)
- Upgrade existing rail trail to the minium eight- (8-) foot standard from Depot Park to the intersection of Pacific Avenue and Beach Street
- One (1) rail crossing with upgrades to Beach Street and Pacific Avenue intersection
- Two (2) street crossings with upgrades to Beach Street and Pacific Avenue intersection
- Fencing may be considered when project is implemented

TABLE 4.8 Segment 8 - Santa Cruz Beach Boardwalk

Segment Length	**0.77 miles (4,070 LF) - Santa Cruz Beach Boardwalk**
Rail Trail Portion	0.0 miles (0 LF)
Coastal Trail Portion	0.77 miles (4,070 LF)
Segment Cost	**$10,314,240**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$56,400
Bridge Structures	1	Each	Varies	$6,000,000
At-Grade Crossings (Rail Tracks or Streets)	3	Each	Varies	$350,000
			Rail Trail Construction SUBTOTAL	**$6,406,400**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II, III, and Sidewalks)	2,000	Linear Feet	$20	$40,000
			Coastal Trail Construction SUBTOTAL	**$40,000**

COST SUMMARY	
Construction TOTAL	**$6,446,400**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$966,960
Environmental Permitting (10%)	$644,640
Construction Management (15%)	$966,960
Contingency (20%)	$1,289,280
SEGMENT TOTAL COST	**$10,314,240**

Segment Features	Description	Quantity
Segment Jurisdictional Area	RTC - Rail ROW Owner, City of Santa Cruz	2
Major Roadway Crossings	Beach and West Cliff	1
Trail At-Grade Railroad Crossings	Existing Crossing on Beach Street	1
Rail Bridge Crossing (Wood Trestle)	Existing Crossing on San Lorenzo Bridge	1
Railroad right-of-way, 35' wide or less	At existing San Lorenzo Bridge Location	1
Major Drainage	San Lorenzo River (existing bridge crossing)	1
Existing Staging Areas/Rest Stops	New Visitor Center/Santa Cruz Beach Wharf/Boardwalk	3
Connection To Other Trails	San Lorenzo River Trail System	1
Connection to Public Beach	Cowell's Beach, Main Beach	2
Connection to Commercial Area	Downtown Santa Cruz	1
Connection to Residential Area	Multiple	2
Connection to Passive Park	Main Beach/Cowell's Beach	2



Cycle track adjacent to boardwalk



Entrance sign to the Santa Cruz Wharf



Rail track interface

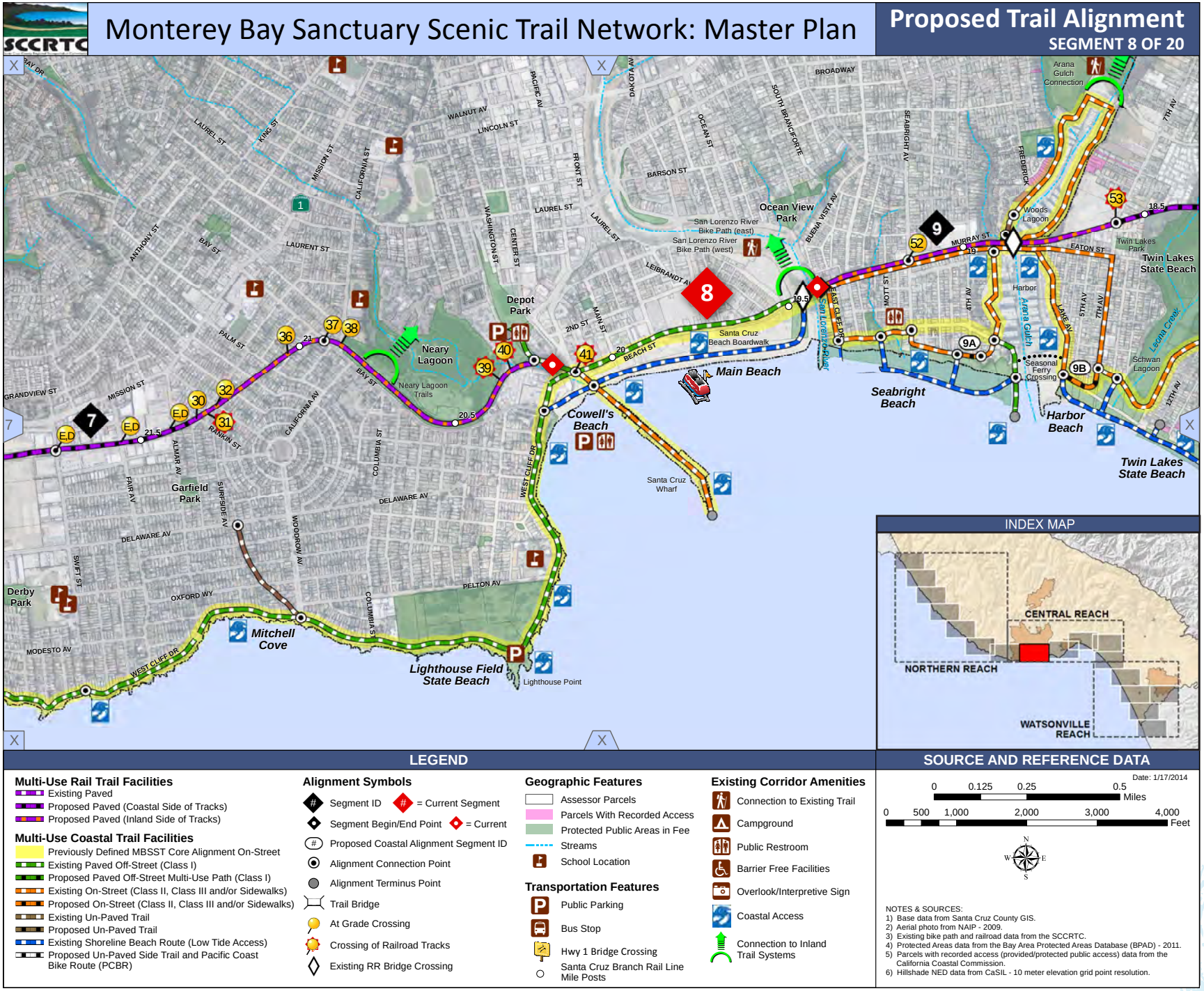


Figure 4-22 Segment 8 proposed trail alignment

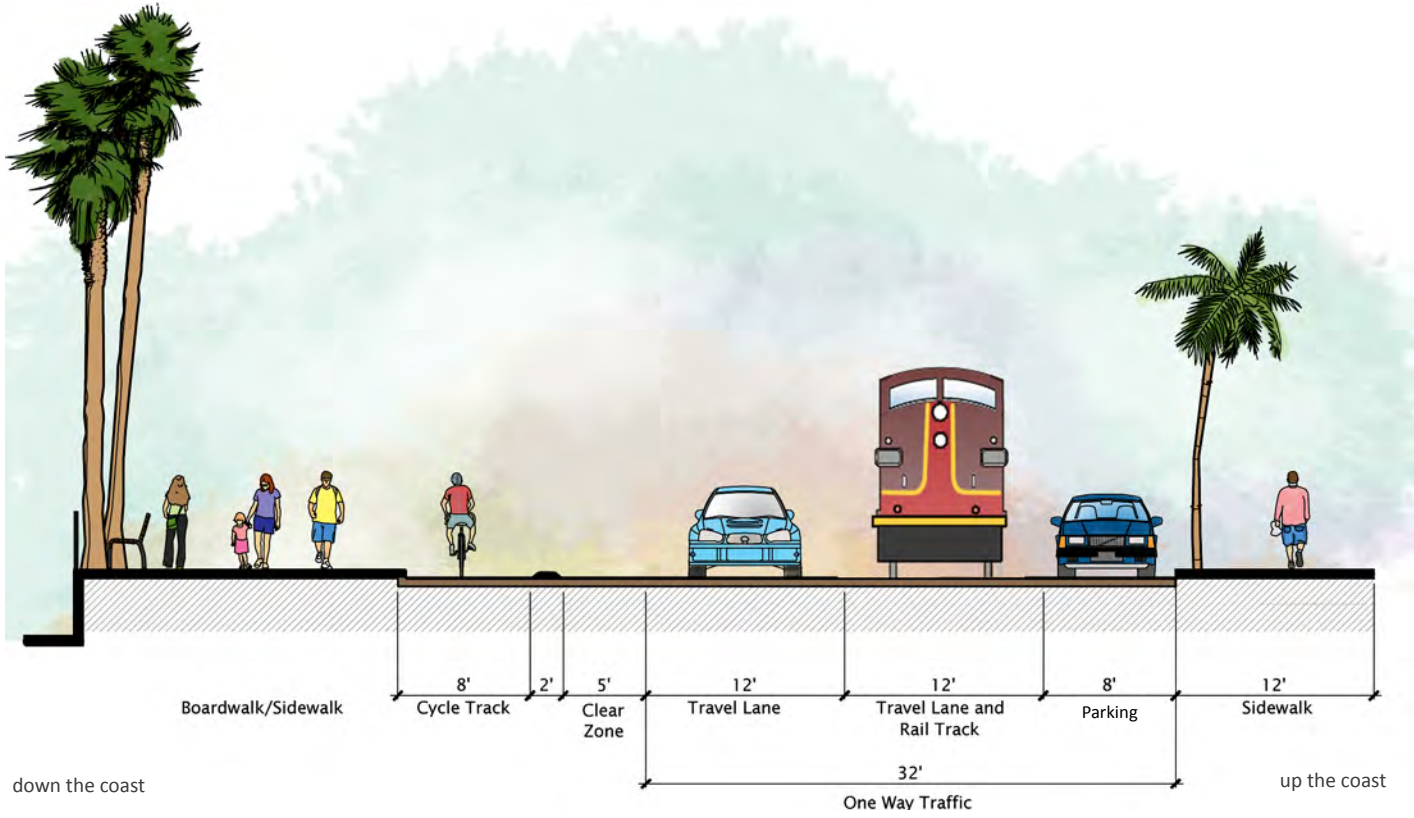


Figure 4-23 Segment 8 trail section



Santa Cruz Beach Boardwalk



Santa Cruz Beach Boardwalk with railroad bridge

4.9 SEGMENT 9 - TWIN LAKES

Length: 1.73 miles (9,140 LF) - coastal side of San Lorenzo Rail Bridge to 17th Avenue

4.9.1 SEGMENT 9 BOUNDARY DETERMINATION

The boundaries for Segment 9 are based on connections to existing facilities at the San Lorenzo Bridge crossing down the coast to the 17th Avenue entrance to the Simpkins Swim Center. This segment of the proposed alignment will make a significant, safe, multi-use path connection from the Main Beach waterfront and the San Lorenzo River to the harbor, Twin Lakes State Beach, and the neighborhoods surrounding the Simpkins Swim Center

4.9.2 SEGMENT 9 DESCRIPTION

The existing San Lorenzo River Rail Bridge offers pedestrian access on the bridge superstructure. The attached pedestrian walkway on the inland side of the rail bridge is narrow and difficult to accommodate passing pedestrians and cyclists walking their bikes across the bridge. The current pedestrian and bike access along Murray Street down the coast to Seabright Avenue is primarily an on-street Class II bike lane and a four- (4-) foot-wide sidewalk on the coastal side of Murray Street. The sidewalk on Murry Street ends at Mott Avenue, one (1) block before Seabright Avenue, and merges onto the small frontage street of Murray, connecting to Seabright Avenue. The city of Santa Cruz has plans to add a designated right-turn lane to the westbound side of Murray Street at Seabright to help with through traffic flow. The proposed Coastal Rail Trail continues down the coast to 7th Avenue. The 7th Avenue at-grade railroad crossing provides a safe rail track crossing for the proposed Coastal Rail Trail to switch from the inland side of the tracks to the coastal side of the rail tracks to eventually cross Twin Lakes State Beach to Simpkins Swim Center.

There are two (2) existing bridges crossing Woods Lagoon (the Santa Cruz small craft harbor) along Murray Street—one (1) is the existing rail bridge and the other is the existing Murray Street roadway bridge paralleling the coastal side of the rail bridge. The four- (4-) foot-wide bike lanes continue across the existing narrow vehicle bridge along with the four- (4-) foot-wide sidewalk located on the coastal side of the bridge. At the bridge abutment there are pedestrian stairs leading from the Murray Street corridor down to the existing trail system within Woods Lagoon/harbor. There are plans to retrofit the existing vehicle bridge crossing at this location, which will include upgrades to pedestrian and bike facility crossings of Woods Lagoon/harbor. As the rail bridge and Murray Street bridge head down the coast across Woods Lagoon, the Murray Street and rail alignments begin to pull away from one another. Murray Street merges into Eaton Street and eventually ends just past 7th Avenue. The existing bike lanes and sidewalks continue down Eaton Street to 7th Avenue. The railroad alignment continues down the coast after the harbor crossing, and the right-of-way opens up down the corridor toward Schwan Lagoon. A new preengineered trail bridge will be needed running parallel to the rail bridge at upper Schwan Lagoon, as will a smaller preengineered trail bridge (or large culvert) crossing at a drainage between Live Oak and El Dorado Avenues. A new bike and pedestrian at-grade crossing is proposed adjacent to the Simpkins Family Swim Center parking lot to access El Dorado Avenue on the inland side of the tracks. The proposed Coastal Rail Trail will parallel the Simpkins Family Swim Center to 17th Avenue. Segment 9 connects to forty-six (46) activity centers and multiple residential neighborhoods identified in Table 3.1.

Segment 9 proposed improvements include:

- 1.53 miles (8,100 LF) multi-use paved path (Class I)
- 0.20 miles (1,040 LF) on-street facilities (Segments 9A and 9B)
- One (1) new preengineered bike/pedestrian bridge crossing over the harbor
- One (1) new preengineered bike/pedestrian bridge crossing Upper Schwan Lagoon
- One (1) new preengineered bike/pedestrian bridge crossing (rail culvert crossing) near El Dorado Avenue
- Four (4) road crossings (Mott Avenue, Seabright Avenue, 7th Avenue)
- Two (2) rail crossings (trail spur at El Dorado Avenue, 7th Avenue)
- Fencing may be considered when project is implemented



TABLE 4.9 Segment 9 - Twin Lakes

Segment Length	**1.73 miles (9,140 LF) - Twin Lakes**
Rail Trail Portion	1.53 miles (8,100 LF)
Coastal Trail Portion	0.20 miles (1,040 LF)
Segment Cost	**$11,914,384**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	8,100	Linear Feet	Varies	$1,640,250
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$240,000
Bridge Structures	3	Each	Varies	$5,000,000
At-Grade Crossings (Rail Tracks or Streets)	6	Each	Varies	$560,000
			Rail Trail Construction SUBTOTAL	**$7,440,250**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II, III, and Sidewalks)	1,040	Linear Feet	$6	$6,240
			Coastal Trail Construction SUBTOTAL	**$6,240**

COST SUMMARY	
Construction TOTAL	**$7,446,490**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$1,116,974
Environmental Permitting (10%)	$744,649
Construction Management (15%)	$1,116,974
Contingency (20%)	$1,489,298
SEGMENT TOTAL COST	**$11,914,384**

Segment Features	Description	Quantity
Segment Jurisdictional Area	City/County of Santa Cruz, RTC-Rail ROW Owner, Port District	-
Minor Roadway Crossings	Seabright Street, 7th Ave, 17th Ave	3
Trail At-Grade Railroad Crossings	Seabright Street	1
Rail Bridge Crossing (Wood Trestle)	Woods Lagoon	1
Rail Bridge Crossing (Concrete)	Twin Lakes	1
Rail Bridge Crossing (Concrete)	Leona Creek	1
Minor Drainage	Leona Creek	1
Existing Staging Areas/Rest Stops	Simkin's Swim Center	1
Connection To Other Trails	Woods Lagoon/Arana Gulch	2
Within 1/4 Mile of Public School	Multiple	3
Connection to Commercial Area	Multiple	3
Connection to Passive Park	Twin Lakes/Twin Lakes State Beach	4
Connection to Sports Park	Simkin's Swim Center	1



Rail right-of-way with residential units backing onto the corridor



Twin Lakes State Beach and Schwan Lagoon trail access



Woods Lagoon/the harbor

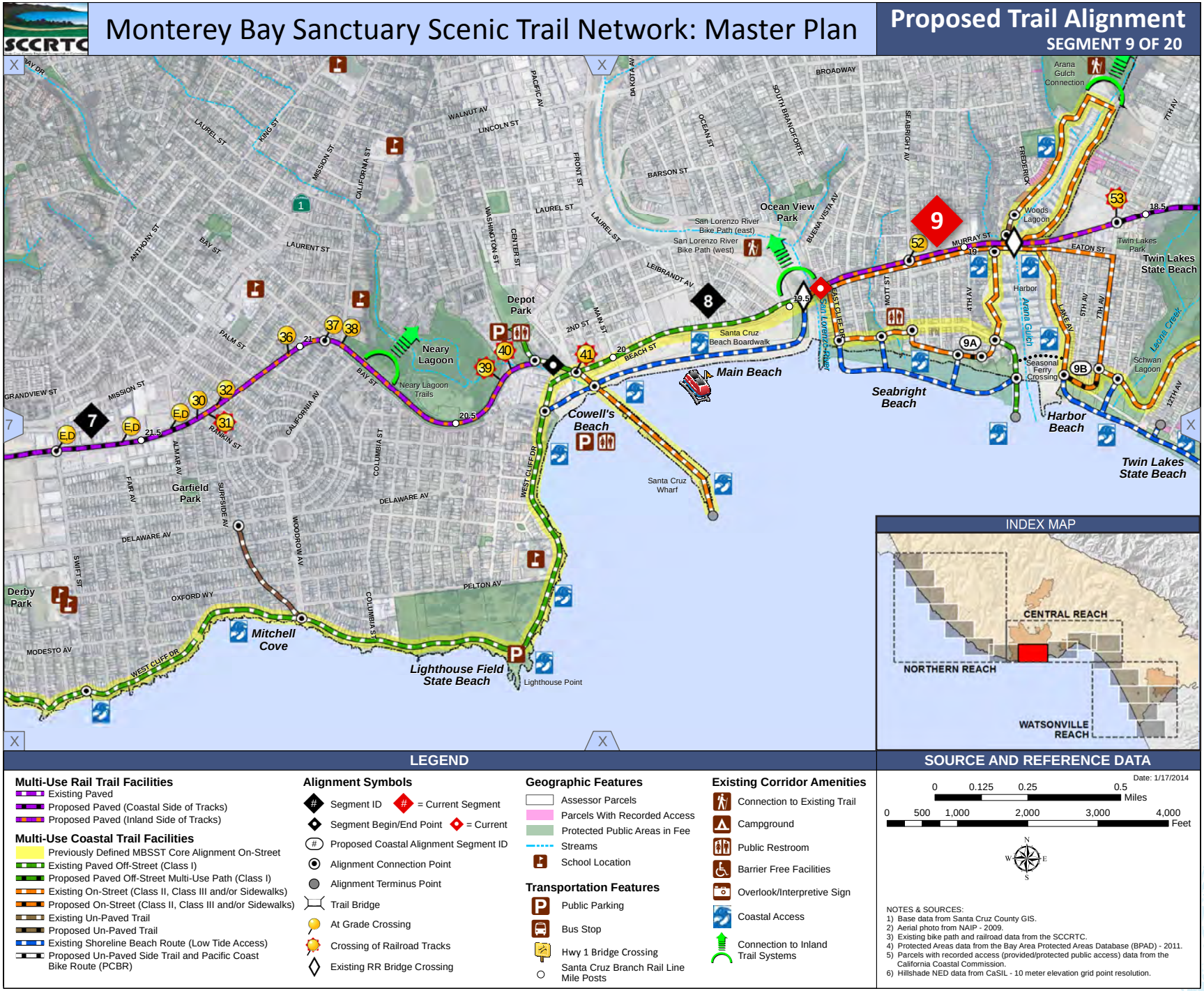


Figure 4-24 Segment 9 proposed trail alignment

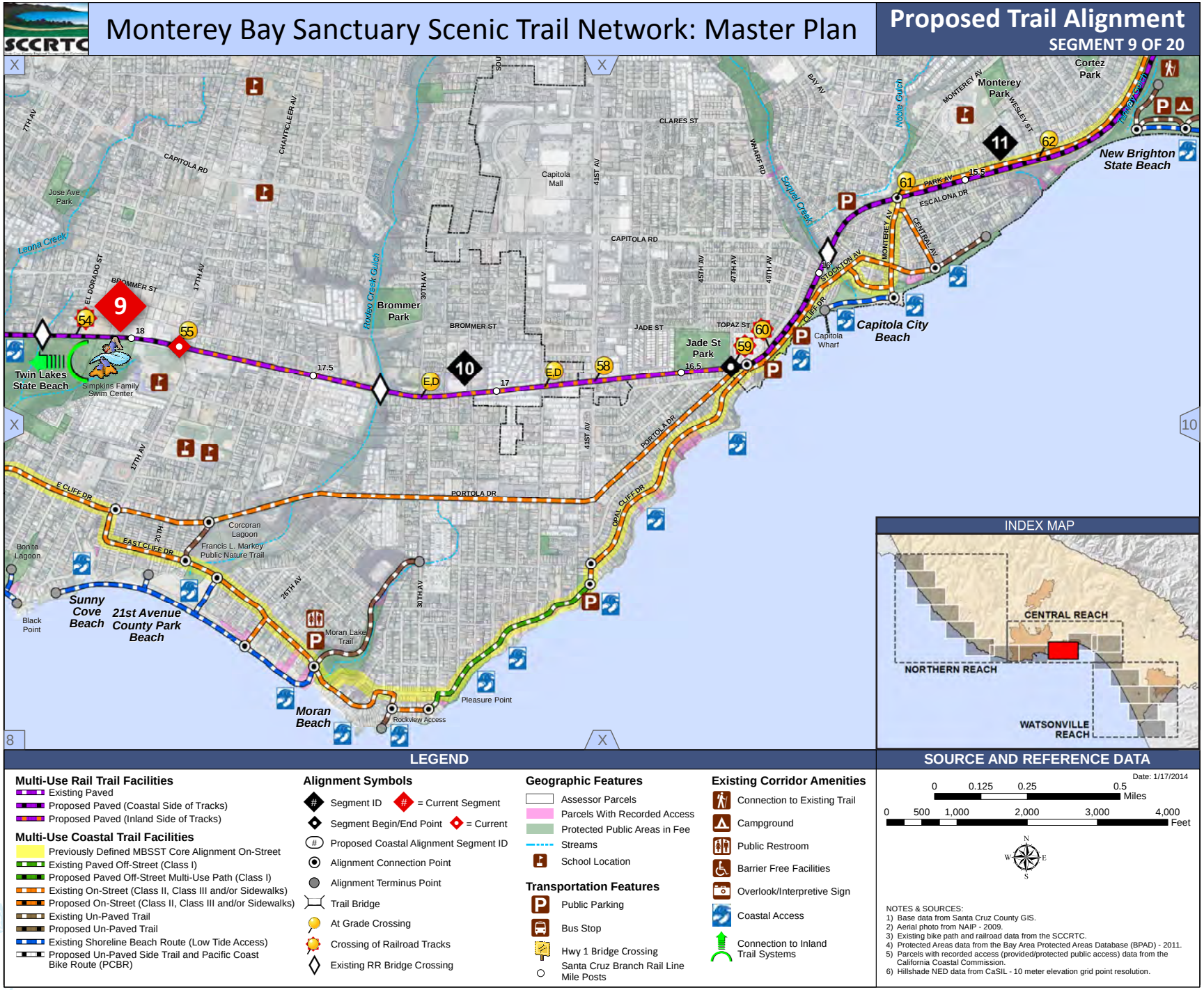


Figure 4-25 Segment 9 proposed trail alignment (continued)

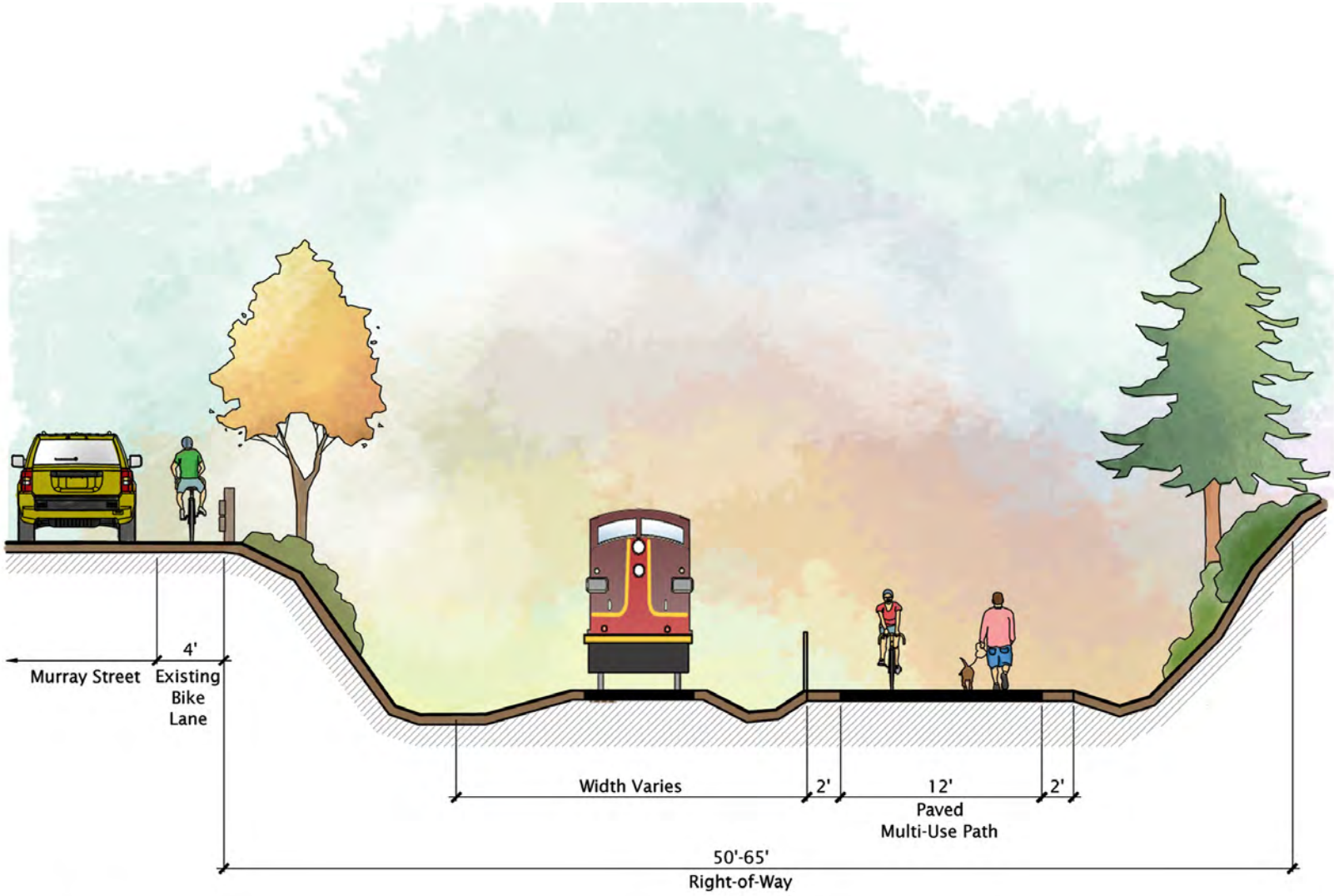


Figure 4-26 Segment 9 trail section



Santa Cruz Harbor



Railroad tracks adjacent to Jade Street Park



Unauthorized paths and bike jumps illustrate the need for trail improvements



Residential unit adjacent to railroad tracks at the 47th Avenue and Portola Drive intersection

4.10 SEGMENT 10 - LIVE OAK - JADE STREET PARK

Length: 1.50 miles (7,940 LF) - 17th Avenue at-grade railroad crossing to Jade Street Park at 47th Avenue

4.10.1 SEGMENT 10 BOUNDARY DETERMINATION

The boundary for Segment 10 begins at the inland side of the 17th Avenue intersection, and extends down the coast through Live Oak and past Jade Street Park, ending at 47th Avenue in Capitola. This segment of the railroad right-of-way is only thirty- (30-) feet wide and will require rail track relocation to accommodate the trail within the right-of-way. To relocate the tracks, coordination will be needed with Iowa Pacific (locally doing business as Santa Cruz and Monterey Bay Railway), as it owns a twenty- (20-) foot easement, as well as state and federal regulatory agencies, as needed.

4.10.2 SEGMENT 10 DESCRIPTION

The segment of the railroad right-of-way from the 17th Avenue at-grade crossing heading down the coast is only thirty to thirty-four- (30 to 34-) feet wide. This narrow right-of-way does not allow enough room for the rail tracks and two-way trail alignment to comingle without realigning the railroad track bed. This issue is exacerbated due to several adjacent property owners who have encroached into the railroad right-of-way. Approximately one (1) mile of rail track will need to be moved to accommodate the Coastal Rail Trail. The rough estimate provided by the rail operators is one (1) million dollars per mile to move the track and associated signals. The cost for moving rail tracks is included in the project cost estimate. The assessment of which side of the rail track the trail will align will be determined in greater detail with future rail track realignment plans. The proposed alignment will also include a preengineered bike/pedestrian bridge over Rodeo Gulch Creek on the inland side of the rail trestle bridge. This narrow right-of-way scenario continues down the coast one-and-a-quarter (1 1/4) miles to Jade Street Park at 47th Avenue in the city of Capitola. The existing surface street bike lanes and pedestrian sidewalks between 17th Avenue and 47th Avenue will serve as interim access until design solutions for this segment of the Coastal Rail Trail route are completed. The existing Opal Cliff Drive Class III corridor will serve as the alternate route. Opal Cliff Drive currently has no sidewalks. Segment 10 connects to thirty-four (34) activity centers identified in detail in Table 3.1.

Segment 10 proposed improved include:

- 1.50 miles (7,940 LF) multi-use paved path (Class I) along the rail right-of-way
- Relocation of approximately 1.0 mile (5,280 LF) of rail track and signal arm assemblies
- One (1) preengineered bike/pedestrian bridge crossing at Rodeo Gulch Creek two hundred- (200-) foot span
- Four (4) non-signalized street crossings (17th Avenue, 30th Avenue, 38th Avenue, 41st Avenue)
- One (1) at-grade rail crossing
- Fencing may be considered when project is implemented

TABLE 4.10 Segment 10 - Live Oak to Jade Street Park

Segment Length	**1.50 miles (7,940 LF) - Live Oak to Jade Street Park**
Rail Trail Portion	1.50 miles (7,940 LF)
Coastal Trail Portion	0.0 miles (0 LF)
Segment Cost	**$9,707,440**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	7,940	Linear Feet	Varies	$4,215,700
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$801,450
Bridge Structures	1	Each	Varies	$450,000
At-Grade Crossings (Rail Tracks or Streets)	5	Each	Varies	$600,000
			Rail Trail Construction SUBTOTAL	**$6,067,150**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II, III, and Sidewalks)	0	Linear Feet	Varies	$0
			Coastal Trail Construction SUBTOTAL	**$0**

COST SUMMARY	
Construction TOTAL	**$6,067,150**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$910,073
Environmental Permitting (10%)	$606,715
Construction Management (15%)	$910,073
Contingency (20%)	$1,213,430
SEGMENT TOTAL COST	**$9,707,440**

Segment Features	Description	Quantity
Segment Jurisdictional Area	City of Capitola, RTC - Rail ROW Owner, County of Santa Cruz	-
Minor Roadway Crossings	30th Ave, 38th Ave, 41st Ave, 47th Ave	4
Trail At-Grade Railroad Crossings	17th Ave, 47th Ave	2
Rail Bridge Crossing (Wood Trestle)	Rodeo Creek Gulch Crossing	1
Railroad right-of-way, 35' wide or less	Entire Segment Length	1.50 miles
Minor Drainage	Rodeo Creek Gulch	1
Existing Staging Areas/Rest Stops	Jade Park	1
Within 1/4 Mile of Public School	Del Mar Elementary, Cypress High School, Shoreline Middle School, Live Oak Elementary	4
Connection to Commercial Area	Light industrial, retail, commercial	3
Connection to Residential Area	Multiple	6
Connection to Sports Park	Jade Street Park, Simpkin's Swim Center, Brommer Park	3
Other	Santa Cruz County Sheriff Services, Central Fire Protection Services, Santa Cruz County Road Maintenance	3



Jade Street Park



Railroad right-of-way with just enough room to accommodate a multi-use path

Includes $1,000,000 for track relocation

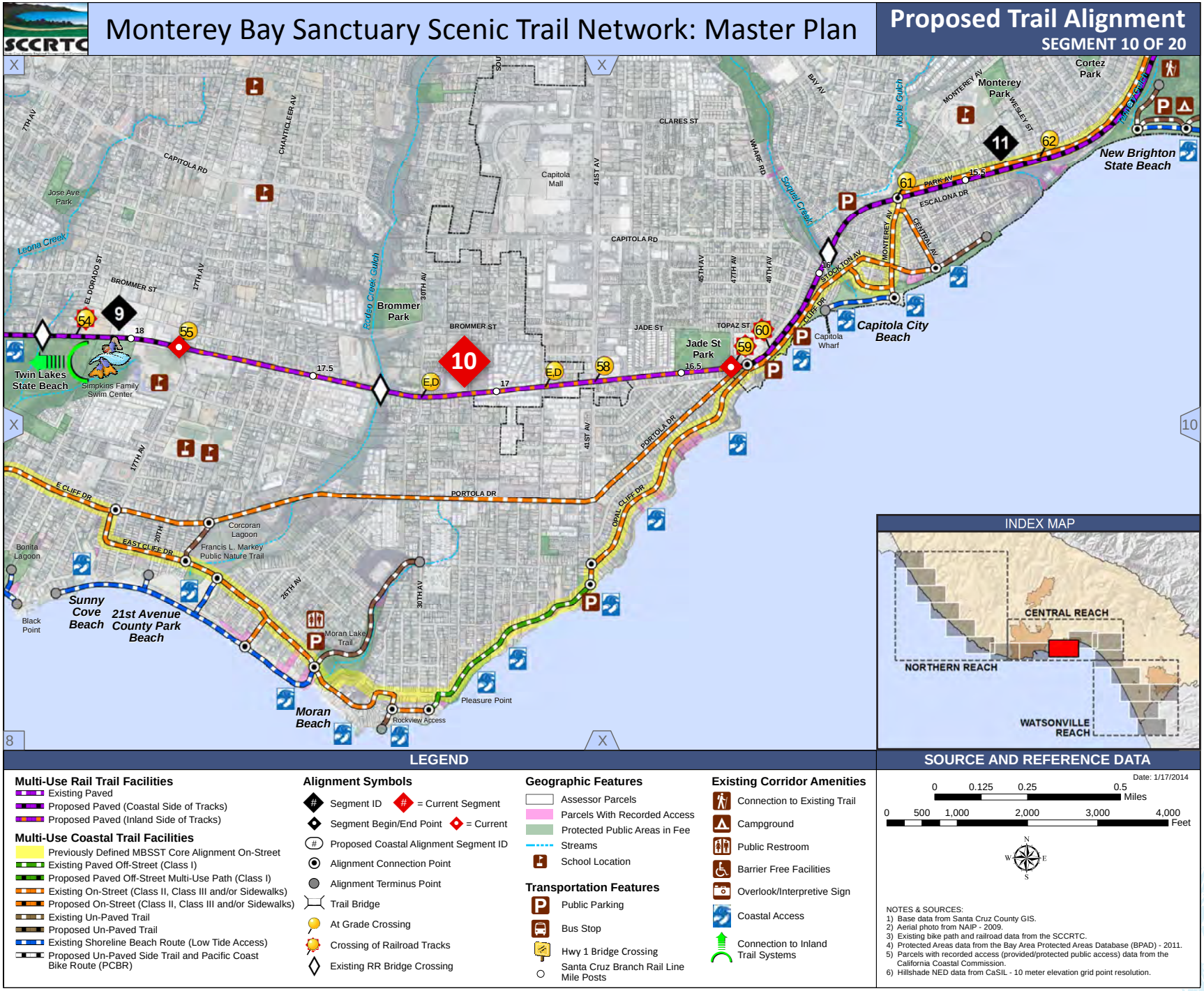


Figure 4-27 Segment 10 proposed trail alignment

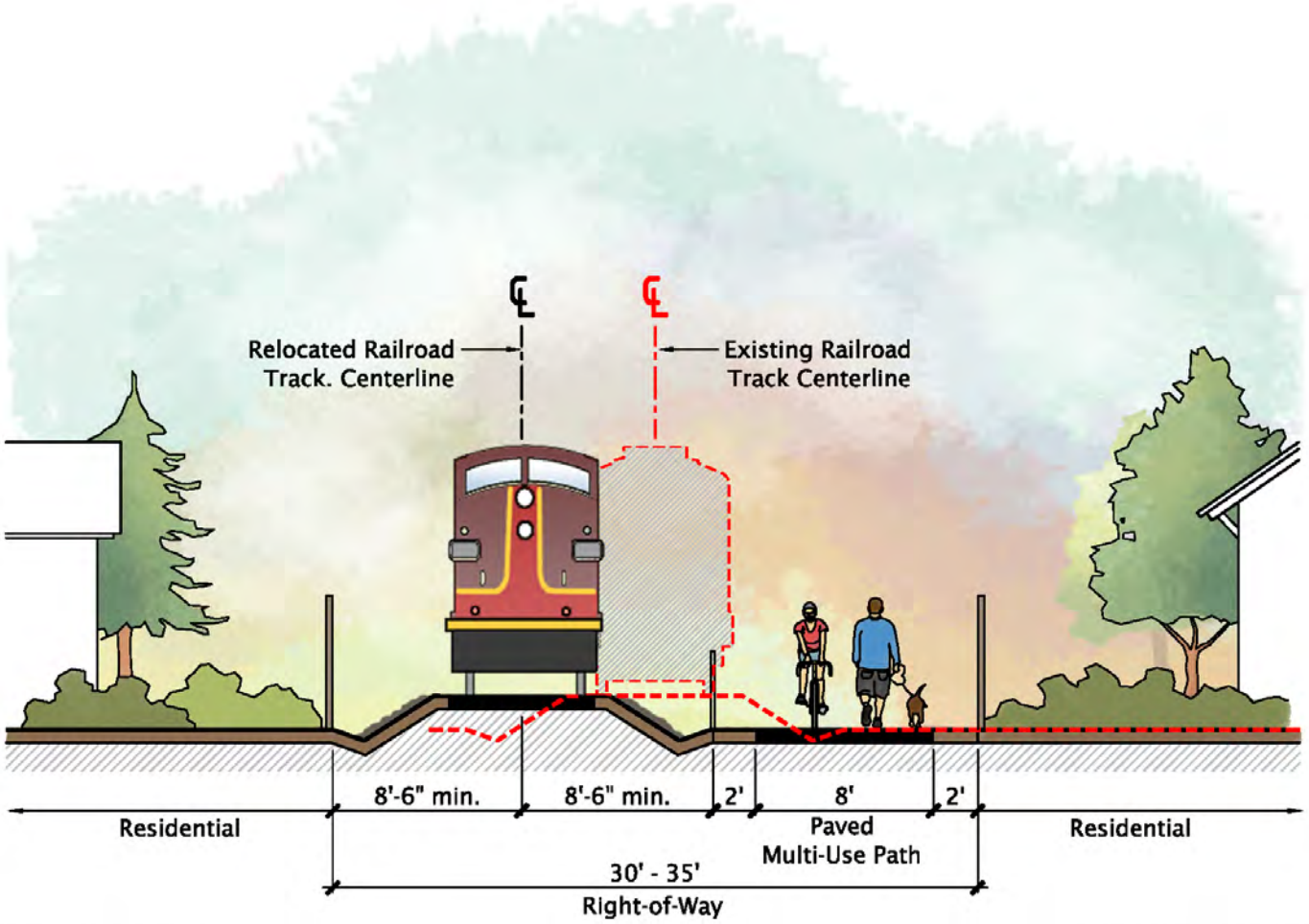


Figure 4-28 Segment 10 trail section

4.11 SEGMENT 11 - CAPITOLA - SEACLIFF

Length: 3.20 miles (16,880 LF) - Jade Street Park at 47th Avenue to State Park Drive

4.11.1 SEGMENT 11 BOUNDARY DETERMINATION

The boundary for Segment 11 is determined by the terminus of Segment 10 at Jade Street Park. Segment 11 runs from Jade Street Park at 47th Avenue down the coast 3.2 miles to State Park Drive. This segment is impacted by extreme topography, dense urban development, and infrastructure constraints through Capitola. The existing on-street bike and pedestrian facilities will need to support the connection for the Coastal Rail Trail until Segments 10 and 11 can be completed.

4.11.2 SEGMENT 11 DESCRIPTION

The rail right-of-way heading down the coast toward Capitola along Cliff Drive has diagonal parking spaces that encroach from Cliff Drive, on the coastal side of the tracks, and steep sloping grades up to an existing pedestrian overlook adjacent to Prospect Avenue on the inland side of the tracks. This stretch will need retaining walls or to be rerouted with grade changes to accommodate the trail on the inland side of the tracks. The greatest challenge in this segment is the rail trestle crossing of Soquel Creek. The current rail trestle passes through a historic district. There are current discussions about improvements to this bridge trestle due to structural conditions. Coastal trail access through this area will need to continue on existing surface streets and sidewalks to cross Soquel Creek and navigate through Capitola Village. Future plans for the rail trestle replacement should include a new bike/pedestrian facility in the bridge design. This crossing could also consider an iconic bike and pedestrian bridge that will span the five hundred- (500-) foot-long Soquel Creek crossing. This iconic bridge will require intricate design solutions to accommodate the footings and superstructure in the severely limited space below the bridge. The cost for this larger iconic bridge structure has not yet been determined and does not appear in this Master Plan.

The proposed Coastal Rail Trail will continue down the coast from Soquel Creek through the Monterey Avenue at-grade crossing on the inland side of the tracks. As the rail line heads down the coast past Monterey Avenue, the tracks merge closer to the coastal edge as it approaches New Brighton State Beach. This area of the corridor offers access to the existing trail network within the park, access to the beach, and unobstructed views down the coast. While an at-grade street crossing is not currently being proposed at the Coronado Street intersection to provide access from Cortez Park to New Brighton State Beach, the feasibility of this should be considered at a later date. A preengineered bridge will be needed to cross over the state beach parking lot access road as the train tracks curve down the coast through the state beach property. A preengineered trail bridge will be needed across Borregas Creek close to the state beach boundary. The proposed trail will remain on the coastal side of the tracks all the way through the state beach to the existing at-grade crossing of Estates Drive. From Estates Drive down the coast, the rail right-of-way narrows as it parallels Poplar Street. The rail corridor along the length of Poplar Street to Mar Vista Drive is just thirty-four- (34-) feet wide. The trail will be forced between a narrow landscape buffer between Poplar Street and the railroad corridor. The trail alignment will continue down the coastal side of the tracks, after crossing the Mar Vista Drive intersection using the existing crosswalks. The existing crosswalks, and possibly the roadway intersection corners, will need to be modified to provide a safe crossing for bicyclists and pedestrians. The rail corridor is flanked by residential housing on both sides all the way to the State Park Drive at-grade crossing. This segment connects with nine (9) activity centers listed in Table 3.1.

Segment 11 proposed facilities include:

- 3.20 miles (16,880 LF) multi-use paved path (Class I) along the rail right-of-way
- Bike and pedestrian facilities to be included in any design plans for new rail bridge replacement of the Soquel Creek rail crossing
- Two (2) preengineered bike/pedestrian bridges (one [1] at New Brighton State Beach parking lot and one [1] at Borregas Creek)
- Five (5) at-grade street crossings (47th Street, Monterey Avenue, New Brighton Road, Estates Drive, Mar Vista Drive)
- One (1) private at-grade street crossing (Grove Lane) and one (1) private at-grade crossing at 48th Street and one (1) additional private crossing
- One (1) rail crossing at 47th street
- Fencing may be considered when project is implemented

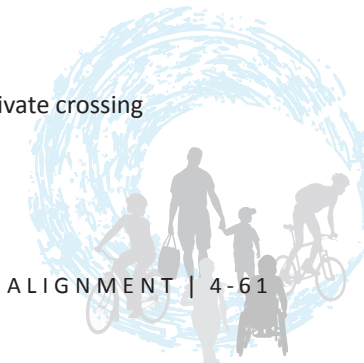


TABLE 4.11 Segment 11 - Capitola-Sea Cliff

Segment Length	**3.20 miles (16,880 LF) - Capitola-Sea Cliff**
Rail Trail Portion	3.20 miles (16,880)
Coastal Trail Portion	0.0 miles (0 LF)
Segment Cost	**$8,868,336**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	16,880	Linear Feet	Varies	$3,815,910
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$551,800
Bridge Structures	2	Each	Varies	$400,000
At-Grade Crossings (Rail Tracks or Streets)	9	Each	Varies	$775,000
			Rail Trail Construction SUBTOTAL	**$5,542,710**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II, III, and Sidewalks)	0	Linear Feet	Varies	$0
			Coastal Trail Construction SUBTOTAL	**$0**

COST SUMMARY	
Construction TOTAL	**$5,542,710**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$831,407
Environmental Permitting (10%)	$554,271
Construction Management (15%)	$831,407
Contingency (20%)	$1,108,542
SEGMENT TOTAL COST	**$8,868,336**

Segment Features	Description	Quantity
Segment Jurisdictional Area	City of Capitola, RTC - Rail ROW Owner, State Parks, County of Santa Cruz	-
Major Roadway Crossings	Cliff Drive	1
Minor Roadway Crossings	Monterey Ave, New Brighton Road	3
Private Road Crossings	Grove Street	1
Trail At-Grade Railroad Crossings	Cliff Drive, Grove Street, Mar Vista Drive	3
Rail Bridge Crossing (Wood Trestle)	Soquel Creek Crossing	1
Rail Bridge Crossing (Concrete)	Tannery Gulch, Borregas Creek Crossings	2
Railroad right-of-way, 35' wide or less	Near Poplar Street	1,200 linear feet
Major Drainage	Soquel Creek	1
Minor Drainage	Tannery Gulch in New Brighton State Beach, Bodegas Creek (also in New Brighton)	2
Existing Staging Areas/Rest Stops	Cliff Drive, New Brighton State Beach	2
Connection To Other Trails	Nisene Trails, California Coastal Trail	2
Within 1/4 Mile of Public School	New Brighton Middle School, Delta High School, Mar Vista Elementary School, Cabrillo College	4
Connection to Public Beach	Capitola City Beach, New Brighton State Beach	2
Connection to Commercial Area	Downtown Capitola	1
Connection to Residential Area	Numerous residential areas in Capitola	6
Connection to Passive Park	Soquel Creek Park, Noble Gulch Park, New Brighton State Beach, Seacliff State Beach	4



Railroad tracks overlooking Capitola Wharf and Capitola Village



Railroad trestle - pedestrian and bicyclists will benefit from improved crossing conditions



Forest area near New Brighton State Beach

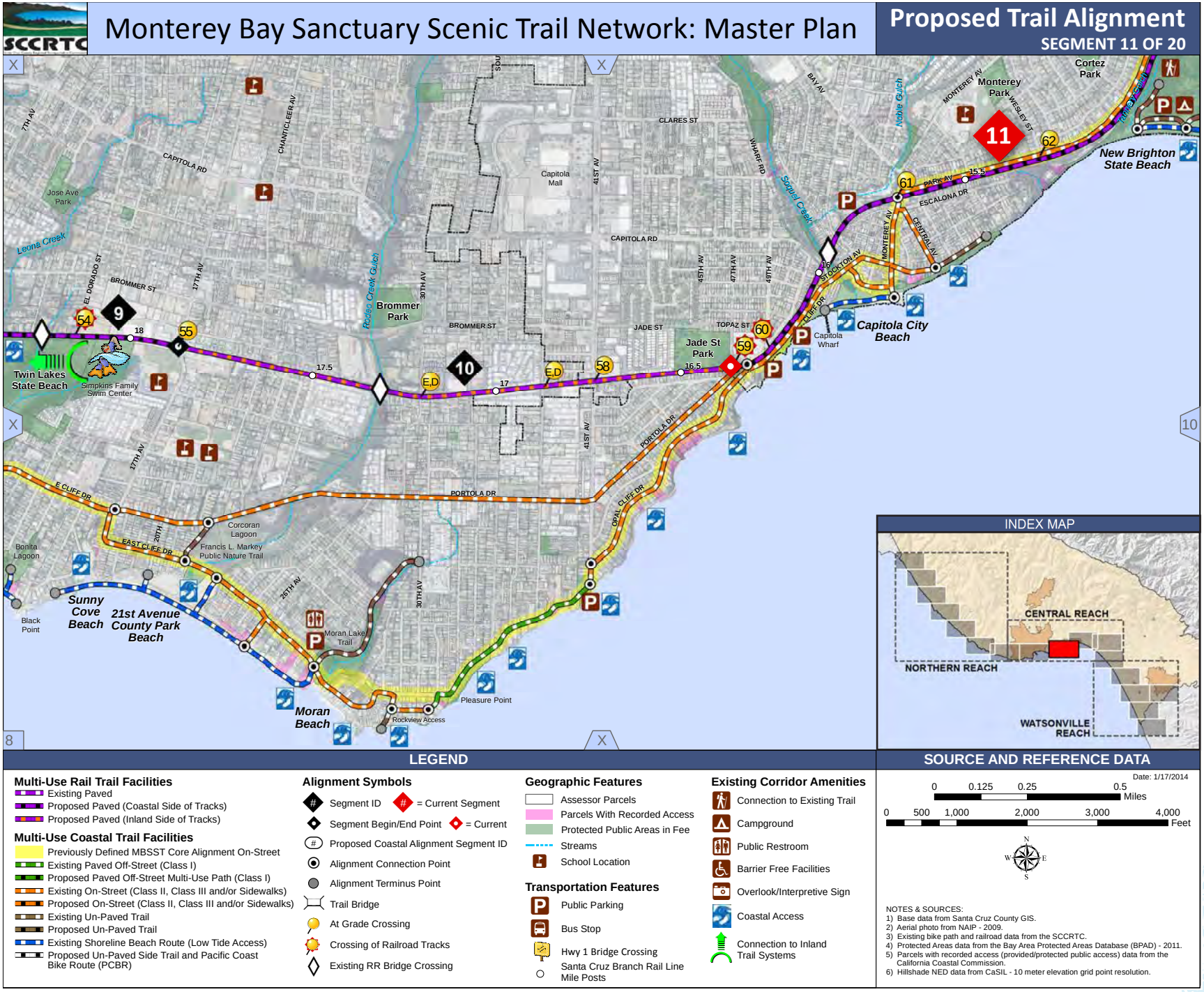


Figure 4-29 Segment 11 proposed trail alignment

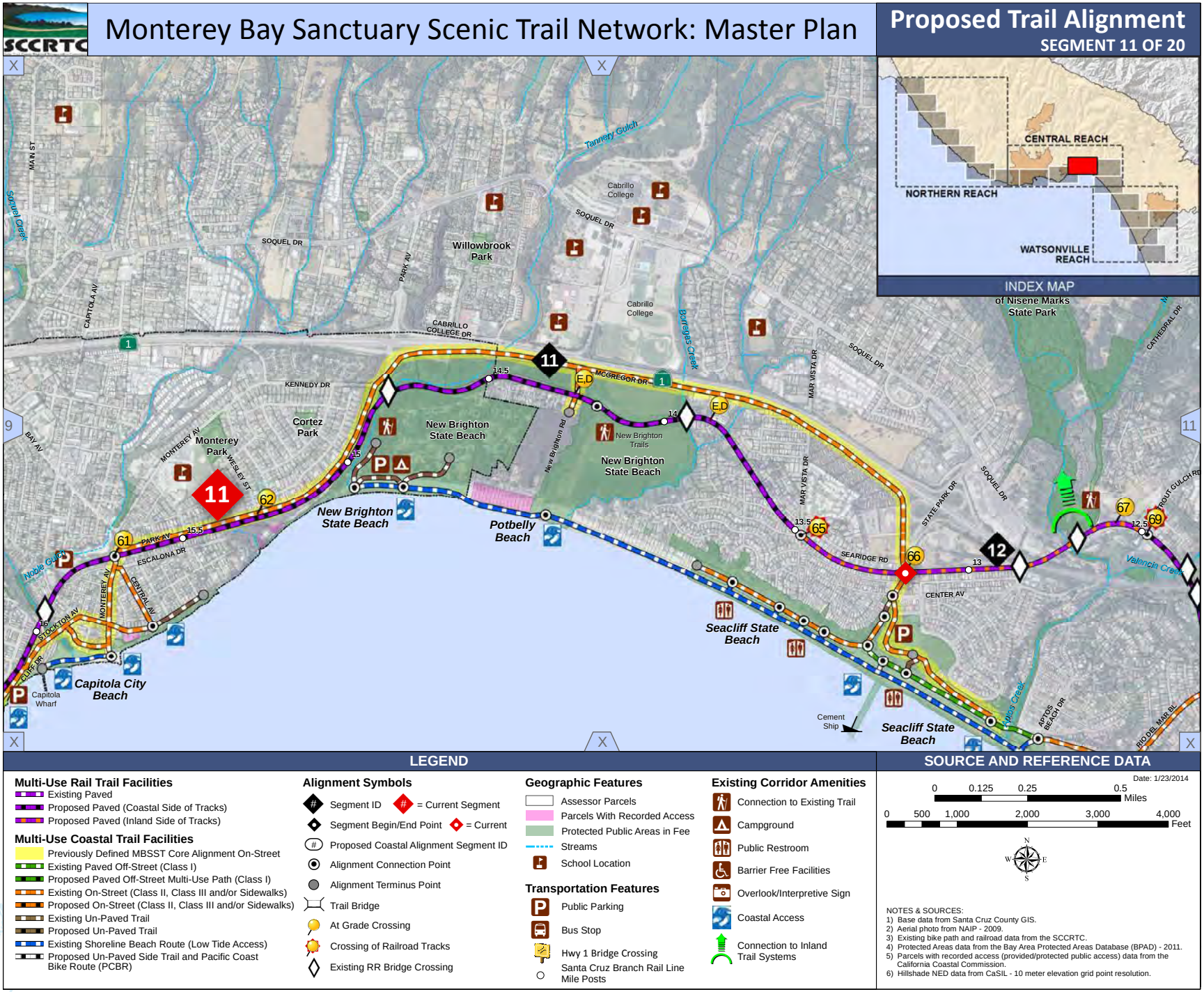


Figure 4-30 Segment 11 proposed trail alignment (continued)

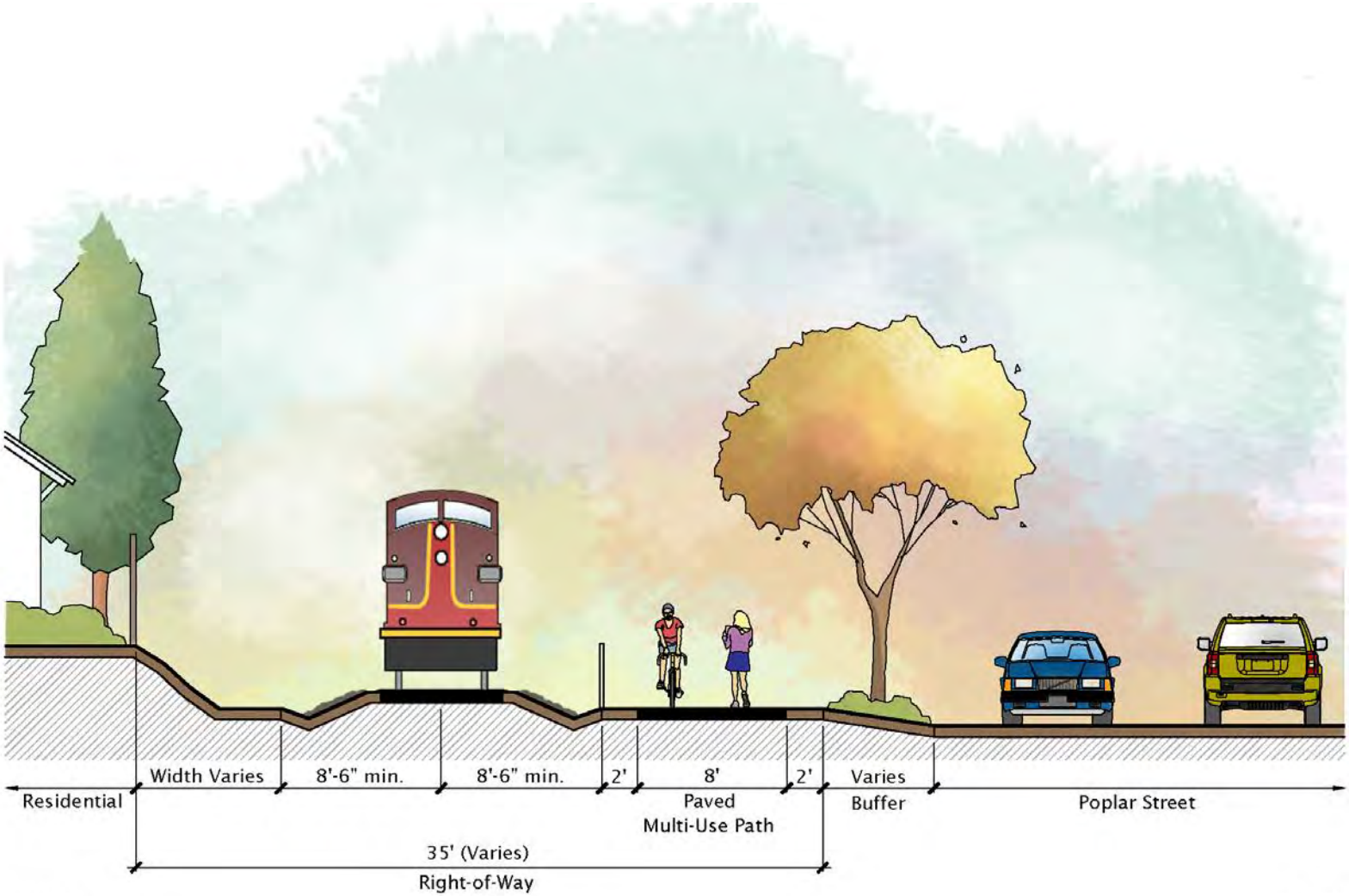


Figure 4-31 Segment 11 trail section

** Note: This segment also includes portions of the multi-use path on the coastal side of tracks.*



Capitola Village with historic railroad trestle



Railroad bridge over Soquel Drive at Aptos Street



Railroad bridge south of Soquel Drive



Aptos Village signage

4.12 SEGMENT 12 - APTOS VILLAGE

Length: 1.14 miles (6,030 LF) - State Park Drive to Rio Del Mar Boulevard

4.12.1 SEGMENT 12 BOUNDARY DETERMINATION

The boundaries for Segment 12 are determined by State Park Drive at the north and Rio Del Mar Boulevard to the south because the rail line tracks divert at these two (2) points to cross over Highway 1 to Aptos Village, and then divert back to cross State Highway 1 again, heading south back to the coast. This segment presents unique and difficult challenges and will require multiple agency coordination and supporting infrastructure to implement.

4.12.2 SEGMENT 12 DESCRIPTION

This segment of the proposed Coastal Rail Trail presents considerable challenges with respect to bridges. From the rail crossing of State Park Drive heading down the coast, the railroad tracks eventually cross over both the north and south lanes of State Highway 1 on a concrete bridge. The track line continues several hundred feet on an earthern embankment inland of State Highway 1, then onto a steel rail bridge crossing over Soquel Drive and Aptos Creek. The upper Highway 1 concrete bridge could be retrofitted to accommodate bike and pedestrian facilities. The crossings over Soquel Drive and Aptos Creek will require a new preengineered bike and pedestrian bridge to connect to Aptos Village. As the rail line enters Aptos Village, the tracks are constrained on both sides by vehicle parking along Soquel Drive on the coastal side of the tracks and a commercial parking lot on the inland side. The trail will cross Aptos Creek Road paralleling the inland side of the rail tracks. The parking areas along Soquel Drive will need to be adjusted to accommodate the trail as it parallels the railroad tracks. The trail will cross from the inland side of the rail tracks to the coastal side at Trout Gulch Road. As the Coastal Rail Trail leaves Aptos Village heading down the coast, the tracks have two (2) additional bridge crossings—one (1) steel truss bridge over Valencia Creek drainage and Soquel Drive, and another narrow concrete bridge structure crossing back over Highway 1. The Coastal Rail Trail will require three (3) new preengineered bridges and one (1) retrofit to the northern Highway 1 concrete bridge crossing. Segment 12 connects with nine (9) activity centers identified in Table 3.1.

Segment 12 proposed facilities include:

- 1.14 miles (6,030 LF) multi-use paved path (Class I) along the rail right-of-way
- Three (3) preengineered bike/pedestrian bridges (bridge spans vary)
- One (1) retrofit of northern Highway 1 concrete bridge for bike and pedestrian facility
- Three (3) at-grade street crossings (State Park Drive, Aptos Creek Road, Trout Gulch Road)
- One (1) rail crossing at Trout Gulch Road
- Fencing may be considered when project is implemented

TABLE 4.12 Segment 12 - Aptos Village

Segment Length	**1.14 miles (6,030 LF) - Aptos Village**
Rail Trail Portion	1.14 miles (6,030 LF)
Coastal Trail Portion	0.0 miles (0 LF)
Segment Cost	**$10,831,696**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	6,030	Linear Feet	Varies	$2,264,760
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$430,050
Bridge Structures	4	Each	Varies	$3,600,000
At-Grade Crossings (Rail Tracks or Streets)	4	Each	Varies	$475,000
			Rail Trail Construction SUBTOTAL	**$6,769,810**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II, III, and Sidewalks)	0	Linear Feet	Varies	$0
			Coastal Trail Construction SUBTOTAL	**$0**

COST SUMMARY	
Construction TOTAL	**$6,769,810**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$1,015,472
Environmental Permitting (10%)	$676,981
Construction Management (15%)	$1,015,472
Contingency (20%)	$1,353,962
SEGMENT TOTAL COST	**$10,831,696**

Segment Features	Description	Quantity
Segment Jurisdictional Area	RTC - Rail ROW Owner, Caltrans Right-of-Way, State Parks, County of Santa Cruz	-
State Highway Crossings	Two rail bridge crossings over Highway 1	2
Minor Roadway Crossings	Trout Gulch Road, State Park Drive, Aptos Creek Road	3
Trail At-Grade Railroad Crossings	Trout Gulch Road	1
Rail Bridge Crossing (Steel Trestle)	Soquel Drive, Soquel Drive - Twice at Aptos	2
Rail Bridge Crossing (Concrete)	Two at Highway 1	2
Minor Drainage	Aptos Creek, Valencia Creek	2
Existing Staging Areas/Rest Stops	Aptos Village Park	1
Connection To Other Trails	Nisene Trail	1
Within 1/4 Mile of Public School	Valencia Elementary School	1
Connection to Public Beach	Seacliff State Beach	1
Connection to Commercial Area	Aptos Village	1
Connection to Residential Area	Multiple in Capitola and Aptos	2
Connection to Passive Park	Nisen Marks State Park	1
Connection to Tourist Destination	Seacliff Village	1



Railroad bridge over Soquel Drive and Aptos Creek



Railroad tracks opposite Aptos Station

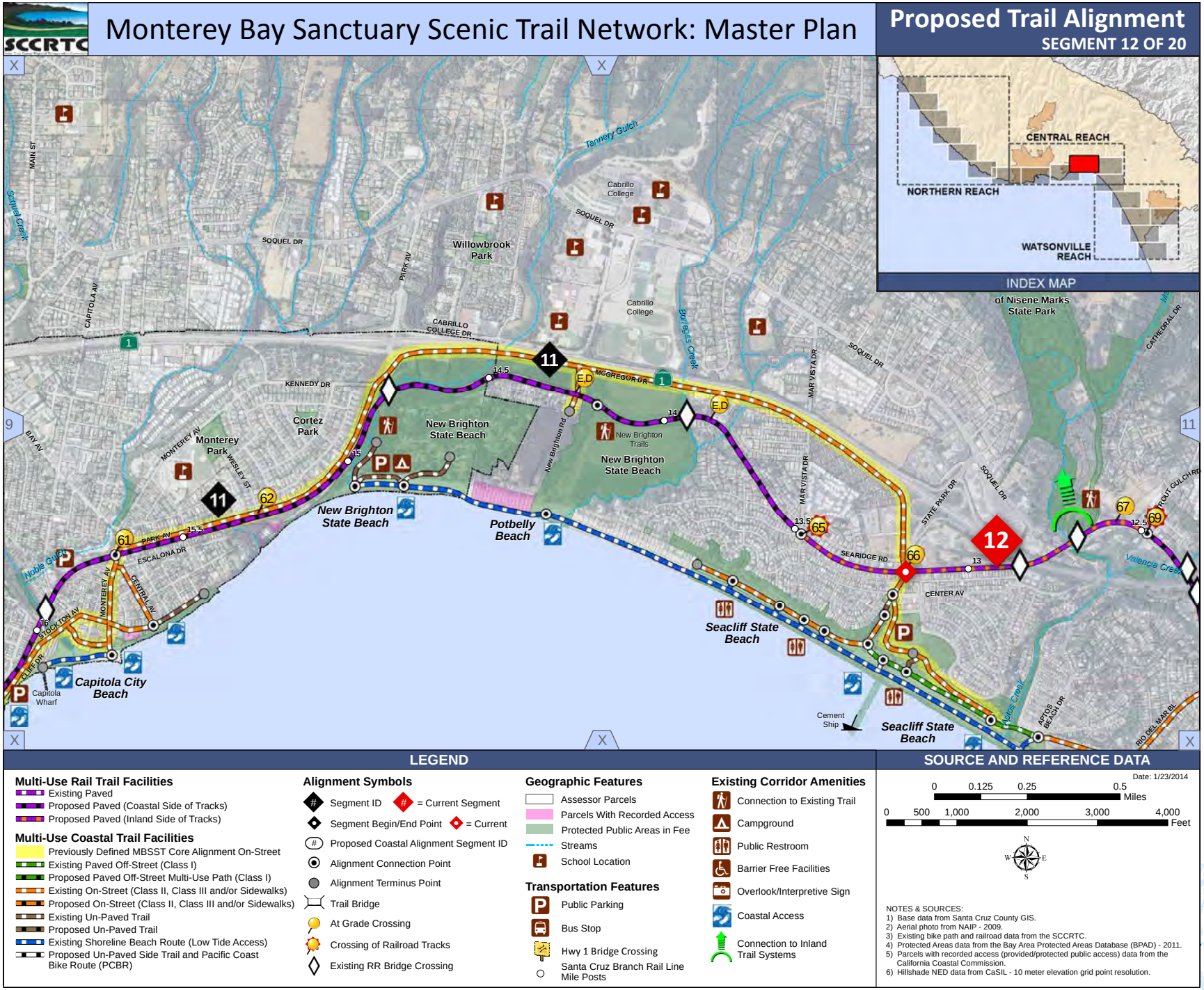


Figure 4-32 Segment 12 proposed trail alignment

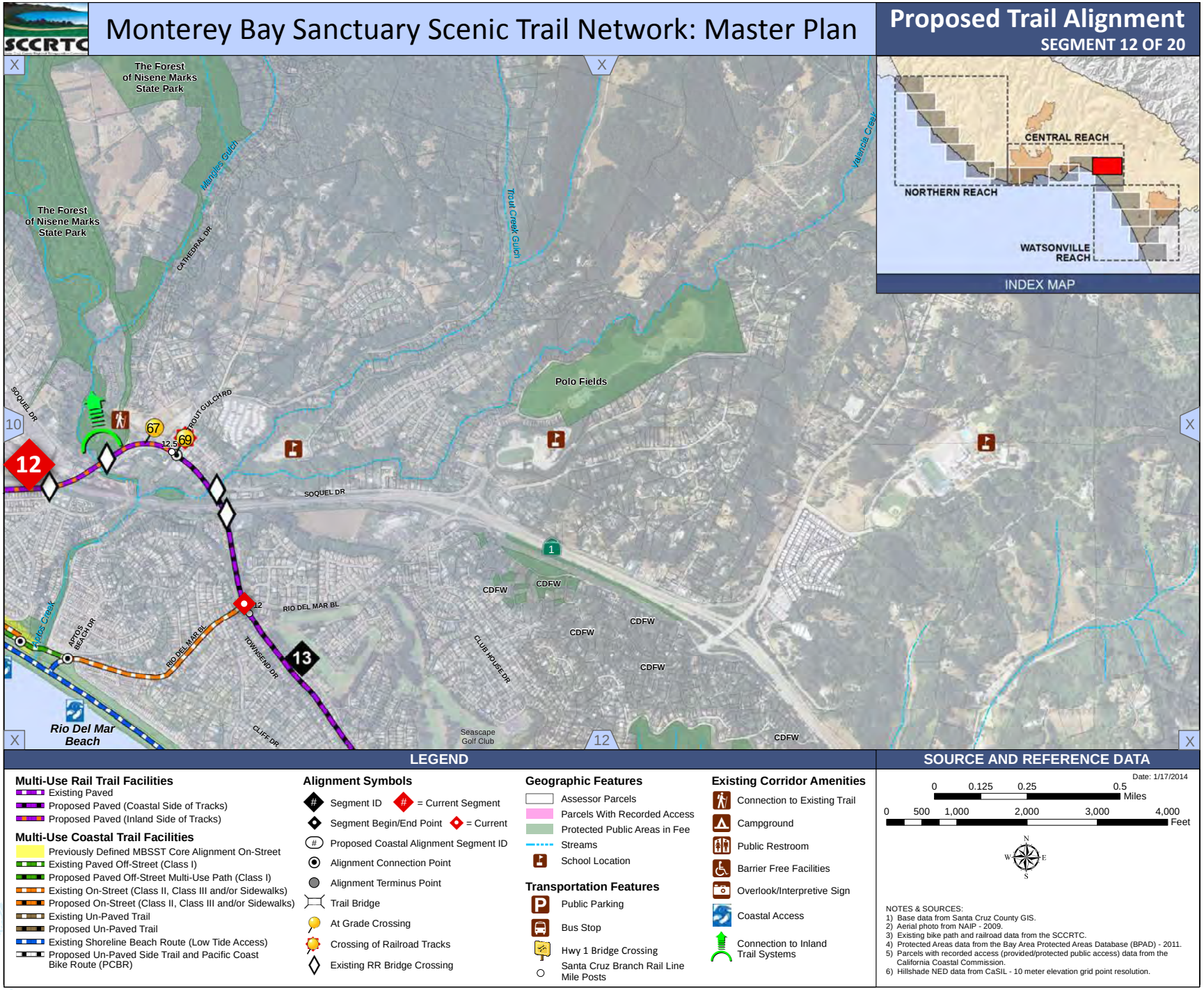


Figure 4-33 Segment 12 proposed trail alignment (continued)

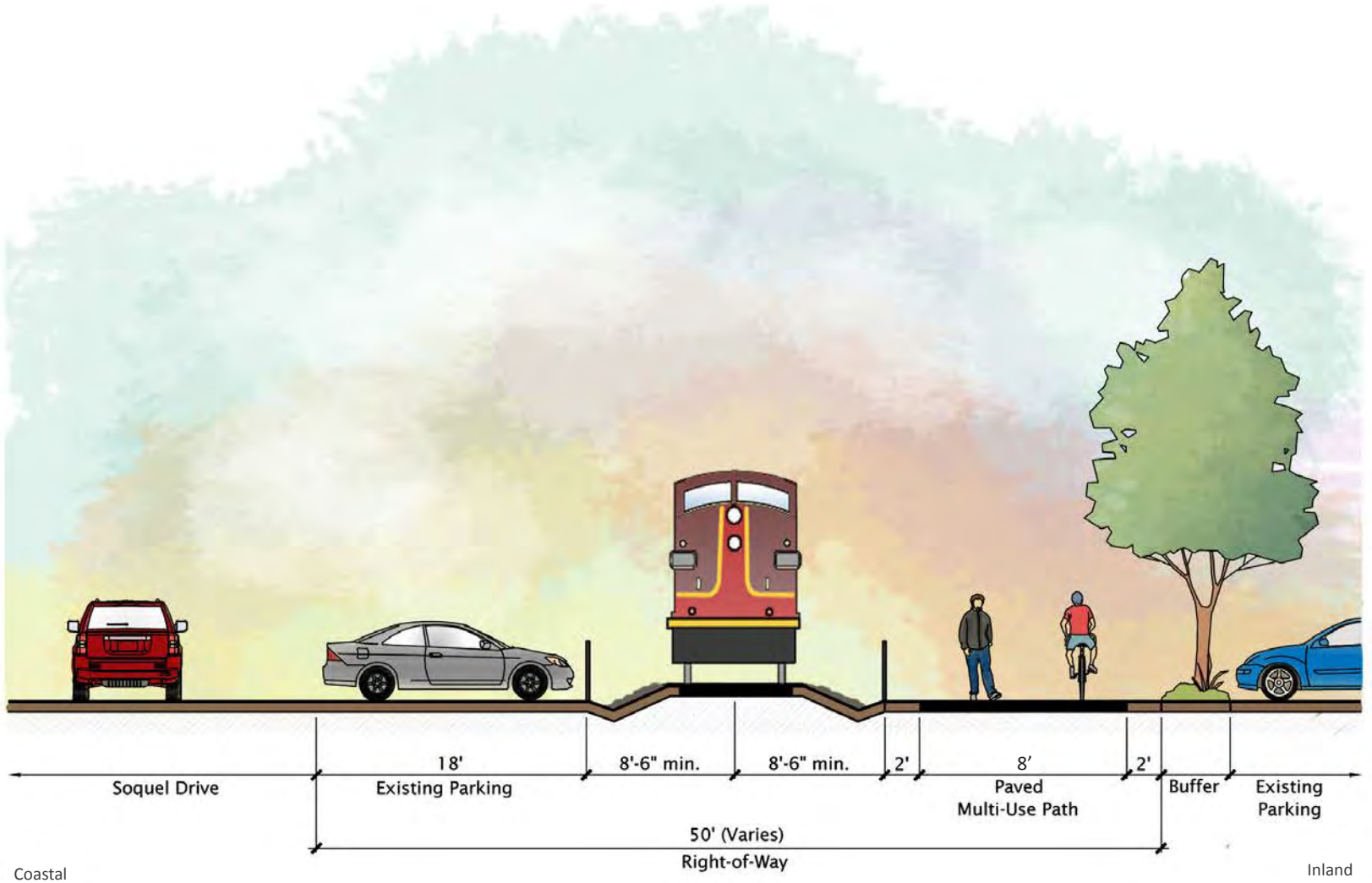


Figure 4-34 Segment 12 trail section



Seacliff State Beach



Rio del Mar State Beach is an ideal "spur" connection to the Coastal Rail Trail



Unique architecture abounds along the Rio Del Mar beach frontage



Rio Del Mar Beach connects to Seacliff State Beach, providing miles of coastal walking opportunities

4.13 SEGMENT 13 - RIO DEL MAR - HIDDEN BEACH

Length: 0.85 miles (4,510 LF) - Rio Del Mar Boulevard to Cliff Drive/Hidden Beach

4.13.1 SEGMENT 13 BOUNDARY DETERMINATION

The northern boundary for Segment 13 is determined by the grade-separated Rio Del Mar Boulevard bridge crossing of the rail corridor where the proposed Coastal Rail Trail will connect to the existing on-street Class III bike route. The north end of Segment 13 is a good start/end point for the proposed trail, while the complicated series of bridges connecting Aptos Village in Segment 12 are designed and implemented. The south end of the segment ends at the Hidden Beach rail trestle crossing.

4.13.2 SEGMENT 13 DESCRIPTION

This segment will provide pedestrian and bike access down the coast to Hidden Beach from Rio Del Mar Boulevard. The access at Rio Del Mar Boulevard will require a ramp down to the existing below-grade rail crossing of Rio Del Mar Boulevard. The proposed trail will ramp down, under the coastal side of Rio Del Mar Bridge, and continue down the coast along the Coastal Rail Trail on the coastal side of the tracks. This section of the rail line is in a trapezoidal corridor with steep sides flanked by residential lots on both sides. The trail segment through this stretch may need small retaining walls on the outside edge of the uphill slopes to accommodate the width of the trail. The close proximity to the residential lots may require privacy fences on the rail right-of-way boundary. The segment ends at the Hidden Beach rail trestle. Hidden Beach includes an existing staging area below the rail trestle. The crossing will require a new preengineered bike/pedestrian bridge, with the south abutment landing adjacent to the rail trestle abutment. This landing point will allow access under the existing rail trestle to continue the trail along the inland side of the tracks as it heads down the coast, and will provide access to the existing Hidden Beach parking lot below the coastal side of the existing rail trestle on Cliff Drive. The Hidden Beach parking lot and existing beach access trail can also serve as a trailhead for the Coastal Rail Trail. This segment connects with seven (7) activity centers identified in Table 3.1.

Segment 13 proposed improvements include:

- 0.85 miles (4,510 LF) multi-use paved path (Class I) along the coastal side rail right-of-way
- One (1) undercrossing connection to Rio Del Mar Boulevard
- One (1) preengineered bike/pedestrian bridge, two hundred- (200-) foot span
- One (1) existing staging area at Hidden Beach
- Fencing may be considered when project is implemented

TABLE 4.13 Segment 13 - Rio Del Mar-Hidden Beach

Segment Length	**0.85 miles (4,510 LF) - Rio Del Mar-Hidden Beach**
Rail Trail Portion	0.85 miles (4,510 LF)
Coastal Trail Portion	0.0 miles (0 LF)
Segment Cost	**$3,306,112**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	4,510	Linear Feet	Varies	$973,620
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$2,700
Bridge Structures	1	Each	Varies	$1,000,000
Staging Area Access	1	Each	$30,000	$30,000
At-Grade Crossings (Rail Tracks or Streets)	1	Each	Varies	$60,000
			Rail Trail Construction SUBTOTAL	**$2,066,320**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II, III, and Sidewalks)	0	Linear Feet	Varies	$0
			Coastal Trail Construction SUBTOTAL	**$0**

COST SUMMARY	
Construction TOTAL	**$2,066,320**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$309,948
Environmental Permitting (10%)	$206,632
Construction Management (15%)	$309,948
Contingency (20%)	$413,264
SEGMENT TOTAL COST	**$3,306,112**

Segment Features	Description	Quantity
Segment Jurisdictional Area	RTC - Rail ROW Owner, County of Santa Cruz	-
Rail Bridge Crossing (Wood Trestle)	Hidden Beach Park	1
Existing Staging Areas/Rest Stops	Hidden Beach	1
Connection To Other Trails	California Coastal Trail	1
Connection to Public Beach	Hidden Beach	1
Connection to Commercial Area	Multiple	5
Connection to Residential Area	Hidden Beach	1
Connection to Passive Park	Private Golf Course	1



Trail access to Hidden Beach Park from Dry Creek Road



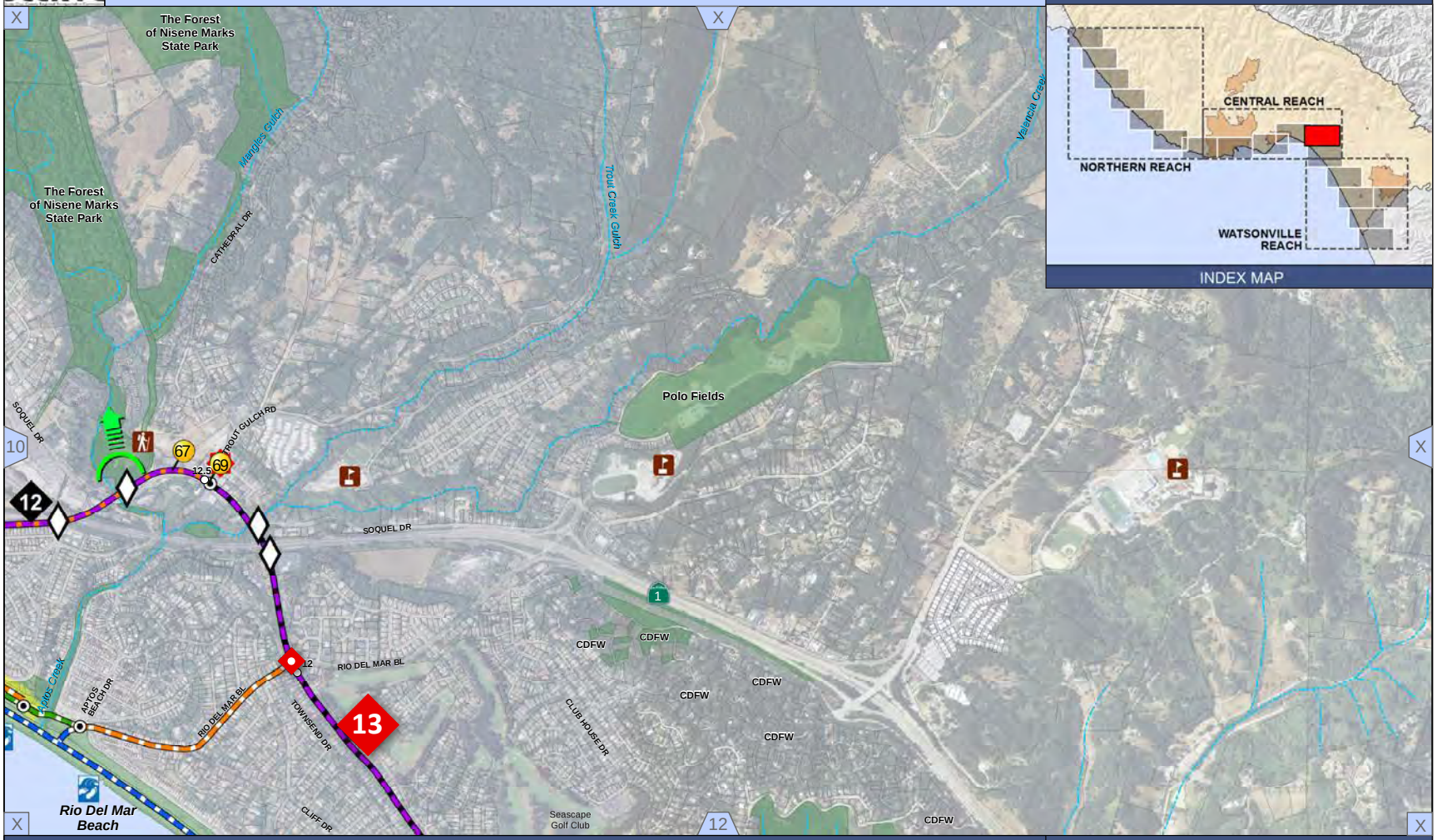
Train tracks and trestle near Hidden Beach Park



Rio del Mar pedestrian path

Monterey Bay Sanctuary Scenic Trail Network: Master Plan

Proposed Trail Alignment
SEGMENT 13 OF 20



INDEX MAP

LEGEND

Multi-Use Rail Trail Facilities
- Existing Paved
- Proposed Paved (Coastal Side of Tracks)
- Proposed Paved (Inland Side of Tracks)

Multi-Use Coastal Trail Facilities
- Previously Defined MBSST Core Alignment On-Street
- Existing Paved Off-Street (Class I)
- Proposed Paved Off-Street Multi-Use Path (Class I)
- Existing On-Street (Class II, Class III and/or Sidewalks)
- Proposed On-Street (Class II, Class III and/or Sidewalks)
- Existing Un-Paved Trail
- Proposed Un-Paved Trail
- Existing Shoreline Beach Route (Low Tide Access)
- Proposed Un-Paved Side Trail and Pacific Coast Bike Route (PCBR)

Alignment Symbols
- Segment ID
- = Current Segment
- Segment Begin/End Point
- = Current
- Proposed Coastal Alignment Segment ID
- Alignment Connection Point
- Alignment Terminus Point
- Trail Bridge
- At Grade Crossing
- Crossing of Railroad Tracks
- Existing RR Bridge Crossing

Geographic Features
- Assessor Parcels
- Parcels With Recorded Access
- Protected Public Areas in Fee
- Streams
- School Location

Transportation Features
- Public Parking
- Bus Stop
- Hwy 1 Bridge Crossing
- Santa Cruz Branch Rail Line Mile Posts

Existing Corridor Amenities
- Connection to Existing Trail
- Campground
- Public Restroom
- Barrier Free Facilities
- Overlook/Interpretive Sign
- Coastal Access
- Connection to Inland Trail Systems

SOURCE AND REFERENCE DATA

Date: 1/17/2014

0 0.125 0.25 0.5 Miles

0 500 1,000 2,000 3,000 4,000 Feet

NOTES & SOURCES:
1) Base data from Santa Cruz County GIS.
2) Aerial photo from NAIP - 2009.
3) Existing bike path and railroad data from the SCCRTC.
4) Protected Areas data from the Bay Area Protected Areas Database (BPAD) - 2011.
5) Parcels with recorded access (provided/protected public access) data from the California Coastal Commission.
6) Hillshade NED data from CaSIL - 10 meter elevation grid point resolution.

Figure 4-35 Segment 13 proposed trail alignment

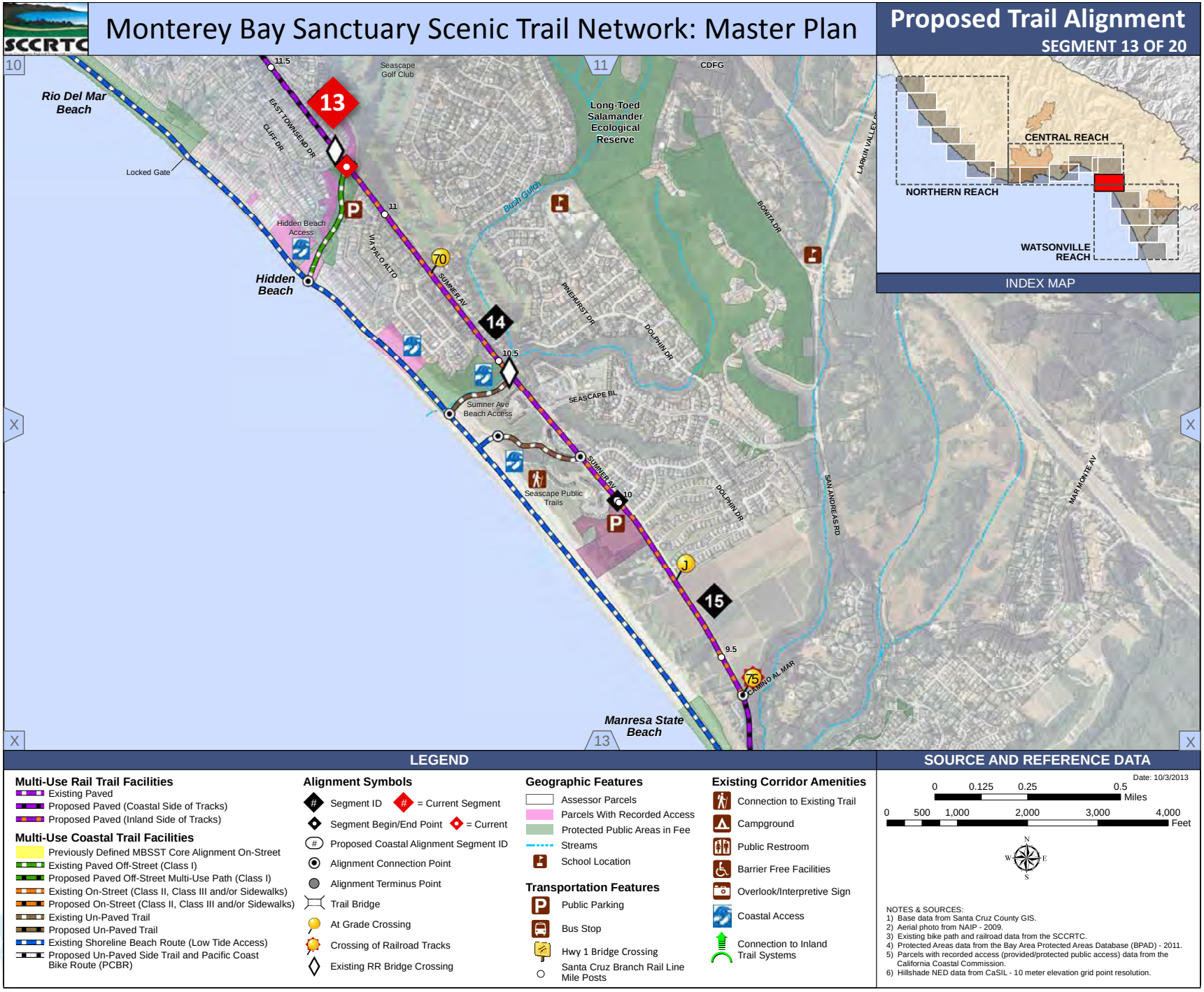


Figure 4-36 Segment 13 proposed trail alignment (continued)

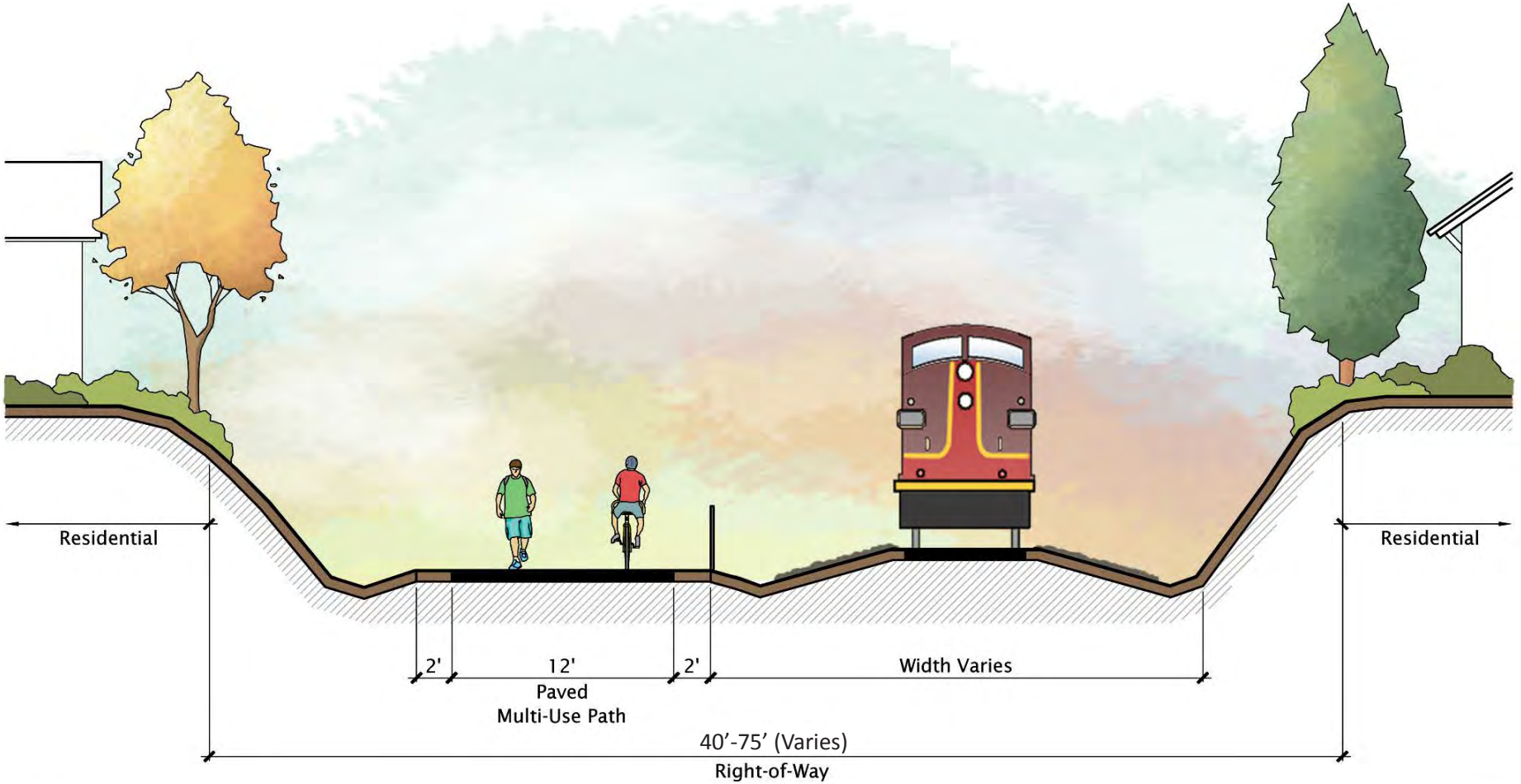


Figure 4-37 Segment 13 trail section



Seacliff State Beach



Railroad crossing at Seascape Resort



Railroad crossing at southern end of Seascape Resort



Seascape Resort railroad crossing looking north

4.14 SEGMENT 14 - SEASCAPE

Length: 1.17 miles (6,160 LF) - Cliff Drive/Hidden Beach to Seascape Park

4.14.1 SEGMENT 14 BOUNDARY DETERMINATION

Segment 14 begins at the existing Hidden Beach parking lot off Cliff Drive on the coastal side of the train trestle abutment. This segment continues along the inland side of the rail tracks to the existing parking lot at Seascape Park.

4.14.2 SEGMENT 14 DESCRIPTION

The Hidden Beach parking lot provides a good access point for this segment of the proposed Coastal Rail Trail. A crossing at the existing trail trestle will be needed to continue the trail down the coast from the Rio Del Mar segment. The proposed trail will use the existing rail trestle as a grade-separated crossing on the south abutment, and will cross underneath the tracks to the inland side of the rail corridor between Sumner Avenue and the train tracks. Further down the coast, small retaining walls on the inland side of the trail tread may be required to secure the uphill slope along the corridor. The proposed Coastal Rail Trail will continue on the inland side of the tracks next to Sumner Avenue, with an at-grade street crossing of Clubhouse Drive. The proposed trail continues down the coast between Sumner Avenue and the rail tracks to the next trestle crossing near Sumner Avenue and Dolphin Drive. This proposed trail crossing can avoid a bridge crossing if the trail follows the grade toward the coastal edge of Sumner Avenue, connecting back to the rail right-of-way near the south bridge abutment. This alignment option also connects the proposed Coastal Rail Trail with an existing public coastal trailhead on Sumner Avenue. The proposed trail alignment continues down the coast between Sumner Avenue and the inland side rail right-of-way to an at-grade signaled street crossing of Sumner Avenue and Seascape Boulevard. This crossing will require relocating electrical control boxes and other utilities to accommodate the proposed trail tread. Segment 14 ends on the inland side of the rail tracks at an existing non-signalized, at-grade rail crossing just inland of the Seascape Park public parking lot. This location also provides the proposed Coastal Rail Trail with existing trailhead parking, staging area access, and a good terminus for segmented implementation phasing. Segment 14 connects with ten (10) activity centers identified in Table 3.1.

Segment 14 proposed improvements include:

- 1.17 miles (6,160 LF) multi-use paved path (Class I) along the inland rail right-of-way
- Two (2) at-grade road crossings (Clubhouse Drive, Seascape Blvd.)
- One (1) trail undercrossing of the existing rail bridge at Hidden Beach
- Fencing may be considered when project is implemented

TABLE 4.14 Segment 14 - Seascape

Segment Length	**1.17 miles (6,160 LF) - Seascape**
Rail Trail Portion	1.17 miles (6,160 LF)
Coastal Trail Portion	0.0 miles (0 LF)
Segment Cost	**$2,079,872**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	6,160	Linear Feet	Varies	$1,192,320
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$7,600
Bridge Structures	0	Each	Varies	$0
At-Grade Crossings (Rail Tracks or Streets)	3	Each	Varies	$100,000
			Rail Trail Construction SUBTOTAL	**$1,299,920**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II, III, and Sidewalks)	0	Linear Feet	Varies	$0
			Coastal Trail Construction SUBTOTAL	**$0**

COST SUMMARY	
Construction TOTAL	**$1,299,920**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$194,988
Environmental Permitting (10%)	$129,992
Construction Management (15%)	$194,988
Contingency (20%)	$259,984
SEGMENT TOTAL COST	**$2,079,872**

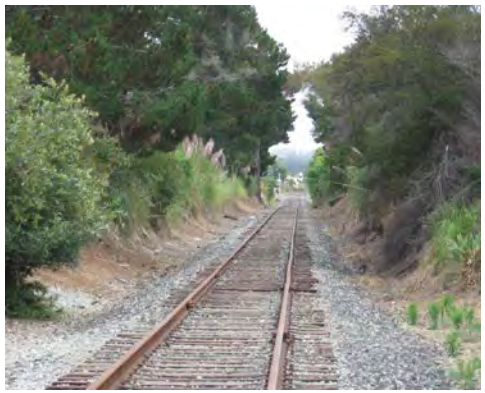
Segment Features	Description	Quantity
Segment Jurisdictional Area	RTC - Rail ROW Owner, County of Santa Cruz	-
Minor Roadway Crossings	Clubhouse Drive, Seascape Boulevard	2
Rail Bridge Crossing (Wood Trestle)	South Hidden Beach Railroad Mile Post 10.5	1
Minor Drainage	Bush Gulch Railroad Mile Post 10.5	1
Existing Staging Areas/Rest Stops	Hidden Beach, Seascape Park	2
Connection To Other Trails	California Coastal Trail, Pacific Coast Bike Route, Seascape Public Trai	3
Within 1/4 Mile of Public School	Rio Del Mar Elementary School	1
Connection to Public Beach	Hidden Beach, Seascape Park	2
Connection to Residential Area	Multiple	4
Connection to Passive Park	Seascape Park	1



Seascape Resort rail crossing and drainage



Southern access to Seascape Resort looking northeast



Narrow rail corridor will require grading of slopes to accommodate a multi-use path

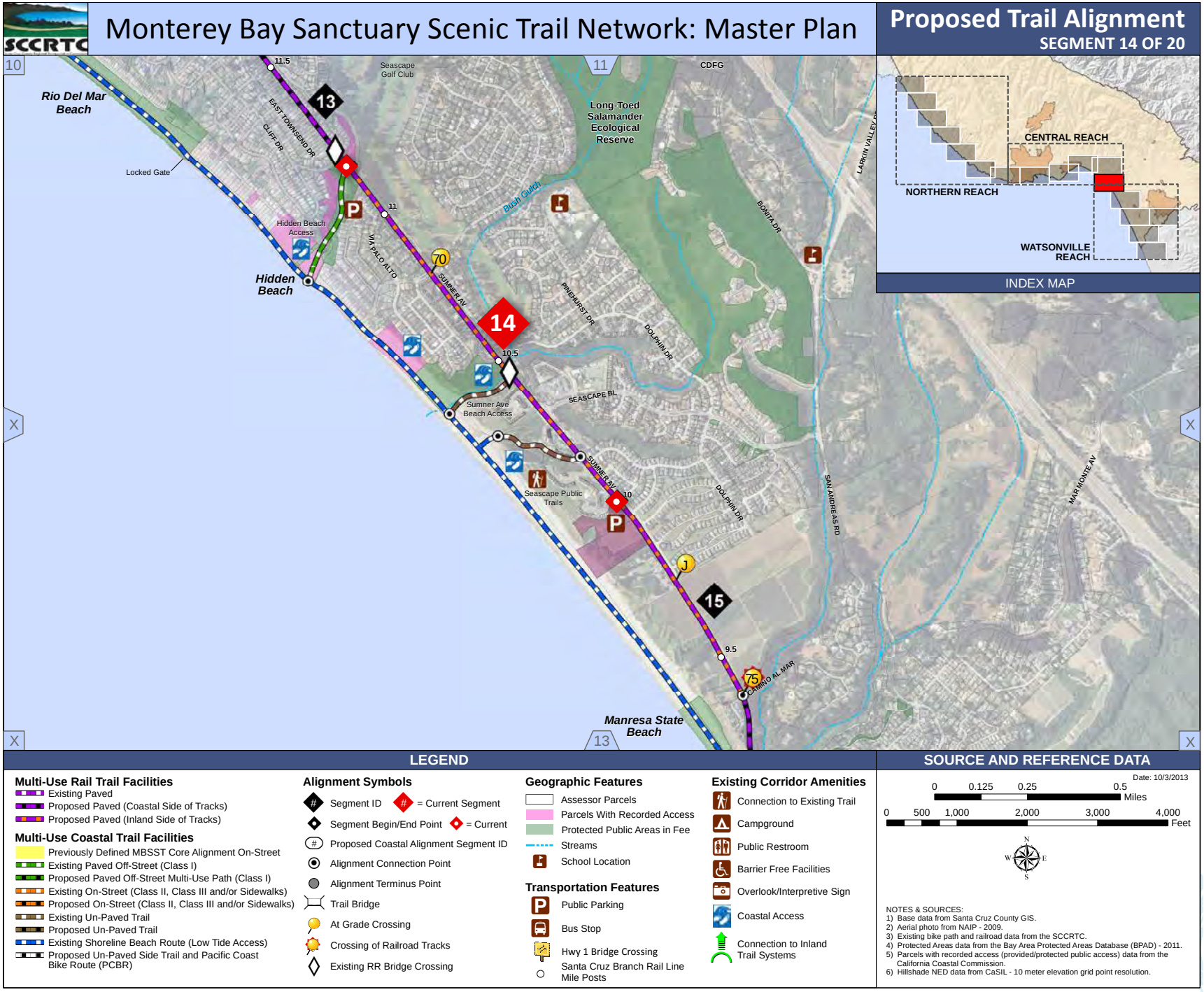


Figure 4-38 Segment 14 proposed trail alignment

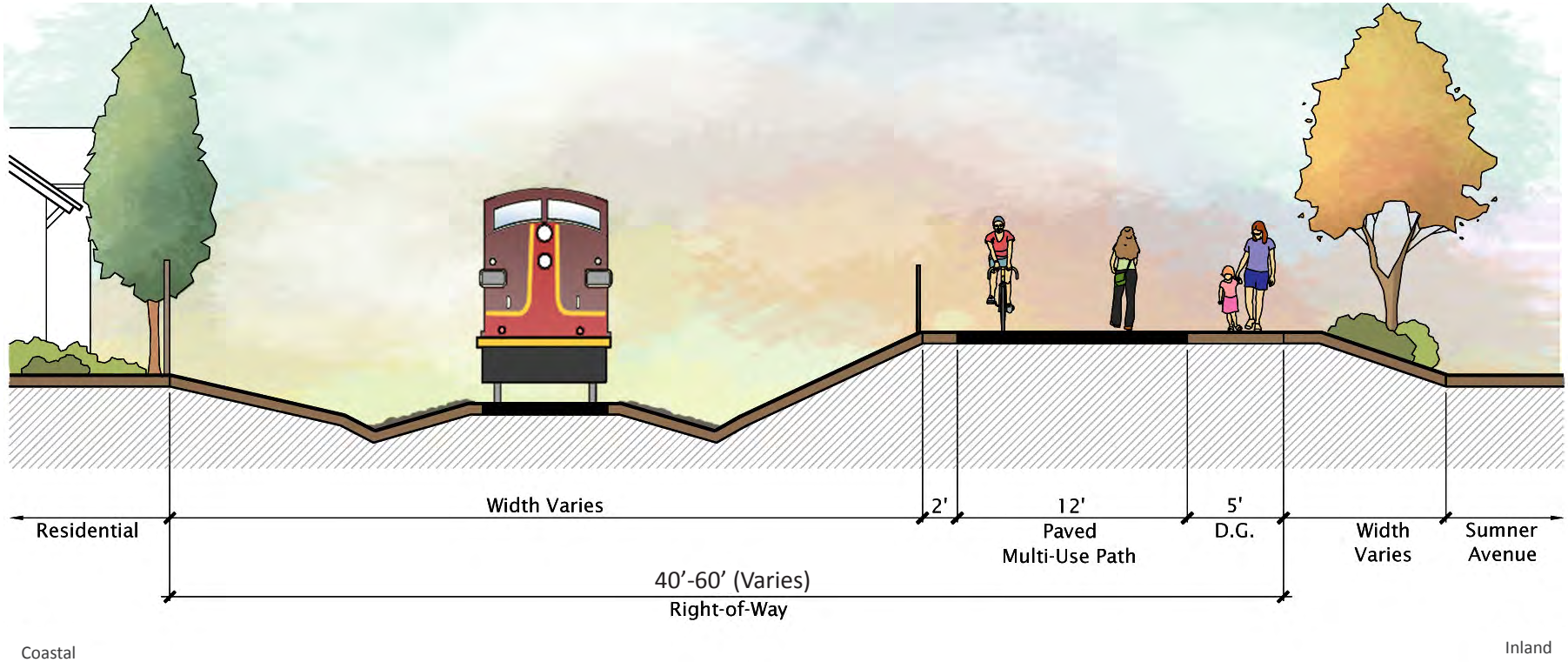


Figure 4-39 Segment 14 trail section

4.15 SEGMENT 15 - MANRESA STATE BEACH

Length: 1.37 miles (7,240 LF) - Seascape Park to Manresa State Beach Railroad Bridge at San Andreas Road

4.15.1 SEGMENT 15 BOUNDARY DETERMINATION

Segment 15 is relatively short, beginning at Seascape Park at the northern boundary and connecting down the coast to the Manresa State Beach Railroad Bridge at San Andreas Road. This segment poses engineering, grading, and grade-separated crossing challenges. Although short, this segment provides good multi-use connectivity with safe accessible trail options linking the California Coastal Trail.

4.15.2 SEGMENT 15 DESCRIPTION

Segment 15 begins at Seascape Park, adjacent to the coastal side of Sumner Road, and continues down the coast along the inland side of the rail right-of-way. Sumner Road ends just down the coast from Seascape Park and the proposed trail alignment continues, crossing over a driveway spur of Sumner Road and on the inland side rail right-of-way adjacent to a short stretch of agricultural land. The alignment eventually crosses the existing at-grade street crossing at Camino Al Mar, just north of railroad mile marker number 9, then the trail switches back to the coastal side of the tracks. The proposed Coastal Rail Trail continues down the coast along the coastal side of the tracks where it reaches a significant rail trestle crossing at La Selva Beach. This crossing connects the proposed trail to an existing public parking lot with coastal access down to La Selva Beach, which is situated below the south rail trestle abutment.

The proposed trail crossing at the La Selva railroad bridge may require the following options for the drainage crossing:

(1) An independent bike/pedestrian bridge structure on the inland side of the existing rail trestle with a landing near the south bridge abutment, crossing over the existing trail to the beach and landing to the inland side of the existing public parking lot;

(2) A hybrid retrofit of the existing trestle superstructure with a bike/pedestrian crossing which utilizes the existing rail bridge for some of the lateral support of the new retrofit, but not completely supporting the retrofit with the new rail bridge structure;

(3) Inclusion of a bike/pedestrian crossing as part of a future rail trestle replacement; or

(4) Use of existing on-street facilities until a new rail trestle is designed and implemented.

The proposed Coastal Rail Trail alignment continues down the coast from the La Selva Beach crossing along the inland side of the rail corridor. The proposed trail will cross the rail tracks at an existing at-grade vehicular rail crossing to continue along the coastal side of the tracks. This existing at-grade vehicle crossing is down the coast from railroad mile marker number 9, and does not currently have signal flashers or warning devices. Once the proposed Coastal Rail Trail is on the coastal side of the tracks, the physical constraints vary from steep slopes, private roadways, adjacent private property lines, narrow railroad right-of-way, and another rail bridge crossing over the San Andreas Road/Pacific Coast Bike Route. This segment connects with seven (7) activity centers identified in Table 3.1.

Segment 15 proposed improvements include:

- 1.37 miles (7,240 LF) multi-use paved path (Class I) along the inland rail right-of-way
- Two (2) private at-grade road crossings (Sumner Avenue, Camino Al Mar) and two (2) additional private crossings
- Two (2) preengineered rail bridge crossings (one [1] three-hundred- [300-] foot span at La Selva, and one [1] two hundred and twenty-five- [225-] foot span at San Andreas Road)
- One (1) rail at-grade crossing (Camino Al Mar)
- Fencing may be considered when project is implemented

TABLE 4.15 Segment 15 - Manresa State Beach

Segment Length	**1.37 miles (7,240 LF) - Manresa State Beach**
Rail Trail Portion	1.37 miles (7,240 LF)
Coastal Trail Portion	0.0 miles (0 LF)
Segment Cost	**$4,735,680**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	7,240	Linear Feet	Varies	$1,425,600
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$4,200
Bridge Structures	2	Each	Varies	$1,450,000
At-Grade Crossings (Rail Tracks or Streets)	5	Each	Varies	$80,000
			Rail Trail Construction SUBTOTAL	**$2,959,800**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II, III, and Sidewalks)	0	Linear Feet	Varies	$0
			Coastal Trail Construction SUBTOTAL	**$0**

COST SUMMARY	
Construction TOTAL	**$2,959,800**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$443,970
Environmental Permitting (10%)	$295,980
Construction Management (15%)	$443,970
Contingency (20%)	$591,960
SEGMENT TOTAL COST	**$4,735,680**

Segment Features	Description	Quantity
Segment Jurisdictional Area	RTC - Rail ROW Owner, State Parks, County of Santa Cruz	-
Major Roadway Crossings	Grade separated - San Andreas Road	1
Minor Roadway Crossings	Camino Al Mar	1
Rail Bridge Crossing (Timber Trestle)	Manresa State Beach crossing	1
Rail Bridge Crossing (Concrete)	San Andreas Road crossing	1
Minor Drainage	Manresa State Beach	1
Existing Staging Areas/Rest Stops	Manresa State Beach, Seascape Park	2
Connection To Other Trails	California Coastal Trail, Pacific Coast Bike Route	2
Connection to Public Beach	Manresa State Beach	1
Connection to Residential Area	Rural residential	1



Views of scenic open space



Pacific Coast Bike route located parallel to the railroad tracks

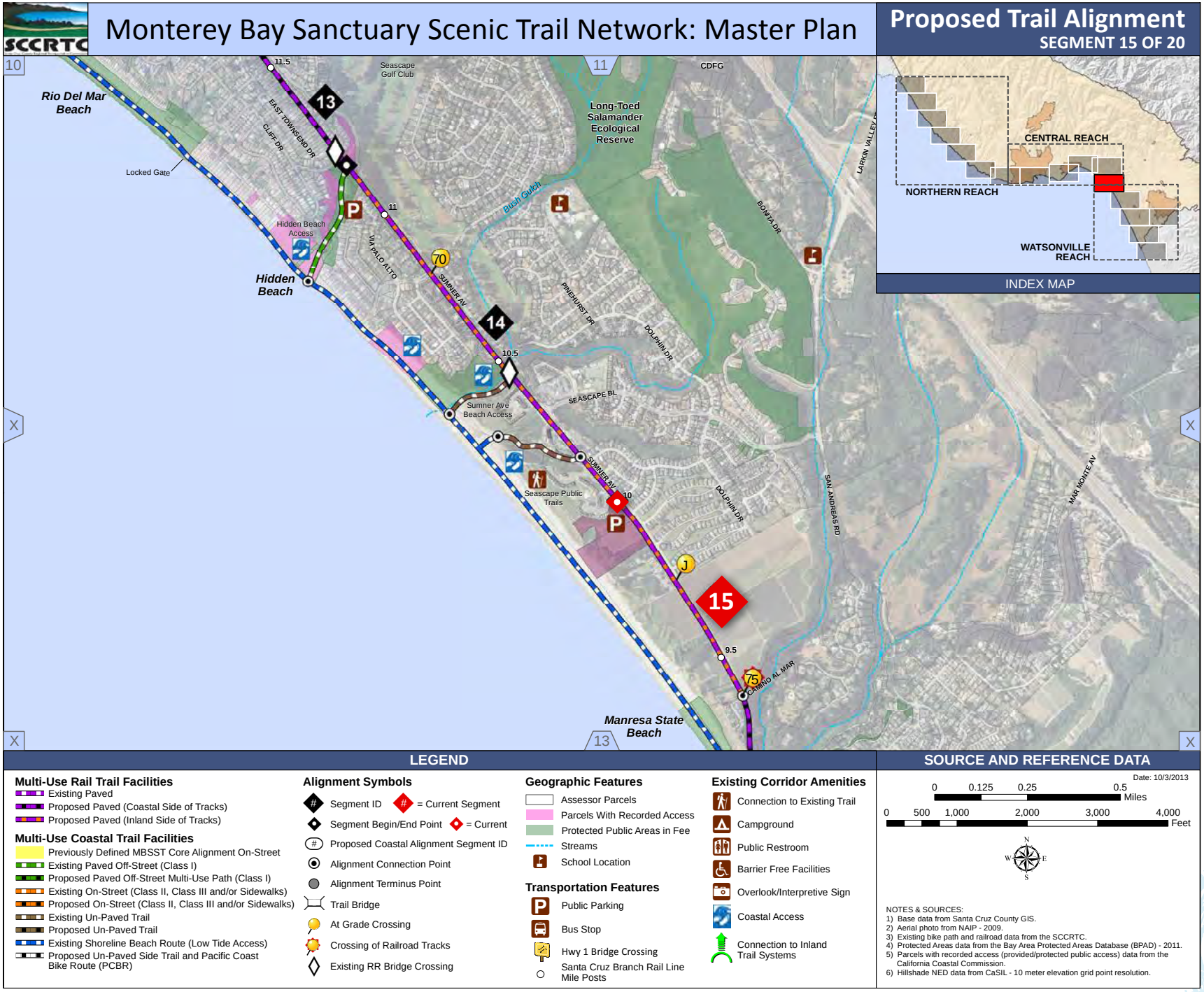


Figure 4-40 Segment 15 proposed trail alignment

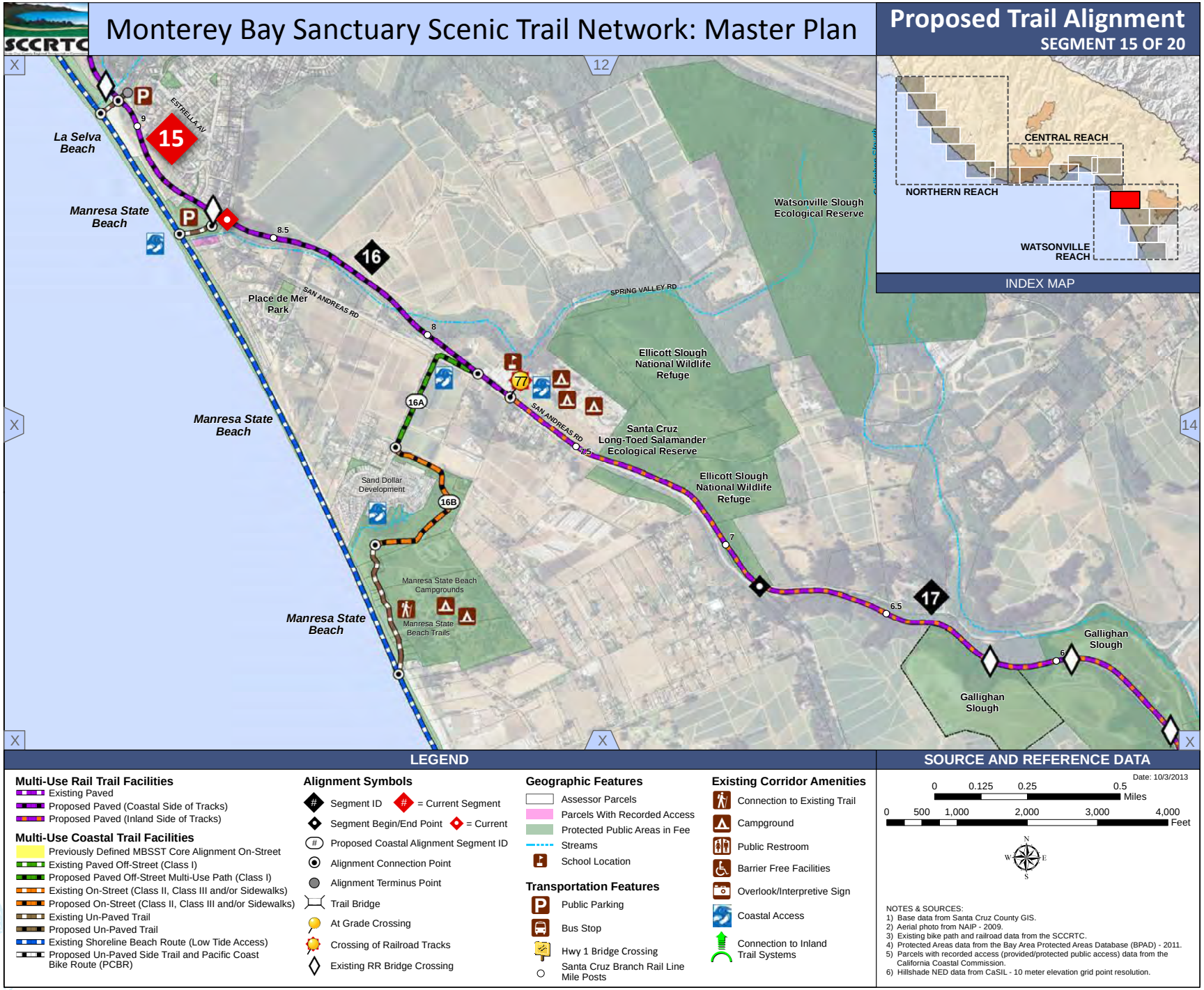


Figure 4-41 Segment 15 proposed trail alignment (continued)

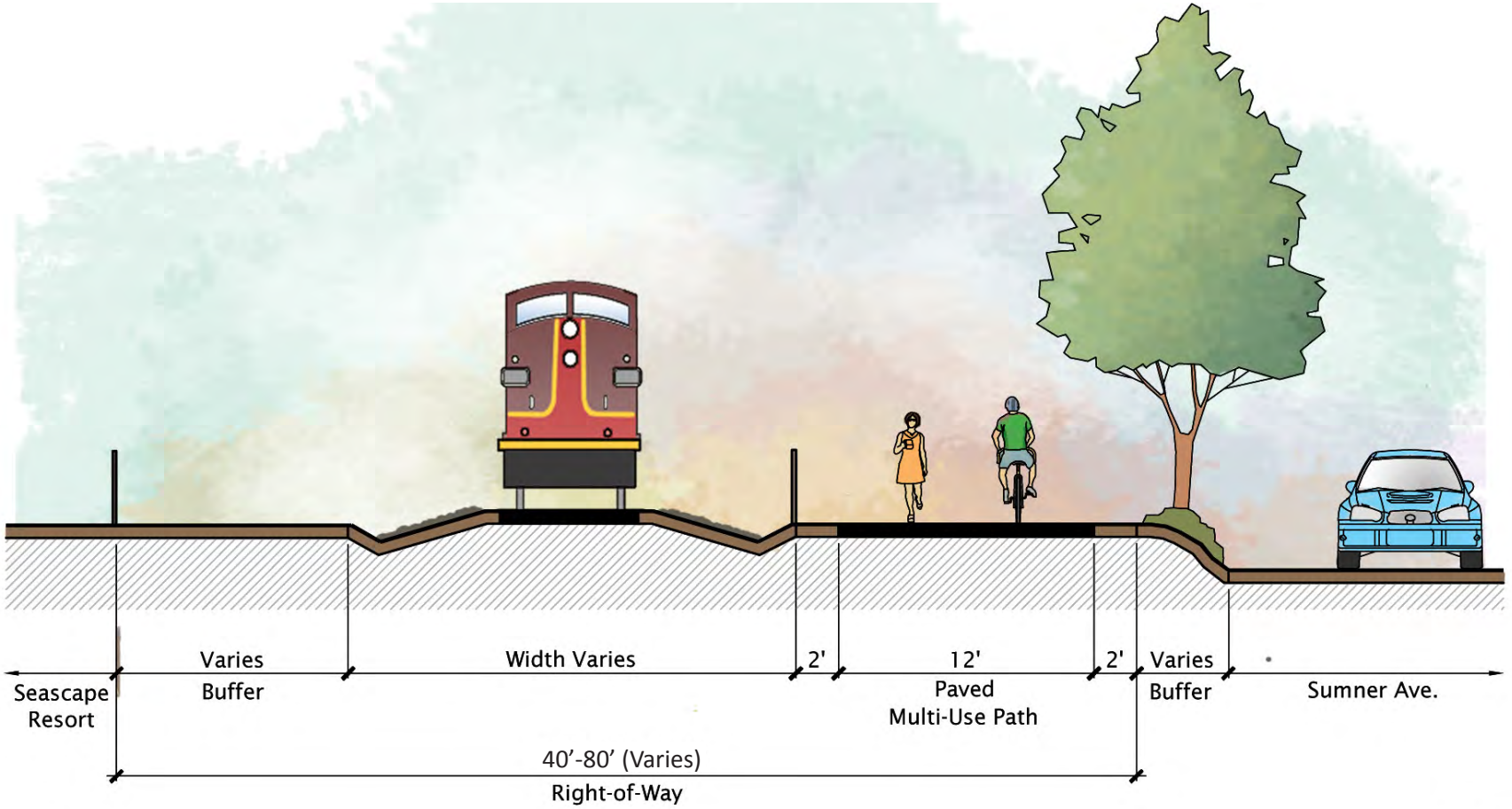


Figure 4-42 Segment 15 trail section


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Manresa State Beach, parking area, beach access, and train tracks



Railroad tracks adjacent to agricultural lands



Inn overlooking agricultural lands and railroad tracks



Campground provides a unique destination opportunity to bike and camp

4.16 SEGMENT 16 - ELLICOTT SLOUGH

Length: 2.66 miles (14,030 LF) - down the coast from Railroad Bridge abutment at San Andreas Road to Buena Vista Drive

4.16.1 SEGMENT 16 BOUNDARY DETERMINATION

Beginning at the southernmost side abutment or the existing rail bridge crossing of San Andreas Road at Manresa State Beach, most of Segment 16 falls between the rail corridor and San Andreas Road/Pacific Bike Route to Buena Vista Drive. This is a short stretch, but is consistent in its setting of following both the rail corridor and the San Andreas Road corridor as the rail line heads inland toward Watsonville.

4.16.2 SEGMENT 16 DESCRIPTION

Segment 16 begins at the south San Andreas Road rail bridge abutment where the rail line begins to diverge from the coastal edge and heads inland toward Watsonville.

South of the bridge over San Andreas Road, the Coastal Rail Trail will follow the coastal side of the rail tracks all the way to Spring Valley Road where it crosses the roadway and switches to the inland side of the rail tracks. The trail continues down the coast, paralleling the tracks along the Ellicott Slough National Wildlife Refuge area. The trail segment continues down the coast across Peaceful Valley Road and ends at the Buena Vista Drive and San Andreas Road intersection. This segment connects with nineteen (19) activity centers identified in Table 3.1.

Segment 16 proposed improvements include:

- 1.78 miles (9,400 LF) multi-use paved path (Class I) along the rail right-of-way
- 0.40 miles (2,100 LF) mutli-use paved path (Class I) coastal trail (Segment 16A)
- 0.48 miles (2,530 LF) Class II bike lanes (Segment 16B)
- Two (2) at-grade road crossings (Spring Valley Road, Peaceful Valley Road)
- One (1) at-grade rail crossing (Spring Valley Road)
- Fencing may be considered when project is implemented

TABLE 4.16 Segment 16 - Ellicott Slough

Segment Length	**2.66 miles (14,030 LF) - Ellicott Slough**
Rail Trail Portion	1.78 miles (9,400 LF)
Coastal Trail Portion	0.88 miles (4,630 LF)
Segment Cost	**$3,613,600**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	9,400	Linear Feet	Varies	$1,522,800
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$9,900
Bridge Structures	0	Each	Varies	$0
At-Grade Crossings (Rail Tracks or Streets)	3	Each	Varies	$335,000
			Rail Trail Construction SUBTOTAL	**$1,867,700**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	2,100	Linear Feet	Varies	$340,200
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II, III, and Sidewalks)	2,530	Linear Feet	$20	$50,600
			Coastal Trail Construction SUBTOTAL	**$390,800**

COST SUMMARY	
Construction TOTAL	**$2,258,500**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$338,775
Environmental Permitting (10%)	$225,850
Construction Management (15%)	$338,775
Contingency (20%)	$451,700
SEGMENT TOTAL COST	**$3,613,600**

Segment Features	Description	Quantity
Segment Jurisdictional Area	RTC - Rail ROW Owner, State Parks, School Dist., State DFG, County of Santa Cruz	-
Segment Length	Manresa State Beach at San Andreas Road to Buena Vista Dr.	1.78 miles
Minor Roadway Crossings	Spring Valley Road	1
Trail At-Grade Railroad Crossings	Spring Valley Road	1
Existing Staging Areas/Rest Stops	Manresa State Beach	1
Within 1/4 Mile of Public School	Renaissance High School	1
Connection to Public Beach	Manresa State Beach	1
Connection to Residential Area	Rural	1
Connection to Passive Park	Ellicott Slough National Wildlife Refuge	1



Manresa State Beach parking, bike racks, and beach access



Train trestle adjacent to Manresa State Beach



Scenic Manresa State Beach

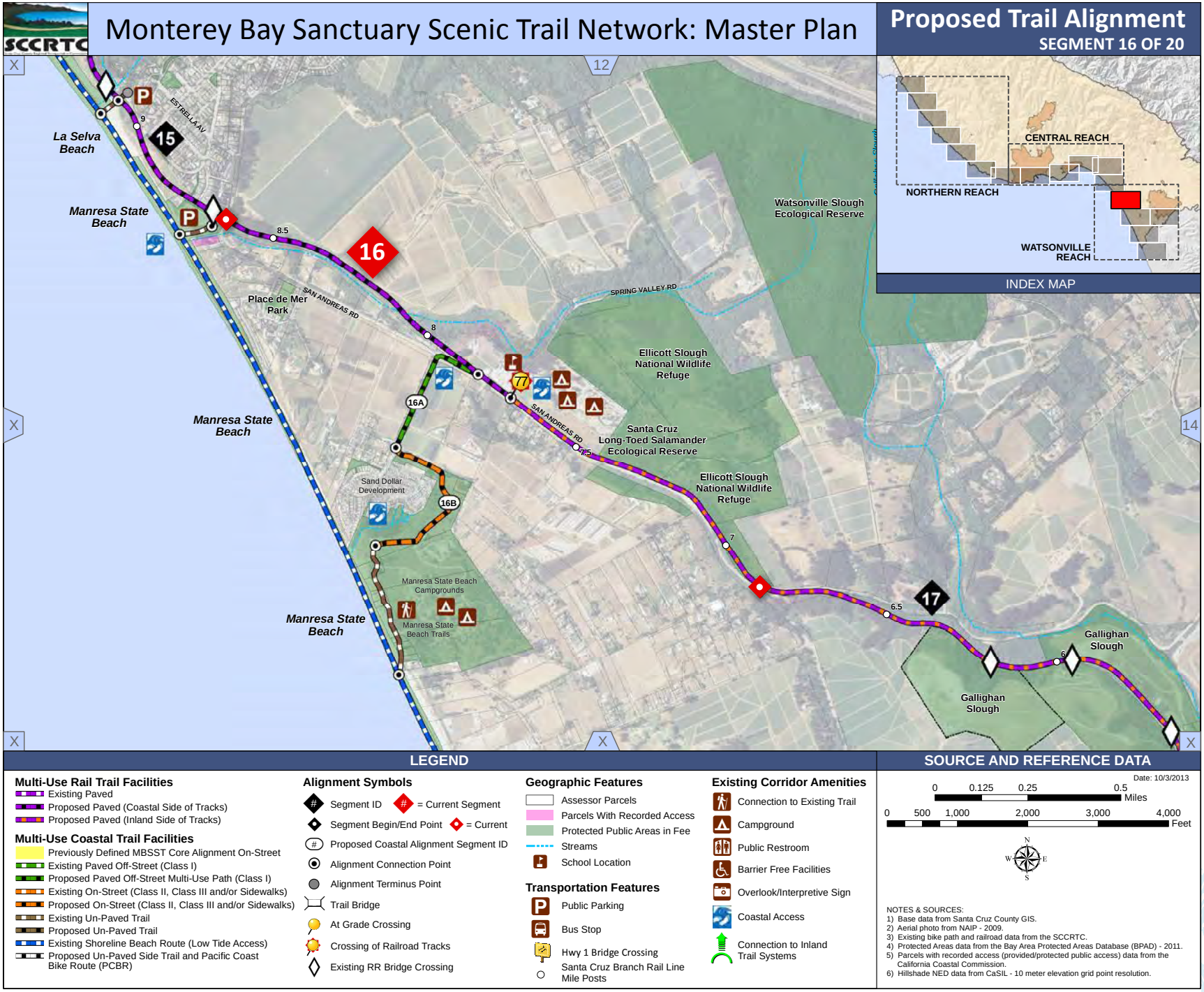


Figure 4-43 Segment 16 proposed trail alignment

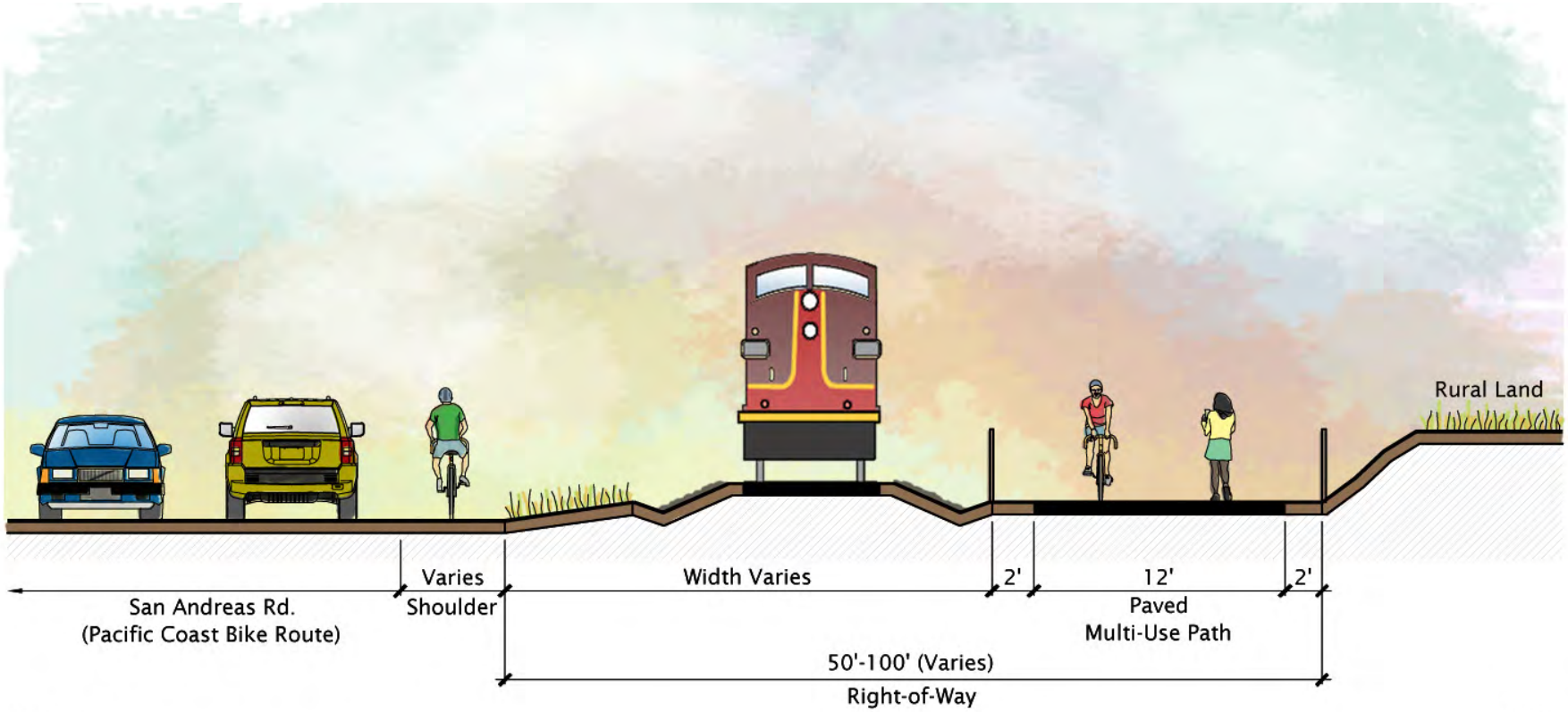


Figure 4-44 Segment 16 trail section



Harkins Slough train trestle



Harkins Slough fauna



Harkins Slough looking south

4.17 SEGMENT 17 - HARKINS SLOUGH

Length: 4.00 miles (21,140 LF) - Buena Vista Drive and San Andreas Road intersection to Lee Road

4.17.1 SEGMENT 17 BOUNDARY DETERMINATION

The Segment 17 boundary is determined by the physical setting and the change in rail corridor character from the northern starting point at San Andreas Road down the coast to Harkins Slough, a primary branch of Watsonville Slough. This is the one (1) spot where the rail corridor diverts away from the coastal edge and heads inland as it continues down the coast to Watsonville.

4.17.2 SEGMENT 17 DESCRIPTION

Starting from the intersection crossing at San Andreas Road and Buena Vista Drive, the proposed Coastal Rail Trail will parallel Gallighan Slough to its convergence with Harkins Slough, following the inland side of the rail tracks. The rail right-of-way width varies from forty-five- (45-) feet wide to one-hundred-and-forty-eight- (148-) feet wide as it continues along the steep slope just down the coast from mile marker 7 to mile marker 4.5 at the Harkins Slough trestle. The Segment 17 stretch will require retaining walls to create a bench for the trail tread. This segment is heavily wooded with several smaller rail trestle bridge crossings over small drainages and sloping ravines. The proposed Coastal Rail Trail will follow the inland rail right-of-way along several agricultural fields, a mineral quarry, and wooded slopes as it descends towards the Gallighan Slough-Harkins Slough wetland area. The alignment will require several preengineered bridges and culverts to cross several of the drainages along the steep slopes. Harkins Slough is the largest freshwater slough in California's Central Coast region, and the four-hundred- (400-) foot crossing of the slough may require a boardwalk bridge structure adjacent to the rail line to reach down the coastal side of the slough. A possible interim alignment will divert the trail from the rail line at Gallighan Slough to an on-road alignment at Rountree Lane, Harkins Slough Road, and Lee Road, and will reconnect with the rail at the Lee Road junction. (This alignment was not evaluated or identified in this Master Plan.) The trail will require fencing along the agricultural operations and there is one (1) private, agricultural, dirt road, non-signalized rail crossing west of Lee Road. This segment connects with four (4) activity centers identified in Table 3.1.

Segment 17 proposed improvements include:

- 4.0 miles (21,140 LF) multi-use paved path (Class I) along the inland rail right-of-way
- Seven (7) rail bridge/culvert crossings of varying lengths
- One (1) private farm road crossing (one-half [1/2] mile west of Lee Road)
- One (1) private road crossing at Buena Vista Drive and one (1) additional private crossing
- This segment also includes fencing for agricultural operations and safety; additional fencing may be considered when project is implemented

Revised Segment 17
See Appendix I

TABLE 4.17 Segment 17 - Harkins Slough

Segment Length	**4.00 miles (21,140 LF) - Harkins Slough**
Rail Trail Portion	4.00 miles (21,140 LF)
Coastal Trail Portion	0.0 miles (0 LF)
Segment Cost	**$19,961,888**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	21,140	Linear Feet	Varies	$5,212,980
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$233,200
Bridge Structures	7	Each	Varies	$7,000,000
At-Grade Crossings (Rail Tracks or Streets)	3	Each	Varies	$30,000
			Rail Trail Construction SUBTOTAL	**$12,476,180**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II, III, and Sidewalks)	0	Linear Feet	Varies	$0
			Coastal Trail Construction SUBTOTAL	**$0**

COST SUMMARY	
Construction TOTAL	**$12,476,180**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$1,871,427
Environmental Permitting (10%)	$1,247,618
Construction Management (15%)	$1,871,427
Contingency (20%)	$2,495,236
SEGMENT TOTAL COST	**$19,961,888**

Segment Features	Description	Quantity
Segment Jurisdictional Area	RTC - Rail ROW Owner, City of Watsonville, California Dept. of Fish and Wildlife (CDFW)	-
Rail Bridge Crossing (Wood Trestle)	Various bridges along segment	4
Major Drainage	Watsonville Slough	1
Minor Drainage	Various drainages along segment	2



Existing Watsonville Slough trail



Harkins Slough looking south



Existing Watsonville Slough trail

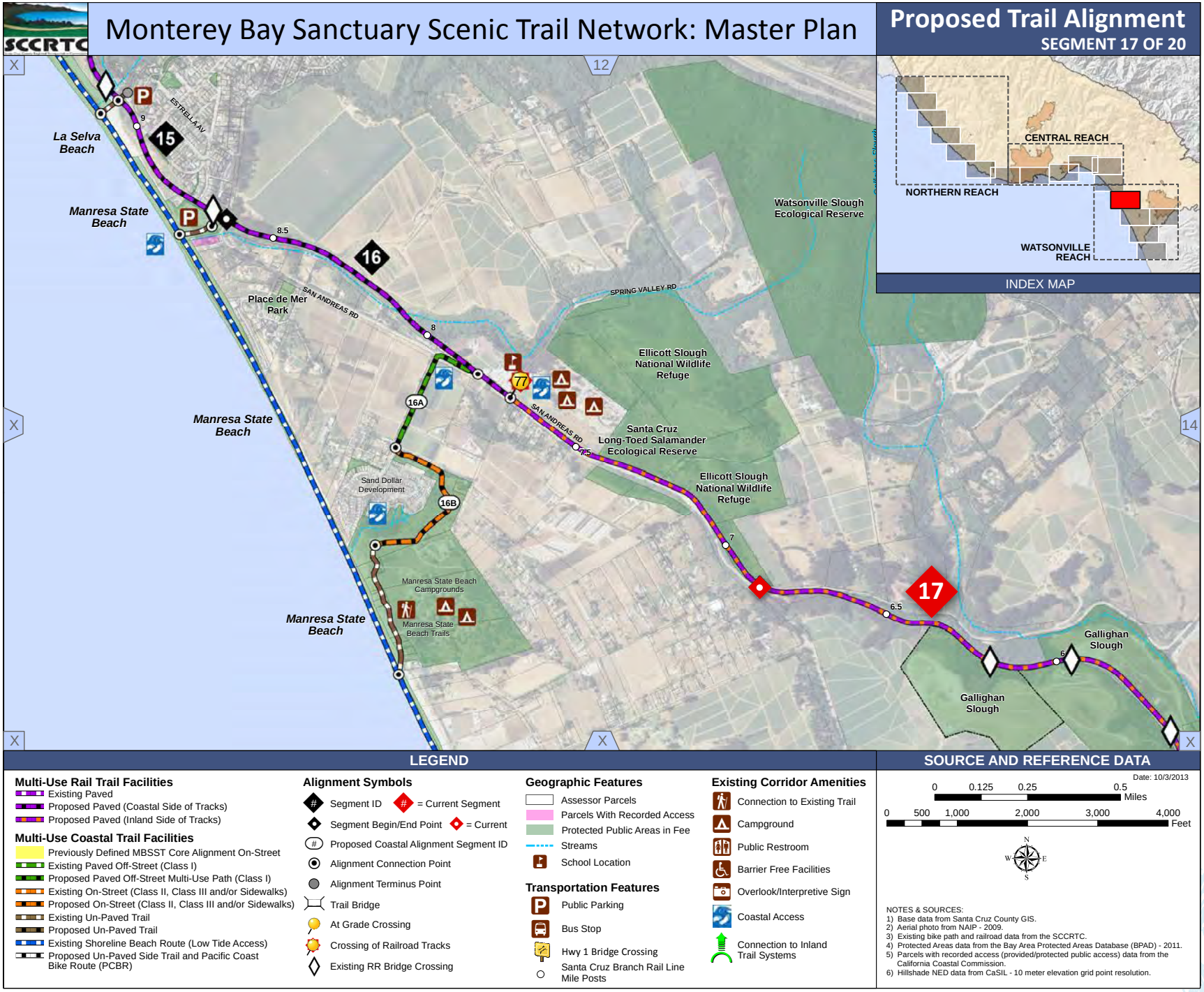


Figure 4-45 Segment 17 proposed trail alignment

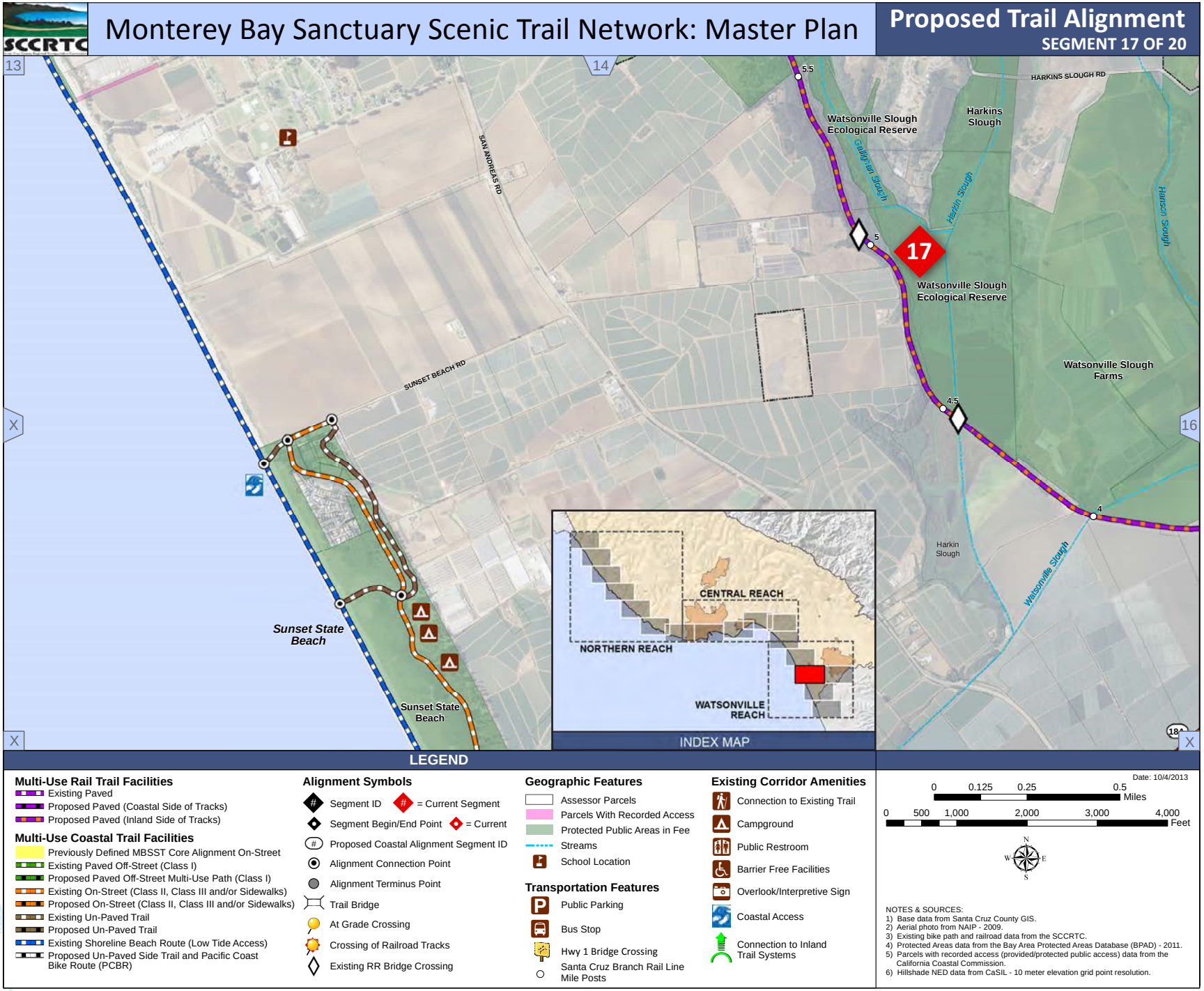


Figure 4-46 Segment 17 proposed trail alignment (continued)

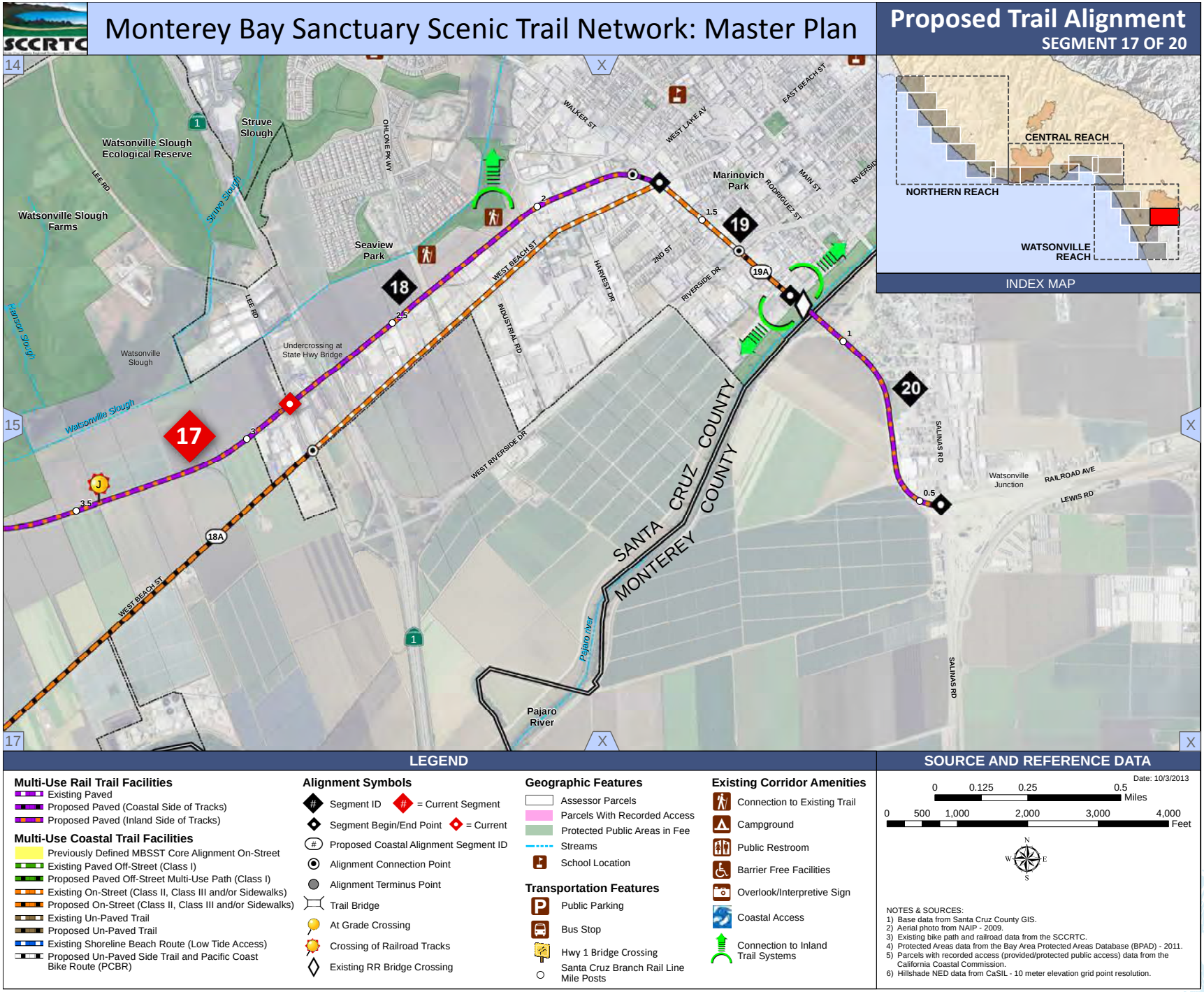


Figure 4-47 Segment 17 proposed trail alignment (continued)

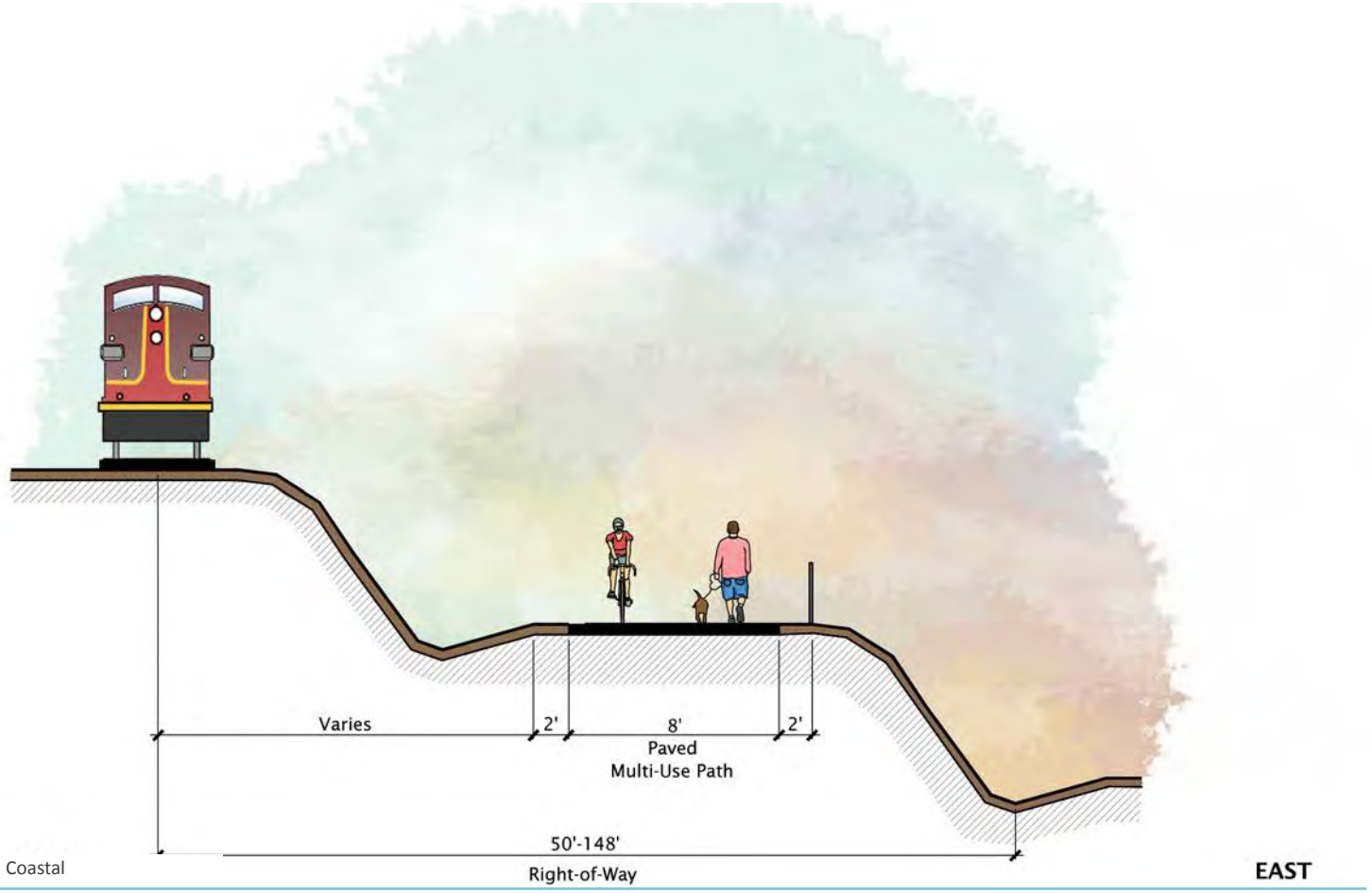


Figure 4-48 Segment 17 trail section



Watsonville agriculture along Beach Road



Watsonville agriculture along Beach Road



Watsonville agriculture along Beach Road

4.18 SEGMENT 18 - WATSONVILLE SLOUGH OPEN SPACE TRAILS

Length: 4.01 miles (21,170 LF) - Lee Road to Walker Street

4.18.1 SEGMENT 18 BOUNDARY DETERMINATION

Segment 18 starts at the railroad crossing at Lee Road and continues down the coast to Walker Street. This segment connects Downtown Watsonville to the existing trail network in the Watsonville Slough Wetlands.

4.18.2 SEGMENT 18 DESCRIPTION

Segment 18 will require coordination with the City of Watsonville, Caltrans, and adjacent local farm owners and operators. Segment 18 begins at Lee Road, which will include a road crossing, and follows the rail right-of-way on the inland side as it continues down the coast, crossing under the Highway 1 bridge structure near Lee Road into Watsonville. The proposed alignment crosses the Ohlone Parkway at-grade rail crossing and connects to the Watsonville Wetland trail system. This segment ends following the industrial areas on the inland side of the tracks just as they connect to Walker Street in the city of Watsonville. Segment 18 connects with three (3) activity centers identified in Table 3.1.

Segment 18 proposed improvements include:

- 1.20 miles (6,350 LF) multi-use paved path (Class I) along the inland rail right-of-way
- 2.81 miles (14,820 LF) Class II bike lanes (Segment 18A: Watsonville Slough at Sunset State Beach to San Andreas Road, and Segment 18B: Thurwacher Road to Lee Road.)
- One (1) rail culvert crossing
- Two (2) road crossings (one [1] at Lee Road and one [1] at Ohlone Parkway)
- This segment also includes fencing for agricultural operations and safety; additional fencing may be considered when project is implemented

TABLE 4.18 Segment 18 - Watsonville Slough Open Space Trails

Segment Length	**4.01 miles (21,170 LF) - Watsonville Open Space Trails**
Rail Trail Portion	1.20 miles (6,350 LF)
Coastal Trail Portion	2.81 miles (14,820 LF)
Segment Cost	**$3,010,720**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	6,350	Linear Feet	Varies	$1,028,700
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$416,600
Bridge Structures	0	Each	Varies	$0
At-Grade Crossings (Rail Tracks or Streets)	3	Each	Varies	$140,000
			Rail Trail Construction SUBTOTAL	**$1,585,300**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II)	14,820	Linear Feet	$20	$296,400
			Coastal Trail Construction SUBTOTAL	**$296,400**

COST SUMMARY	
Construction TOTAL	**$1,881,700**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$282,255
Environmental Permitting (10%)	$188,170
Construction Management (15%)	$282,255
Contingency (20%)	$376,340
SEGMENT TOTAL COST	**$3,010,720**

Segment Features	Description	Quantity
Segment Jurisdictional Area	City of Watsonville, Flood Control, RTC - Rail ROW Owner, County of Santa Cruz	-
Minor Roadway Crossings	Lee Road, Ohlone Parkway	2
Private Road Crossings	Farm field access roads	2
Existing Staging Areas/Rest Stops	Watsonville Wetlands	1
Connection To Other Trails	Watsonville Wetlands	1
Within 1/4 Mile of Public School	Landmark Elementary School	1
Connection to Residential Area	Seaview Ranch	1



Row crops adjacent to the railroad corridor



Scenic agricultural fields



Agriculture employee parking

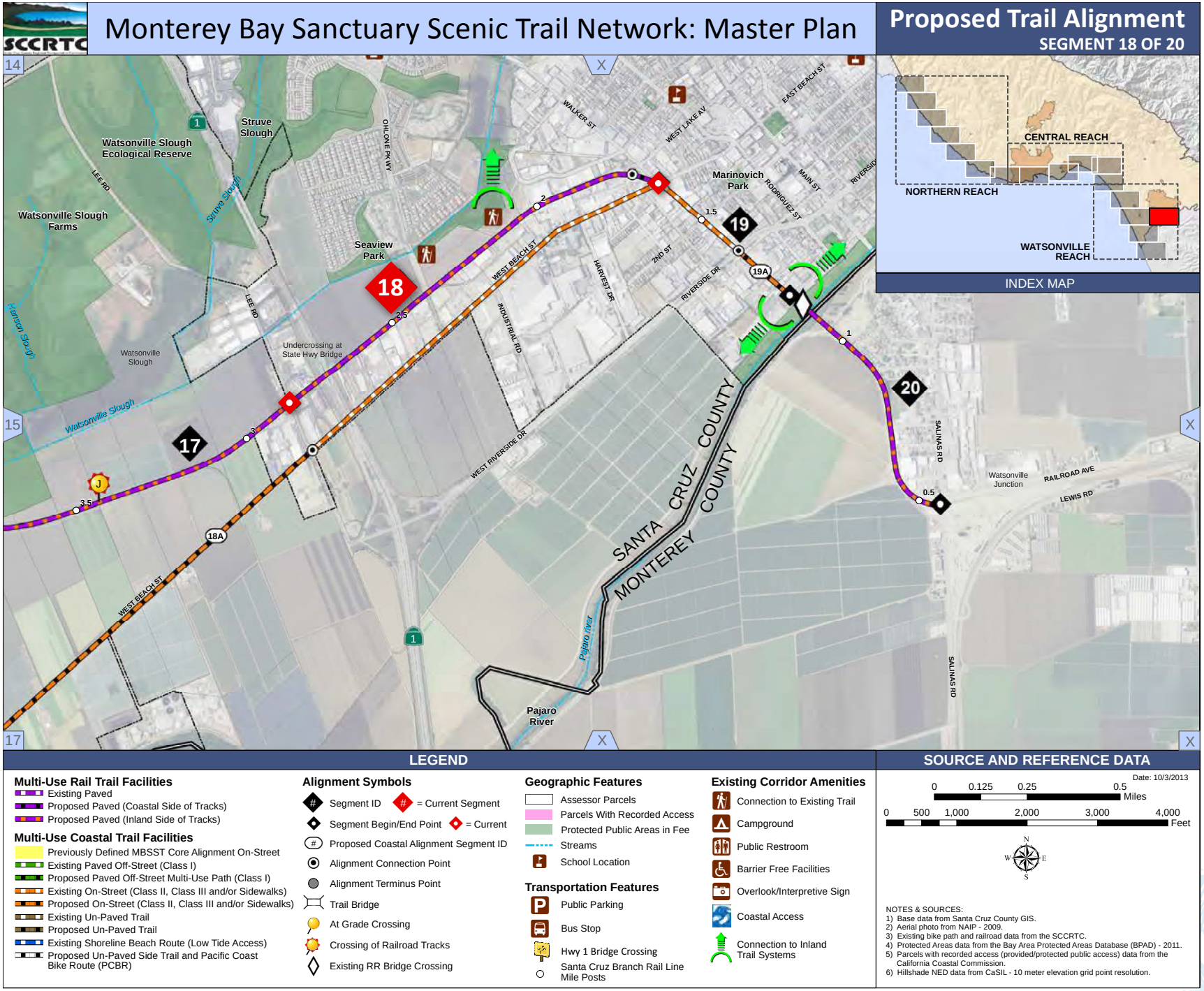


Figure 4-49 Segment 18 proposed trail alignment

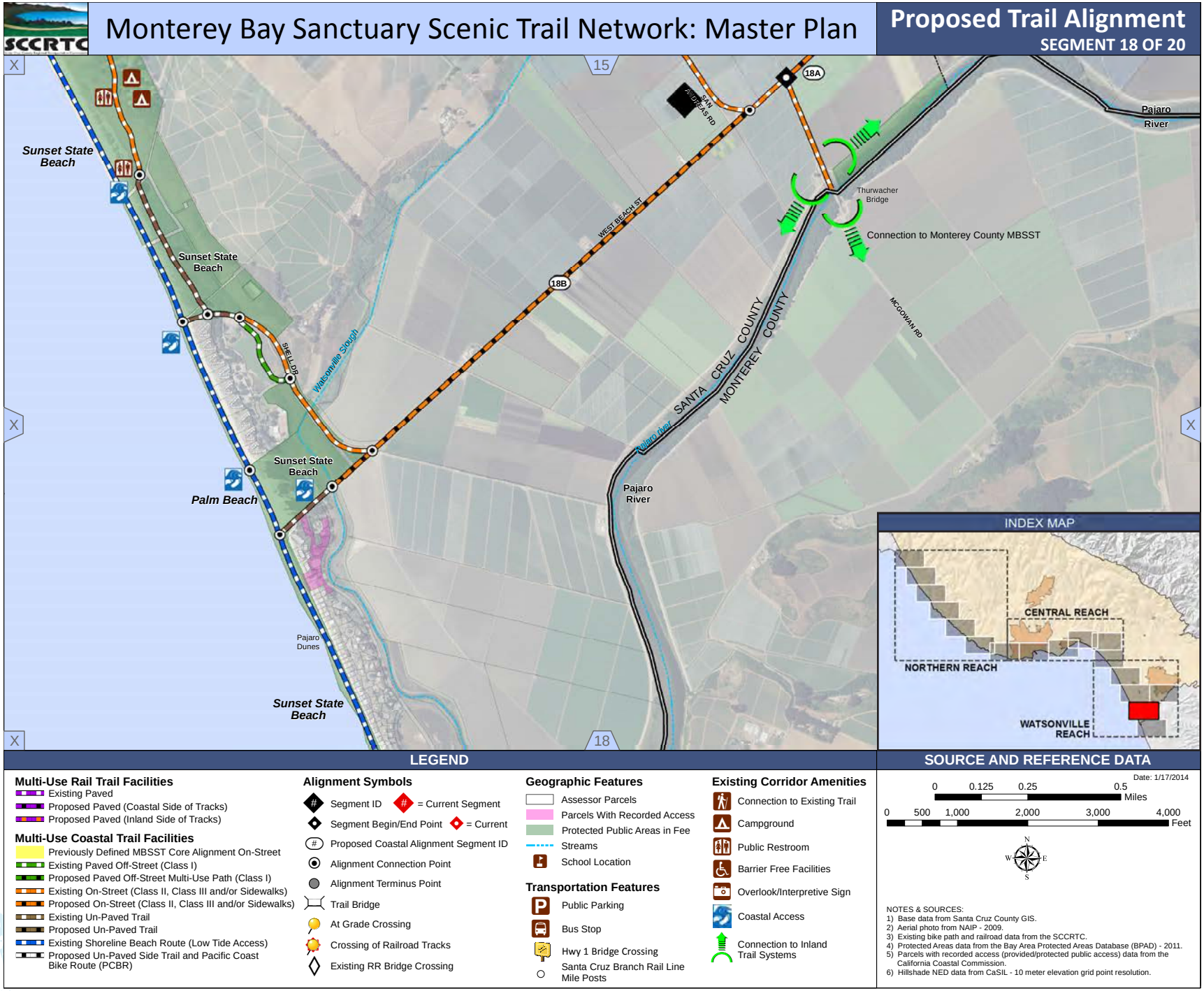


Figure 4-50 Segment 18 proposed trail alignment (continued)

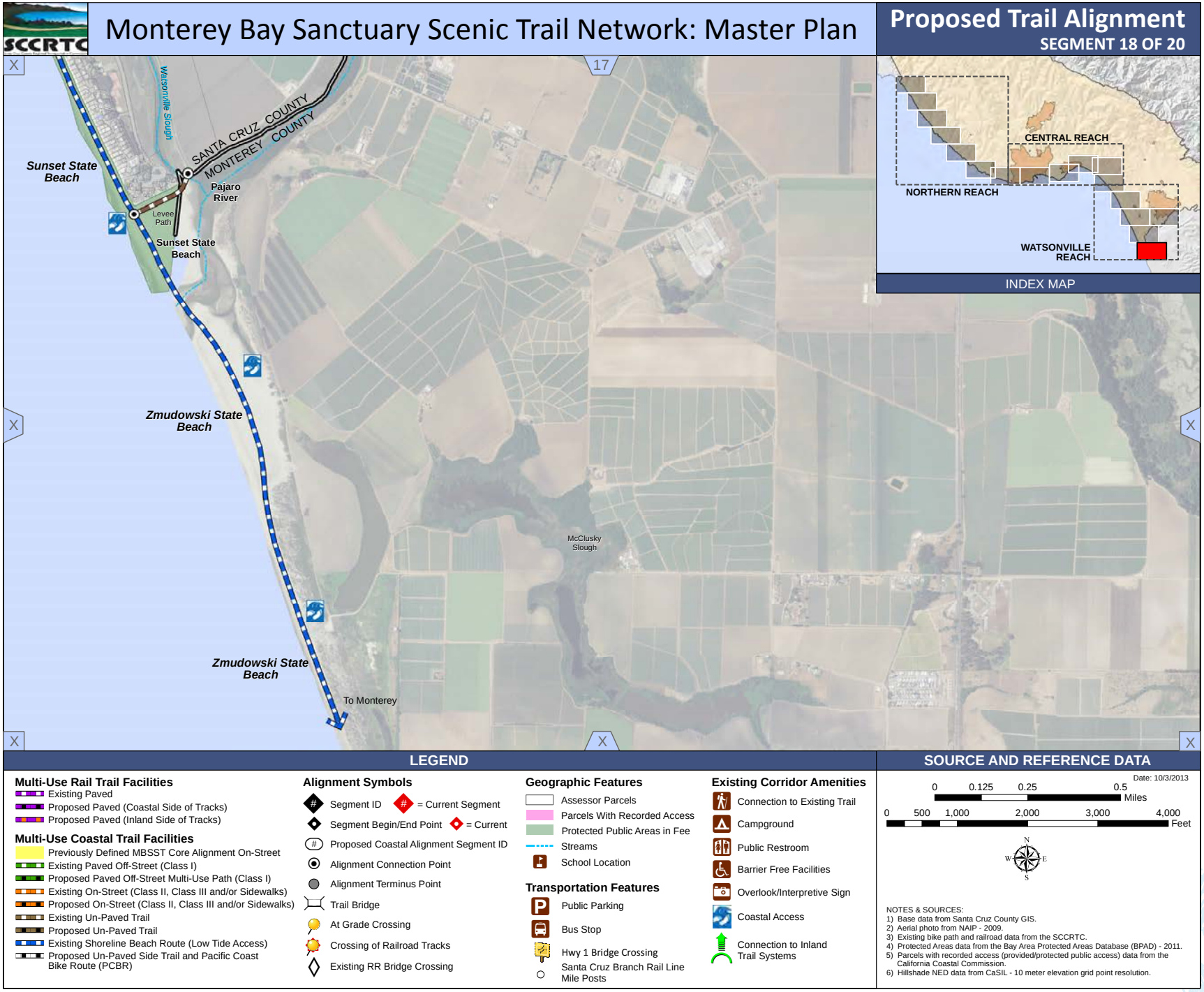


Figure 4-51 Segment 18 proposed trail alignment (continued)

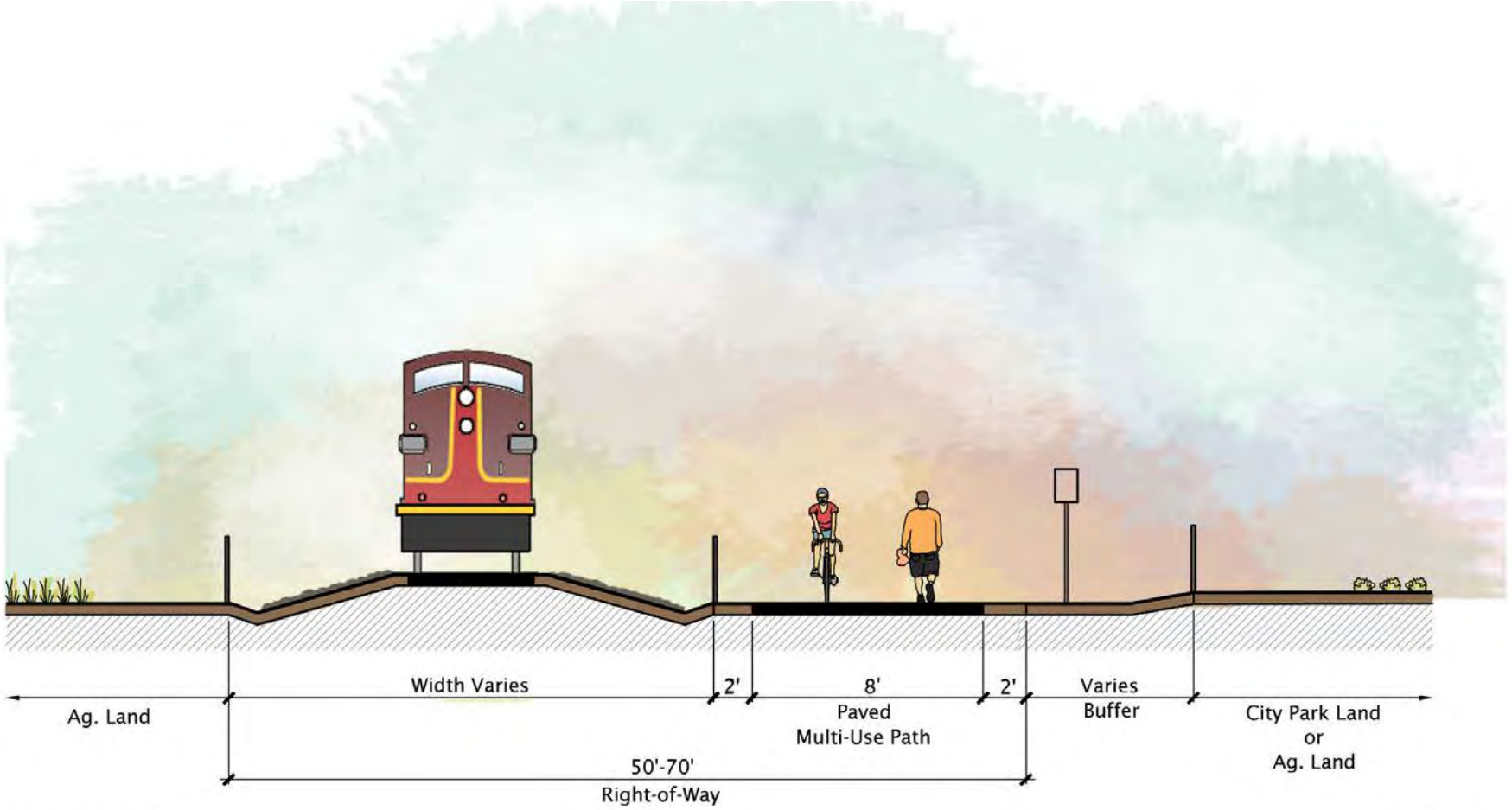
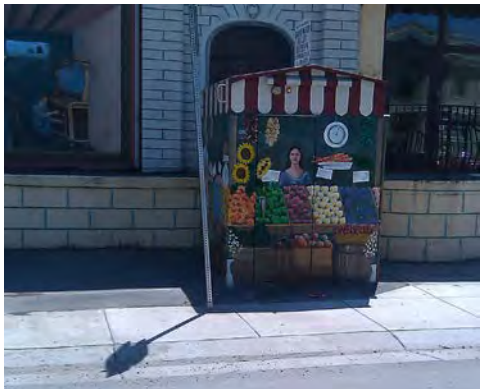


Figure 4-52 Segment 18 trail section



Walker Street industrial area adjacent to railroad corridor



Murals adjacent to the rail corridor on Walker Street in Watsonville



Industrial fence and road located in close proximity to the railroad tracks

4.19 SEGMENT 19 - WALKER STREET, CITY OF WATSONVILLE

Length: 0.47 miles (2,460 LF) - Walker Street to North Bank of the Pajaro River

4.19.1 SEGMENT 19 BOUNDARY DETERMINATION

Segment 19, from the intersection of Walker Street and West Beach Street, is both a multi-use path and an on-street facility. It begins near railroad mile marker 2 and continues to the southernmost end of Walker Street at the Pajaro River Bridge.

4.19.2 SEGMENT 19 DESCRIPTION

Segment 19 will be part of Watsonville's bike facility network. Segment 19 starts as an existing Class II bike lane and sidewalk facility at the intersection of Walker Street and West Beach Street. Currently, the rail tracks are situated in the centerline of Walker Street and the existing Class II bike lanes and sidewalks on Walker Street end at the intersection of Walker Street and West Riverside Drive. Segment 19A begins at the Walker Street and Riverside intersection and end at the Pajaro River levee. This segment of Walker Street needs consistent sidewalks and curb ramps. Class II bike lanes are also proposed along both sides of Walker Street from the Riverside Drive intersection all the way to the terminus of Walker Street to connect the Pajaro River Levee Trail. Segment 19 connects with fifteen (15) activity centers identified in Table 3.1.

Segment 19 proposed improvements include:

- 0.29 miles (1,510 LF) existing Class II bike lane along Walker Street right-of-way
- 0.18 miles (950 LF) proposed Class II bike lane along Walker Street right-of-way (Segment 19A)
- New sidewalks on the inland side of Walker Street from the intersection of W. Riverside Drive to the end of Walker Street, connecting to the Pajaro River

TABLE 4.19 Segment 19 - Walker Street, City of Watsonville

Segment Length	**0.47 miles (2,460 feet) - Walker Street, City of Watsonville**
Rail Trail Portion (Existing - Walker Street)	0.29 miles (1,510 LF)
Coastal Trail Portion (Proposed - Walker Street)	0.18 miles (950 LF)
Segment Cost	**$381,280**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Amenities (Fencing, Benches, Signeage, Etc.)	0	Lump Sum	Varies	$159,300
Bridge Structures	0	Each	Varies	$0
At-Grade Crossings (Rail Tracks or Streets)	1	Each	Varies	$60,000
			Rail Trail Construction SUBTOTAL	**$219,300**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II and Sidewalks - 19A)	950	Linear Feet	$20	$19,000
			Coastal Trail Construction SUBTOTAL	**$19,000**

COST SUMMARY	
Construction TOTAL	**$238,300**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$35,745
Environmental Permitting (10%)	$23,830
Construction Management (15%)	$35,745
Contingency (20%)	$47,660
SEGMENT TOTAL COST	**$381,280**

Segment Features	Description	Quantity
Segment Jurisdictional Area	City of Watsonville, Flood Control	-
Connection To Other Trails	Pajaro River	1
Within 1/4 Mile of Public School	Radcliff Elementary	2
Connection to Commercial Area	Walker Street and Downtown Watsonville	1
Connection to Residential Area	Multiple	2
State Highway Crossings	State Route 129 (Riverside Drive)	1
Major Road Crossings	West Beach Street	1
Minor Roadway Crossings	Second Street	1
Within 1/4 Mile of Public School	Radcliff Elementary, Ceiba College Prep	2



Railroad tracks with Highway 1 in the background



Railroad tracks with hotel in the background



Pajaro River Levee Trail park sign

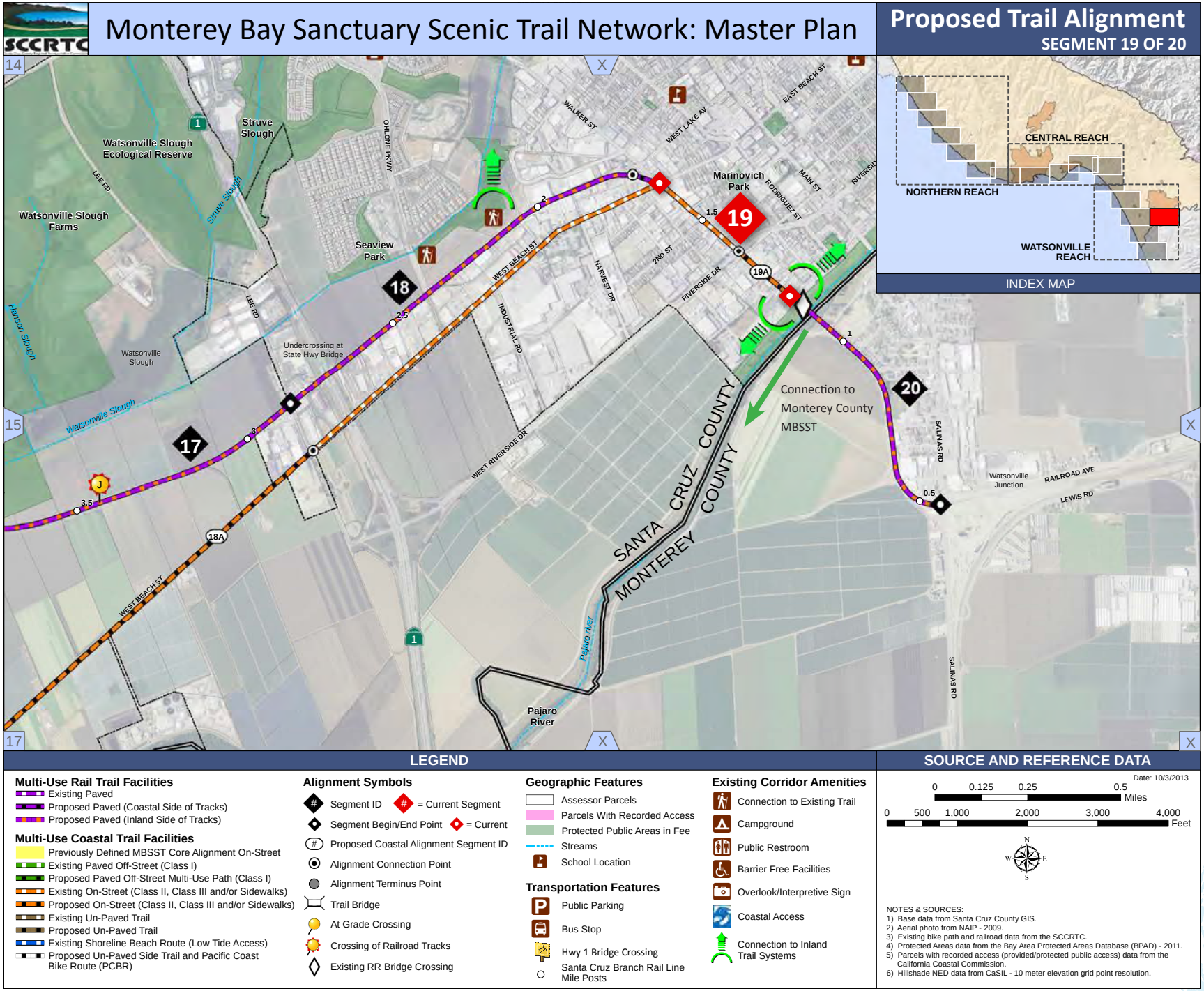


Figure 4-53 Segment 19 proposed trail alignment

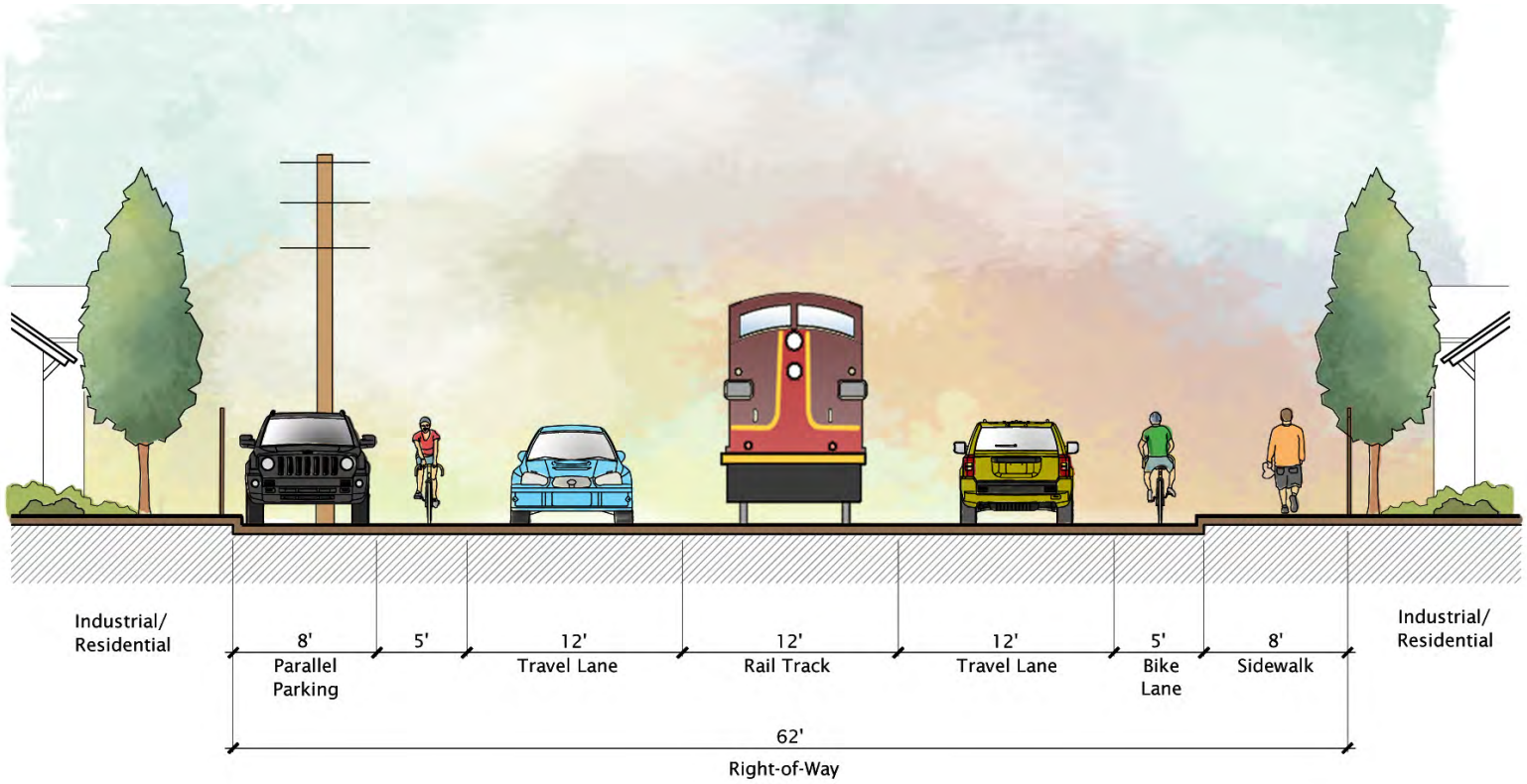


Figure 4-54 Segment 19 trail section



Pajaro River levee looking south



Pajaro River railroad bridge



Homeless encampment adjacent to the Pajaro River

- One (1) at-grade street crossing at Riverside Drive
- Additional fencing may be considered when project is implemented

4.20 SEGMENT 20 - PAJARO RIVER

Length: 0.74 mile (3,930 LF) - North Bank of the Pajaro River to Porter Street

4.20.1 SEGMENT 20 BOUNDARY DETERMINATION

Segment 20 is the last segment of the railroad corridor starting at the rail trestle crossing of the Pajaro River and concluding at the proposed Coastal Rail Trail down the coast where the rail line meets Salinas Road.

4.20.2 SEGMENT 20 DESCRIPTION

This segment is a short connection that includes a new preengineered bridge crossing at the Pajaro River. This connection will occur on the inland side of the river rail trestle crossing and will provide regional connection to the existing and proposed Pajaro River levee-top trail in Watsonville. The proposed rail trail alignment will continue along the inland side of the tracks connecting adjacent neighborhoods and schools and ending at the Salinas Road right-of-way. This terminus at Salinas Road is planned to someday continue inland from Salinas Road to a future rail station on Railroad Avenue and a regional connection inland of the county line toward San Benito County and the city of Gilroy. The terminus of Segment 20 connects to the Monterey County bike path, as identified by the Transportation Agency for Monterey County (TAMC). This segment connects with five (5) activity centers identified in Table 3.1.

While a footbridge or crossing of the Pajaro River and Watsonville Slough are not being proposed as part of this Master Plan, they will provide high-quality beach access. These links are regionally important because the levee-top trail proposed by the City of Watsonville Trails and Greenways Master Plan has the potential not only to complete beach access from the city of Watsonville, but also to provide Coastal Rail Trail continuity around the southern reach of the Monterey Bay. Therefore, a study should be conducted at a later date to identify and evaluate various ways for crossing the Pajaro River and the Watsonville Slough in order to connect the Santa Cruz County portion of the MBSST Network to its Monterey County counterpart and to maximize coastal access opportunities.

Segment 20 proposed improvements include:

- 0.74 miles (3,930 LF) multi-use paved path (Class I) along the inland rail right-of-way
- One (1) new preengineered bike/pedestrian bridge at the Pajaro River crossing, two-hundred- (200-) foot span
- 3,930 feet of fencing for agricultural operations and safety, additional fencing may be considered when project is implemented

TABLE 4.20 Segment 20 - Pajaro River

Segment Length	**0.74 miles (3,930 LF) - Pajaro River**
Rail Trail Portion	0.74 miles (3,930 LF)
Coastal Trail Portion	0.0 miles (0 LF)
Segment Cost	**$3,009,136**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	3,930	Linear Feet	Varies	$636,660
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$244,050
Bridge Structures	1	Each	Varies	$1,000,000
At-Grade Crossings (Rail Tracks or Streets)	0	Each	Varies	$0
			Rail Trail Construction SUBTOTAL	**$1,880,710**

Coastal Trail Components	Quantitiy	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II, III, and Sidewalks)	0	Linear Feet	Varies	$0
			Coastal Trail Construction SUBTOTAL	**$0**

COST SUMMARY	
Construction TOTAL	**$1,880,710**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$282,107
Environmental Permitting (10%)	$188,071
Construction Management (15%)	$282,107
Contingency (20%)	$376,142
SEGMENT TOTAL COST	**$3,009,136**

Segment Features	Description	Quantity
Segment Jurisdictional Area	City of Watsonville, Flood Control, Monterey County	-
Rail Bridge Crossing (Wood Trestle)	Pajaro River	1
Major Drainage	Pajaro River	1
Connection To Other Trails	Pajaro River, Watsonville Trail Network	2
Within 1/4 Mile of Public School	Pajaro Middle School	1
Connection to Commercial Area	Salinas Road/County Road G12	1
Connection to Residential Area	South Watsonville	1
Connection to Sports Park	Pajaro Middle School fields	1



Pajaro River looking northeast



Railroad bridge over the Pajaro River at Walker Street



Pedestrians walking over the Pajaro River railroad bridge

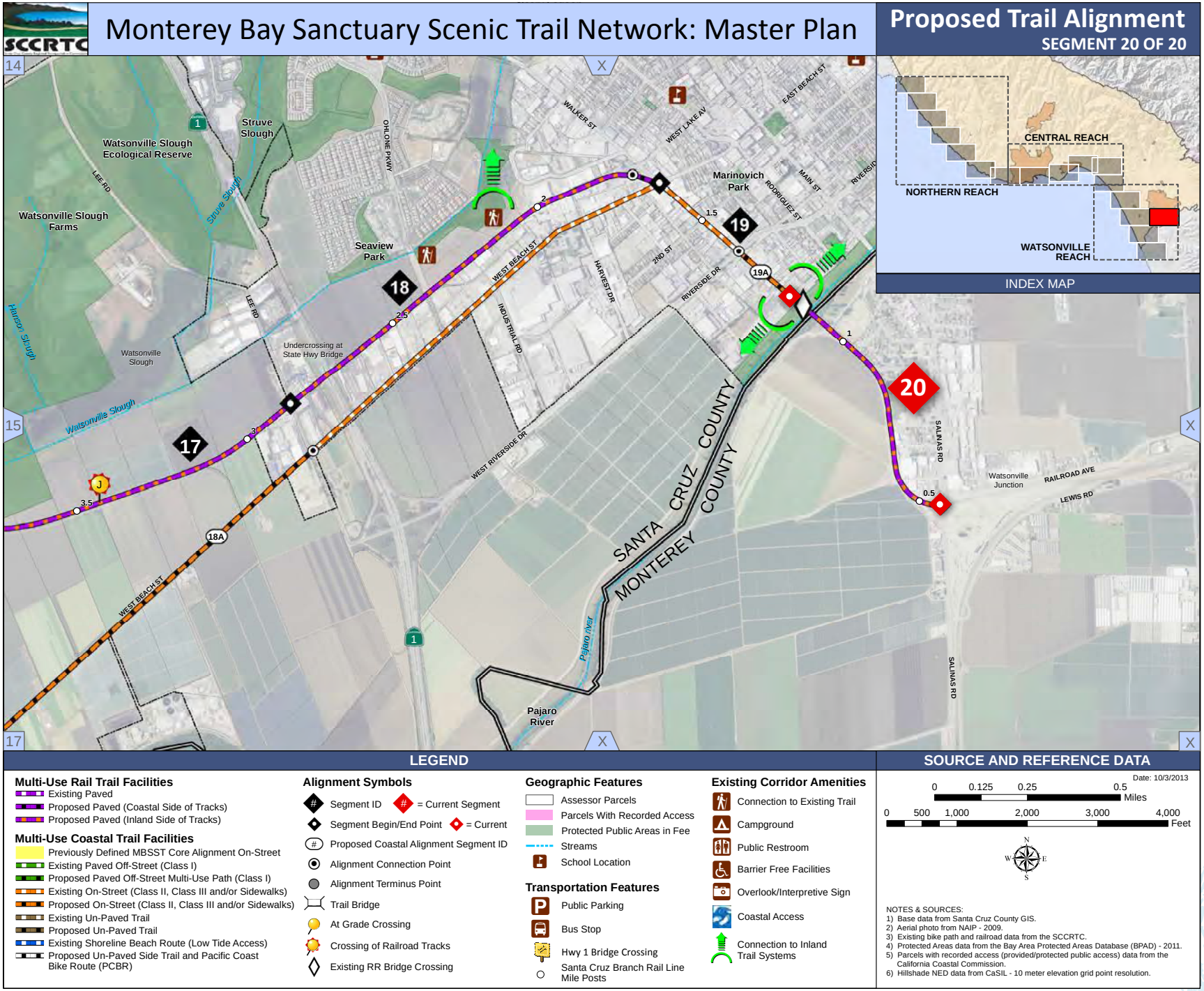


Figure 4-55 Segment 20 proposed trail alignment

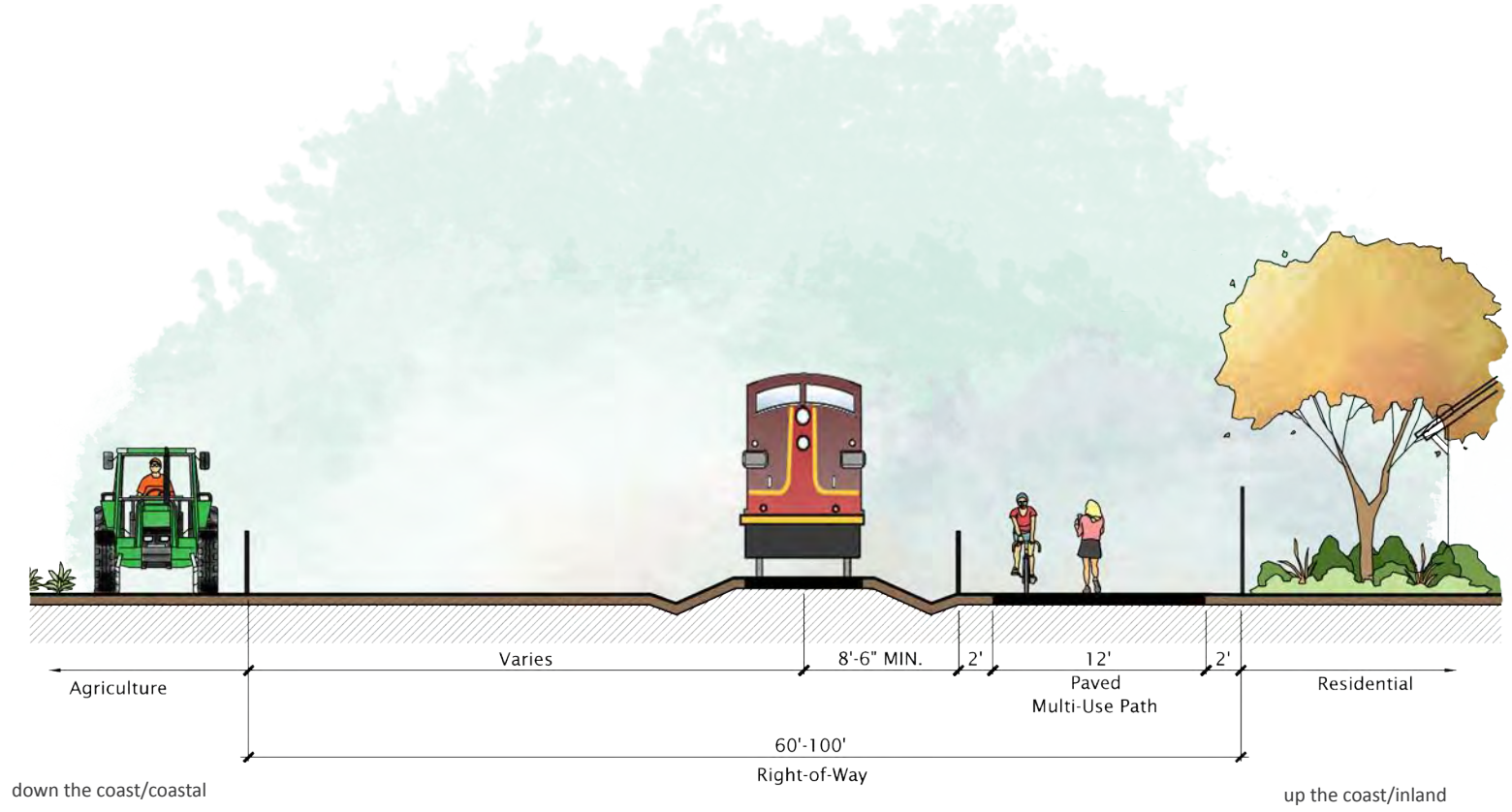


Figure 4-56 Segment 20 trail section



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This section focuses on trail facility design standards such as typical path construction and layout, wayfinding signing and markings, rail and road crossings, rail-with-trail design standards, on-and off-road bikeways, security and landscape fencing, lighting, bridges and crossings, habitat enhancement, and any operational and management specifics that might be warranted as a result of sensitive biological resources. The design standards are presented in list form and supported with photos, graphic sections, and elevations.

SECTION FIVE
TRAIL DESIGN STANDARDS

5.1 REGULATORY FRAMEWORK

State and federal standards guide and/or dictate the design standards for the Monterey Bay Sanctuary Scenic Trail Network Master Plan. Additionally, professional organizations provide specific design and implementation guidelines and standards to ensure that multi-use paths are constructed to a consistent set of the highest and best standards currently available in the United States. Planning, design, and implementation standards are derived from the following sources:

- Caltrans: Highway Design Manual (Chapter 1000 Bikeway Planning and Design, and other sections)
- American Association of State Highways and Transportation Officials (AASHTO): A Policy on Geometric Design of Highways and Streets
- Manual of Uniform Traffic Control Devices
- United States Department of Transportation (USDOT), Federal Highway Administration (FHWA): Selecting Roadway Design Treatments to Accommodate Bicycles
- Bicycle-Friendly Advocacy: Selecting and Designing Bicycle Routes
- U.S. Department of Transportation/Federal Highway Administration: Conflicts on Multiple-Use Trails
- Institute of Transportation Engineers: Design and Safety of Pedestrian Facilities
- Regional Transportation Commission: Rails-with-Trails, Sharing Corridors for Transportation and Recreation
- California Coastal Trail Accessway Standards
- Local Coastal Program(s)
- National Association of City Transportation Officials (NACTO) - Urban Bikeway Design Guide
- California Department of Parks and Recreation Accessibility Guidelines (2009)
- Iowa Pacific Railroad Design Preferences

It is useful to note that while there are a considerable number of trails on active railroads around the United States, few design guidelines have been developed specifically for this type of facility to date. The sources listed above provide details on many aspects of a rail trail, but: (a) may contain recommendations that disagree with each other, (b) are not, in most cases, officially recognized “requirements,” and (c) may not cover all of the conditions on most rail trails. Except for the Caltrans guidelines, all design guidelines must be considered as simply design resources for the Monterey Bay Sanctuary Scenic Trail Network Master Plan, to be supplemented by the reasonable judgments of professionals.



In addition to the published resources listed above, the Master Plan standards have been drawn from the experiences of active rail trails around California and the United States to establish accepted practices. There are only a few distinct patterns around the country in terms of grade crossings, fencing, setbacks, and other items. However, efforts are currently underway by planning and traffic specialists to establish an official reviewing body in California composed of Caltrans, the Public Utilities Commission, and other agencies and organizations to establish a set of standards for rail trails in the state.

The following table summarizes the breakdown between those design standards which are mandatory versus those which are advisory only. This framework forms the basic foundation for the trail design.

TABLE 5.1 - Mandatory/Advisory Design Standards

Mandatory Standards	Advisory Standards
Trail Width	Signing and Striping
Separation of Pathway to Roadway	Intersections and Crossings
Design Speed	Horizontal Alignment
Class I Bike Path	Stopping Sight Distance
Class II Bike Lanes	Lateral Clearance on Horizontal Curves
Class III Bike Routes	Gradients
Bridge and Grate Standards	Structural Section
Signing, Markings, and Traffic Controls	Drainage
Sidewalks	Barrier Posts
	Bikeway and Railroad Intersections
	Trail Setbacks from Railroad Tracks
	Multi-Use Paths

APPLICATION OF STANDARDS

The Master Plan has been designed in accordance with the basic guidelines set forth by Caltrans. Where there are conditions that are not explicitly covered in the Caltrans or AASHTO guidelines, advisory standards from appropriate resources have been applied. In conjunction with future construction, the final engineered plans for segments of the trail will demonstrate compliance with all applicable mandatory standards. Compliance will be determined by the appropriate jurisdiction in which the trail is located.



CONTINUOUS THEME

The approximately 50-mile length of the MBSST Network presents a design challenge in terms of maintaining a uniform and cohesive appearance. Since the trail network crosses through several jurisdictions, certain design features become critical to maintaining a continuous theme and trail experience. These key unifying design features are listed below and are illustrated in this section.

- Trail logo
- Directional signs
- Kiosks and information resources
- Landscaping features
- Pavement markings
- Mile markers
- Interpretative exhibit design
- Trail entrance features



Conceptual wayfinding signage for the Coastal Rail Trail

California State Parks logo

Monterey Bay Sanctuary Scenic Trail logo

California Coastal Trail logo



Multi-use paved path adjacent to railroad tracks



Two-way cycle track, separated from the street via bollards
Planters or other decorative elements may be used in place of bollards (Image from NACTO)

Where rights-of-ways and easements allow, additional trail width should be considered in order to separate users.

5.2 TRAIL CLASSIFICATIONS

The trail network travels through a varied landscape for its approximately 50-mile length. The segments within Santa Cruz, Capitola, Aptos, and Watsonville are urban in nature, characterized by the adjacency of residences, businesses, and a greater number of public street crossings. In contrast, the segments north of Santa Cruz and south of Aptos are surrounded by rural lands and, for the most part, working agricultural operations, state parks, or open space. The recommended trail alignment in Section 4 identifies the type of trail to be constructed within each segment. These types of trails include Class I multi-use paved paths (virtually all of the Coastal Rail Trail), Class II-designated bike lanes, Class III on-street bike routes, unpaved trail surfaces, sidewalks, and boardwalks.

MULTI-USE PAVED PATH (CLASS I)

A multi-use paved path is a derivative of the Caltrans-defined Class I bike path. Unless otherwise noted, the terms “trails” and “paths” in this document are used synonymously to refer to paved bike/pedestrian multi-use facilities defined by Caltrans as a “Class I Bikeways (Bike Paths)” in the Caltrans Highway Design Manual, Chapter 1000, Bicycle Transportation Design, Topic 1003 - Bikeway Design Criteria. A Class I bike path provides bicycle travel on a paved right-of-way, completely separated from any street or highway. A multi-use paved path permits a variety of users, in addition to bicyclists, including walkers, joggers, wheelchair users, and non-motorized scooter users.

Typical design elements may include:

- Paved surface of eight to twelve (8-12’) feet wide or wider if right-of-way exists and/or high use is anticipated (concrete, asphalt, or permeable), and a two-foot (2’) wide shoulder on each side
- Center lane striping
- Separation from adjacent roadways by at least twelve (12) feet
- Safety fence separating inner trail edge from rail line (e.g., fifty-four- [54-] inch minimum post and wire) as needed
- Lighting fixtures
- Use of noninvasive ornamental barrier plants as a buffer or to help soften fencing
- Provide clearly illustrated and properly located signage with informational, interpretive, and regulatory messages
- Compliance with ADA requirements in trail design where possible
- Minimum 8’ 6” setback from railroad centerline



Designated Class II bike lane

DESIGNATED BICYCLE LANE (CLASS II)

Designated bicycle lanes are synonymous with Caltrans-defined Class II bike lanes. Often referred to as a "bike lane," an on-street bike lane provides a striped and stenciled lane for one-way travel on a street or highway.

Typical design elements include:

- Paved surface four to five (4-5) feet wide
- Lane striping
- Street markings indicating bike route or bike lane

Enhanced design elements Include:

- Colored bike lane
- Bike box



Class II bike lane (Image from NACTO)



A bike box, a bright green rectangle painted onto asphalt at intersections, reserved exclusively for bikes is a possible treatment (Image from NACTO)



Class II painted bike lane, area in green (Image from NACTO)



Class III bike route sharrow pavement markings (Image from NACTO)



Class III bike route sharrow in Santa Cruz



A sharrow reminds drivers to share the road with bicyclists, while also informing bicyclists to make use of the full lane and position themselves away from vehicle doors



On-street bike route with sharrows

ON-STREET BIKE ROUTE (CLASS III)

On-street bike routes are synonymous with Caltrans-defined Class III bike routes. Generally referred to as a "bike route," an on-street bike route provides for shared use with motor vehicle traffic and is identified only by signing. Optional shared roadway bicycle marking pavement stencils are also available for use on Class III bike routes.

SHARED LANE MARKINGS ("SHARROWS," CLASS III)

It is important to note that bicycles are permitted on all roads in California except where specifically prohibited. In order to optimize vehicle and bicycle user understanding, a marking referred to as a "sharrow" may be used. Sharrow refers to shared lane pavement marking and is considered a Class III facility. This marking is placed in the center of a travel lane to indicate that a bicyclist may use the full lane. The sharrow symbol consists of a bicycle symbol with two chevron markings above the bicycle. The best practice is to use a sharrow in conjunction with a "Bikes May Use Full Lane" sign.

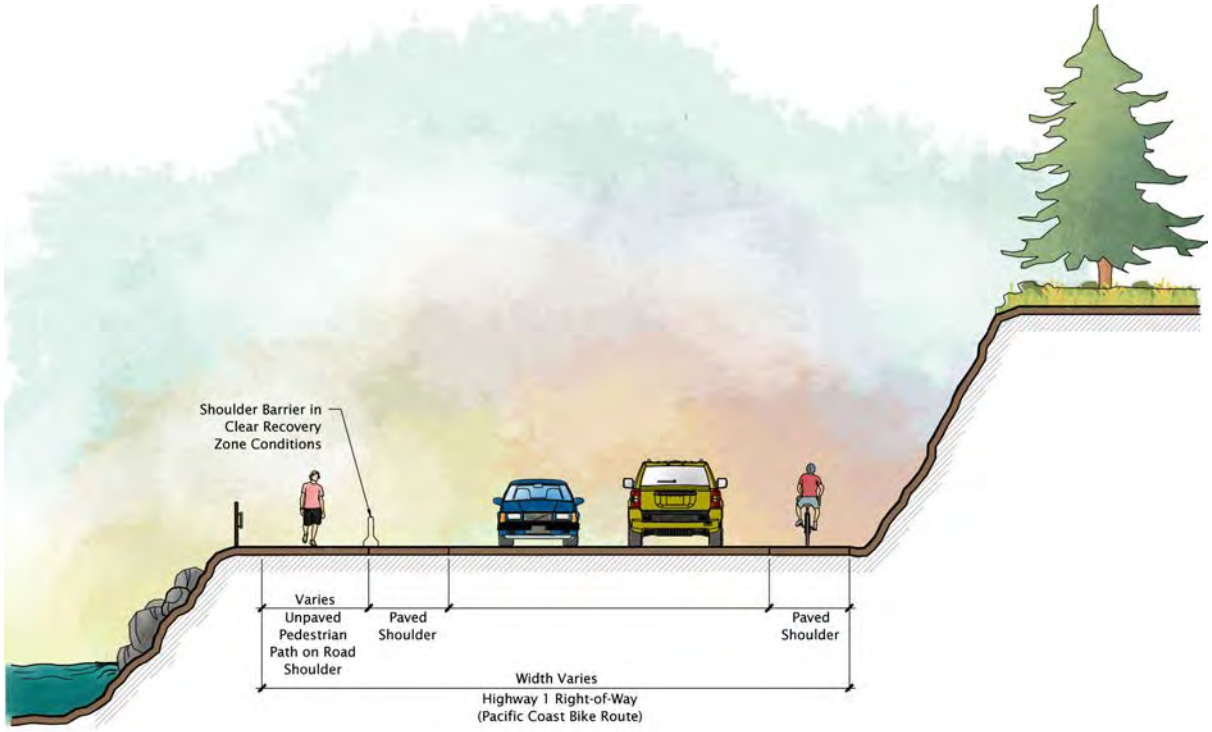
Typical design elements include:

- Shared lane
- Pavement markings indicating route (chevron stencils)
- Pole signage indicating route

UNPAVED TRAIL SURFACE

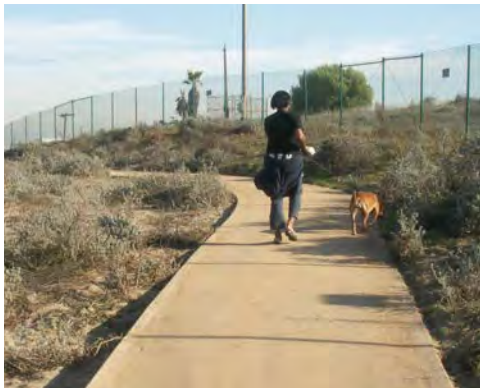
Unpaved trail surfaces are located in the remote areas of the corridor, including the northernmost portion of the Northern Reach and the southernmost portion of the Watsonville Reach. Unpaved trails are five to six (5-6) feet wide through steep terrain and sensitive areas. To keep the trail as maintenance-free as possible, these trails are designed to avoid exceeding grades greater than twelve percent (12%) when possible. Unpaved trails may require some hand-tooled segments with drainage crossings that blend with the site character and slope as much as possible.

Unpaved trails may also be provided adjacent to a paved surface where right-of-way permits.





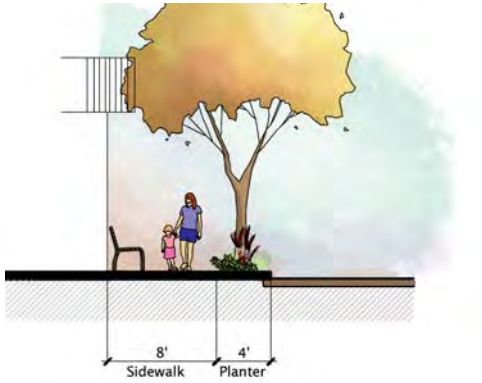
Unpaved trail on coastal bluff



Improved unpaved trail surface



Unpaved trail surface with trail seating



SIDEWALKS

Sidewalks and walkways enhance the walkability of an area. Sidewalk design should incorporate an appropriate walkway width, safety lighting, pleasant walking surface texture, benches, and a landscaped separation of pedestrian and vehicular traffic to create a pleasurable walking experience. Sidewalk width is regulated by the implementing entity. Typically, existing sidewalks vary between four (4) feet wide and ten (10) feet wide, depending on available right-of-way and adjacent land use. Sidewalks six (6) feet wide or wider are optimal so that two wheelchair users may travel side-by-side.

BOARDWALKS

Boardwalks are used to span unavoidable wet areas, sensitive resource areas, or depressions. Boardwalks should be considered for Segment 17 where wetland and sensitive habitat areas are located. They also can be used to provide trail in areas where grading and filling might harm tree roots or create trail surfaces that wildlife such as amphibians will not cross. Footings vary depending on soil conditions. Plastic lumber is more expensive than wood but very long-lasting for deck boards. Its heavier weight can help avoid floating in sites that flood and the pronounced texture can reduce slippery surfaces.

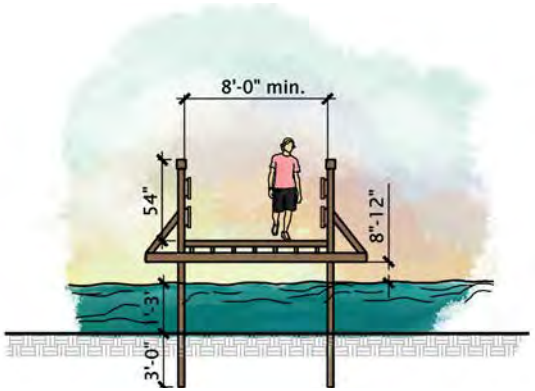
Wood surfaces in shaded or moist sites may become slick or even grow moss. This can be managed by attaching half- (1/2-) inch hardware cloth (wire mesh), especially where boardwalks follow creek grade, and be attached with one-and-a-half- (1 1/2-) inch heavy-duty staples approximately eight to twelve (8-12) inches apart. The upper side of the mesh should have wires perpendicular to the direction of travel. The ends of hardware cloth should be tucked between deck boards or lapped over the sides and stapled every four to six (4-6) inches. Paint with sand texture may also help, depending on site conditions. An annual cleaning (after autumn leaves fall) is recommended. A kick rail is particularly important along accessible trails where it helps people using canes or wheelchairs stay on the structure.



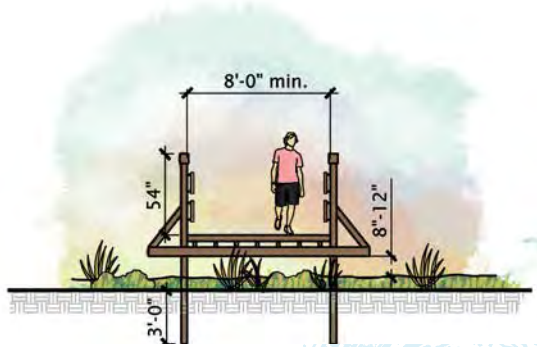
Boardwalk with bicyclist and fencing



Boardwalk without fencing



Boardwalk over wetland area



Boardwalk over sensitive habitat area



Bicycle with surfboard attachment at Pleasure Point



Capitola train trestle



Pajaro River Bridge crossing



Santa Cruz Harbor Bridge

5.3 TRAIL CROSSINGS AND INTERSECTIONS

5.3.1 TRESTLE AND BRIDGE CROSSINGS

Trail segments crossing creeks or other streams and drainage may require a bridge or low-water crossing, but these should be kept to a minimum and carefully designed to avoid habitat impacts. Approaches to bridges should be level and straight. Bridge widths should correspond to the trail tread width. On multi-use paths, crossings should be structurally suitable to support pickup truck maintenance vehicles. Bridges should be designed to accommodate all trail user groups. When bridge railings are required, they should meet current Caltrans standards. Bridge footings should be constructed outside of the top of the stream bank.

There are two main types of bridges: truss and beam. Truss bridges have a structure mostly above the deck and are capable of spanning great distances. A beam bridge has a lower profile, for use in areas where the emphasis is on the beauty of the landscape. The superstructure of the bridge (timber or steel beams) is under the deck surface. The most economical means to acquiring a bridge is through a prefabricated bridge manufacturer. Many prefabricated bridges can be customized to fit the architectural preferences of the owner agency. It should be noted that pre-engineered bridges cannot be inserted anywhere as the name implies; rather, a complex design of abutments, foundation systems, and approach work will need to be engineered to support the bridge.

The multitude of rail bridge and trestle crossings along the Coastal Rail Trail alignment will create the greatest physical and budgetary challenges to linking the trail from one end of the county to the other. The rail bridge span distances vary throughout the length of the Master Plan area, with the greatest number of bridge crossings and longest bridge spans occurring primarily in the Central and Watsonville Reaches of the corridor. There are three bridge crossing treatments that will be developed in correlation with the prioritization of trail facility improvements. The sequencing of the planned rail bridge crossings will also be dependent upon alternate bike facility street routes until the various bridge projects are budgeted, designed, and constructed along with the trail segments that connect them to the system. Each bridge crossing will begin with coordination and design collaboration with the RTC as the owner of the rail right-of-way and with input from the operator. The following bridge crossing treatment types describe three possible design concepts for existing railroad bridge and trestle crossings. Section 4 segment maps identify each crossing and the recommended type of bridge.

RAIL BRIDGE REPLACEMENT - TYPE 1 CROSSING

The Type 1 trail bridge crossing will be integrated into long-term rail bridge replacement efforts. Following the engineering evaluation of each rail bridge throughout the corridor, any rail bridge slated for replacement should be considered for a redesign that includes the addition of multi-use path facilities to the bridge deck. This Master Plan has no proposed trail bridge replacement type 1 crossings. However; one will be needed at Soquel Creek over the long term. The minimum width for the multi-use path should include a minimum eight- (8-)-foot-wide paved trail tread with two- (2-) foot-wide shoulders on each side, for a total of twelve (12) feet. However, the Caltrans minimum requirement is a ten- (10-) foot-wide structure. The trail platform could dually serve as bridge maintenance access. Planning for additional width to accommodate rail maintenance vehicles should be considered in the budgetary and design phases.



Illustration of rail bridge replacement bridge

RETROFITTED RAIL BRIDGE - TYPE 2 CROSSING

Existing rail bridges that are considered structurally sound and have been evaluated to potentially accommodate a retrofitted trail bridge attached to the existing superstructure will provide an alternate solution for a trail crossing where there is no room for a new, separate trail bridge. This design alternative can sometimes be the most costly and should be evaluated against bridge crossings Types 1 and 3 for cost, span, scheduling, connectivity efficiency, environmental impacts, and clearances. The possibility of retrofitting a rail bridge is limited to one location for this project. This occurs at the upper crossing on Highway 1 in Segment 12.



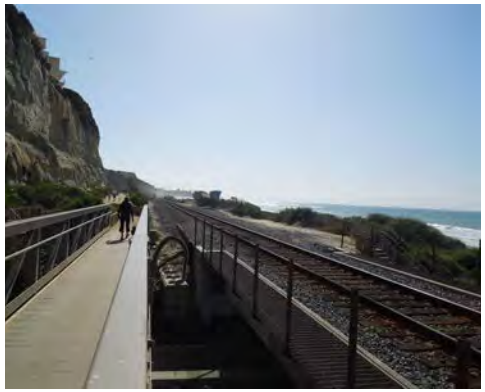
Illustration of proposed improvements to the westerly Highway 1 bridge crossing in Aptos

NEW MULTI-USE TRAIL BRIDGE - TYPE 3 CROSSING

It may not be feasible to retrofit some rail bridge structures with a multi-use trail deck; or a rail bridge replacement is not considered for certain rail bridges. In these locations, a more cost-effective solution may be to install a new, separate trail bridge parallel to the existing rail bridge structure. This scenario will include new abutments, a prefabricated bridge, and permitting for the new crossing. This Master Plan includes 23 separated multi-use trail bridge type 3 crossings.



Illustration of new multi-use trail bridge adjacent to existing bridge



Multi-use path bridge in San Clemente, CA



Multi-use path bridge in Whittier, CA

DRAINAGE WAY CHARACTERISTICS

The drainage way characteristics may dictate the structural design of the bridge. When crossing a channel subject to flooding, the bridge shall be designed to be above the 100-year flood level. When crossing channels not subject to flooding, it may still be desirable to determine whether the bridge's superstructure should be above or below the deck based on clearance underneath.

BRIDGE LENGTH

Wood bridges that clear spans of over fifty (50) feet are generally difficult without specially fabricated structural members or mid-span piers. Steel beam bridges can span greater distances, but the beam depth will increase in proportion to the span. Steel truss bridges can span up to two hundred (200) feet without additional piers.

BRIDGE PLACEMENT

Bridges shall be aligned along the path to avoid perpendicular or sharp turns at the bridge approach and maximize sight distance. If the bridge is at the bottom of a grade exceeding four percent (4%), a short, flat transition area is needed to meet the bridge deck grade.

LIVE LOAD

Bridges which will allow for small vehicles and machinery for maintenance and emergency purposes should be designed to carry a minimum eight- (8-) ton live load.

BRIDGE AESTHETICS

The proposed bridge materials should reinforce the theme of the local area, and may include steel and wood with stone masonry abutments.

RAIL TRACK REALIGNMENT/RELOCATION

Realignment/relocation of rail tracks is necessary to complete the preferred alignment of Segment 10 (Live Oak-Jade Street Park). The rail operator (Iowa Pacific, doing business as Santa Cruz and Monterey Bay Railway) is aware of the recommended relocation of the rail tracks and supplied a figure of approximately $1,000,000

per mile for such a realignment.

5.3.2 ROADWAY CROSSINGS

Trails should cross public streets at intersections in the same place a crosswalk would normally be placed. If there is no intersection within two hundred (200) feet of the proposed trail crossing, an at-grade trail crossing, including median break, may be considered. Implementing entity and/or Public Works departments will make the determination as to whether a trail crossing at a roadway can be safely achieved. Traffic volumes, times of day, travel speed, sight lines to and at the intersection, and problems unique to the crossing or intersections will be used in making the determination. In addition, the Public Utilities Commission (PUC) has identified 101 crossings along the corridor. These crossings are heavily restricted/regulated and require additional permits and scrutiny if modified.

If an intersection with pedestrian crossing exists within two hundred (200) feet of where a trail is proposed, pavement, barriers, and landscape features with appropriate signage will be installed to guide trail users to the intersection. In jurisdictions where riding on the sidewalk is prohibited by ordinance, an additional bicycle-crossing facility should be identified and stenciled (see top right image).

A total of eleven (11) types of treatments were developed and considered for the crossing locations along the Coastal Rail Trail corridor. These improvements will be installed at railroad crossings and street intersections or mid-block crossings in the vicinity of each crossing. Recommended crossing treatments are provided in Appendix F. In some locations, a custom treatment will be necessary and may include unusual combinations of the standard treatments, or an altogether unique treatment. Appendix F includes illustrations of custom crossing treatments. The treatment types are listed in a hierarchy of the level of control and are followed by the number of occurrence instances in parenthesis:

Type A:	Railroad signal equipment - new signal or modification of existing (13)
Type B:	Traffic signal modification (1)
Type C:	Hawk traffic signal/pedestrian hybrid beacon (2)
Type D:	Active enhanced mid-block - Pedestrian-activated warning system (4)
Type E:	Passive enhanced mid-block - Additions to the standard mid-block treatment (9)
Type F:	Standard mid-block - Signs and markings (6)
Type G:	Traffic-calming measures - Raised medians, curb extensions, or bulb-outs (3)
Type H:	Connection facilities - Pedestrian walkways, intersection crosswalks, and/or bicycle markings (12)
Type I:	Rail crossing without railroad signal equipment (very low crossing volumes) (2)
Type J:	Standard private crossing - Typical controls include a combination stop sign/ private crossing/no trespassing sign (36)

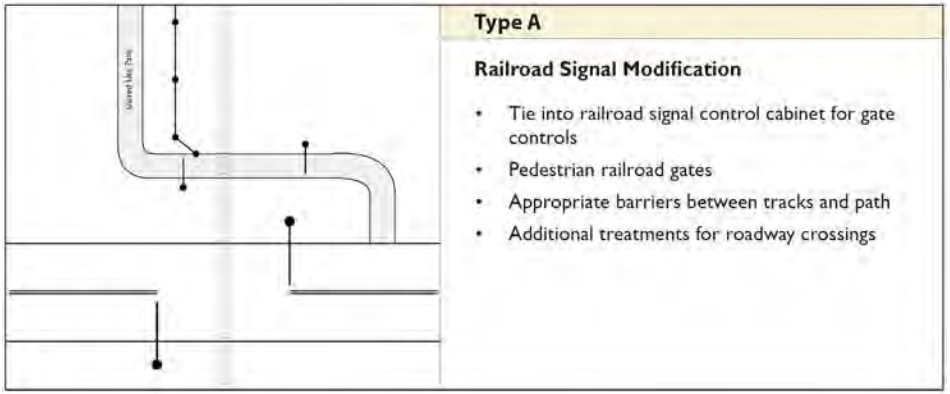


Bike and pedestrian mid-block crossing.

Right-of-way priority *at all roadway crossings shall be determined by the RTC and/or implementing entity, in consultation with private property owners (where appropriate), during the design of individual trail segments. Where feasible, right-of-way preference shall be given to the facility with the higher volume of traffic. Right-of-way shall be indicated with an appropriate stop sign or yield sign that applies to the roadway or multi-use facility cross-traffic.*

Type K: No additional improvements or changes (9)

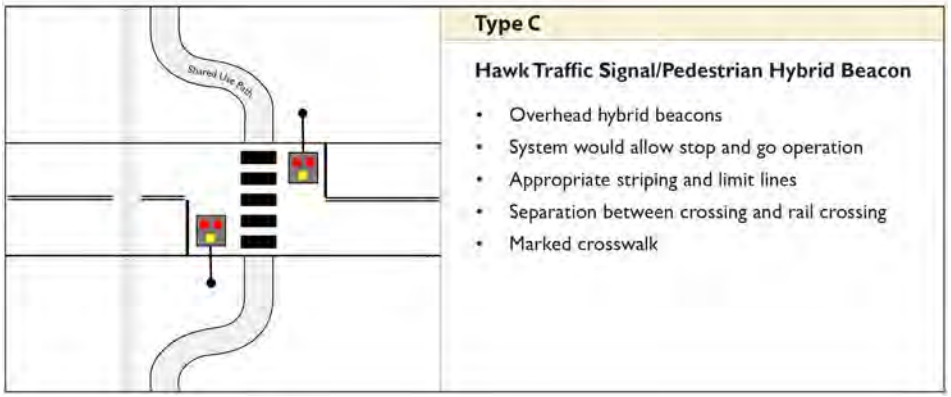
Figures 5.1 through 5.3 detail roadway crossing concepts that illustrate how the trail will interact with existing streets and with the rail tracks.



Type A

Railroad Signal Modification

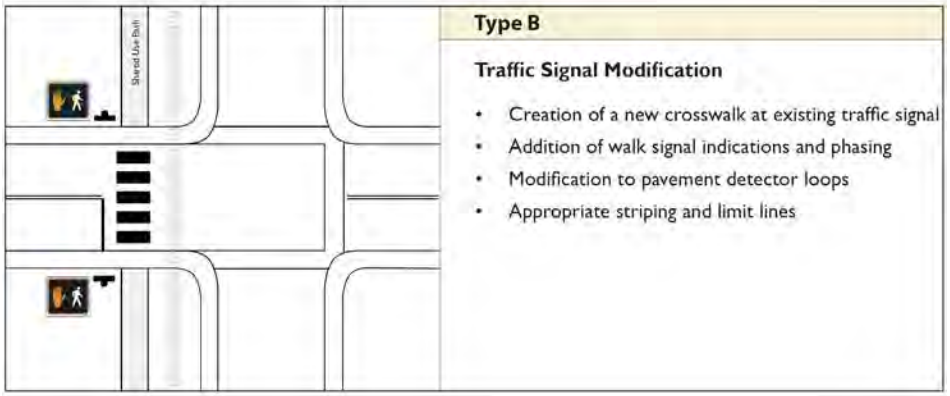
- Tie into railroad signal control cabinet for gate controls
- Pedestrian railroad gates
- Appropriate barriers between tracks and path
- Additional treatments for roadway crossings



Type C

Hawk Traffic Signal/Pedestrian Hybrid Beacon

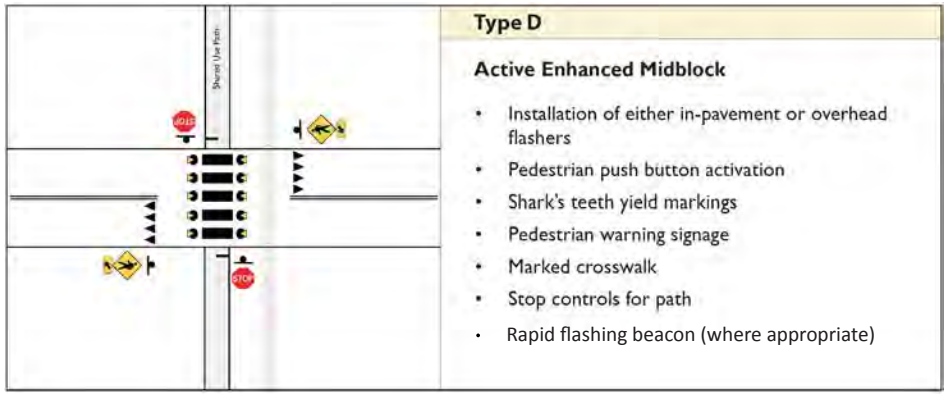
- Overhead hybrid beacons
- System would allow stop and go operation
- Appropriate striping and limit lines
- Separation between crossing and rail crossing
- Marked crosswalk



Type B

Traffic Signal Modification

- Creation of a new crosswalk at existing traffic signal
- Addition of walk signal indications and phasing
- Modification to pavement detector loops
- Appropriate striping and limit lines

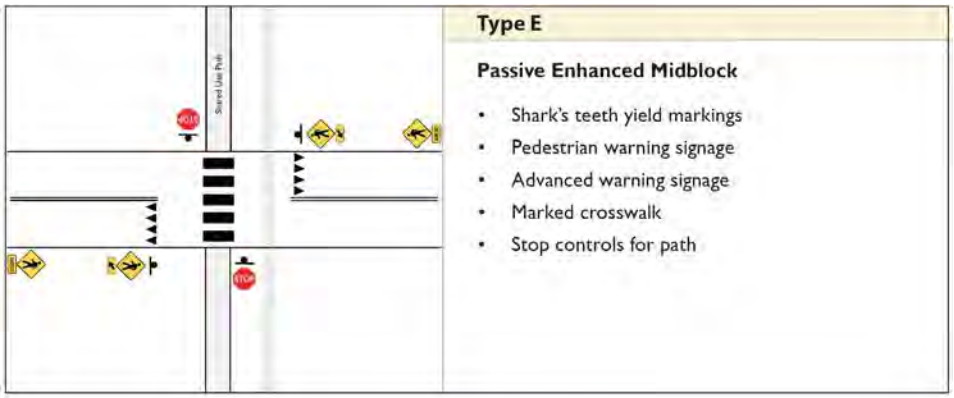


Type D

Active Enhanced Midblock

- Installation of either in-pavement or overhead flashers
- Pedestrian push button activation
- Shark's teeth yield markings
- Pedestrian warning signage
- Marked crosswalk
- Stop controls for path
- Rapid flashing beacon (where appropriate)

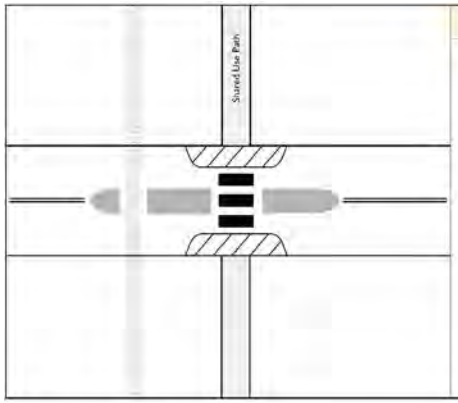
Figure 5-1 Detailed roadway crossing concepts: Types A, B, C, and D



Type E

Passive Enhanced Midblock

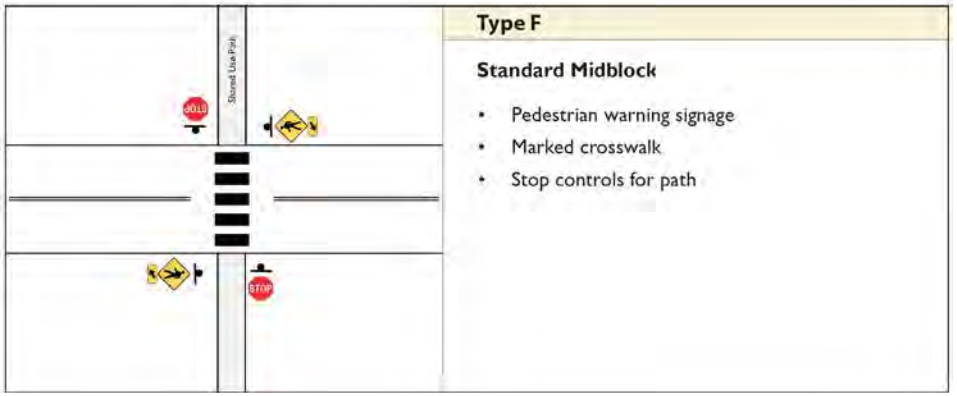
- Shark's teeth yield markings
- Pedestrian warning signage
- Advanced warning signage
- Marked crosswalk
- Stop controls for path



Type G

Traffic Calming Measures

- Raised medians
- Curb extensions or bulb-outs
- Warning signs if needed
- Marked crosswalk



Type F

Standard Midblock

- Pedestrian warning signage
- Marked crosswalk
- Stop controls for path



Type H

Connection Facilities

- Redirection of path to existing crosswalk
- Additional bike lane or sharrow markings

Figure 5-2 Detailed roadway crossing concepts: Types E, F, G, and H

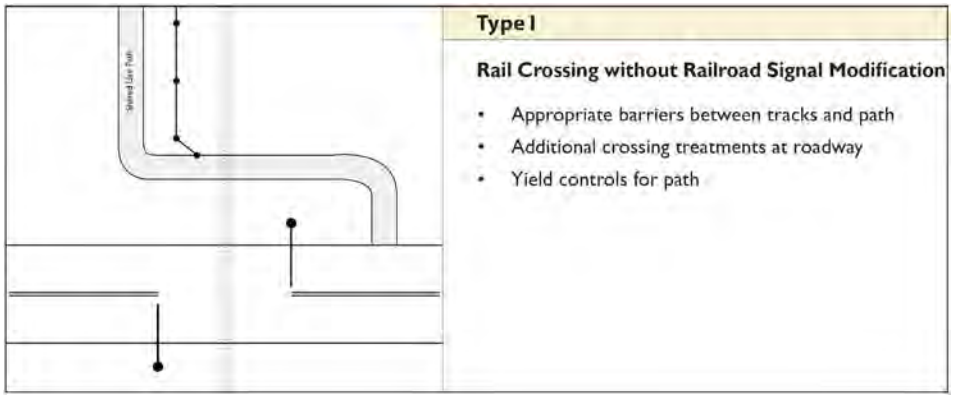


Figure 5-3 Detailed roadway crossing concepts: Types I and J



Natural Bridges State Beach



Existing trail fencing and bollards near the Sanctuary Exploration Center

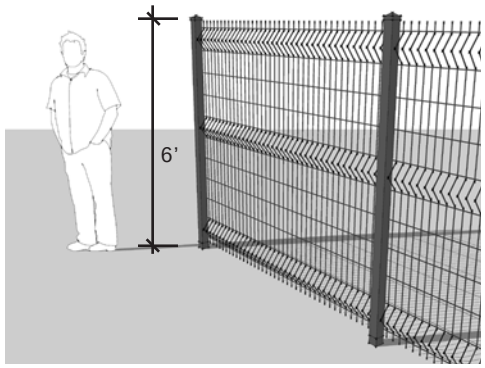


Figure 5-4 Wire security fence

5.4 TRAIL AMENITIES AND FEATURES

In addition to user facilities at rest stops and staging areas, trail amenities in the form of benches, shade structures, informational signs, and trash containers will be located along the MBSST Network in strategic locations. The design of these elements is intended to reflect an ocean theme. The use of wood, stone, wire fences, self weathering (rusted) steel, and other rustic materials will reinforce this image.

5.4.1 TRAIL FENCING

Fencing along the MBSST Network will vary depending on the location and agreements between adjacent landowners and the RTC. The use of fencing along the Coastal Rail Trail corridor should be used conservatively to maintain the open feel and views of the coastal environment as well as to maintain neighborhood connectivity. Where right-of-way permits, a landscaped buffer should be provided instead of fencing. Fences can be costly if installed unnecessarily and the long-term maintenance adds to long-term budget impacts. The fence designs proposed for the trail corridor are standards that can be applied to several scenarios. Fencing will typically be used for the following reasons: safety, security, trespass prevention, environmental impacts, and privacy. The following narrative describes the types of fencing appropriate for various locations and needs. Not any one type is presumed for use throughout the MBSST Network. Efforts will be made to preserve and encourage neighborhood connectivity.

Fences will be used when required by either RTC or the adjacent landowner. When a fence is required, it will be located at the right-of-way edge or a minimum of two (2) feet from the outermost edge of the trail surface. The specific location of the trail fence will be determined at the time of the preliminary design and finalized in the construction documents for each implementation phase of the project. Where authorized private farm crossings exist or are planned, the implementing entity, with RTC approval, and the adjacent landowner will mutually determine the most appropriate method of a secured gated treatment or open fence segments for farm vehicular access and/or public access to public lands, should they be deemed necessary.

WIRE SECURITY FENCE

Where the upmost security is necessary, a seventy-two- (72-) inch-high woven-wire fence with metal posts (refer to Figure 5-4) is recommended. This fence type provides a high level of trespass prevention and security. This fence also provides an opportunity for screening with vine plantings to soften the look of the fence and could provide additional protection from train blown dust and debris.

- Urban and industrial areas
- Rail track and trail separator (where high number of illegal crossings are expected)
- Safety and security need
- Agricultural land boundaries

SMOOTH WIRE FENCE

Smooth wire fencing is fifty-four (54) inches high, includes ten (10) wire strands, and has a concrete or metal post (refer to Figure 5-5). This fence type reduces trespassing and provides open visibility of the surrounding landscape.

- Rural and urban areas
- Agricultural land boundaries
- Rail track and trail separator (where trail is within fifteen [15] feet of rail tracks)
- Scenic areas and open space
- Environmentally sensitive sites

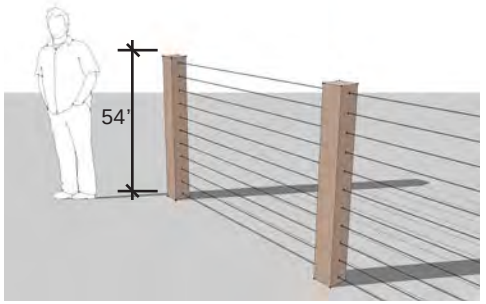


Figure 5-5 Smooth wire fence (between rail and trail or between trail and agricultural land)

CONCRETE SPLIT-RAIL FENCE

Concrete split-rail fencing is forty-eight (48) inches high and includes three (3) concrete rails (refer to Figure 5-6). Concrete may be stamped/formed and painted to look like wood. This fence type provides a low level of trespass prevention, some open visibility, boundary delineation, and emulates a parkland character.

- Urban areas and rural residential
- Open space and park lands

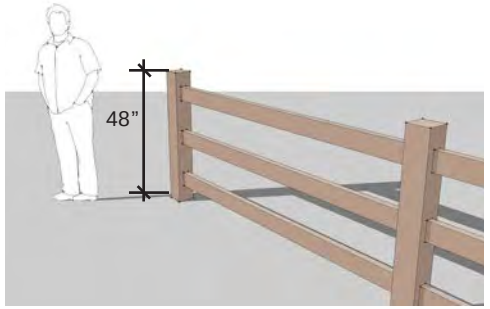


Figure 5-6 Concrete split-rail fence (between trail and rural residential parks, and open space)

In urban areas, a fence may be used to separate the trail from adjacent property. The design and use of this fence is subject to the discretion of each implementing entity as approved by RTC. The style of the fence in urban areas shall reflect the design character established by local design plans. Fencing types may include wood, wood substitute, stone and wrought iron, wrought iron or other suitable materials excluding chain link materials.

PRIVACY FENCE

A seventy-two- (72-) inch-high concrete privacy fence with metal posts (refer to Figure 5-7) should be provided where enhanced privacy is necessary. This fence type provides some level of trespass prevention, security, and privacy for adjacent landowners. This fence also provides an opportunity for screening with vine plantings. The concrete components increase the life of the fence and reduce the long-term maintenance cost.

- Urban and industrial areas
- Residential areas
- Safety and security need

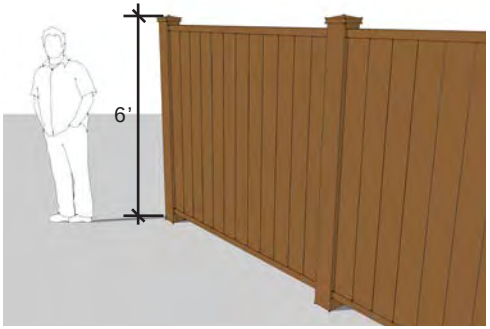


Figure 5-7 Privacy fence

Other barrier types between the trail and private property may be used such as ditches, berms, and/or vegetation. Recommended vegetation types should be low-water, low-maintenance varieties. Ditch or berm gradients should not exceed two to one (2:1) slopes or be greater than ten (10) feet in depth or height.

5.4.2 TRAIL FURNISHINGS



Concept of concrete bench with MBSST logo



Existing concrete bench near the terminus of East Cliff Drive



Concrete trash can

BENCHES AND SEATING AREAS

Benches for the trail system should be durable and capable of withstanding both the harsh coastal environment and the remote stretches of trail segments outside of the urban areas. The benches should be secured to their locations to avoid theft and or vandalism. Since the trail will be passing through multiple communities and governing agencies, each with its own character and setting, the bench style for the Coastal Rail Trail should be consistent, rather than trying to conform to the bench standards of each local jurisdiction. Benches should be placed at a minimum every quarter (1/4) to half (1/2) mile to provide convenient and attractive resting places along each segment. Areas where the new trail connects with existing beach trailheads, rest stops, interpretive overlooks, or other existing park facilities may not need new benches. New trail rest areas and trailheads should first be evaluated for conformance with existing adjacent park furnishings before adding new benches. Existing adjacent park furnishings should override the implementation of new facilities if they are already present and in good condition. Each bench placement should be analyzed to avoid redundancy or clutter. Other alternatives to fabricated benches could include the use of large boulders for seating in more rural or natural settings. Benches should be clustered with trash receptacles and other key furnishing elements.

TRASH AND RECYCLING RECEPTACLES

Trash receptacles should be placed in areas where there are benches and at all major trailhead locations. The trash receptacle unit should include one (1) trash container and one (1) recycling container. The containers shall include animal-proof lids, and the design, color, and style shall stay consistent along the trail segments outside of the existing agency's park and trail segments.

BIKE RACKS

Bike racks should be located at rest areas, existing and proposed trail heads, near transit stops, picnic sites, park sites, and commercial areas adjacent to the trail. Bike racks should be provided in conjunction with commercial, office, and multi-family residential developments adjacent to the trail corridor, both existing and proposed.

PICNIC AND SHADE SHELTERS

Shelters should be placed along the trail corridor where existing park facilities are farther than a quarter (1/4) mile in distance. They should be conveniently located at trailhead parking areas, rest areas, scenic overlooks, and remote or exposed segments along the trail corridor. Because the trail passes through multiple community and park agency boundaries, the shelter locations should be carefully selected to work with existing park and trail facilities and avoid redundancy. Picnic and shade shelter design and style should be consistent along the trail corridor. Shelter design exceptions may occur when a proposed shelter location is adjacent to or within an agency jurisdiction that has an existing shelter in that site or within view of the trail corridor's chosen location.

BOLLARDS

The purpose of bollards is to keep unauthorized motorists off the path. Consideration should be given to whether motor vehicle entry is likely, and thus bollards will enhance safety, or if it is unlikely and thus bollards will present a hazard to trail users. If used, bollards should be removable for emergency and maintenance access, light in color and reflectorized for visibility, lit with solar-powered LED lights (where feasible), and between thirty-six and forty-six (36-46) inches tall. Bollards should be positioned at least five (5) feet apart so as not to restrict width for wheelchair and other trail users, and should include diversion striping on the pavement.

5.4.3 UTILITIES AND LIGHTING

Surface and subsurface utilities are located within the railroad right-of-way and may impact the location and construction of the Coastal Rail Trail. Subsurface utilities and infrastructure must be identified during pre-construction activities. Utilities include active and abandoned railroad communications cable, signal, and communication boxes, fiberoptic cable, water and sewer lines, and telephone lines. The Coastal Rail Trail will be designed to avoid having to move most active surface utilities, although utility poles no longer in use may be removed. Installation of underground utility infrastructure to meet existing and potential future utility requirements will be considered to minimize the need to dig up and patch any constructed trail segments. The trail may be located directly over existing subsurface utilities assuming: (a) adequate depth exists between the trail surface and utility to prevent damage, and (b) agreements can be reached with the utility owner regarding access for repairs and potential impact to the trail. The use of solar powered panels will be encouraged to minimize the need for surface and subsurface utility cables.

Portions of the trail may be lighted, especially where there is considerable evening pedestrian and bicycle commuter traffic. There will be some lighting benefit from existing light sources along adjacent roadways and at crossings. Dark sky-compliant lighting should be used to illuminate the trail. Dark sky lighting must project light downward without releasing lighting upwards into the atmosphere or outward past the intended projected path.



Typical bike rack found throughout Santa Cruz County



Trail lighting that is dark sky-compliant due to downward-facing light with shield



Metal bollard along multi-use path



Seascape Park in Aptos has the potential to incorporate additional staging area amenities

5.4.4 TRAIL ACCESS/STAGING AREAS

Twenty-two (22) trail access and staging areas exist in close proximity to the trail alignment, for example at Depot Park and at the Wilder Ranch State Park Visitor Center. Features include parking for vehicles and bicycles, drinking water, trash receptacles, kiosks with traveler information, and other amenities. As future usage increases, additional staging areas may be warranted. A concept for future trail access/staging areas is identified on Figure 5-8. All new staging areas and retrofits shall be compliant with ADA standards (handicapped accessibility). Refer to Figure 5-8 for typical features.

PURPOSE AND CHARACTER

- Place to park vehicles and unload bikes
- Access from urban areas to trail
- Wide range of services for recreational users
- Tied to shared public used (e.g., train depots, parks, museums, civic uses, etc)

TABLE 5.2 - Existing/Planned Trailhead/Staging Area Amenities

	Paved Parking Lot	Accessible Parking	Street Parking	Shelter	Overlook with Benches	Trash Cans	Bike Racks	Accessible Restroom	Drinking Water	Benches	Picnic Area	Other/Notes
Waddell Beach	X	X						X				
Greyhound Rock Beach	X	X					X	X				
Scott Creek Beach			X		X	X	X					
Davenport Beach Landing			X		X	X	X	X				
Davenport												Unpaved parking lot
Capitola Village	X	X	X		X	X	X	X	X	X	X	
Coast Dairies, Bonny Doon Beach	X					X						
Coast Dairies, Yellowbank Beach												Unpaved parking lot
Wilder Ranch State Park, 4 Mile Beach												Unpaved parking lot
Wilder Ranch State Park, Old Cove Landing	X	X	X				X	X	X			Trailer parking
Natural Bridges State Beach	X	X										
Neary Lagoon Park - PLANNED												Existing boardwalk
Depot Park	X	X		X			X	X	X	X	X	Other amenities
Main Beach	X	X					X	X	X	X	X	Other park amenities
Santa Cruz Harbor	X	X					X	X	X	X	X	Other park amenities
Simpkins Swim Center	X	X		X			X	X	X	X	X	Other amenities
Jade Street Park at 47th St.	X	X					X	X	X	X		Other park amenities
New Brighton State Beach	X	X		X			X	X	X	X	X	Other amenities
Aptos Village	X	X					X					
Hidden Beach	X						X			X	X	Lawn area
Seascape Park	X	X			X		X	X	X	X	X	Lawn area, trails
Manresa State Beach	X	X			X		X	X	X	X	X	
Watsonville Slough Trails							X			X	X	Lawn area, trails
Walker St., Watsonville	X											





Figure 5-8 Trail access/staging area design elements

DESIGN ELEMENTS

- Paved parking (permeable or aggregate base in sensitive areas to filter runoff)
- Information kiosk with a trail directory map/trail information
- Picnic tables, benches
- 911 call boxes (rural areas)
- Drinking fountains
- Trash and recycling cans
- Safety lighting
- Bike racks
- Shade and shelter
- Potential for commercial vending and service (food, bike support, equipment)
- Interpretive signs
- Food kiosk
- Bike shop/station rental
- Charging stations for e-bikes
- Security cameras

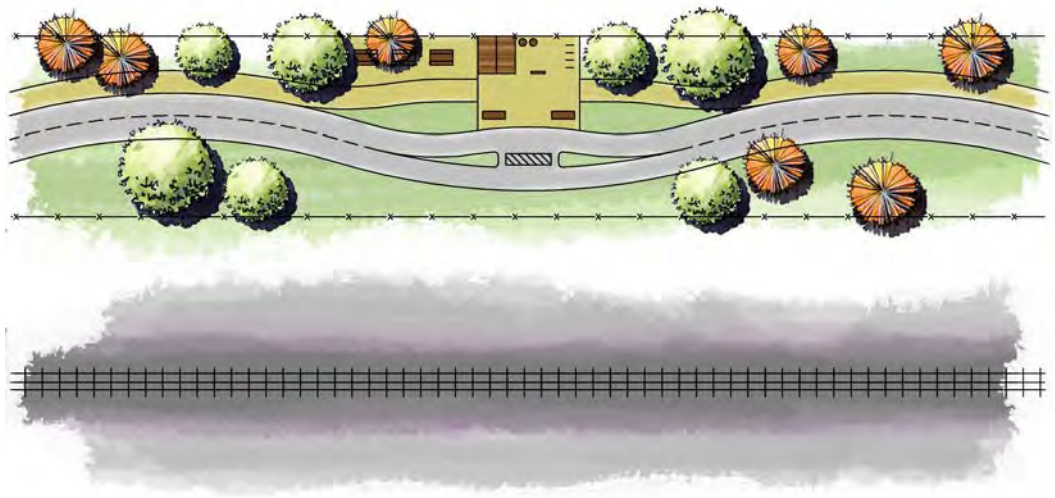


Figure 5-9 Typical rest area design when located adjacent to the railroad corridor

REST AREAS

Facilities for comfort (benches, trash receptacles, shade, and water), safety (phones and kiosks with traveler information), and interpretative information (historical, cultural, and educational information) should be developed along the trail. Rest areas should be located at places of interest and at regular intervals (approximately two to three [2-3] miles apart).

DESIGN ELEMENTS:

- Trash cans
- Emergency phone
- Drinking water
- Shade element
- Directional signage/trail information
- Benches with backrests and armrests
- Grades that do not exceed five percent (5%)



Wilder Ranch parking lot, trail access, and staging area



Wilder Ranch restrooms



Depot Park parking lot, trail access, and staging area



Bike stop sign



Bike route signage on West Cliff Drive


Signage at Wilder Ranch

5.4.5 UNIFORM TRAIL SIGNING AND MARKING

Uniform sign design and logo theme will be provided along the trail. Signing and marking will unify the trail design and provide functional information. Elements such as bollards to prevent unauthorized trail access, mile post markers to identify specific locations along the trail, directional signs to various places of interest and user services, informational and traffic control signs and a trail logo will all provide necessary information and help to unify the design.

Signs along the trail should be designed to meet all of the required and recommended signing and marking standards developed by Caltrans in Chapter 1000 of the Highway Design Manual. In addition, all signs and markings should conform to the standards developed in the Manual of Uniform Traffic Control Devices (MUTCD).

In general, all signs should be located at least three to four (3-4) feet from the edge of the paved surface, have a minimum vertical clearance of eight-and-a-half (8.5) feet when located above the trail surface, and be a minimum of four (4) feet above the trail surface when located on the side of the trail. All signs should be oriented so as not to confuse motorists. The designs (though not the size) of signs and markings should be the same as used for motor vehicles as per the MUTCD.

Directional signing may be useful for trail users and motorists alike. For motorists, a sign reading “Coastal Rail Trail Xing” along with a trail emblem or logo helps both warn and promote use of the trail itself. For trail users, directional signs and street names at crossings help direct people to their destinations. The RTC will work to ensure trail connectivity to other bike and pedestrian facilities through way-finding and directional signs. Refer to page 5-32 for trail marking and sign examples.

5.4.6 COASTAL RAIL TRAIL SIGNAGE

A customized wayfinding signage program for the Coastal Rail Trail should be further developed to orient users, provide educational opportunities, and to unify the trail corridor. The design should mirror the MBSST sign program in terms of height, scale, and font type. However, the signs should differ from the MBSST in terms of colors and materials used. All trail signage should be identified with the MBSST logo. Conceptual illustrations of compatible signage types are provided below.

In addition, a Coastal Rail Trail logo should be created to enhance the identity of the rail trail. The logo may be a variation of the MBSST logo by keeping the same orientation, font, and use of black. The colors and central design should be modified in order to reflect a rail trail theme.

HISTORIC AND EDUCATIONAL THEMES

The MBSST Network offers a unique opportunity to physically connect the communities in Santa Cruz County to one another and create ties to its culture and history. In addition to the exhibit locations identified by the previously prepared MBSST Standards Manual, additional historic and educational exhibits (interpretive exhibits) will be placed along the trail at strategic locations offering a variety of information. For example, information concerning the history of railroads, lumber, beaches, and farming in the area can be portrayed. Educational exhibits describing the environment and natural resources should be developed to educate visitors and residents about current issues and stewardship. All of these topics will be presented in a cohesive design to help reinforce the continuity of trail design.



Santa Cruz Public Libraries

Seacliff Beach State Park with the cement ship, the Palo Alto, in the background (1930)

Interpretive Design Themes

- Monterey Bay National Marine Sanctuary
- Location specific flora and fauna
- Coastal-dependent industrial history
- Native American presence and culture
- Watershed and underwater geography
- Climate and habitat
- Railroad History
- Rivers, Estuaries, Beaches



Figure 5-10 Conceptual signage for Coastal Rail Trail



Monterey Bay Sanctuary Scenic Trail interpretive signage installation at Lighthouse Point Park

SANCTUARY SCENIC TRAIL SIGNAGE

The RTC and the Santa Cruz County Interagency Task Force secured funding from a Federal Transportation Enhancement Grant to develop conceptual designs for a trail logo, a wayfinding system to orient trail users, and an interpretation system to showcase distinct habitat areas, and illustrate themes and stories consistent with the conservation and education goals of the Monterey Bay National Marine Sanctuary. Through this process, a series of well-designed wayfinding and interpretive exhibits were designed to be distributed along the original 11-mile alignment of the Monterey Bay Sanctuary Scenic Trail. There are five (5) types of signs and exhibits: trail markers, directional signs, orientation signs, minor interpretive exhibits, and major interpretive exhibits. A handful of these signs have already been installed.

The now-expanded MBSST Network incorporates the Coastal Rail Trail into the earlier multi-year, multi-agency effort to create the original alignment of the MBSST through the Sanctuary Scenic Trail Standards Manual and Draft Long Range Interpretive Plan. Though the documents are not part of the MBSST Network Master Plan, opportunities exist to highlight the original Sanctuary Scenic Trail alignment and the documents' visions of providing opportunities for coastal access and appreciation of the Monterey Bay National Marine Sanctuary through a series of coordinated wayfinding signs and interpretive exhibits. A series of scenic loops or spurs on existing and proposed facilities, identified through directional signage, could be developed to guide trail users at each key juncture of the original Sanctuary Scenic Trail alignment and the Coastal Rail Trail.

The following loops and spur have been identified for consideration once the proposed segments are implemented:

- A West Cliff Scenic Loop that joins the Coastal Rail Trail at Natural Bridges Dr. and at Pacific Ave.
- A Pleasure Point Scenic Loop that joins the Coastal Rail Trail at Lake Ave. and at Opal Cliff Dr.
- A Seacliff Scenic Spur that joins the Coastal Rail Trail at State Park Dr. and continues on State Park Dr. and along Seacliff State Beach, across the bike/pedestrian bridge over Aptos Creek, and along Beach Dr. up to the locked gate.



Figure 5-11 Directional and interpretive signage (Identified by the Sanctuary Scenic Trail Standards Manual - June 2005), Graphics by LSA

COUNTYWIDE BICYCLE ROUTE SIGNAGE

In an effort to further increase bicycle ridership and provide a viable transportation alternative, the RTC is developing a Countywide Bicycle Route Signage Program. Wayfinding signage for the current on-street network is thought to increase the number of bicyclists on the road, as well as improve bicyclists' visibility and safety. The exact sign type has not been agreed upon yet, but the mock-ups proposed (see image below) will fit in with existing signage, will be easily integrated into the proposed sign types, and wll be in compliance with the MUTCD.

MULTIPLE TRAIL DESIGNATIONS

In certain instances, the Coastal Rail Trail will include additional trail network alignments such as the California Coastal Trail and/or the Pacific Coast Bike Route. When this is the case, the application of the proper logo(s) should be applied to trail signage to inform the user of the multiple-route status. A concept of a post with trail logos is illustrated below.



Possible countywide bicycle route signage



Post sign with multiple trail designations



Existing trail signage on East Cliff Drive

California State Parks logo

California Coastal Trail logo



Typical Pacific Coast Bike Route sign

5.4.7 LANDSCAPE DESIGN

The landscaping treatment along the MBSST Network will vary along the corridor as it traverses from one region to another. The landscape treatment will be limited by availability of space in the trail corridor, narrow rights-of-way, railway operational clearance, agricultural operations, sensitive coastal bluffs, maintenance agreements, and other mitigating factors.

Currently there are existing segments of the MBSST Network corridor that follow highly urbanized areas with landscape treatments existing along street corridors, parks, adjacent open space, harbor edges, and beachfront areas. The landscape for new segments of the MBSST Network will vary with the setting and with the agency responsible for the design, implementation, and long-term maintenance. The landscape treatment will also vary by setting. The proposed trail corridor lies along one of the most beautiful coastlines in the world, traversing many different environments ranging from intensely popular urban areas to rural and native coastal edges. Landscape treatment in intensely urbanized areas can include both California native and non-native drought-tolerant plant palettes. These urban areas offer a broader range of choices for plant species to be used in the landscape. However, in areas where the trail is located in and/or adjacent to native landscape settings, or rural and agricultural lands, every effort should be taken to maintain California native and indigenous plant species in the planting and restoration efforts. Plant palettes will be determined as part of the design phase for each segment in coordination with the implementing entity. Planting plans will also comply with environmental studies and recommendations concerning sensitive or critical native plant habitats. Other precautions should consist of the strict avoidance of invasive species.



Drought-tolerant grasses used in median treatment



A combination of flowering shrubs and groundcover should be used at key areas



Drought-tolerant succulents thrive in Santa Cruz County

5.4.8 DRAINAGE AND EROSION CONTROL

DRAINAGE IMPROVEMENTS DURING TRAIL CONSTRUCTION

Drainage improvements to accommodate the trail section will be made in conjunction with trail construction. Trail design will be engineered so as not to increase any historic runoff onto a property. Drainage engineering will be coordinated with any adjacent and regional efforts that may be underway at the time to resolve historical problems to the greatest degree feasible. A combination of culverts, channelization, and improved bridge crossings will occur in conjunction with trail construction. Trail engineering will focus on methods to minimize river deposits that may cause maintenance issues. Construction materials that maintain historic runoff levels and meet water quality standards will be used.

CULVERTS

Culverts can be used in seasonal drainage ways or seeps along gullies and swales. Culverts should be sized to handle the high flow during seasonal rains. The culverts may consist of plastic or metal corrugated pipe. Trail approaches should be designed at a straight 90-degree angle. Culvert crossing width should match the trail approach width on both sides. Culvert faces should be concealed with native stone and channels downstream of culverts with large rocks.

SEA LEVEL RISE AND CLIMATE ADAPTATION

Generally, the California Coastal Commission (CCC) requires new development to be set back from bluff edges so that development will be safe from bluff retreat for at least 100 years. However, the CCC does make exceptions to the setback requirements for recreational/trail projects. The 100-year sea rise projection is unlikely to impact on-street trails. However, natural surface trails along coastal bluffs may be impacted and development of new trails should consider sea level rise impacts.

Measures to assure the long-range viability of the MBSST Network will be developed as needed when segments move forward. The potential for shoreline retreat and/or sea level rise should be a consideration in the design of each segment. Where projects or placement of shoreline protective works will impair the continuity of the shoreline public access route, an alternative measure for providing such access will be considered. One such example is a bluff-top bypass routes.



Sand dune encroaching onto railroad tracks



Exposed drainage infrastructure



Example of a "universal access" trail (Bonnie Lewkowicz)



Pedestrians and bicyclists sharing the trail



Bridges should be wide enough to allow for pedestrians and bicyclists to pass with ease

5.5 UNIVERSAL TRAIL DESIGN

"Accessibility" or "universal access" shall be considered a best practice in the decision-making processes, including planning, design, construction, and management of the MBSST Network. Universal access includes design strategies that provide trail access to those with and without disabilities including families, seniors, and people with mobility impairments. At a minimum, current state and federal regulations concerning the Americans with Disabilities Act (ADA) shall be applied to provide access to a wide range of user capabilities as required by law.

While trail designers shall refer to the federally mandated ADA guidelines, the following five (5) design characteristics are typical of the types of challenges to providing a universally accessible trail.

- Trail grade
- Cross slope
- Width
- Surface type
- Obstacles

5.6 CALIFORNIA COASTAL COMMISSION AND CONSERVANCY ACCESSIBILITY STANDARDS

The California Coastal Commission and Conservancy Standards and Recommendations for Accessway Location and Development Accessibility Standards provide guidelines for the location, size, and type of accessways along the California coast. The Standards were adopted to ensure that a consistent approach is used for access construction. Since sites and circumstances vary along the coast, the application of these standards is flexible. They apply to all new and existing developments and shall be considered during the MBSST Network implementation and construction process. Appendix G provides the full California Coastal Commission and Conservancy Standards and Recommendations for Accessway Location and Development Accessibility Standards.

5.7 USER CONFLICT REDUCTION STRATEGIES

In essence, user conflicts are a result of success: they are indicative of a trail's popularity. Nonetheless, they can lead to safety issues. Trail planners can take preventative measures to anticipate heavy use and preclude user conflict in multiple-use trails permitting use by walkers, runners, bicyclists, etc. Potential trail conflicts are best minimized through design and through setting the proper expectations which, in turn, comes from appropriate width, clear signage, and enforcement of behavior.

General tips for reducing the potential for conflicts include:

1. Involve all potential user groups in the planning process to raise issues and help address them.
2. Design to minimize conflicts with separate trails or shoulders for pedestrian and equestrian use where possible. Provide adequate width and sight lines. Furnish turnouts at stopping points, etc.
3. Use clear signage or pavement markings to define etiquette and yielding protocol.
4. Set expectations for multi-use.
5. Enforce rules by volunteer trail patrols and/or a uniformed presence, especially when a trail is new to establish precedent and expectations.

Spatial management is a system that designates different trails or spaces for particular uses. For instance, trail managers may assign one trail to cyclists and another trail to walkers. In addition, speed controls help curtail speeding cyclists on multi-use trails. A formal speed limit should be established only when all else fails; an effective speed limit requires consistent, ongoing enforcement, and it is unclear whether reducing the speed actually improves the real or perceived safety of the trail. The problem of excess speed might therefore be better addressed through design. For example, a granular stone surface will encourage slower speeds than a paved surface.



People pushing strollers are commonly found on multi-use trails



Trail etiquette sign example

Trail etiquette should be established at the beginning. Involving trail patrols and volunteer trail ambassadors is a great way to build community support and expectations on the trail. Encourage interaction between user groups with a campaign such as, “Just say hello.” Trail etiquette can be formalized into user rules and regulations. The regulations, developed in conjunction with trail user groups, should spell out the rules governing public conduct on the trail. Unless legally required, use terms such as “trail courtesy” or “visitor responsibilities” instead of “rules and regulations.” Visual and simple displays of expectations are preferred. Consider these courtesy advisories:

- Wheels yield to heels
- Be courteous to all trail users
- Travel at a reasonable speed in a consistent and predictable manner
- Always look ahead and behind before passing
- Pass slower traffic on the left; yield to oncoming traffic when passing
- Give a clear warning signal before passing: use voice signal, not horn or bell, when passing horses
- Keep all pets on a short leash
- Respect the rights of adjacent property owners
- Don’t be a litterbug
- Please clean up after your pets
- Move off the trail when stopped to allow others to pass
- Yield to other users when entering and crossing the trail
- Motorized vehicles are prohibited (except electric wheelchairs)
- Alcoholic beverages and illegal drugs are not permitted on the trail
- Firearms, fireworks, and fires are not permitted on the trail
- All trail users should use a light and reflectors after dusk and before dawn
- Travel no more than two abreast
- Be aware and courteous to others while using a cellular phone



5.8 DOGS ON TRAILS

The MBSST Network in Santa Cruz County traverses approximately 50 miles from the banks of the Pajaro River in the south, up north to the San Mateo County line. The MBSST Network will pass through several different city, county, and state properties, all with varying rules and regulations addressing dogs in the park lands and on trails.

One of the most popular trail activities today is people walking their dogs. For many people, a trail walk invariably means a walk with the dog. This has become an important activity for both the owner and the pet to enjoy the outdoors and get some exercise. For some trail users, this is an opportunity to let the dog run free in available open areas. Along multi-use trails, agency managers often post leash laws to help reinforce safety policies and leash requirements.

Wildlife habitat areas are especially sensitive to unleashed dogs. Trails near waterways, shorelines, riparian corridors, and potential nesting areas often include leash laws to prevent dogs from having contact with wildlife. Dogs benefit from wearing a leash by being protected from rattlesnakes, ticks, traffic, trail user conflicts, and various other hazards and distractions.

As the popularity of dog walking continues to grow, so does the need to prevent dog waste from impacting the trail and adjacent uses. Implementing entities should require pet waste removal and provide dog waste bag dispensers at trailheads. More remote sites or neighborhood access areas may include a simple regulation sign requiring pet owners to collect their pet waste both as a courtesy to other users and a management tool for habitat preservation. Dogs may be restricted in trail sections that are adjacent to agricultural lands where sensitivity relating to contamination exists.

The waste removal restrictions do not apply to service animals, as defined by the Federal Americans with Disabilities Act (ADA). The ADA defines a service animal as any guide dog, signal dog, or other animal individually trained to provide assistance to an individual with a disability.

Currently the California State Parks' rules and regulations require dogs on a leash within park boundaries. California State Beach regulations require dogs be on a leash and allowed on paved trails only.

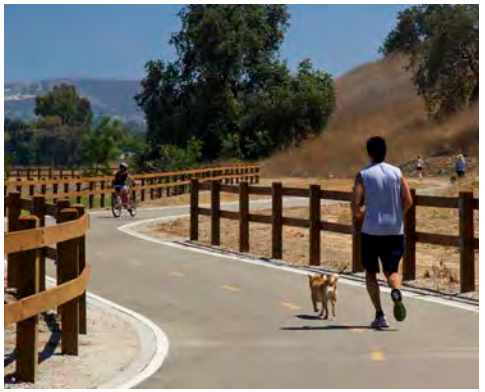
Other regulations for dogs on trails may include requests to have the pet up-to-date with all applicable vaccinations and a current license with the County Department of Animal Services. Some implementing entities may have their own animal care services or licensing.



Pet waste station



Dogs on leashes



Trail runner with dog on a leash

5.9 EQUESTRIANS ON TRAILS

Specific design considerations for equestrian use on multi-use paths should be considered due to the lack of equestrian experience near railroads, horses' instinctual flight behavior, and equestrians' general wariness of new and potentially challenging situations. Some equestrian users advocate fences of sufficient height to prevent horses jumping them when startled or frightened; however, this concern must be balanced with the need for visibility of trains for both horses and riders. Horses that cannot see an oncoming or approaching train will experience greater fear and confusion than if they are able to see and identify the source of noise.

Trail width is an overriding design issue when providing equestrian use. Multi-use paths designed to accommodate equestrians should provide a separate unpaved pathway that is at least eight- (8-) feet wide and that has a vertical clearance of at least ten (10) feet. The equestrian trail should be separated a minimum of three (3) feet from the paved multi-use path.

Many horses are frightened by bridges and other elevated environments, particularly lattice or perforated bridges and trestles that allow the animal a view of the ground surface substantially below the bridge deck. Most horses are not accustomed to this environment and will respond unpredictably with potentially negative consequences. In Segment 5.3, the Old Dairy Gulch bridge crossing will require additional consideration when designing bridge improvements to incorporate equestrians.

Equestrian use is limited to an approximately nine- (9-) mile-long stretch (Segments 5 and 6) within the Northern Reach coastal area extending from Wilder Ranch to Davenport. Equestrians will utilize the existing facilities located in Wilder Ranch.

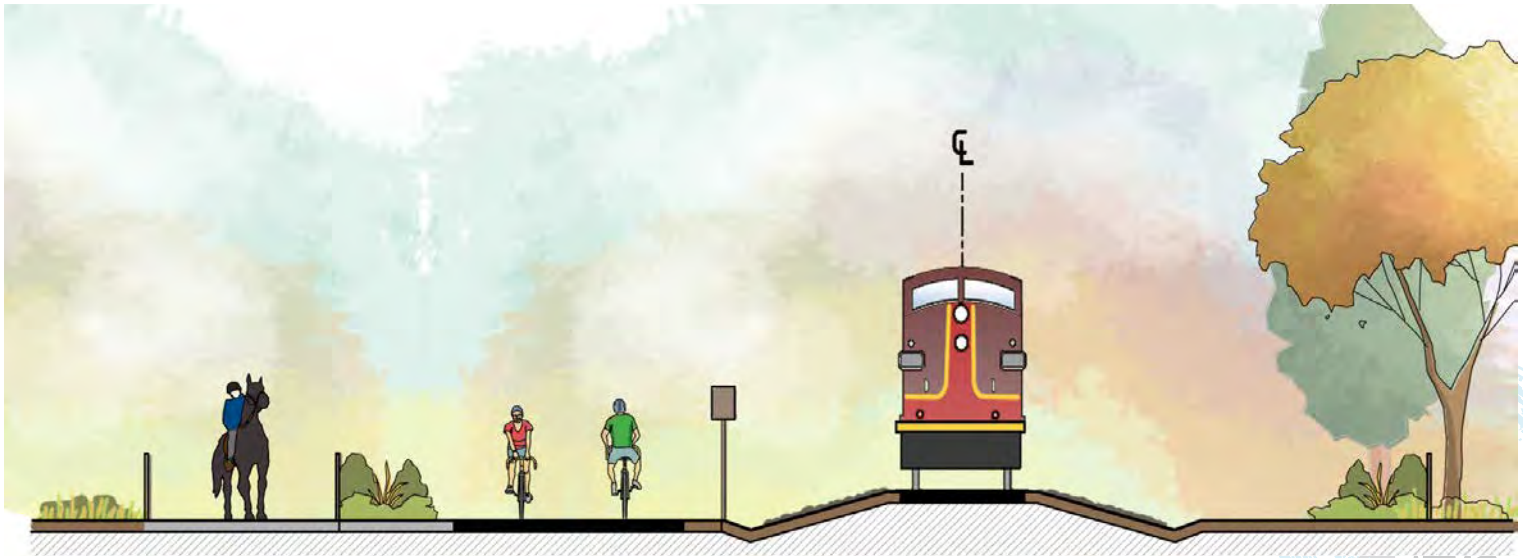


Figure 5-12 Equestrian trail adjacent to the Coastal Rail Trail



Equestrian trail opportunity north of Wilder Ranch



SECTION SIX CONTENTS

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This section consists of matrices and tables designed to provide an objective process for the MBSST Network funding and development priorities. It describes the process by which points were assigned to each segment and includes a ranking matrix that tabulates the points earned by each segment. This information is then translated into a priority matrix that assigns each segment a priority. Funding sources, administration, and implementation strategies are also included.

SECTION SIX
PROJECT PRIORITIZATION AND COSTS

6.1 PROJECT PRIORITIZATION

The following information and tables are provided to aid the Santa Cruz County Regional Transportation Commission (RTC) in determining whether or not a project is ready for further development and implementation. The goal of Tables 6.1 through 6.9 is to objectively prioritize the order in which the Monterey Bay Sanctuary Scenic Trail Network (MBSST Network) segments could be developed. Actual implementation may be different due to new funding opportunities or restrictions, community priorities, regional transportation plan goals, and needs for gap closures within the trail system itself which may change over time. Prioritization may also be impacted by implementing entities' interests in bringing the project to fruition. However, the RTC intends to use this prioritization mechanism as a general guideline by which to fund and implement each segment. Tables 6.2 through 6.9 evaluate a series of criteria developed to prioritize segments based on a point system. The segments that receive the most points are ones that serve a large number of activity centers, have minimal physical constraints, and fill in MBSST Network gaps. These prioritization categories include:

1. Proximity to Activity Centers - 5 points possible
2. Population Density - 5 points possible
3. Coastal Access Connectivity - 5 points possible
4. Trail Segment Cost - 5 points possible
5. Trail Segment Length - 5 points possible
6. Minimal or No Bridge Crossings - 5 points possible
7. Limited Right-Of-Way Constraints- 5 points possible
8. Gap Closures (and connections to existing and planned non-motorized facilities) - 5 points possible
9. Public Input - 5 points possible

These tables work in concert with Table 6.10 which applies the prioritization categories to each segment. There are a total of forty-five (45) possible points based on the nine (9) categories above.

Actual implementation may be different due to new funding opportunities or restrictions, community priorities, regional transportation plan goals, and needs for gap closures within the trail system itself which may change over time.



6.1.1 EVALUATION CRITERIA AND METHODOLOGY

PROXIMITY TO ACTIVITY CENTERS - 5 POINTS POSSIBLE

This category represents the number of local and regional activity centers within 1/4-mile, 1/2-mile, and 1-mile of the proposed trail alignment. Activity centers include destinations such as educational facilities, employment and retail/commercial centers, parks, beaches, and tourist attractions.

The activity centers were counted per trail segment and assigned a corresponding point total. They were also assigned a distance multiplier based on the distances mentioned above, as centers located closer to the proposed trail alignment have a higher value to trail users.

The resulting Activity Center Type Per Segment matrix is shown in Table 3.1. The methodology for including the activity center data in Table 6.1 below.

TABLE 6.1 - Proximity to Activity Centers Methodology and Points

Segment	Distance From Trail Multiplier			Number of Activity Centers	Points
	1/4 mile	1/2 mile	1 mile		
Per Segment	1.5	1	0.5	0 - 10	1
				10.5 - 20	2
				20.5 - 30	3
				30.5 - 40	4
				40.5 - 50	5



POPULATION DENSITY - 5 POINTS POSSIBLE

This category represents a trail segment's utility as it relates to numbers of potential localized users. The analysis is based on Census 2010 Block population data polygons within or intersecting a 1/2-mile buffer region for each segment. The potential benefit each trail segment provides, as it relates to population density, is reflected in the following point scale:

TABLE 6.2 - Population Density Methodology

Description	Points
Segment area population greater than 20,000	5
Segment area population of 15,001 to 20,000	4
Segment area population of 10,001 to 15,000	3
Segment area population of 5,001 to 10,000	2
Segment area population of 0 to 5,000	1

COASTAL ACCESS CONNECTIVITY - 5 POINTS POSSIBLE

The Coastal Rail Trail comprises most of the proposed trail alignment. It is part of the larger MBSST Network through Santa Cruz County and its connectivity to coastal access and local beaches is vitally important. This category assigns higher value where there is more connectivity to these coastal resources and breaks down as follows:

TABLE 6.3 - Coastal Access Connectivity Methodology

Description	Points
Trail runs adjacent to beach/shoreline/coastal bluffs	5
Trail has three (3) or more direct coastal connections	3
Trail has one (1) or two (2) direct coastal connections	1
Trail does not directly connect to a coastal access point	0



TRAIL SEGMENT COST - 5 POINTS POSSIBLE

The cost of a trail segment project directly influences the ability to implement it and how limited funding should be prioritized. Each project was rated on a scale of 1 to 5 points for estimated cost of implementation as shown in Table 6.4 below.

TABLE 6.4 - Trail Segment Cost Methodology

Estimated Segment Cost	Points
$0 - $1,000,000	5
$1,000,000 - $2,500,000	4
$2,500,000 - $5,000,000	3
$5,000,000 - $7,500,000	2
$7,500,000 +	1

SEGMENT LENGTH - 5 POINTS POSSIBLE

Trail segment length represents the physical amount of trail that will be available for public use per project segment. Longer trail segments receive a higher point total and the assigned values are represented in Table 6.5 below.

TABLE 6.5 - Trail Segment Length Methodology

Segment Length in Miles	Points
0.00 - 1.00 Miles	1
1.01 - 2.00 Miles	2
2.01 - 3.00 Miles	3
3.01 - 4.00 Miles	4
4.01 - 5.00+ Miles	5



MINIMAL OR NO BRIDGE CROSSINGS - 5 POINTS POSSIBLE

Crossing an existing stream or highway via a new or modified bridge is a significant physical constraint in terms of construction cost, time, and permitting. There are several locations where the proposed trail alignment will need to utilize existing bridges or trestles to overcome existing obstacles. These crossings will need to be modified or built to accommodate the proposed trail. The corresponding cost and challenges associated with these efforts are significant, and therefore a lower number of points are awarded as the number of crossings increases. This is reflected in the following point scale:

TABLE 6.6 - Minimal or No Bridge Crossings Methodology

Description	Points
Proposed trail alignment encounters no bridge crossings	5
Proposed trail alignment encounters one (1) bridge crossing	3
Proposed trail alignment encounters two (2) or more bridge crossings	1

LIMITED RIGHT-OF-WAY (ROW) CONSTRAINTS - 5 POINTS POSSIBLE

This category represents the significance of physical and monetary constraints involved in constructing the proposed trail alignment through narrow right-of-way areas. The Coastal Rail Trail is the preferred alignment; however, a constrained railroad right-of-way area will necessitate realigning the railroad tracks to accommodate the proposed trail, or rerouting the trail around the constrained right-of-way area along existing streets.

In the Northern Reach, where the proposed trail alignment continues north beyond the railroad right-of-way, the Caltrans right-of-way along Highway 1 can accommodate the proposed trail without significant constraints. The difficulties involved with constrained right-of-ways are represented as follows:

TABLE 6.7 - Limited Right-of-Way (ROW) Constraints Methodology

Description	Points
Proposed trail alignment is in Caltrans ROW or existing railroad ROW that can accommodate the trail without altering/moving the railroad tracks	5
Requires rerouting proposed trail alignment along existing streets	3
Requires obtaining an easement for proposed trail alignment	1
Requires permitting and moving/realigning railroad tracks	0



A gap closure completes a trail segment to an activity center or between two existing trail facilities.

GAP CLOSURES (AND CONNECTIONS TO EXISTING AND PLANNED NON-MOTORIZED FACILITIES) - 5 POINTS POSSIBLE

This category evaluates a trail segment's ability to connect to existing trail systems or networks. Such connections provide the value-added benefit of expanding the continuity of the overall MBSST Network, increasing connectivity to destination areas and recreational uses, and potentially increasing public usage of the existing trails. The benefits of connecting to existing trails are reflected by the following point scale:

TABLE 6.8 - Gap Closures (and Connection to Non-Motorized Facilities) Methodology

Description	Points
Trail connects to three (3) or more existing non-motorized facilities	5
Trail connects to two (2) existing non-motorized facilities	3
Trail connects to one (1) existing non-motorized facility	1
Trail does not connect to any existing non-motorized facility	0

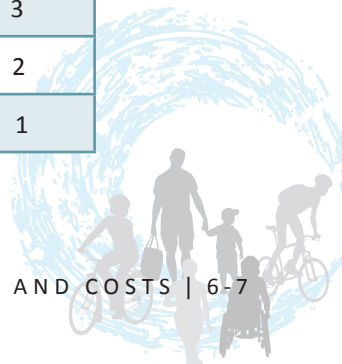
Public input and participation is an important part of the prioritization process.

PUBLIC INPUT - 5 POINTS POSSIBLE

Public input and participation is an important part of the prioritization process. Community members involved at the public workshops and other outreach efforts represent potential trail users and concerned residents. As a result of the outreach process, Table 6.9 was developed to represent community preferences. Table 6.10 includes the cumulative sum of each participating community member's top two preferences. Points reflecting their priorities are assigned to proposed trail segments by the following point scale:

TABLE 6.9 - Public Input Methodology

Description	Points
Segment was identified as one of the top 3 preferred segments	5
Segment was ranked as the 4th or 5th in priority	4
Segment was ranked as the 6th through 10th in priority	3
Segment was ranked as the 11th through 15th in priority	2
Segment was ranked as the 16th through 20th in priority	1



6.2 PRIORITIZATION MATRIX

6.2.1 PROJECT PRIORITIZATION

Table 6.10 shows the scoring guide for each trail segment based on tabulating the applicable points from Tables 6.1 to 6.9. Each segment can earn a possible 45 points. Segments with the highest point totals within their reach are considered to be the most likely to be funded in the early stages of trail development. A detailed analysis of the project priority list is described in Section 6.3.

TABLE 6.10 - Project Prioritization Matrix

CATEGORY (WITH POINT TOTALS)	TRAIL ALIGNMENT SEGMENT																			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
SEGMENT LENGTH (IN MILES)*	1.06	4.77	1.11	3.64	10.55	1.49	3.10	0.77	1.73	1.50	3.20	1.14	0.85	1.17	1.37	2.66	4.00	4.01	0.47	0.74
SEGMENT COST (IN MILLIONS)	$ 0.11	$ 0.31	$ 2.55	$ 2.69	$ 15.01	$ 3.11	$ 11.22	$ 10.31	$ 11.91	$ 9.71	$ 8.87	$ 10.83	$ 3.31	$ 2.08	$ 4.74	$ 3.61	$ 19.96	$ 3.01	$ 0.38	$ 3.01
Activity Centers	2	2	1	1	1	3	4	5	5	5	1	2	1	2	2	2	1	1	2	1
Population Density	1	1	1	1	1	1	5	3	4	5	5	3	2	2	1	1	1	3	3	2
Coastal Access Connectivity	5	3	3	1	5	3	3	5	3	1	5	1	1	1	3	1	0	0	0	0
Segment Cost	5	5	3	3	1	3	1	1	1	1	1	1	3	4	3	3	1	3	5	3
Segment Length	2	5	2	4	5	2	4	1	2	2	4	2	1	2	2	3	4	5	1	1
Minimal or No Bridge Crossings	5	5	3	5	5	5	3	3	1	3	1	1	3	5	1	5	1	5	5	3
Limited ROW Constraints	0	0	1	3	5	5	5	3	5	0	1	1	3	3	3	3	3	3	1	3
Gap Closures	3	1	0	0	5	5	5	5	5	3	5	3	1	1	3	1	0	3	5	5
Public Input	1	2	1	3	5	1	3	4	5	4	5	3	2	2	2	1	3	3	1	2
Total Points (out of 45)	**24**	**24**	**15**	**21**	**33**	**28**	**33**	**30**	**31**	**24**	**28**	**17**	**17**	**22**	**20**	**20**	**14**	**26**	**23**	**20**

Note: *Segment Length refers to total combined length of Coastal Rail Trail and Coastal Trail alignments.

6.2.2 SEGMENT PRIORITY RANKING

Table 6.11 utilizes data from the Prioritization Matrix and ranks the segments by overall trail and also by reach. This data provides countywide and regional guidance as to which segments may develop ahead of others based on the priority analysis.

TABLE 6.11 - Segment Priority Ranking

SEGMENT PRIORITY RANKING

ITEM	PRIORITY RANKING*: OVERALL TRAIL																			
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th
Trail Segment	**7**	**5**	**9**	**8**	**6**	**11**	**18**	**10**	**1**	**2**	**19**	**14**	**4**	**20**	**16**	**15**	**13**	**12**	**3**	**17**
Total Points	33	33	31	30	28	28	26	24	24	24	23	22	21	20	20	20	17	17	15	14
% of Total Possible Points (45)	73%	73%	69%	67%	62%	62%	58%	53%	53%	53%	51%	49%	47%	44%	44%	44%	38%	38%	33%	31%

ITEM	PRIORITY RANKING*: BY REACH																			
	NORTHERN REACH					**CENTRAL REACH**									**WATSONVILLE REACH**					
	1st	2nd	3rd	4th	5th	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	1st	2nd	3rd	4th	5th	6th
Trail Segment	**5**	**1**	**2**	**4**	**3**	**7**	**9**	**8**	**6**	**11**	**10**	**14**	**13**	**12**	**18**	**19**	**20**	**16**	**15**	**17**
Total Points	33	24	24	21	15	33	31	30	28	28	24	22	17	17	26	23	20	20	20	14
% of Total Possible Points (45)	73%	53%	53%	47%	33%	73%	69%	67%	62%	62%	53%	49%	38%	38%	58%	51%	44%	44%	44%	31%
SEGMENT COST (IN MILLIONS)	$ 15.01	$ 0.11	$ 0.31	$ 2.69	$ 2.55	$ 11.22	$ 11.91	$ 10.31	$ 8.87	$ 3.11	$ 9.71	$ 2.08	$ 3.31	$ 10.83	$ 3.01	$ 0.38	$ 3.01	$ 3.61	$ 4.74	$ 19.96
	$20,657,456					71,354,320									34,712,304					

Note: *If two or more segments accumulate the same number of points, the segment with the least associated cost is given a higher priority.

6.3 PROJECT LIST

6.3.1 NORTHERN REACH PROJECTS

The Northern Reach includes Segments 1-5. Table 6.12 prioritizes the segments by the number of points they received. The segments that received the most number of points are considered the most feasible for implementing within a short time frame. This includes Segments 5, 1, and 2 as the top three segments.

These segments provide gap closures to existing MBSST segments, provide access to numerous activity centers, connect to the coastal edge and beaches, and provide connectivity to other existing local and regional bikeway and pedestrian facilities. Segment 5 is particularly in a good position for implementation as it falls within the railroad right-of-way corridor with minimal private land interference or significant environmental impacts. Segments 4 and 3 may require a bit more lead time to resolve physical design constraints, ROW conflicts, complex coastal connections, and other budgetary challenges. However, these segments serve to close the gap in the overall trail network, which will help elevate their importance for funding.

TABLE 6.12 - Northern Reach Projects

Points	Segment	Length	Cost	Document Reference Page
33	5 - Davenport and Wilder Ranch	10.55 miles	$15,006,784	4-25 to 4-34
24	1 - Waddell Bluffs	1.06 miles	$107,120	4-5 to 4-8
24	2 - Greyhound Rock/Cal Poly Bluffs	4.77 miles	$308,032	4-9 to 4-14
21	4 - Davenport Landing/End of Railroad Tracks	3.64 miles	$2,685,424	4-21 to 4-24
15	3 - Upper Coast Dairies at Scott Creek	1.11 miles	$2,550,096	4-15 to 4-20
	TOTALS	**21.13 miles**	**$20,657,456**	



6.3.2 CENTRAL REACH PROJECTS

The Central Reach includes Segments 6-14. Table 6.13 prioritizes the segments by the number of points they received. The segments that received the most number of points are considered the most feasible for implementing within a short time frame. This includes Segments 7, 9, and 8 as the top three segments.

These segments provide gap closures to existing MBSST segments, provide access to numerous activity centers, connect to the coastal edge and beaches, and provide connectivity to other existing local and regional bikeway and pedestrian facilities. These segments are located in some of the most densely populated areas of the MBSST Network and provide ideal start/end points from residential neighborhoods. Some of the segments that received a lower number of points did so due to influences such as: high cost of construction, difficult or numerous rail crossings, narrow right-of-way, minimal access to greater population, and other limiting factors. However, these segments serve to close the gap in the overall trail network, which will help elevate their importance for funding.

TABLE 6.13 - Central Reach Projects

Points	Segment	Length	Cost	Document Reference Page
33	7 - Coastal Santa Cruz	3.10 miles	$11,218,016	4-39 to 4-44
31	9 - Twin Lakes	1.73 miles	$11,914,384	4-51 to 4-56
30	8 - Santa Cruz Beach Boardwalk	0.77 miles	$10,314,240	4-45 to 4-50
28	6 - Wilder Ranch Trailhead/Shaffer Road	1.49 miles	$3,114,224	4-35 to 4-38
28	11 - Capitola-Sea Cliff	3.20 miles	$8,868,336	4-61 to 4-66
24	10 - Live Oak/Jade St Park	1.50 miles	$9,707,440	4-57 to 4-60
22	14 - Seascape	1.17 miles	$2,079,872	4-79 to 4-82
17	13 - Rio Del Mar-Hidden Beach	0.85 miles	$3,306,112	4-73 to 4-78
17	12 - Aptos Village	1.14 miles	$10,831,696	4-67 to 4-72
	TOTALS	**14.95 miles**	**$71,354,320**	



6.3.3 WATSONVILLE REACH PROJECTS

The Watsonville Reach includes Segments 15-20. Table 6.14 prioritizes the segments by the number of points they received. The segments that received the most number of points are considered the most feasible for implementing within a short time frame. This includes Segments 18, 19, and 20 as the top three segments.

These segments provide gap closures to existing MBSST segments, provide access to numerous activity centers, and provide connectivity to other existing local and regional bikeway and pedestrian facilities. These segments are located in some of the most densely populated areas of the Watsonville Reach and provide ideal start/end points from residential neighborhoods and the city of Watsonville. Segments 16 and 15 may require a bit more lead time to resolving physical design constraints, ROW conflicts, bridge design and construction, and other budgetary challenges. However, these segments serve to close the gap in the overall trail network, which will help elevate their importance for funding.

TABLE 6.14 - Watsonville Reach Projects

Points	Segment	Length	Cost	Document Reference Page
26	18 - Watsonville Slough Open Space Trails	4.01 miles	$3,010,720	4-99 to 4-104
23	19 - Walker Street, City of Watsonville	0.47 miles	$381,280	4-105 to 4-108
20	20 - Pajaro River	0.74 miles	$3,009,136	4-109 to 4-112
20	16 - Ellicott Slough	2.66 miles	$3,613,600	4-89 to 4-92
20	15 - Manresa State Beach	1.37 miles	$4,735,680	4-83 to 4-88
14	17 - Harkins Slough	4.0 miles	$19,961,888	4-93 to 4-98
	TOTALS	**13.25 miles**	**$34,712,304**	

Trail facilities serve mobility and access needs and encourage non-motorized active transportation.

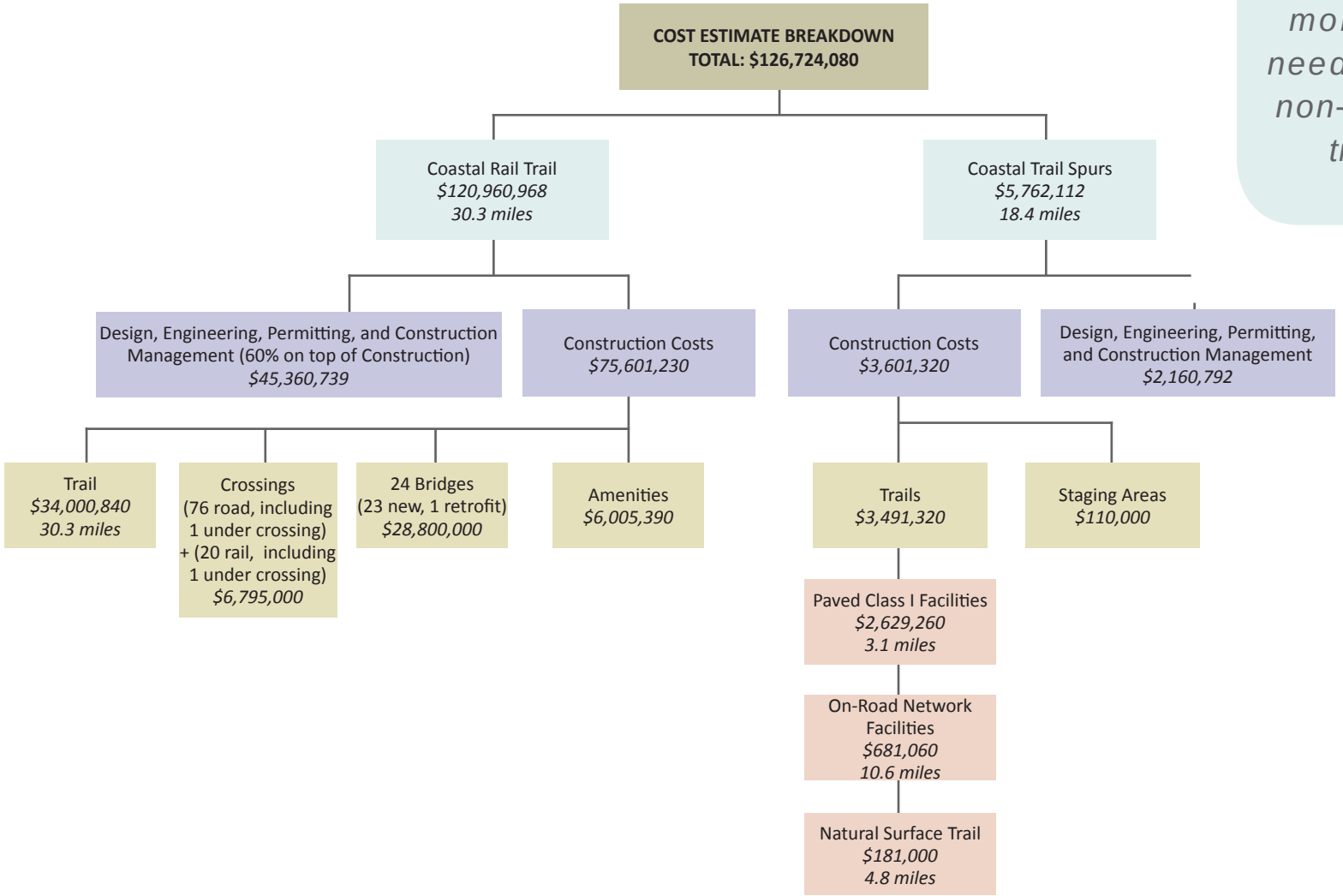


Figure 6.1 Summary of cost by trail facility type

PERMIT AND APPROVAL TYPES

A. Approval by the California Public Utilities Commission Rail Crossing Engineering Section;

B. Local jurisdiction adoption (including Santa Cruz County, Monterey County [for Segment 20] and cities of Santa Cruz, Capitola, and Watsonville);

C. Coastal Development Permit(s) from Santa Cruz County or California Coastal Commission;

D. Section 404 Permit(s) from the U.S. Army Corps of Engineers;

E. Section 1600 Permit(s) from the California Department of Fish and Game Wildlife;

F. Section 401 Water Quality Certification from the Regional Water Quality Control Board;

G. Approval by the U.S. Fish and Wildlife Service;

H. Approval by the California Public Utilities Commission Rail Crossing Engineering Section;

I. Caltrans Encroachment Permit(s) and/or Approval by Federal Railroad Administration.

J. Marine Mammal Protection Act Incidental Harassment Authorization Permit

6.4 PERMITS AND APPROVALS

Typically each segment or combination of segments that is pursued as a project will involve obtaining several permits and agreements. This section summarizes the types of permits and the basic process for each.

COASTAL DEVELOPMENT PERMIT - LOCAL GOVERNMENT OR COASTAL COMMISSION

Nearly any kind of improvement, even signs, requires a Coastal Development Permit (CDP). Signs and other rudimentary improvements can be approved administratively, but the projects contained in the Master Plan are significant and will require a full permit and hearing.

While Santa Cruz County will handle the majority of CDP applications, it is anticipated that CDPs will also be required for the Cities of Santa Cruz, Capitola, and Watsonville. In “original jurisdiction” wetland areas, CDP applications will be submitted directly to the Coastal Commission itself. These areas include the mouth of the San Lorenzo River, the Woods Lagoon (Harbor) area, Soquel Creek Lagoon in Capitola, and six other locations. The Coastal Commission will also hear appeals of a locally approved CDP. The legal standard of review for the delegated jurisdiction areas includes the respective Local Coastal Program (LCP) for each of the local governments, in addition to the public access and recreation policies contained in Chapter 3 of the California Coastal Act.

The standard of review for CDPs is the Coastal Commission-certified LCP, including the LCP’s Land Use Plan and implementing ordinances. Certain actions contemplated in this Master Plan were not anticipated at the time of original LCP certification, e.g., dual use of the rail corridor. These instances may trigger the need for LCP amendment before the CDP application can be considered.

For qualifying Public Works projects, the California Coastal Act also provides an alternative development review process that does not entail a locally issued CDP. This process requires prior Coastal Commission approval of a Public Works Plan (PWP). At Wilder Ranch State Park, for example, projects identified in the approved PWP do not need separate approval as CDPs. Although only rarely utilized, the PWP process is an available option for future state park, local park agency, utility agency, Caltrans, and local and regional transportation agency projects that are subject to the California Coastal Act.

The Coastal Zone Management Act (CZMA), enacted in 1972, is the corresponding federal legislation. In accordance with the CZMA, the California Coastal Act and the various Local Coastal Programs comprise the federally designated California Coastal Management Program (CCMP). In addition to its primary development review responsibilities under the California Coastal Act, an ongoing role for the Coastal Commission is to review federal agency actions for consistency with the CCMP.

Appeals of county and city actions, original jurisdiction CDPs, requests for approval of PWPs, Long Range Development Plans (applicable to University of California, Santa Cruz lands), federal consistency matters, and any submitted LCP amendment requests are heard by the Coastal Commission at its regularly scheduled meetings.



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."

STREAMBED ALTERATION AGREEMENT - CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE (CDFW)

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

CALTRANS ENCROACHMENT PERMIT - CALTRANS OR SANTA CRUZ COUNTY

Where the project involves work or permanent improvements within the state highway right-of-way or county road right-of-way, an encroachment permit from Caltrans or the county will be required. This typically requires a maintenance agreement with either a public agency or a non-profit organization to ensure that the MBSST Network facilities in the highway right-of-way will be adequately maintained.

RAIL CROSSING - CALIFORNIA PUBLIC UTILITIES COMMISSION (CPUC)

CPUC staff ensure that rail crossings are safely designed, constructed, and maintained, and CPUC authorization is required prior to constructing a new rail crossing or modifying an existing rail crossing. Commission authorization may be requested by filing a formal application with typical requests taking 45 days to 12 months for approval. There are 101 CPUC crossings along Coastal Rail Trail.

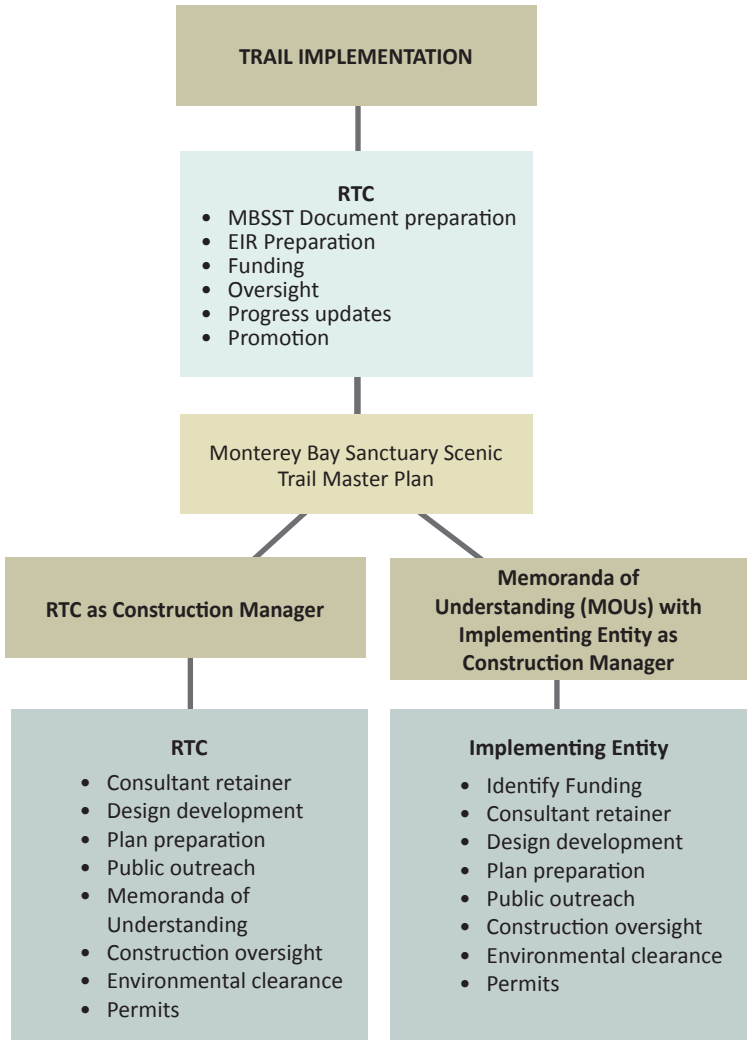
SECTION 401 WATER QUALITY CERTIFICATION - REGIONAL WATER QUALITY CONTROL BOARD (RWQCB)

Many MBSST Network projects 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.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

When federal funds are used for trail implementation, the NOAA may be involved with reviewing and commenting on environmental documentation for projects effecting marine mammals. This may lead to project mitigations and possibly require a Marine Mammal Protection Act Incidental Harassment Authorization (MMPA IHA) permit.

As owner of the Coastal Rail Trail corridor, the RTC will continue to provide regional policy and oversight for the MBSST Network.



6.5 ADMINISTRATION

Administration of the Coastal Rail Trail will involve both the RTC and the implementing entities. The RTC will remain the property owner, will continue to provide regional policy oversight for trails within the rail right-of-way corridor, and will coordinate with the rail operator. For segments or facilities on local roads or other public rights-of-ways, the appropriate implementing entity will maintain oversight and/or responsibility. RTC staff will provide a forum for public input throughout the trail development process, augmenting public input in the local planning and design process.

6.6 TRAIL IMPLEMENTATION

In regard to MBSST Network construction improvements, the main role of the RTC is to provide ongoing coordination services and assist with the funding for implementation of the MBSST Network. The RTC will take the lead in preparing memoranda of understanding (MOUs) between itself and implementing entities to clarify roles, responsibilities for design, development, construction, monitoring, and maintenance of the MBSST Network. The RTC may also act as a project manager.

The following describes the RTC's implementation responsibilities in greater detail:

- Funding - Upon identification of a segment, the RTC or lead agency will organize a funding strategy to design, construct, and maintain the segment. RTC staff will assist implementing entities in developing fundable projects, matching projects with funding sources, and helping to complete competitive funding applications. In some cases, RTC may act as the project sponsor or cosponsor.
- Progress - Through board presentations, website notifications, and other venues, the RTC will provide regular updates to the public regarding the status of the trail development.
- Oversight - The RTC will work closely with implementing entities, planning, parks, and Public Works staff to implement trail segments.
- Coordination - Finally, should the RTC incur additional operating expenses to coordinate implementation, maintenance, operation, and liability of the trail through agreements with implementing entities, funding will need to be identified.

The following describes implementing entities' responsibilities in greater detail:

- Once the segment as been identified and funded, the RTC and/or implementing entities may employ in-house staff or retain a qualified bicycle and pedestrian trail planning consultant to design the trail construction documents. After review by the RTC's advisory committees and implementing entities, boards and committees, the RTC will review and approve of all trail designs submitted by the implementing entities. The RTC Bicycle Committee will review design and engineering plans at the conceptual and detailed levels.
- In conjunction with implementing entities and/or trail planning consultant, a series of workshops should be conducted to introduce the project to the public and to identify any new information not included in this Master Plan.
- Implementing entities will be responsible for overseeing any necessary environmental clearance. The implementing entities will obtain the necessary planning, environmental, and development permits.
- The RTC may oversee project construction. This may be done in consultation with the implementing entity and/or trail planning or construction management consultant.

An implementing entity is defined as a city, county, RTC, state park, or other body.

6.7 TRAIL IMPLEMENTATION OVER JURISDICTIONAL BOUNDARIES

The 20 trail alignment segments incorporate logical start and end points based on physical and/or geographical features. In some instances, it was necessary to extend a segment across jurisdictional boundaries to the next significant physical feature. The RTC owns 31 miles of the approximately 32-mile-long Santa Cruz Branch Railroad corridor right-of-way and will work closely with the City of Santa Cruz, Santa Cruz County, City of Capitola, City of Watsonville, and State Parks where trail segments cross jurisdictional boundaries or when the segment is located solely within their jurisdiction.

The RTC owns 31 miles of the approximately 32-mile-long Santa Cruz Branch Railroad corridor right-of-way, allowing the RTC to act as the primary developer of the Coastal Rail Trail.

6.8 À LA CARTE TRAIL DEVELOPMENT (PARTIAL SEGMENT)

Due to costs or other considerations, it may not always be possible to develop an entire segment at once. In addition, the scope of grant funding may limit the types of improvements that may be funded. It is possible that only a portion of a trail segment, facility, or amenity may be funded/constructed at one time. For example, it is possible that just the Coastal Rail Trail portion of a segment may be funded while the on-street improvements may not or vise versa. Remaining facilities may be improved at a later date.





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This section addresses the strategies the Santa Cruz County Regional Transportation Commission could employ to manage, operate, and maintain portions of the project over time, working towards the completion of the Monterey Bay Sanctuary Scenic Trail Network.

SECTION SEVEN
OPERATION AND MAINTENANCE

7.1 OPERATIONS AND MAINTENANCE PLAN

The overall goal of the Operations and Maintenance (O&M) Plan is to ensure that the Monterey Bay Sanctuary Scenic Trail Network (MBSST Network) is operated in an efficient and safe manner for trail users and adjacent uses. As such, this O&M Plan identifies the responsibilities, tasks, procedures, estimated operation and trail maintenance costs, and other aspects related to the management of the MBSST Network. The Santa Cruz County Regional Transportation Commission (RTC) may adopt modified or additional policies as future conditions warrant.

The O&M Plan for the MBSST Network is an important component that will help ensure that safe and productive public facilities are retained over the next several decades. The O&M Plan is intended to provide key considerations required to operate and maintain the trail facilities and help minimize potential liability considerations associated with the multi-use path facilities. The O&M Plan program addresses specific strategies to guide the implementing entities to ensure that adequate standards are accounted for to protect the RTC's investment for the MBSST Network, as well as the users of the trail system.



Pavement markings will need to be reapplied on a periodic basis

7.1.1 OPERATIONS

Operational activities associated with the MBSST Network facilities will consist primarily of developing regulatory information to define the rules and regulations of the facilities, identifying methods for documenting and monitoring trail accidents, and establishing security measures aimed at reducing any negative activities along the trail facilities.



Signs should be kept clear of stickers and graffiti

Developing specific rules and regulations for the multi-use MBSST Network facilities is an important consideration in reducing potential conflicts along the trail. In addition, the following must be the responsibility of the implementing entities: monitoring of collisions (including identifying the type and primary cause[s] of collisions), and following through and rectifying any physical deficiencies associated with conflict points. Law enforcement and/or fire departments should be responsible for collecting collision information and identifying causes that may have contributed to the collision, and documenting this information appropriately.

Implementing entities should be given responsibility for identifying and improving physical or operational conditions that may have contributed to any conflict along the MBSST Network. In addition, the implementing entity typically should be responsible for warning users of any problems and obstructions, as well as closing the trail when conditions warrant. Educational materials, trailhead kiosks, signage, and educational events should also be considered as tools to inform trail users and reduce the potential for collisions.



Vegetation will need to be pruned to a minimum vertical clearance of ten (10) feet



Trail maintenance will include removing sand from paved surfaces



Litter receptacles should be emptied on a regular basis



Example of root intrusion on paved trail surface

7.1.2 MAINTENANCE

A comprehensive maintenance program for the MBSST Network should be considered an ongoing and long-term investment designed to protect the MBSST Network's integrity and functionality. There are several maintenance activities that should be considered. As defined in the O&M Plan, each activity has an estimated frequency schedule that should be initiated and refined, and a primary agency that is charged with leading the maintenance activity. Many of the maintenance activities defined in the O&M Plan are dependent on the final design and implementation of the trail amenities, materials, degree of landscape improvements, and amount of support infrastructure that is developed along the MBSST Network. The level of maintenance may be subject to funding availability.

The following list indicates general maintenance activities anticipated for the MBSST Network:

- Shoulder and grass mowing
- Tree pruning and fallen tree removal
- Weed control
- Tree, shrub, and grass trimming and fertilization
- Plant irrigation
- Irrigation line maintenance and sprinkler replacement
- Drainage system cleaning
- Pavement sealing, repaving, and pothole repair
- Pavement sweeping and marking replacement
- Bollard replacement
- Graffiti removal
- Trash disposal
- Fountain and restroom cleaning/repair
- Sign replacement and repair
- Fence and barrier repair/replacement
- Lighting replacement and repair
- Furniture maintenance
- Emergency telephone maintenance
- Bridge inspection

7.1.3 SAFETY

MBSST Network user safety is considered a significant element in the O&M Plan. The MBSST Network can expect trail user conflicts to occur even though the MBSST Network is a well-designed and constructed corridor with a pre-existing defined rail right-of-way, a limited number of street intersection crossings (many of which are low-traffic volume neighborhood streets), and adequate easement width to ensure open and visual connectivity. The fact that the trail will include a two-way multi-use pathway designed to separate trail users from vehicular traffic is exceptional. Specific safety concerns are addressed in various sections throughout the Master Plan.

MBSST NETWORK PATROLS

Either professional or volunteer trail patrols may be used to augment police patrol for the MBSST Network. As a rule of thumb, a multi-use trail should employ one dedicated person-hour per day for every five miles of actively used trail, and 0.5 person-hours per day for every five miles of low-use trail. This figure is likely to vary seasonally and by day of week.

SIGNAGE

Installing key regulatory signs at regular intervals along the trail will help users internalize the rules. This will include “Bicyclists Yield to Pedestrians,” “Pass on the Left,” “Slower Traffic Stay Right,” yield or stop signs, as well as preferred speed indicators. Enforcement by repetition may be the most inexpensive and effective kind. Refer to other sections of the MBSST Master Plan and Manual of Uniform Traffic Control Devices (MUTCD) for appropriate signage, markings, and locations.

FENCING FOR SECURITY

- Fencing will be provided as shown in Section 5.4.1.
- To mitigate negative aesthetic impacts of the fence, plant material such as vines and/or climbing ivy and other plants may be used. Any proposed plant material along the trail will be selected in collaboration with adjacent property owners on a case-by-case basis.
- Without a specific request by an adjacent property owner, fencing will be evaluated for each segment of the trail. Property owners may request to omit fencing along their frontage, but the trail manager may deny a request if it is deemed that fencing is necessary. Refer to fencing design in Section 5.

EMERGENCY CALL BOXES

- Solar-powered emergency phones will be installed on an as-needed basis.



Security patrol on bikes



Emergency call station

7.2 TRAIL OPERATION AND MANAGEMENT

While the implementing entities are primarily responsible for the management of the trail facilities, there should be one point-of-contact (the trail manager) who will be made available to the general public ...

... identify the agency most appropriate to house a Trail Management Program and how to fund a trail manager, trail ranger, and/or an adopt-a-trail coordinator position.

While the implementing entities are primarily responsible for the management of the trail facilities, there should be one point-of-contact (the trail manager) who will be made available to the general public within each jurisdictions for general inquiries and management. The RTC board should work to identify the agency most appropriate to house a Trail Management Program and how to fund a trail manager, trail ranger, and/or an adopt-a-trail coordinator position. The trail manager will ensure that each element described in the O&M Plan is completed.

7.2.1 TRAIL MANAGER RESPONSIBILITIES

The following list represents the major tasks that may be the responsibility of the trail manager:

- Coordinate development of the MBSST
- Organize and coordinate O&M Plan
- Implement O&M Plan and seek adequate funding
- Obtain bids and manage contracts for maintenance and improvements
- Monitor security and safety of the trail
- Oversee maintenance and rehabilitation efforts
- Manage and respond to issues and incidents
- Act as the local trail spokesperson with the public, including elected officials, and respond to the issues and concerns raised by trail users
- Develop and manage an emergency response plan in coordination with local fire and police
- Maintain records
- Manage an operation and maintenance budget
- Pursue outside funding sources

7.2.2 TRAIL RANGER RESPONSIBILITIES

The following list represents the major tasks that may be the responsibility of the trail ranger:

- Trail patrol
- Ensure temporary trail closures gates are open or closed, should they be needed
- Ensure temporary trail closure signage is in place
- Ensure maintenance needs are addressed



7.2.3 LIABILITY AND INDEMNIFICATION

In general, liability risks for neighbors of multi-use paths are probably reduced from current levels by the recreational use statute and other statutes described below. However, there is always the potential condition of liability for implementing entities that own and operate public use facilities such as a multi-use pathway system. To minimize this risk, the implementing agency should adhere to the risk management strategies identified in Section 7.2.7. Implementing entities could consider obtaining insurance to provide the necessary liability protection.

7.2.4 INSURANCE

It is assumed that the trail will be covered under existing insurance policies of implementing entities or the RTC. This will be verified for each segment as implementation arrangements are made. However, while insurance may cover costs associated with lawsuits, it neither prevents suits nor minimizes the risk of court judgments that can cost the implementing entity a considerable sum of money.

7.2.5 GOVERNMENTAL TORT CLAIMS ACT

Government Code Section 831.4 addresses claims made against public entities for injury on trails. It states:

> "A public entity, public employee, or a grantor of a public easement to a public entity for any of the following purposes, is not liable for an injury caused by the conditions of:
>
> (a) Any unpaved road which provides access to fishing, hunting, camping, hiking, riding, including animal and all types of vehicular riding, water sports, recreational or scenic areas and which is not (1) a street or highway, or (2) a county, state or federal highway, or (3) a public street or highway of a joint highway district, boulevard district, bridge and highway district or similar district formed for the improvement or building of public streets or highways.
>
> (b) Any trail used for the above purposes.
>
> (c) Any paved trail, walkway or sidewalk on an easement of way which has been granted to a public entity, so long as such public entity shall reasonably attempt to provide adequate warnings of the existence of any condition of the paved trail, walkway, path or sidewalk which constitutes a hazard to health or safety. Warnings required by this subdivision shall only be required where pathways are paved, and such requirement shall not be construed to be a standard of care for any unpaved pathway or roads."





Trail/road surveillance camera

7.2.6 CALIFORNIA CIVIL CODE SECTION 846

Government Civil Code Section 846 addresses claims made against property owners. It is summarized as follows:

> "An owner of any estate or any other interest in real property, whether possessory or nonpossessory, **owes no duty of care to keep the premises safe for entry or use by others for any recreational purpose** or to give any warning of hazardous conditions, uses of, structures, or activities on such premises to persons entering for such purpose...
>
> A "recreational purpose," as used in this section, includes such activities as ... hiking... riding, including animal riding, ... and all other types of vehicular riding...sightseeing, picnicking, nature study, nature contacting ... and viewing or enjoying historical, archaeological, scenic, natural, or scientific sites."



Automated information kiosk concept

7.2.7 RISK MANAGEMENT STRATEGIES

To minimize liability, it is important to adhere to all applicable laws and regulations. The design standards for the MBSST Network should be consistent with the Caltrans Highway Design Manual and the AASHTO Guide for the Development of Bicycle Facilities. Other practical measures include the following:

- Post and enforce trail regulations
- Post warning signs for known hazards that are not easily identified
- Prepare a trail maintenance plan and keep accurate maintenance records
- Inspect the trail for hazards
- Evaluate hazards and maintenance problems reported by trail users and address with appropriate measures
- Ensure the provision of adequate emergency access points to the trail
- Accommodate emergency vehicles when the trail is more than 500 feet from public roads
- Illuminate entry points and street-grade crossings
- Trim vegetation to maximize visibility and utility
- Provide bicycle racks at key destination points that allow for both frame and wheels to be locked; consider bicycle lockers at key intermodal locations and/or destination sites
- Provide the County Fire Department and law enforcement with a map of the MBSST Network, along with access points and keys or combinations to gates and bollards
- Enforce speed limits and other rules of the road

- Plant or modify landscaping so as to reduce the possibility of “hiding” places for illegal activities
- Incorporate screen landscaping such as climbing vines adjacent to private fencing.
- Choose trees that avoid excessive leaf litter, minimize root invasion, are of an evergreen variety, and are planted a minimum of ten (10) feet from residential property lines where possible
- Maintain shrubs below three (3) feet in height where law enforcement requires visual access adjacent to public streets

Fencing and other measures may be incorporated into the trail to screen or separate private property from users of the right-of-way.

7.2.8 PRIVATE PARTY PROTECTION

While the Coastal Rail Trail will be located along an existing, publicly owned right-of-way corridor, a number of private properties are located directly adjacent to the proposed MBSST Network right-of-way. Neighbor concerns regarding path location near their properties typically include a loss of visual privacy and concerns about crime, vandalism, noise, and fire. Criminal activity is diminished along a path that is well-planned, -designed, -operated, -maintained, and as a result, well-used.

Project planning and design should consider measures addressed in Section 7.2.7 to mitigate impacts to private properties.

7.2.9 EMERGENCY VEHICLE ACCESS

The MBSST Network should be designed to ensure it can accommodate all emergency (police and fire) vehicles that might need to get on the trail. If removable bollards are installed, all appropriate emergency response agencies should have direct access. The MBSST Network itself is generally accessible from adjacent public rights-of-way. However, where it is not, a minimum ten (10) feet of pathway clearance and twelve (12) feet of vertical clearance should be provided.



Constructing a trail along an active railroad doubles the value a community derives from the rail corridor and provides citizens with greater transportation choices.

7.3 TRAIL AND RAIL OPERATION INTERFACE

7.3.1 DESIGN

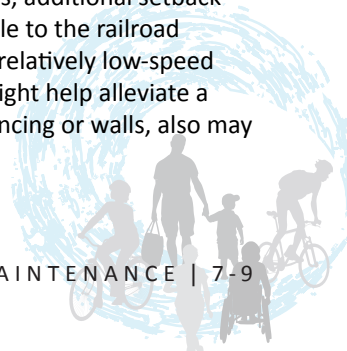
There are few universally accepted national standards or guidelines to dictate trail facility design adjacent to active railroad tracks. This presents trail designers with many design opportunities. However, they should work closely with the railroad operator and maintenance staff to achieve a suitable design. Well-designed trails can meet the operational requirements of railroads, often providing benefits in the form of reduced trespassing and dumping. Additional benefits to the railroad from a trail include increased rider access to stations, the potential for increased ridership, as well as channelization of crossings by using fencing to direct users to appropriate crossing locations. Appendix H includes the California Rails-with-Trails Survey Along Active Rail Lines, and the U.S. Department of Transportation Rails-to-Trails Lesson Learned documents, which discuss in detail the design and benefits of rail trails.

7.3.2 SETBACK DISTANCE

The term "setback" refers to the distance between the edge of a paved multi-use path and the centerline of the closest active railroad track. Although paved multi-use paths are currently operating throughout the United States along train corridors of varying types, speeds, and frequencies, there is no consensus on an appropriate setback recommendation. Therefore, it is up to the rail operator and trail designer to come to an agreement based on the following factors:

- Type, speed, and frequency of trains in the corridor
- Separation technique
- Topography
- Sight distance
- Maintenance needs
- Historical challenges

Based on discussions with Santa Cruz and Monterey Bay Railway (a subsidiary of Iowa Pacific Holdings) and the understanding that every trail segment is different, the setback distance should be determined on a case-by-case basis. The minimum setback distance ranges from eight feet six inches (8' 6") to twenty-five feet (25'), depending on the circumstances. In many cases, additional setback distance may be recommended. The lower setback distances may be acceptable to the railroad operator or agency and design team in such cases as constrained areas, along relatively low-speed and -frequency lines, and in areas with a history of trespassing where a trail might help alleviate a current problem. The presence of vertical separation, or techniques such as fencing or walls, also may allow for a narrower setback.



7.4 TRAIL AND AGRICULTURAL OPERATION INTERFACE

From the onset of the MBSST Network planning process, a key focus was to accurately identify and resolve agricultural land use compatibility issues. Several methods of information collection and issue resolution relating to agricultural operations were employed during the trail planning process. Adjacency issues faced by the agricultural community may be addressed through preventative design measures presented below. Some of the proposed measures are design-related and others are operational in nature (a function of the ongoing management of the trail). Potential benefits to adjacent agricultural operations include new fencing, signage restricting access, and decreased maintenance responsibilities. Dogs may be prohibited in sections where agricultural operations may be compromised. It should be noted that the trail is considered a transient (i.e., for persons passing through) recreational use, similar to a public road or sidewalk, and is not subject to setback buffers.

Potential benefits to adjacent agricultural operations include new fencing, signage restricting access, and decreased maintenance responsibilities.

7.4.1 PESTICIDE SPRAYING AND BURN ACTIVITY

Notices Posted:

- Trail entrances will be posted with notices of ongoing agricultural activities stating that the trail user agrees to using the trail at his/her own risk.
- Trail users will be advised that agricultural operations will be occurring and may include pesticide spraying, agricultural dust and debris, and burning activities in accordance with state and local laws and ordinances.
- Notices will state that the trail may be subject to closure without notice to accommodate such activities.
- Signage will direct trail users to nearby restroom facilities.

Trail entrances will be posted with notices of ongoing agricultural activities ...

Ability for Trail Closures:

- The trail will be designed with the ability for its physical closure (of isolated segments) in the event it becomes necessary to facilitate permitted spraying.
- Agricultural operators are responsible for notifying the Agricultural Commissioner of any impending spraying activity.
- The trail manager will work the Agricultural Commissioner and operators to close trails or place “Use at Your Own Risk” advisory signage, as needed.

The Santa Cruz County Agricultural Commissioner’s office is responsible for issuing pesticide spraying permits and regulating the use of pesticides and other agricultural chemicals. The implementing entity will work with the Agricultural Commission’s office to minimize impacts to agricultural operators because of the development of the adjacent trail as long as pesticides and other agricultural chemicals are applied in compliance with the label, worker safety requirements, weather conditions, drift restrictions, and all other safety requirements as required by federal, state, and local laws.

7.5 TRAIL ADJACENT TO PRIVATE PROPERTY OWNERS

7.5.1 FACILITATE COMMUNICATION WITH ADJACENT PROPERTY OWNERS

The trail manager will provide adjacent property owners with contact information for each jurisdiction and the departments that handle routine trail maintenance. Adjacent property owners will also be informed of any changes in trail operations and any major trail rehabilitation or expansion projects.

7.5.2 RESPOND TO ADJACENT PROPERTY OWNER CONCERNS

Adjacent property owners should be treated like clients. Responding effectively to problems they identify lets them know that they are important to the successful operation of the MBSST Network.

7.5.3 KEEP THE TRAIL WELL-MAINTAINED

Keeping a well-maintained trail is probably the best thing an agency can do to satisfy adjacent property owners. The local agency shall consider the operation of driveways that cross the trail to access property and should keep landscaping in those areas well-trimmed to prevent any problems from developing. Graffiti should be removed as quickly as possible.

7.5.4 DEVELOPMENTS ON ADJACENT PROPERTIES

Changes in land use adjacent to the MBSST Network can have a significant impact on the quality of the trail experience. Incompatible uses can create hazards, complicate operations, and affect the aesthetic and recreational appeal of a trail. Land use can be controlled so long as it is consistent with existing zoning laws. The key is to:

- Ensure that the County and City Planning Departments keep the trail manager informed of land use and building permit applications.
- Work with developers early in the planning process to make sure the interface between development and the trail is appropriately designed.



7.6 OPERATING RESPONSIBILITIES AND PROCEDURES

The trail manager should coordinate with each department, organization, or person who will be responsible for activities involved in operating and maintaining the MBSST Network. This includes documents for landscape maintenance and scheduling, sweeping crews for routine trail surface cleaning, traffic operations division for sign replacement and intersection traffic control, and the police and fire departments for developing emergency response procedures. The following topics address specific operating procedures and responsibilities.

7.6.1 DEVELOPING TRAIL USE REGULATIONS

The purpose of trail regulations is to promote user safety and enhance the enjoyment of all users. The trail should include posted trail use regulations at trailheads and key access points before it is opened. Trail maps and informational materials should include these regulations. It should be established that the trail facility is a regulated environment like other public parks and rights-of-way.

Below are recommended trail regulations for adoption and enforcement by the implementing entity:

- Hours of use: dawn to dusk where lighting cannot be installed. However, every attempt should be made to keep the trail open 24 hours a day
- Motor vehicles, except service or emergency vehicles, are prohibited
- Power-assisted mobility impairment-devices, such as wheelchairs are allowed
- Electric bikes and Segways are permitted, unless prohibited by local ordinance
- Skateboards are allowed
- In-line skates and roller skates are allowed
- Horses are only permitted on Segments 5 and 6, and on state park property (where expressly allowed)
- Keep to the right, except when passing
- Yield to on-coming traffic when passing
- Bicycles always yield to pedestrians
- Give a vocal warning or use a bell when passing
- Pets must always be on a leash no more than six feet in length
- Dog owners must clean up after their dogs
- Travel no more than two abreast
- Littering is prohibited



- No amplified sound, e.g., portable “boom boxes” (except with permit for special events)
- Alcoholic beverages are not permitted on the trail
- Do not wander off the trail onto adjacent properties
- Do not stand in the middle of the trail when stopped
- 15 mph speed limit
- 10 mph speed limit in special zones of convergence, e.g., bridge crossings and staging areas
- Maintenance vehicles should yield to trail users
- Trail regulations should conform to existing implementing entity and state regulations, ordinances, and laws
- Be alert and attentive

7.6.2 MBSST TRAIL CLOSURES

The MBSST Network, or sections of the trail, may be closed from time to time such as during periodic maintenance of the trail. Users should be warned of impending trail closures, and given adequate detour information to bypass the closed or unfinished section of trail.

Recommended procedures that should be followed prior to the trail closing, including a variety of means to inform the public, are listed below:

- The trail manager will make every effort to provide at least 48 hours advance notice to the affected agencies to post signs at all trail entrances on the impacted segments to be closed indicating the duration of the closure, do everything possible to keep the public informed, and to keep the closure period as short as possible.
- The local agency will physically close off the trail that is being closed with barriers, and post “Trail Closed” signs.
- The local agency will provide “Detour” signs where trail users can reasonably be rerouted to other routes. If no reasonable alternate routes are available, the trail should have an “End Trail” sign and provide access to the street and sidewalk system.
- Where re-paving is not 100% complete, provide warning signs for bicyclists to slow down or dismount where needed.



7.7 TRAIL MAINTENANCE PLAN

Proper maintenance of the trail is important for the productive use of the facility and the protection of the financial investment the RTC, implementing entities, and the public have made in the MBSST Network. The following is a list of recommended trail maintenance activities that may supplement existing local practices:

TABLE 7.1 - Trail Maintenance Activities and Frequencies

Item	Estimated Frequency
Shoulder and grass mowing	As needed
Tree pruning and fallen tree removal	As needed
Weed control	Monthly - as needed
Tree, shrub, and grass trimming/fertilization	5 months - 1 year
Plant irrigation/watering*	Weekly - monthly, as needed
Irrigation line maintenance/sprinkler replacement	1 year
Drainage system cleaning	1 year
Pavement sealing/repaving	30-40 years
Pavement sweeping	As needed
Bollard replacement	As needed
Graffiti removal	As needed
Trash disposal	Weekly
Fountain/restroom cleaning/repair	Monthly, repairs as needed
Sign replacement and repair	1-3 years
Fence/barrier repair/replacement	Immediate, repairs as needed
Lighting repair/replacement	As needed
Furniture maintenance	1 year
Emergency telephone maintenance	As needed
Pothole filling	As needed

*If feasible, low-water use and low-maintenance plant materials should be used for the MBSST Network.

Many of these maintenance items are dependent on the type and amount of landscaping and supporting infrastructure that is developed along the MBSST Network. It is recommended that the trail manager coordinate maintenance activities so as to minimize impacts to trail users and to maximize cost efficiencies.



Funding for operating and maintenance of the MBSST Network, including related administrative costs, will most likely need to be programmed annually through local jurisdictions' or implementing agencies' general fund.

7.8 ADMINISTRATION AND COST

The MBSST Network will have specific administrative, legal, operations, and management costs associated with ongoing maintenance and operation. Funding for operating and maintenance of the MBSST Network, including related administrative costs, will most likely need to be programmed annually through local jurisdictions' or implementing agencies' general fund. Additional sources of operation and maintenance funding may be provided through lease agreements for communications infrastructure, vendors, etc.

7.8.1 ADMINISTRATIVE COSTS

The trail management responsibility should be placed with a staff person in the agency identified by the RTC. This trail manager will have widespread responsibility, ranging from managing and monitoring maintenance activities, coordinating with adjacent property owners, responding to and monitoring reported problems, maintaining records, managing a budget, pursuing outside funding sources, and coordinating with other cities along the trail (full range of trail manager responsibilities is identified in Section 7.2.1). Initially, it is projected that this responsibility will take up to 10% to 30% of a full-time employee's time at a fee of $20,000 to $50,000 annually. Funding for this proposition will need to be identified. As additional trail miles are built and the geographic reach expands, a full-time trail manager may need to be employed.

7.8.2 DESIGN, ENGINEERING, AND CONSTRUCTION MANAGEMENT COSTS

When seeking segment funding, the implementing agency must incorporate design, engineering, and permitting fees into the overall cost estimate. These fees, which are generally determined as a percentage of the project construction cost, are a necessary component of an accurate cost estimate. Fees typically are around 15% of the total project hard costs (the cost of construction materials and labor). Of the total project hard costs (the cost of construction labor and materials), fees typically in the range of 15% are needed for design and engineering, 10% for environmental permitting, and 15% for construction management. Typically, an additional 20% contingency is set aside for construction overruns. Construction administration costs are typically budgeted on a per-month basis ranging from $2,000-$3,000 per month depending on the scale of the construction project.



7.8.3 MAINTENANCE COSTS

The estimated annual cost for maintenance of the MBSST Network as described in Table 7.1 will be approximately $6,000-$10,000 per mile per year. This depends on the intensity of design amenities and frequency of operation and maintenance that is provided. There are likely to be economies of scale as more trails are completed, and based on the length of the facility.

Implementing agencies will be responsible for any structure, culvert, or natural condition within its easement, regardless of whether it is a pre-existing condition or not. Existing bridge structures along the trail shall be modified to provide safe access for trail users, yet care should be taken to minimize impacts to the historic integrity of the bridges as defined.

7.8.4 OPERATIONS AND MAINTENANCE COST-SAVING OPTIONS

- Share maintenance equipment with local jurisdictions and other city, county, and state parks.
- Create an adopt-a-trail program.
- Involve local non-profit groups in a volunteer patrol program or fundraising efforts to support operation and maintenance.

7.8.5 LEGAL COSTS

While liability is not expected to be a significant problem based on research of existing similar trails, there may be additional legal costs in the form of insurance premiums, litigation, and settlements. For the purposes of this trail, it is recommended that the implementing agencies use the same legal cost factor that it uses for any new facility, such as a park or school, either on an acreage basis or user-day basis.



The RTC may implement and maintain the trail, but it may also do so through arrangements with entities interested in implementing the trail. The arrangements could be formalized through memoranda of understanding (MOUs).

7.9 IMPLEMENTATION MEMORANDA OF UNDERSTANDING

RTC acquired the title to the railroad right-of-way corridor from the Union Pacific Railroad. RTC's primary obligation and responsibility, as the property owner, through the use of state funds, is to maintain a right-of-way for existing and future rail service. Because there is wide community interest in also using the railroad right-of-way-for a bicycle and pedestrian trail, the RTC will also use the right-of-way to provide a multi-use tail. The RTC may implement and maintain the MBSST Network, but it may also do so through arrangements with entities interested in implementing the trail. The arrangements could be formalized through memoranda of understanding (MOUs). The MOUs should identify a bicycle and pedestrian path as a future use of the right-of-way, and also address issues such as finances, administrative structure, maintenance, encroachment permits, leases, licenses, and easements, and other appropriate items. The MOUs will serve as the underlying legal framework to help guide the development and management of the bicycle and pedestrian trail along the railroad right-of-way.





Seacliff Beach Pier and the Palo Alto Cement Ship in Aptos
This two-mile, sandy beach includes camping, swimming, fishing, bicycling, rollerblading, and many other recreational activities



APPENDIX A

Existing Jurisdictional Goals

Existing implementing Entities contained within this Appendix are from documents with specified goals, objectives, and policies. Therefore, this list does not contain all of the existing documents contained within Section 2 and Appendix B of this Master Plan.

REPORT NAME	DATE	GOALS
Aptos Village Plan	1/23/2010	No clearly defined goals. See document for Core Elements and Implementation
Arana Gulch Draft Master Plan	6/2010	• Public Use • Provide a trail system that allows public access within habitat areas in a manner that does not result in significant degradation of habitat values. • Provide trail connections through Arana Gulch that provide access from adjacent communities to the coastline and the Monterey Bay National Marine Sanctuary Trail. • Provide multi-use trail connections that would comply with the American with Disabilities Act (ADA) requirements, and provide pedestrian, wheelchair and bicycle access. • Provide areas for nature viewing and interpretive displays to complement and blend with the natural environment. • To protect sensitive habitat areas, restrict dogs to on-leash use at all times on designated trails. • Close unauthorized, non-designated pathways. • No new vehicle parking with the Arana Gulch boundaries will be provided, as there is adequate existing parking near the entrances.
California Coastal Act		Legislative findings and declarations; goals • The Legislature further finds and declares that the basic goals of the state for the coastal zone are to: • (a) Protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources. • (b) Assure orderly, balanced utilization and conservation of coastal zone resources taking into account the social and economic needs of the people of the state. • (c) Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles and constitutionally protected rights of private property owners. • (d) Assure priority for coastal-dependent and coastal-related development over other development on the coast. • (e) Encourage state and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the coastal zone.

REPORT NAME	DATE	GOALS

City of Capitola Bicycle Transportation Plan	2/10/2011	• Improve bicycle circulation, connectivity and access
		• Increase bicycle ridership and replace motor vehicle trips with bicycle trips. Achieve a city-wide goal of 5% of all trips and 20% of work trips made by bicycle by 2020.
		• Improve bicycle safety
		• Design a city-wide multi-modal transportation system that accommodates bicycles Maintain new and existing bicycle infrastructure
		• Goal 1: Improve bicycle circulation, connectivity and access
		  • Objective 1.1: Construct and mark bicycle routes in conformance with the County-wide Bicycle Route Signage Program and state standards, as outlined in the Manual of Uniform Traffic Control Devices (MUTCD) and the California Supplement.
		  • Objective 1.2: Locate bikeways as bicycle lanes adjacent to the main traveled way unless a more direct and useful separated bicycle path can be provided. Where bicycle lanes are not possible due to right-of-way restrictions, etc., include a wide curb lane, or shared lane pavement markingObjective 1.3: Coordinate with other jurisdictions to adopt a system of bikeways that complements the County system.
		  • Objective 1.4: Coordinate the planning, design and construction of bikeway facilities with all implementing agencies.
		  • Objective 1.5: Install in all existing and proposed signalized intersections inductive loop sensors or video sensors (devices to trigger traffic signal phasing) that are positioned to detect bicycles, and are appropriately stenciled.
		  • Objective 1.6: Design regional bicycle routes to connect residential areas with major activity centers (employment, educational, civic, etc.) by including bikeway network development as part of the Capital Improvements Program to prioritize construction or retrofits for completion of specific routes.
		  • Objective 1.7: Build all bridges with enough width to safely accommodate bicycle travel. Comply with or exceed the Caltrans standard requirement of a 4-foot (1.2m) minimum bicycle lane, or a 5-foot lane if a gutter is present.
		  • Objective 1.8: Where possible exceed the minimum lane width for Class II bicycle lanes to allow more bicycle traffic and separation from parked cars and automobile traffic.
		  • Objective 1.9: Improve the flow of bicycle traffic through the Capitola Village.

REPORT NAME	DATE	GOALS

		• Goal 2: Increase bicycle ridership and replace motor vehicle trips with bicycle trips. Achieve a city-wide goal of 5% of all trips and 20% of work trips made by bicycle by 2020.
		  • Objective 2.1: Require that event sponsors provide safe bicycle access and secure bicycle parking at special events
		  • Objective 2.2: Encourage employers to offer incentives to employees who ride a bicycle instead of driving a car to work.
		  • Objective 2.3: Encourage the provision of bicycle racks, showers, lockers, and other storage facilities at destinations, where practical and economically feasible, when reviewing discretionary permits for major activity centers and new developments.
		  • Objective 2.4: Plan a bikeway network to integrate with other modes of transportation (train or transit stations and Park and Ride lots, etc.) in order to encourage and support the use of bicycling and reduce the use of motor vehicles.
		  • Objective 2.5: Provide convenient, secure bicycle parking at private and public facilities and commercial districts through parking ordinance requirements.
		  • Objective 2.6: Provide bicycle parking stands (facilities) at all primary public access points and at appropriate neighborhood access points.
		  • Objective 2.7: Identify several street parking spaces located in front of commercial and retail stores to be converted into bicycle parking.
		  • Objective 2.8: Increase modal split of Capitola employee commuter trips to 25% of all trips made by bicycle, transit, walking or carpool by 2020.
		  • Objective 2.9: Replace Capitola vehicle fleet trips with bicycle trips when feasible.
		  • Objective 2.10: Work with New Brighton Middle School and local Bicycle advocacy groups to establish a year-round incentive and tracking program for students to encourage active transportation.

REPORT NAME	DATE	GOALS

		• Goal 3: Improve bicycle safety
		  • Objective 3.1: Support bicycle rider safety training programs for elementary and middle school students.
		  • Objective 3.2: Encourage establishments that teach driver education to include lessons on sharing the road and the rights and responsibilities of bicyclists according to the California Vehicle Code.
		  • Objective 3.3: Continue to support stable funding for local bicycle safety and education programs.
		  • Objective 3.4: Require that contractors and utility companies doing roadside work maintain the road edge in the best possible condition during construction and adhere to the "Guidelines to Protect the Safety of Bicyclists, Pedestrians, and Disabled Travelers during Road Construction."
		  • Objective 3.5: When feasible, avoid lengthwise concrete seams in bicycle lanes and require prompt repair (including pavement) and restriping of bicycle lanes before the project is considered complete.
		  • Objective 3.6: Limit on-street parking on arterial and collector streets, encourage parking alternatives, pursue off-street parking development as methods to provide Class II bicycle lanes and do not eliminate joint bicycle lanes/parallel shoulder parking unless the new bicycle lanes are effectively as wide or wider.
		  • Objective 3.7: Limit the number of driveways when planning new commercial and multiple-family residential developments in order to reduce automobile-bicycle conflicts.
		  • Objective 3.8: Maintain adequate outside travel lane width (14 feet) when no bicycle lane can be accommodated.
		  • Objective 3.9: Encourage bicyclists to take the lane on Class III bikeways by exceeding the minimum standard distance sharrows shall be placed from the curb as defined in the Manual of Uniform Traffic Control Devices (MUTCD) Section 9C.07.
		  • Objective 3.10: Encourage car parking arrangements which increase the visibility of pedestrians and bicyclists. Consider reverse angled parking.
		  • Objective 3.11: Remove botts dots from streets during scheduled road maintenance.

REPORT NAME	DATE	GOALS

		• Goal 4: Design a city-wide multi-modal transportation system that accommodates bicycles
		  • Objective 4.1: Encourage other modes of transportation (buses, trains, etc.) to plan for, and provide space for carrying recreational and commuting bicyclists on public transportation systems. Include secure bicycle parking facilities with development of transit shelters incorporating Santa Cruz County Transit District design approval.
		  • Objective 4.2: Include bicycle access in all fixed guideway planning and design.
		  • Objective 4.3: Make provisions for bicycle commuter facilities in any and all future planning documents regarding the Capitola Mall and Transit Station.
		  • Objective 4.5: Require new recreation and visitor-serving developments in the Coastal Zone to support alternative transportation to the beaches and other tourist destinations.
		  • Objective 4.6: Ensure that all major corridors provide a choice of transportation modes and are designed with multi-model amenities such as bus stops, turnouts and shelters, and bicycle lanes and sidewalks.
		• Goal 5: Maintain new and existing bicycle infrastructure
		  • Objective 5.1: Ensure that bicycle facilities remain in a usable condition through regular maintenance and sweeping.
		  • Objective 5.2: Retain all existing bikeways along with roadway improvement projects.
		  • Objective 5.3: Secure a portion of local and State funding for bikeway maintenance.
		  • Objective 5.4: Maintain bicycle parking facilities.

REPORT NAME	DATE	GOALS
City of Capitola General Plan	9/28/1989	**Bicycles** • Objective: To promote a safe, efficient bicycle system as a viable mode of transportation within the City of Capitola. To the extent possible provision for bicycles will be made on all major roads in the City. The Bikeway Plan recommended is intended to connect to the County bikeway system and to provide a system through the City and to its major attraction points. • Policy 30-Support the development of the bikeway system as planned. • Policy 31-Every effort shall be made to provide for bicycles along all arterial and minor arterials. The desired objective is a Class II bikeway as depicted on page 69. **Implementation** 1. Develop a system of bikeways including bike lanes and bike routes along designed corridors as shown in the Capitola General Plan Bikeway Plan Map. Responsibility: Public Works 2. Bicycle safety efforts will be continued through the City Police Department and supported at the County level. 3. Bicycle facilities will be maintained by the Public Works Department. 4. Bicycle facility development will be included in the Capital Improvement Program by the Public Works Department. 5 Signalized intersections along designated bikeways shall be designed to be sensitive to bicyclists, where necessary. Responsibility: Public Works Department. 1. Policy 32-Require bicycle parking or storage facilities at new private and public developments where appropriate. 2. Policy 33-Give equal consideration to bicycles moving through the village areas, as is given automobiles. 3. Policy 34-Bicycle facilities are not recommended on collector streets unless traffic volumes are close to the limits of collector street standards and/or bicycle traffic is estimated will be high or related to school or park access.

REPORT NAME	DATE	GOALS
City of Capitola Certified Local Coastal Program (LCP)	Amended 10/2005	• POLICY A: The City of Capitola shall adopt the policies of the Coastal Act (State Law - Public Resources Code [PRC] Sections 30200-30264) as the guiding policies of this Land Use Plan. If there is a need for interpretation beyond the policies in each component, the Coastal Act Policies will be used as the basis. (The complete text of the PRC Sections 30200-30264 is included in the Appendices.) • POLICY B Where policies in the Land Use Plan overlap or conflict, the policy that is the most protective of coastal resources shall take precedence. • POLICY C The Capitola LCP Land Use Plan shall be adopted as an amendment to the Capitola General Plan. • POLICY D: In reviewing or carrying out projects outside the coastal zone, the City shall consider the effect of such projects or actions on coastal zone resources in order to ensure that the policies of the Capitola LCP Land Use Plan are achieved. • POLICY E: Prior to the issuance of any permit for development in the coastal zone, the City of Capitola shall prepare necessary findings that the development meets the standards set forth in all applicable Land Use Plan polices. • POLICY F: The City of Capitola shall maintain a high level of opportunities for public participation throughout the entire Local Coastal Program and Implementation Planning process. • POLICY G: The Land Use Plan brings the City's General Plan, Zoning Ordinances and other policies for lands within the coastal zone into conformance with the Coastal Act. It should be recognized that the Land Use Plan must be used in concern with other local, state and federal policies and regulations when evaluating any development proposal, If a conflict between policies arises, the adopted Land Use Plan policies shall be the prevailing policy.



REPORT NAME	DATE	GOALS

City of Santa Cruz General Plan 2030	6/2012	• Goal M1: Land use patterns, street design, parking, and access solutions that facilitate multiple transportation alternatives
		  • M1.1.2: Connect activity centers with pedestrian and bicycle paths. Cf. M4.3.
		  • M1.1.3: Implement pedestrian and bicycle improvements that support transit ridership.
		  • M1.2: Create livable streets. "Livable street" support the intent of Section 65302(b) of the California Government Code to create "complete streets" planned, designed, operated, and maintained to provide safe mobility for all users, including "bicyclists, children, persons with disabilities, motorists, movers of commercial goods, pedestrians, users of public transportation, and seniors."
		• Goal M2: A safe, sustainable, efficient, adaptive, and accessible transportation system
		  • M2.1.2: Encourage use of alternative modes of transportation.
		  • M2.1.3: Implement pedestrian, bike, mass transit, and road system improvements through the Capital Improvement Program.
		  • M2.1.4: Support regional funding and implementation of key regional projects that can significantly benefit Santa Cruz and further the City's mobility policies.
		  • M2.1.5: Do not adopt, approve, or construct an Eastern Access to the university without a vote of the people in a citywide general election.
		  • M2.3: Increase the efficiency of the multi-modal transportation system.
		  • M2.3.1: Design for and accommodate multiple transportation modes.
		  • M2.3.3: Incorporate pedestrian, bicycle, and mass transit facilities in the design of bridges and road projects.
		  • M2.3.4: Encourage visitor-serving developments, such as hotels, to make bicycles and shuttle programs available to patrons.
		  • M3.1.9: Consider reducing parking requirements for employers, developments, businesses, and major destination centers that implement effective alternative transportation programs. Cf. LU4, ED1.9.2, and M2.3.2, and 3.1.9.

REPORT NAME	DATE	GOALS
		• Goal M4: A citywide interconnected system of safe, inviting, and accessible pedestrian ways and bikeways. • M4.1.1: Update and implement the Pedestrian Master Plan for development of a complete, continuous, and structurally adequate system of pedestrian paths and walkways. • M4.1.4: Encourage walking in Santa Cruz through educational outreach and promotional programs. • M4.2: Provide and maintain a complete, interconnected, safe, inviting, and efficient citywide bicycle network. Cf. CD5.1, CC8.4, PR4.1.2. • M4.2.1: Maintain and update as necessary the City's Bicycle Transportation Plan. • M4.2.2: Work with appropriate agencies to seek funding for pedestrian and bicycle projects. • M4.2.3: Facilitate bicycling connections to all travel modes. • M4.2.4: Implement bicycle safety programs and cooperate with other agencies in the enforcement of bicycle safety. • M4.2.5: Study the development of parking alternatives (such as removal of parking from one side of the street) and off-street parking facilities prior to the removal of any on-street spaces. • M4.2.6: Provide regular sweeping, pavement repairs, striping, and signs along bike routes. • M4.3: Require pedestrian and bicycle improvements in major activity centers and activity areas. Cf. ED5.1, and M1.1, 1.1.2, 1.5.1, and 2.4.2. • M4.3.1: Promote the development of bike lanes on arterial and collector streets and in proposed and already-adopted City plans. • M4.3.2: Develop bike commute routes along railroad rights-of-way (while ensuring the ability to develop rail transit) and along West Cliff Drive, Broadway, King, and other streets.

REPORT NAME	DATE	GOALS
		• M4.4: Assure a high level of bicycle user amenities. Cf. PR1.6.4. • M4.4.1: Maintain Zoning Ordinance and parking district requirements that require secure, covered bicycle parking and/or storage lockers at private and public facilities. • M4.4.2: Provide design guidelines for safe and secure bicycle parking, and promote bicycle access for special events. • M4.4.3: Increase the supply of bicycle parking throughout the city. • M4.4.4: Consider ways to require existing development to upgrade and/or retrofit on-site bicycle user amenities. • M4.5: Support pedestrian and bicycle safety improvements. • M4.5.3: Develop a schedule and comprehensive funding program for proposed bike system improvements within the Capital Improvements Program. • M4.5.4: Consider counter-flow bike lanes on one-way streets where significant bicycle traffic is expected and where safety measures are in place.
City of Santa Cruz Bicycle Transportation Plan 2008	02/10/2011	1. Improve bicycle circulation, connectivity and access 2. Increase bicycle ridership and replace motor vehicle trips with bicycle trips. Achieve a city-wide goal of 5% of all trips and 20% of work trips made by bicycle by 2020. 3. Improve bicycle safety 4. Design a city-wide multi-modal transportation system that accommodates bicycles 5. Maintain new and existing bicycle infrastructure
City of Watsonville, Watsonville VISTA 2030 General Plan		• Goal 6.3: Transit Facilities and Service. Promote the use of transit as an alternative to the automobile for all types of travel. • Policy 6.3.1: Public Transit Facilities and Services. The City shall take an active role in transit planning by the Santa Cruz Metropolitan Transit District (SCMTD) for the Watsonville Planning Area.

REPORT NAME	DATE	GOALS
		• **Implementation** • 6.3.13: Transit Stop Locations. The City shall cooperate with the Santa Cruz Metropolitan Transit District and Monterey Salinas Transit in the evaluation of, and recommendation for, location of transit stops and shelters. Transit stops and shelters should be designed to be compatible with through traffic, bicycle, and pedestrian movements. • Goal 6.5: Bicycle Circulation. Plan for and provide a safe, convenient network of bicycle facilities that serves both local and regional travel. • Policy 6.5.1: Bicycle Facilities Development. The City shall plan for, and implement a comprehensive network of bicycle facilities in order to promote the bicycle as an alternative to the private automobile. • **Implementation** • 6.5.11: New Construction and Improvements. New construction and improvements to streets designated as bike routes shall include facilities for safe bicycle travel consistent with the City's Bicycle Plan. • 6.5.12: Designation of Bicycle Lanes. The City shall designate specified arterials for the development of bicycle lanes, consistent with the Bicycle Plan. • 6.5.13: Design for Bicycle Lanes. The City shall require new development projects to include bicycle lanes as part of the project proposal, consistent with the Bicycle Plan. • 6.5.14: Coordination of Planning. The City shall coordinate local and Santa Cruz County plans for bicycle lanes and walkways. • 6.5.15: Integration with Open Space. The City shall ensure that Bicycles facilities are integrated into the City's open spaces, greenways and parks to provide a system of off-street facilities for recreational and commute bicyclists. • Policy 6.5.2: Bicycle Facilities Maintenance. Bicycle facilities shall be kept clean and clear of obstructions.



REPORT NAME	DATE	GOALS
		• **Implementation** • 6.5.21: Bike Lane Sweeping. The City shall continue a regular bicycle lane sweeping program. • 6.5.22: Parking Enforcement. The City may institute parking restrictions along major designated arterials that are designated bike routes. • 6.5.23: Conflict Elimination. The City shall work with the Santa Cruz County Transportation Commission Bicycle Committee and Watsonville Police Department to identify potential areas of conflict between bicycle facilities and vehicles and eliminate the occurrence of conflicts, particularly at intersections. • Policy 6.5.3: Bicycle Support Facilities. The City shall encourage bicycle facilities in new developments, as an incentive for bicycling as a commute alternative. • Implementation • 6.5.31: Bicycle Storage. The city shall use the development review process to ensure that new commercial, industrial, and public projects provide secure bicycle storage for their employees, customers, clients, and attendees. • 6.5.32: State Design Standards. Where possible, bikeways shall be constructed and marked in conformance with Caltrans Planning and Design Criteria, and be consistent with the Bicycle Plan. • 6.5.33: Bicycles on Bridges. The City shall require that all bridges be constructed with sufficient width (four feet minimum on each side) to safely accommodate bicycle travel. • 6.5.34: Sensing Devices for Signalized Intersections. Vehicle sensing devices at all signalized intersections shall be sensitive enough for bicyclists to activate the signal in the absence of a car. The City will consider installing bicycle loop detectors at signalized intersections on designated bike routes, or install push buttons accessible to bicyclists waits at the curb.



REPORT NAME	DATE	GOALS
		• Goal 6.6: Pedestrian Circulation. Recognize the importance of pedestrian travel, alone or in combination with other travel modes, and to encourage walking. • Policy 6.6.1: Pedestrian Travel. The City shall plan for, and implement a comprehensive network of safe pedestrian facilities in order to promote pedestrian travel.
City of Watsonville Wetlands Trails Master Plan	5/19/2003	1. Provide a safe and scenic network of trails for recreational use and as an alternate means of transportation. 2. Encourage trail use for pedestrians, bicyclists, and personas with disabilities. Trails that meet ADA requirements are referred to as 'all-access' trails. 3. Provide various point accesses to link commercial and residential areas. 4. Promote the importance of natural settings with wildlife viewing lookouts and interpretive displays. 5. Incorporate and utilize existing infrastructure into the proposed trails. 6. Offer alternative routes for specific areas.
City of Watsonville Trails & Bicycle Master Plan	11/2012	**Master Plan Visions and Goals** 1. Develop a safe and interconnected city-wide network of trail and bicycle facilities that link together destinations and people, both locally and regionally; 2. Develop a trail network that provides facilities and programs designed to expand and encourage active recreation, community strength, and alternative transportation; 3. Enhance, protect, and preserve the environmental quality of open space, waterways and wildlife habitats; 4. Stimulate economic growth through increased tourism and real property value, by developing a city-wide trail network; and 5. Conserve and tell the story of local culture, history, and heritage through interpretive signage.

REPORT NAME	DATE	GOALS
City of Watsonville 2005 Local Coastal Program (LCP)	9/28/1982	No clearly defined goals. See document for Policies and Implementation Program
California Coastal National Resource Management Plan (CCNM)	09/2005	• Goal 1: Protect the geological formations and the habitat that they provide for biological resources of the CCNM. • Goal 2: Protect the scenic and cultural values associated with the CCNM. • Goal 3: Provide and promote research opportunities to understand the resources and values of the CCNM. • Goal 4: Provide the public with interpretive information and educational initiatives regarding the values and significance of the CCNM and the fragile ecosystems of the California coastline. • Goal 5: Coordinate planning and management activities with the numerous jurisdictions on and adjacent to the CCNM and use the CCNM to help enhance cooperative and collaborative initiatives and partnerships with a variety of communities, agencies, organizations, academic institutions, the public, and other stakeholders.
Coastal Conservancy Completing the California Coastal Trail	1/1/2003	• **Objectives in Completing the California Coastal Trail** • Proved a continuous trail as close to the ocean as possible, with connections to the shoreline ("vertical access") at appropriate intervals and sufficient transportation access to encourage public use. • Foster cooperation between State, local, and federal public agencies in the planning, design, signing, and implementation of the Coastal Trail. • Increase public awareness of the costs and benefits associated with completion of the Coastal Trail. • Assure that the location and design of the Coastal Trail is consistent with the policies of the California Coastal Act and local coastal programs, and is respectful of the rights of private landowners. • Design the California Coastal Trail to provide a valuable experience for the user by protecting the natural environment and cultural resources while providing public access to beaches, scenic vistas, wildlife viewing areas, recreational or interpretive facilities, and other points of interest. • Create linkages to other trail systems and to units of the State park systems, and use the Coastal Trail system to increase accessibility to coastal resources from urban population centers.

REPORT NAME	DATE	GOALS
		• **Recommendations for Action: Projects to Implement to Coastal Trail Santa Cruz County** • Work with the Santa Cruz County Regional Transportation Commission to acquire the former railroad right-of-way and develop the multi-use trail from Davenport to Watsonville. • Complete the environmental analysis and design of a principal trail alignment through the former Coast Dairies property in cooperation with the Trust for Public Land and others, and construct the trail. • Work with State Parks to complete the coastal trail segment across the Gray Whale Ranch property to the public. • Work with Santa Cruz County to identify a trail alignment trough Love Oak and work with the County State Parks, and private landowners to identify a trail alignment from Capitola to the County line. • Encourage and assist in the completion of the Monterey Bay Sanctuary Scenic Trail. • Work with the U.S. Army Corps of Engineers and Santa Cruz and Monterey Counties to complete the trail systems along both sides of the Pajaro River and connect them to the Coastal Trail.
Long Range Interpretive Plan for the Monterey Bay Sanctuary Scenic Trail	Draft	• Provide public trail access along the Monterey Bay National Marine Sanctuary to enhance appreciation, understanding and protection of this special resource, without harming sensitive areas. • Provide relevant, engaging interpretation and information of the Monterey Bay National Marine Sanctuary, the coastal environment and communities through which the trail passes and promote environmentally sensitive trail use. • Encourage alternative transportation by providing safe, inviting and continuous routes for a wide variety of non-motorized uses. • Maximize ocean views and scenic coastal vistas, emphasizing connections to existing and proposed local trail systems, with frequent lateral access opportunities for different user groups from the main trail to the beach, vista points, interpretive facilities and other points of interest along the way. • Provide a sense of continuity for the visitor along the entire trail route through unifying visual elements.



REPORT NAME	DATE	GOALS
Moving Forward Monterey Bay 2035	6/1/2010	**Regional Goals** 1. Increase the Accessibility and Mobility of People and Goods 2. Protect the Environment, Promote Energy Conservation, Improve the Quality of Life, and Promote Consistency between Transportation Improvements and State and Local Planned Growth and Economic Development Patterns 3. Enhance the Modal Integration and Connectivity of the Transportation System for People and Goods. 4. Increase the Safety of the Transportation System for Motorized and Non-motorized Users 5. Increase the Security of the Transportation System for Motorized and Non-motorized Users 6. Promote transit, vanpooling, ridesharing, bicycling, pedestrian and other alternative transportation modes to reduce single-occupant vehicle travel. 7. Avoid, minimize or mitigate the environmental impacts caused by operation or improvement of the transportation system.Strategies: Strive to limit plans and programs to those transportation facilities and services which avoid, minimize or mitigate impacts to prime agricultural land, natural wetlands and riparian corridors, coastal dunes, significant scenic corridors, significant natural habitat areas, and/or cultural and historical sites. • Work with other agencies to increase the potential of combining bicycle travel with other modes of transportation, including the provision of bicycle lanes, storage facilities at transit stops and employment centers and ridesharing staging areas. • Facilitate the retention, expansion and improvement of transit and non-motorized mode travel to and within activity centers, along travel corridors, in scenic areas, and for special events. • Promote convenient and efficient transit services for commuting to and from existing and planned work, school, shopping, recreational and other activity centers. 8. Avoid, minimize or mitigate the environmental impacts caused by operation or improvement of the transportation system.Strategies: Strive to limit plans and programs to those transportation facilities and services which avoid, minimize or mitigate impacts to prime agricultural land, natural wetlands and riparian corridors, coastal dunes, significant scenic corridors, significant natural habitat areas, and/or cultural and historical sites.

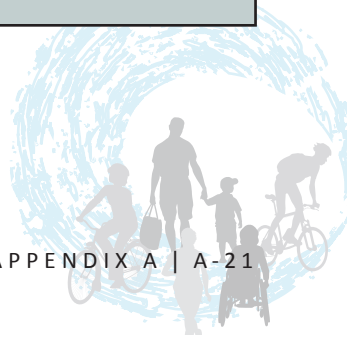
REPORT NAME	DATE	GOALS
		9. Avoid, minimize or mitigate the environmental impacts caused by operation or improvement of the transportation system.Strategies: Strive to limit plans and programs to those transportation facilities and services which avoid, minimize or mitigate impacts to prime agricultural land, natural wetlands and riparian corridors, coastal dunes, significant scenic corridors, significant natural habitat areas, and/or cultural and historical sites. • Work with other agencies to increase the potential of combining bicycle travel with other modes of transportation, including the provision of bicycle lanes, storage facilities at transit stops and employment centers and ridesharing staging areas. • Facilitate the retention, expansion and improvement of transit and non-motorized mode travel to and within activity centers, along travel corridors, in scenic areas, and for special events. • Promote convenient and efficient transit services for commuting to and from existing and planned work, school, shopping, recreational and other activity centers. 10. Avoid, minimize or mitigate the environmental impacts caused by operation or improvement of the transportation system.Strategies: Strive to limit plans and programs to those transportation facilities and services which avoid, minimize or mitigate impacts to prime agricultural land, natural wetlands and riparian corridors, coastal dunes, significant scenic corridors, significant natural habitat areas, and/or cultural and historical sites. **Santa Cruz County (SCCRTC):** 1. Increase the security of the transportation system for motorized and non motorized users. 2. Ensure that all major corridors provide a choice of transportation modes and are designed with multi-modal amenities such as bus stops, turnouts and shelters, bike lanes and sidewalks. **Long-Range Strategies: Implement the 1999 Watsonville-Santa Cruz-UCSC Corridor Major Transportation Investment Study program of projects:** • Santa Cruz Branch Rail right-of-way acquisition • Bicycle/pedestrian path on rail right-of-way • Local road improvements

REPORT NAME	DATE	GOALS
		• Local bicycle projects • Electric bicycle subsidy program • Provide multi-modal access to recreational resources. **Long Range Strategies Santa Cruz County (SCCRTC):** • Increase percentage of work trips done by bicycle to five percent of all trips and 20 percent of all work trips by 2035; do so by prioritizing bikeway projects based on: 1) increased safety or access; 2) complete gaps in the regional bicycle network; 3) high-demand, high-density areas and commute routes; 4) along popular recreational routes. Develop a program to measure and monitor growth rates. • Support efficient connections among all transportation modes. • Plan transportation improvements which are consistent with the needs and desires of residents and businesses of the region and which are closely coordinated with local land-use and transportation planning policies, including those of the Cities of Santa Cruz, Watsonville, Capitola and Scotts Valley, the County of Santa Cruz, UCSC, the Santa Cruz Metropolitan Transit District, the Association of Monterey Bay Area Governments, the Coastal Commission, Caltrans, other transportation agencies, and neighboring counties. • Encourage transit-oriented development and provide alternatives to automobile commutes by linking land-use decisions with transit, bikeway, pedestrian, and park-and-ride investments. • Allow for and anticipate future mobility needs, taking into account projected future demographics. • Emphasize sustainable transportation modes consistent with regional environmental policies. • Ensure that transportation projects contribute to the protection of biological and scenic
Caltrans State Routes 1 & 183 Corridor System Management Plan	10/2011	• The goal of the CSMP is to improve mobility along the SR 1 corridor by the integrated management of the transportation network including the selected highway, parallel/connector roadways, transit, bicycle, and travel demand management components of the corridor. Managing the facilities in a multi-modal approach will ensure that the benefits from investments made in the corridor can be sustained over time.
		• The objective of the CSMP is to identify strategies that would improve safety, reduce travel time delay, improve connectivity, and expand mobility options along the corridor in a cost effective manner. • Implementation of the CSMP will improve safety on the transportation system and improve connectivity to jobs, housing, and commerce.

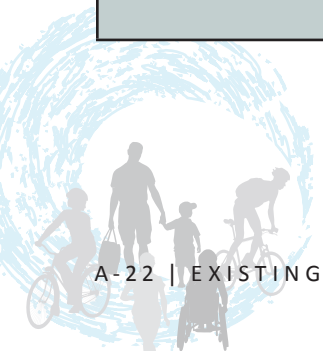
REPORT NAME	DATE	GOALS
The Sanctuary Scenic Trail Standards Manual	6/1/2005	**Trail Goals** • Enhance appreciation and protection of the Monterey Bay National Marine Sanctuary by promoting public use and enjoyment at its shoreline. • Provide public trail access along the shoreline of the Monterey Bay, without harming sensitive areas. • Enhance appreciation and protection of the marine sanctuary; our coastal environment and local communities through engaging interpretation and information. • Encourage alternative transportation and draw travelers out of their cars. • Maximize ocean views and scenic coastal vistas while connecting local trail systems, interpretive facilities and points of interest along the way. • Provide a sense of continuity along the entire trail route through unifying visual elements • Promote environmentally sensitive and respectful trail use.
Santa Cruz County Bicycle Plan	3/1/2011	• Bicycle Plan objectives, policies, and goals including some items outlined in the 1994 General Plan and Local Coastal Program for Santa Cruz County, and the 2010 Santa Cruz County Regional Transportation Plan include: • To encourage bicycle travel as a major form of transportation in order to increase bicycle use to 20% of all work trips and to increase general bicycle trips to 5% of all trips by the year 2035. (RTP 2.7) • To develop a bikeway network maximizing the safety and convenience of users of all levels of experience within that system. The network should be primarily for commuter travel designed to increase the potential of combining bicycle travel with other forms of transportation and also include the opportunity for recreational use. Support promotion and transportation safety programs to encourage safe and frequent use of alternative transportation modes. (RTP 2.7.4, GP 3.8a)



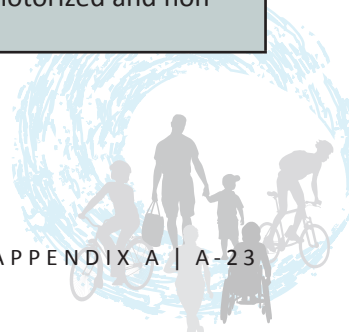
REPORT NAME	DATE	GOALS
		• To coordinate the County's bikeway planning efforts with local cities and adjacent counties and other agency to provide an integrated regional bikeway system and to actively seek all available means of financing bikeways including State and Federal grants. (GP 3.8b) • Reduce bicycle collisions by reducing the potential for bicycle and auto conflicts. (RTP 1.6.2) • To encourage the design of pedestrian, bicycle, and vehicle circulation and parking to be safe, convenient, readily understandable, and coordinated with development on surrounding properties; and encourage design which minimizes the visual impact and reduces the scale of paving materials and parking. **Policies** • System Continuity. Plan a bikeway network to integrate with other modes of transportation (train or transit stations and Park and Ride lots, etc.) in order to encourage and support the use of bicycling and reduce the use of motor vehicles. (GP 3.8.1) • Coordinate the planning, design and construction of bikeway systems with all implementing agencies. • Ensure that all major corridors provide a choice of transportation modes and are designed with multi-model amenities such as bus stops, turnouts and shelters, and bike lanes and sidewalks. (RTP 2.1) • Maintain adequate outside travel lane width (14 feet) when no bicycle lane can be accommodated. (RTP 2.7.3) **Commuting** • Design regional bicycle routes to connect residential areas with major activity centers (employment, education, civic, etc.) by including bikeway network development as part of the Capital Improvements Program to prioritize construction or retrofits for completion of specific routes. (GP 3.8.2) • Encourage employers to make bicycles and bike facilities available for business-related trips. (RTP 1.3.13) • Encourage the provision of bicycle racks, showers, lockers, and other storage facilities at destination, where practical and economically feasible, when reviewing discretionary permits for major activity centers. These facilities should be provided at a level consistent with the County goal of 5% total bicycle travel. (GP 3.8.4) • Emphasize safe and convenient modes of transportation for all transit riders, motorists, bicyclist, and pedestrians



REPORT NAME	DATE	GOALS
		• Require new recreation and visitor-serving developments in the Coastal Zone to support alternative transportation to the beaches, e.g., bikes, small scale shuttle service (GP7.7.31). • Construct and mark bicycle routes in conformance with state standards, as outlined in the California Manual of Uniform Traffic Control Devices and the California Highway Design Manual. • Locate bikeways as bicycle lanes adjacent to the main traveled way unless a more direct and useful separated bike path can be provided. Where bicycle lanes are not possible due to right-of-way restrictions, etc., include a wide curb lane. • Build all bridges with enough width to safely accommodate bicycle travel. Allow for 4-foot (1.2m) minimum bike lanes. • Retain and/or enhance all existing bikeways along with roadway improvement projects by incorporating "Complete Streets" concepts ensuring that bike lanes are not narrowed to the point that them become substandard. • Limit the number of driveways when planning new commercial/residential developments in order to reduce automobile-bicycle conflicts. (RTP 3.4.6) • Limit on-street parking on arterial and collector streets, encourage parking alternatives, pursue off-street parking development as methods to provide Class II bike lanes and do not eliminate joint like lanes/ parallel shoulder parking unless the new bike lanes are effectively as wide or wider. • Install in all existing and proposed signalized intersections bicycle detector loops (a device to trigger traffic signal phasing) that are recognizable by the cyclist (from GP program "h" on page 3.16). **Bicycle Parking** • Provide convenient, secure bicycle parking at private and public facilities and commercial districts through parking ordinance requirements. (RTP 3.4.4) • Require that event sponsors provide safe bicycle access and secure bicycle parking at special events. (RTP 3.4.4) • Provide bicycle parking stands (facilities) at all primary public points and at appropriate neighborhood access points (GP program "b" on page 3-16).



REPORT NAME	DATE	GOALS
		• Modal Interaction. Encourage other modes of transportation (buses, trains, etc.) to plan for, and provide space for carrying, recreational and commuting bicyclists on public transportation systems. Include secure bicycle parking facilities with development of transit shelters incorporating Santa Cruz County Transit District design approval. (GP 3.8.3) • Include bicycle access in all fixed guideway planning and design. • Regional Continuity. Coordinate with other jurisdictions to adopt a system of bikeways that complements the county system. • Regional Consistency. Periodically revise the Master Plan of Countywide Bikeways (MPCB) component of the Transportation Element to reflect changing conditions, and to evaluate proposed development projects for compatibility with the MPCB through the subdivision and development permit approval process. (GP 3.8.6) • Maintenance. Require that contractors and utility companies doing roadside work maintain the road edge in the best possible condition during construction and, upon completion, improve the road shoulder to the preconstruction condition or better. • Require those entities performing roadside work to maintain the road edge in the best possible condition during construction, explore ways to avoid lengthwise seams in bike lanes and require prompt repair (including pavement) and restriping of bike lanes before the project is considered complete. • Retain all existing bikeways along with roadway improvement projects. (RTP 1.5.4) • Ensure the bicycle facilities remain in a usable condition through regular maintenance and sweeping. • Education and Safety. Encourage bicycle rider training program for all elementary school children in Santa Cruz County and a better instruction of motorists about sharing the road with bicyclists should be included in all driver's education courses for high school students and adults. • Continue to identify stable funding for the Community Traffic Safety Coalition Bicycle Safety Program. **Goals** • Improve bicycle circulation; • Increase use of bicycling for short- and long-range trips, and reduce the use of motor vehicle; and • Design all streets and roads to be "bicycle friendly" to equally accommodate both motorized and non-motorized modes of transportation.



REPORT NAME	DATE	GOALS
Santa Cruz County Local Coastal Program (LCP)	1994	• Refer to the Local Coastal Program on the County's website for General Plan/LCP policies. Language which includes the (LCP) initials is part of the Local Coastal Program and applies countywide unless specifically stated that the policy is limited to the coastal zone.
Santa Cruz County Regional Transportation Plan	6/2010	1. Preserve and maintain the existing transportation system, emphasizing safety, security and efficiency. 2. Increase mobility by providing an improved and integrated multi-modal transportation system. 3. Coordinate land use and transportation decisions to ensure that the region's social, cultural, and economic vitality is sustained for current and future generations. 4. Ensure that the transportation system complements and enhances the natural environment of the Monterey Bay region and reduce greenhouse gas emissions. 5. Make the most efficient use of limited transportation financial resources. 6. Solicit broad public input on all aspects of regional and local transportation plans, projects and funding.
Santa Cruz County General Plan Circulation Element	12/19/1994	Goals: • Transportation System: Provide a convenient, safe and economical transportation system for the movement of people and goods, promoting the wise use of resources, particularly energy and clean air, and the health and comfort of residents. • Mode Choice: Provide the public with choice in transportation modes on a well-integrated system. • Limit Increase in Auto Use: Limit the increase in auto usage to minimize adverse impacts. Increase transit ridership, carpooling, vanpooling, walking and bicycling, etc. • Efficiency: Provide for more efficient use of existing transportation facilities. • Regional Goals: Meet the requirements of regional plans, such as the Congestion Management Program, Air Quality Management Plan and Regional Transportation Plan. Integrate planning for transportation, land use, and air quality goals. • Parking: Manage parking supply to provide reasonably convenient parking for groups such as shoppers and visitors who are most sensitive to the parking supply levels, while encouraging alternatives to solo commuting and·limiting impacts on neighborhoods. • Access: Provide forthe special transportation needs of the elderly and disabled.



REPORT NAME	DATE	GOALS
		• Bikeway System: Develop and implement a comprehensive bikeway system that promotes bicycle travel as a viable transportation mode and meets the recreational and travel needs of the citizens of Santa Cruz County. • Safety: Reduce the number and severity of bicycle accidents. • Finance: Plan a system within the County's ability to finance and operate. distributing the costs of transportation system improvements equitably among Santa Cruz County and neighboring jurisdictions. • Aesthetics: Minimize impacts on visual, historic, and archaeological resources. • Coordination: Coordinate transportation improvements in area plans with the General Plan and LCP Land Use Plan and regional transportation plans.
Seacliff Village Plan	05/20/2003	No clearly defined goals. See document for policy framework
University of California, Santa Cruz 2008 Bicycle Plan	11/2008	No clearly defined goals. See document for guidelines and policies
University of California, Santa Cruz Long-Range Development Plan		No clearly defined goals. See document for guidelines and policies
Big Basin Redwoods State Park General Plan	05/2012	No clearly defined goals. See document for overview of planning concepts and proposals
Coast Dairies Long-Term Resource and Access Plan	06/26/2003	The Coast Dairies Plan provides seven goals specific to the Property: • Conserve and enhance the biological open space values; • Create new and diverse recreational and educational opportunities; • Maintain and enhance sustainable agriculture; • Restore key natural resources; • Protect natural forested areas from commercial harvest; • Allow for other sustainable economic uses of the land; and • Use adaptive management as a tool to achieve sound long-term stewardship of the property.

REPORT NAME	DATE	GOALS

The Forest of Nisene Marks State Park General Plan	07/2005	See document for full list of goals. Goals pertinent to MBSST include:
		• Goal: Concentrate visitor use, recreation opportunities, facilities, and administrativeactivities in appropriate locations that will accommodate heavier use, while minimizingimpacts to natural, cultural, and scenic resources.
		  • Guidelines:
		  • Locate facilities away from any sensitive natural or cultural areas, including streams and historic and archeological sites, to minimize impacts to these resources.
		  • Use signs, fencing, walls, stairs and other features to direct visitors away from sensitive biological and cultural resources, as necessary, and to protect sensitive areas.
		  • Design facilities to blend aesthetically with scenic, natural, and cultural features.
		  • Utilize sustainable design and materials in the development of new facilities.
		• Goal: Preserve the historic integrity of sites and railroad grades that are determined significant to the history of The Forest of Nisene Marks State Park.
		  • Guidelines:
		  • Ground-disturbing activities shall be kept to a minimum in the vicinity ofdesignated historic resources without appropriate surveys and possible mitigation.
		  • If needed and feasible, stabilization of historic sites shall occur in order to preserve their historical integrity.
		  • Historic sites should be included in the interpretive program, if further research substantiates their historic importance.

Wilder Ranch State Park General Plan	03/1980	No clearly defined goals. See document for guidelines and policies



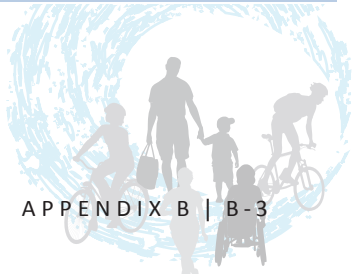
APPENDIX B

Master Plan Relationship to Existing Documents Summary

MBSST Relationship Summary

Name	Date	Prepared For	Prepared By	Approval	Summary	Relationship to MBSSTMP
Administration and Coordination License Agreement Between the Santa Cruz County Regional Transportation commission and Santa Cruz and monterey		RTC and Monterey Bay Railway Company	RTC and Monterey Bay Railway Company		The administration and coordination license agreement between the Santa Cruz County Regional Transportation Commsision (RTC) and Santa Cruz and Monterey Bay Railway Company (Railway) establishes the respective rights and obligations with respect to the property and the freight easement along the rail corridor. The RTC granted the rail operator the exclusive right and obligation to use, maintain, repair, and operate all of the railroad facilities for freight service purposes, and a non-exclusive licence to use a partial portion of railroad facilities for railway tourist service.	Provides the framework under which the Rail Trail can operate. Ensure proposed alignment is consistent with agreemement policies identified in this Plan.
Aptos Village Plan	23-Feb-10	County of Santa Cruz	County of Santa Cruz	23-Feb-10	The Aptos Village Plan provides a planning framework to guide future public and private improvements in the Aptos Village. It addresses development issues related to land use, circulation, design, and improvements in the village area.	Ensure proposed alignment is consistent with policies identified in this Plan.
Arana Gulch Draft Master Plan	Feb, 2006	City of Santa Cruz	City of Santa Cruz Parks and Recreation Department		The City of Santa Cruz acquired Arana Gulch in 1994 as one of the Greenbelt lands, and shortly thereafter opened the property to the public. While popular with hikers strolling along the meadow, bicyclists riding to the Upper Harbor, and visitors of all ages enjoying the scenery and wildlife, recreational use on the property is limited to earthen trails, most of which existed prior to the City's ownership. Only two visitor entrances currently exist and there are no visitor facilities, except trails and associated signage. The intent of the master plan is to establish a vision and goals that will shape the future of Arana Gulch as a unique open space within the City of Santa Cruz. In addition, the Master Plan identifies recreational uses and resource management guidelines to direct future management and enhancement of this natural area.	Ensure proposed alignment links to this area.
Big Basin Redwoods State Park General Plan	May, 2012	California State Parks	California State Parks	May, 2012	The Big Basin Redwoods State Park General Plan is the primary management document for a park within the California State Park system, establishing its purpose and a management direction for the future. By providing a defined purpose and vision with long-term goals and guidelines, it provides the framework for a unit's resource stewardship, interpretation, visitor use, operation, and development. Subsequently, this established framework helps guide daily decision-making and serves as the basis for developing more detailed management and site-specific project plans.	Ensure proposed alignment is consistent with policies identified in this Plan.
California Coastal Act	2013	California Coastal Commission	California Coastal Commission	2013	The Coastal Act includes specific policies that address issues such as shoreline public access and recreation, lower cost visitor accommodations, terrestrial and marine habitat protection, visual resources, landform alteration, agricultural lands, commercial fisheries, industrial uses, water quality, offshore oil and gas development, transportation, development design, power plants, ports, and public works. The policies of the Coastal Act constitute the statutory standards applied to planning and regulatory decisions made by the Coastal Commission and by local governments, pursuant to the Coastal Act.	Ensure proposed alignment is consistent with policies identified in this Plan.

Name	Date	Prepared For	Prepared By	Approval	Summary	Relationship to MBSSTMP
California Coastal National Monument Resource Management Plan	Sept, 2005	California State Office Bureau of Land Management (BLM)	California State Office Bureau of Land Management (BLM)	Sept, 2005	Th e purpose of the California Coastal National Monument (CCNM) Resources Management Plan (RMP) is to establish guidance, objectives, policies, and management actions for the public lands of the CCNM administered by the U.S. Department of the Interior's Bureau of Land Management (BLM). Th e RMP attempts to resolve a wide range of natural resource and land use issues within the CCNM area in a comprehensive manner. The document addresses and integrates, where possible, the numerous related management issues of the various current and potential future coastal partners who are	Ensure proposed alignment is consistent with policies identified in this Plan.
Caltrans District 5 State Route 1 Transportation Concept Report	Apr, 2006	Caltrans	Caltrans	Apr, 2006	The Caltrans District 5 State Route 1 Transportation Concept Report (TCR) is the long-term planning document for State Route 1(Route 1 or SR 1) in District 5 of the California Department of Transportation (Caltrans). The TCR (1) evaluates current and projected conditions along the route; (2) establishes a twenty-year planning vision or concept; and (3) recommends long- and short-term improvements to achieve the concept.	Ensure proposed alignment is consistent with policies and facilities identified in this Plan.
Caltrans Highway Design Manual - Chapter 1000 Bicycle Transportation Design	7-May-12	Caltrans	Caltrans	7-May-12	The needs of non motorized transportation are an essential part of all highway projects. Mobility for all travel modes is recognized as an integral element of the transportation system. Chapter 1000 includes design guidance for Class I bike paths, Class II bike lanes, and Class III bike routes. Design guidance that addresses the mobility needs of bicyclists on all roads is distributed throughout the manual where appropriate.	Ensure proposed alignment is consistent with policies identified in this Plan.
Caltrans State Route 1 & 183 Corridor System Management Plan	Oct, 2011	Caltrans	Caltrans	Oct, 2011	There is a need for a planning approach that coordinates transportation facility operations and service with capital projects to produce a seamless transportation system focusing on highdemand corridors, such as SR 1. The purpose of the CSMP is to create a partnership planning process and resulting guidance document that focuses on system management strategies that coordinate all the individual transportation modes and that includes performance measures to track the effectiveness of the strategies and projects. The goal of the CSMP is to improve mobility along the SR 1 corridor by the integrated management of the transportation network including the selected highway, parallel/connector roadways, transit, bicycle, and travel demand management components of the corridor. Managing the facilities in a multi-modal approach will ensure that the benefits from investments made in the corridor can be sustained over time. The objective of the CSMP is to identify strategies that would improve safety, reduce travel time delay, improve connectivity, and expand mobility options along the corridor in a cost effective manner. Implementation of the CSMP will improve safety on the transportation system and improve connectivity to jobs, housing, and commerce.	Ensure proposed alignment is consistent with policies identified in this Plan.



Name	Date	Prepared For	Prepared By	Approval	Summary	Relationship to MBSSTMP
City of Capitola Bicycle Transportation Plan	Feb, 2011	City of Capitola	City of Capitola	Adopted Feb 10, 2011	The City of Capitola Bicycle Transportation Plan (BTP) assesses commuter needs, identifies funding sources and directs the future development of bicycle facilities in the City. It also seeks to carry out the Five Es used by the League of American Bicyclists to identify and rank Bicycle Friendly Communities. The five Es are Evaluation, Engineering, Education, Encouragement, and Enforcement. The Capitola Bicycle Transportation Plan sets goals and objectives for the purpose of increasing the safety and convenience of bicycle commuting in the area. The BTP is an update of the 2005 City of Capitola Bicycle Transportation Plan. It includes or expands upon the goals and objectives put forth in 2005 to improve network connectivity, address dangerous or hazardous areas, and increase education and bicycle resources. In addition to remaining consistent with major City planning documents, the 2011 Bicycle Transportation Plan implements the policies and programs of the Circulation Element of the General Plan. The BTP is intended to aid City of Capitola planners and engineers in prioritization bicycle improvement projects with the goal of increasing bicycle commuting, recreation, tourism, and safety.	Ensure proposed alignment is consistent with the facilities identified in this Plan.
City of Capitola Certified Local Coastal Program (LCP)	Updated, Jan, 2005	City of Capitola	City of Capitola	Updated, Jan, 2005	The City of Capitola's Certified Local Coastal Program consists of a Land Use Plan and Implementation Plan. The Land Use Plan is a comprehensive long-term plan for land use and physical development within the City's coastal zone. The plan consists of policies and recommendations for land use designations that are consistent with the provisions of the Coastal Act. The Implementation Plan includes zoning, regulations, and other programs needed to carry out the goals, policies, and land use designations of the Land Use Plan.	Ensure proposed alignment is consistent with policies identified in this Plan.
City of Capitola General Plan Circulation Element	Sept, 1989	City of Capitola	Freitas + Freitas	Sept, 1989	Circulation element contains objectives, policies, and implementation measures.	Ensure consistency with General Plan objectives, policies, and implementation measures.
City of Santa Cruz Bicycle Transportation Plan 2008	Nov, 2008	City of Santa Cruz	City of Santa Cruz Transportation Commission Bicycle / Pedestrian Subcommittee	Adopted November 25, 2008	The emphasis of the 2008 Bicycle Transportation Plan is shifted from that of the 2000 and 2004 plans. Many of the significant projects from those plans have been completed - Bay Street, Beach Street, High Street, Soquel Avenue and major portions of the San Lorenzo River Path. The 2008 plan is focused on creating a detailed network of routes to give bicyclists a greater range of choices. There is potential to develop a multi-purpose trail for bicyclists and pedestrians within the Union Pacific rail ROW. The City of Santa Cruz should establish and maintain access to the rail ROW and potential new transportation facilities when considering new development projects. This 2008 Plan includes a wider variety of bicycle facilities, not just bike lanes and bike paths, but signed bike routes, traffic-calmed bike boulevards, shared pavement markings, or "sharrows", and developed multi-purpose trails. This 2008 Plan supports the grand scale of the regional Monterey Bay Sanctuary Scenic Trail Network as well as the small scale of simple cut-through easements for access and improved railroad crossings.	Ensure alignment includes these facilities.
City of Santa Cruz General Plan 2030 Mobility Chapter	Feb, 2009	City of Santa Cruz			This chapter corresponds to the required circulation element. Its purpose is to set forth policies and ways to ease the ability of people and vehicles to move around, out of, and into the city in the long term, through 2030. This chapter includes goals, policies, and actions that guide city bodies in making decisions related to the city's transportation and road systems and in implementing the actions recommended in this chapter.	Ensure consistency with Goals, Policies, and Actions

Name	Date	Prepared For	Prepared By	Approval	Summary	Relationship to MBSSTMP
City of Watsonville 2005 Local Coastal Program (LCP)	Amended Oct, 2000	City of Watsonville	City of Watsonville	Amended Oct, 2000	The Watsonville 2005 LCP contains policies that have been adopted by the City Council and certified by the California Coastal Commission, to ensure carefully planned development, consistent with coastal resource protection, of lands lying within the six (6) areas where the Watsonville City limits overlap the Coastal Zone. The policies have important relationships with the Watsonville General Plan and Zoning Ordinance, the State Coastal Act, and with the plans of individual property owners.	Ensure proposed alignment is consistent with policies identified in this Plan.
City of Watsonville Trails & Bicycle Master Plan	Mar, 2012	City of Watsonville	RBF Consulting	Mar, 2012	The purpose of the Watsonville Trails & Bicycle Master Plan contained within the City of Watsonville Urban Greening Plan, is to develop a framework for building an integrated system of pathways and bikeways that will link residents to the outdoors. The future network will provide residents of Watsonville and the greater region with close-to-home and close-to-work access to bicycle and pedestrian trails that connect to the city's most popular destinations and surrounding natural areas, including the vast network of sloughs that are unique to south Santa Cruz County. The trails and greenways will serve as non-vehicular transportation and recreation needs and help to encourage quality, sustainable economic growth. This plan will also serve as the Bicycle Transportation Plan. The plan complies with the requirements and guidelines articulated in Section 891.2 of the California Streets and Highways Code. By complying with this element of the vehicle code, the plan meets the requirements of the Bicycle Transportation Account (BTA), a Caltrans funding source for bicycle improvements projects.	Ensure proposed alignment is consistent with policies and facilities identified in this Plan.
Coast Dairies Long-Term Resource Protection and Access Plan	26-Jun-03	California State Parks/The Trust for Public Land	Environmental Science Associates	26-Jun-03	The specific purpose of the Coast Dairies Plan is to provide direction and guidance on how best to manage natural and physical resources, visitor use, development and use of lands and facilities, and resource protection of the Property. This Plan will be the basis for the Proposed Action for subsequent National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) Analysis, and is expected to be adopted as a State Park General Plan and as a BLM Resource Management Plan Amendment. Once completed, the Coast Dairies Plan will be used as a template against which future project implementation plans are reviewed to determine whether such projects will protect and enhance the values of the Property.	Ensure proposed alignment is consistent with policies identified in this Plan.
Completing the California Coastal Trail	Jan, 2003	Coastal Conservancy	Coastal Conservancy	Jan, 2003 per SB908	The legislature and the Governor directed the Coastal Conservancy, through SB908 of 2001, to report on a proposed trail that would stretch 1,300 miles along the entire California coast and across dozens of political jurisdictions.	Ensure consistency with Coastal Conservancy policies and map.
Long Range Interpretive Plan for the Monterey Bay Sanctuary Scenic Trail	Draft	SCCRTC	SCCRTC	Draft	This Long Range Interpretive Plan was created for two purposes: 1) to help guide the future alignment of the Monterey Bay Sanctuary Scenic Trail toward resources worthy of appreciation and protection; 2) to give local entities direction for developing interpretive features within theirjurisdiction by describing the significance of features along the trail and translating those into a set of compelling stories, or themes. The plan offers a "blueprint" for interpretation that is comprehensive, site appropriate and meaningful throughout the trail corridor.	Ensure proposed alignment is consistent with policies and facilities identified in this Plan.

Name	Date	Prepared For	Prepared By	Approval	Summary	Relationship to MBSSTMP
Monterey Bay Sanctuary Scenic Trail Master Plan	Jan, 2008	TAMC	Alta Planning & Design		The purpose of the Master Plan is to identify the preferred alignment for the trail and to outline an implementation strategy for the project that extends from the Pajaro River in the north to Lovers Point in the south. Recommendations for preferred alignment include design and cost estimates. This information aids in project prioritization, which is essential to efficient implementation.The development of the Master Plan involved several steps, including an extensive resource inventory phase, public participation phase, alignment options and assessment phase, and preferred alignment and improvement plans. The Master Plan is designed to present both the preferred alignment and the process followed to arrive at recommended alignment.	Proposed alignment should tie-into the identified TAMC route.
Moving Forward Monterey Bay 2035	Under Development	AMBAG	AMBAG	Under Development	Federal regulations require that the Association of Monterey Bay Area Governments (AMBAG) to develop a long range transportation plan for the three-county Monterey Bay metropolitan region that is both financially constrained and falls under the on-road motor vehicle emissions budget included in the Federal Air Quality Maintenance Plan. The AMBAG region is currently in conformity for its vehicle emissions budget. Because new state legislation, SB 375, calls for MPOs to prepare a Sustainable Communities Strategy (SCS) to be used to synchronize and coordinate both the metropolitan transportation planning process and the regional housing needs allocation process, AMBAG is treating this 2010 update of the MTP as a minor update, with a significantly revised MTP expected in 2014. Programs and projects listed in this plan serve the stated goals and objectives, as well as meet the transportation needs and deficiencies. Programs and projects are first	Refer to Appendix D and E for projects that have been identified for funding.
Park-and-Ride	NA	SCCRTC	Commute Solutions	NA	Map identifying locations of park and ride lots within SC County.	Bicycle staging opportunity
San Lorenzo Valley Trail Feasibility Study	Apr-06	County of Santa Cruz Department of Public Works	Land People		Improved bicycle and pedestrian routes have been discussed in the San Lorenzo Valley for many years. In the past few years, the San Lorenzo Valley Trail Committee formed and conducted field studies to focus on this objective. In 2001 the Santa Cruz Public Works department and the Rails-To-Trails Conservancy collaborated on an application for a Caltrans Community-Based Transportation Planning Grant. In May 2002 Caltrans approved the grant to conduct a feasibility study of a trail along the San Lorenzo Valley/Highway 9 corridor between Santa Cruz and Boulder Creek (approximately 15 miles), including an assessment of the potential to the use the Big Trees/Roaring Camp Railroad line as part of the trail.	Opportunity for spur connection



Name	Date	Prepared For	Prepared By	Approval	Summary	Relationship to MBSSTMP
Sanctuary Scenic Trail Standards Manual	Jun, 2005	SCCRTC	Alta Planning & Design	Jun, 2005	The Standards Manual contains the guidelines, specifications and construction documents for the signage and exhibit program along the 11-mile core area of the Sanctuary Scenic Trail in Santa Cruz County. The purpose of the Standards Manual is to assist participating jurisdictions when they create and install trail elements and exhibits along their segment of the Trail. It describes sites, placement, site preparation, sign types, content, and frequency of signs. This "blueprint" has been accepted by officials in each of the jurisdictions along the 11-mile trail segment in Santa Cruz County. It should be referred to when developing signs and exhibits by each of these jurisdictions. Within the broad framework of the guidelines established in this manual, each jurisdiction will have the latitude to determine content, exact siting and contextual details.The Standards Manual establishes guidelines to make each site consistent with the overall trail plan. Each jurisdiction will be responsible for following these guidelines. The Standards Manual outlines this process to make it as easy as possible to implement the overall plan.	Ensure proposed alignment is consistent with policies and facilities identified in this Plan.
Santa Cruz Branch Rail Line Informational Right-of-way maps	Nov, 2005	SCCRTC	SCCRTC	NA	Maps display Union Pacific Railroad Company's Santa Cruz Branch Line ROW as developed by the County of Santa Cruz Geographic Information Systems Department on behalf of the SCCRTC. The complete length of the ROW is divided into 62 maps. These maps are intended to act as a reference for planning purposes only. They provide approximate ROW width and location abutting land use and points of reference for the Santa Cruz Branch Rail Line given available data.	Maps to be utilized in developing proposed bicycle facilities.
Santa Cruz County Bicycle Plan	Mar, 2011	Santa Cruz County	County of Santa Cruz Department of Public Works	Mar, 2011	The purpose of this plan is to consolidate into one document all bicycle-related County plans and projects that are currently identified in the County General Plan, the Santa Cruz County Regional Transportation Plan, and other local documents. Although not a part of the General Plan, the Bicycle Plan is consistent with and implements action statements of the Circulation Element of the General Plan and/or County and regional plans. The Plan is intended to aid County planners and engineers in selecting and implementing bicycle improvements with the goal of increasing bicycle commuting.	Ensure proposed alignment is consistent with the facilities identified in this Plan.
Santa Cruz County Bike Map	NA	SCCRTC	Eureka Cartography	NA	Map identifying bicycle routes, parks, bike shops, hostels, campgrounds, transit centers, schools, colleges, and golf courses	Ensure proposed facilities tie into existing facilities and destinations
Santa Cruz County General Plan 1983 Local Coastal Program	1994	Santa Cruz County	Santa Cruz County Planning Department	12/19/1994	The 1994 General Plan and Local Coastal Program Land Use Plan have been combined into one document. The Local Coastal Program (LCP) consists of land use plans, the zoning ordinance, zoning district maps, and other implementing actions, which, when taken together, meet the requirements of, and implement the provisions and policies of the Coastal Act. The LCP policies of the General Plan reflect the coastal issues and concerns of the County which is required to be consistent with the statewide policies of the Coastal Act. The LCP is legally binding on the County and provides a permanent program for coastal protection.	Ensure consistency with Goals, Objectives, policies, and programs
Santa Cruz County General Plan Circulation Element	May, 1995	Santa Cruz County			The circulation element is intended to be the key policy statement of the County regarding transportation facilities and programs serving the unincorporated areas. It is an integral part of the General Plan and Local Coastal Program Land Use Plans that provides a basis for transportation related decisions and complements the other General Plan and LCP Land Use Plan elements. Specifically, the Circulation Element clarifies transportation issues raised in other General Plan elements and offers guidance towards solutions.	Ensure consistency with Goals, Objectives, policies, and programs

Name	Date	Prepared For	Prepared By	Approval	Summary	Relationship to MBSSTMP
Santa Cruz County Regional Transportation Plan	Jun, 2010	Santa Cruz County	SCCRTP	Jun, 2010	This 2010 Regional Transportation Plan (called the 2010 RTP) is a minor update of the last version, completed in 2005, and provides guidance for transportation policy and projects through the year 2035. The 2010 RTP is the RTC's comprehensive planning document, which identifies the goals, projects, and programs that will maintain and improve out transportation system over the next twenty-five years. Individual projects listed in the 2010 RTP must still undergo separate design and environmental processes, and can only be implemented as local, state, and federal funds become available.	Review document for identified projects and funding. Include in Plan.
Santa Cruz County Transit Corridors Plan	Under Development	County of Santa Cruz	The Planning Center, DC&E	Under Development	The Transit Corridors Plan for Santa Cruz County is currently under development. Once completed the Plan will integrate the County's land use and transportation policies in a way that protects environmental resources, supports economic growth, and increases access to opportunity for all County residents.	Ensure proposed alignment is consistent with policies identified in this Plan.
Santa Cruz Branch Rail Line Alignment and Bridge Evaluation & Repair/ Rehabilitation or Replacement Recommendation Report	31-Aug-12	SCCRTC	Patterson and Associates	31-Aug-12	The J.L. Patterson & Associates, Inc. (JLP) team under Contract No.RT14019-01 with the Santa Cruz County Regional Transportation Commission (SCCRTC) was to assist the SCCRTC in identifying, reassessing and prioritizing $6 million in capital improvements.T he $6 million is generally directed towards maintaining and expanding (at a limited level) freight and recreational rail service on the Santa Cruz Branch Rail Line (BranchLine)and includes project cost analysis and budgeting for those investments that are most cost-beneficial for extending the useful life of the rail line. The JLP team reviewed previously prepared inspection, condition, environmental and other related reports and conducted supplemental data collection, field inspections, testing, and analysis as needed to determine the overall scope of required rehabilitation, reconstruction, and other improvements. Once the information was reviewed and analyzed, the JLP team prioritized the most important repairs needed that can be performed within the $6 million construction budget	Review document for identified projects and funding. Include in Plan.
Santa Cruz Industrial Lead Supplemental Structural Assessment Report	23-Jun-06	SCCRTC	HNTB	NA	The report provides a structural assessment of selected structures on the Santa Cruz Industrial Lead. The Supplemental Structural Assessment Report supplements previously completed structural assessments completed by other consultants in July 2005 and August 2005. The July 2005 Structural Assessment and August 2005 La Selva Trestle Supplemental Reports highlighted specific structures that were in need of additional structural assessment "due to a Poor Condition Rating, advance age of the structure, importance/visibility of the structure, and/or potentially high capital and maintenance costs of the structure". The purpose of the Supplemental Structural Assessment Report is to present findings from HNTB's structural assessment of those specific structures.	Ensure structures are compatible with proposed bicycle facilities
Seacliff Village Plan	10-Jul-03	County of Santa Cruz	County of Santa Cruz	10-Jul-03	The Seacliff Village Plan was prepared by the community and Planning Department staff to establish land use, circulation, and design standards for the Seacliff Village Plan Area. The Seacliff Village Plan provides a more detailed examination of planning issues and recommends more specific solutions than can be provided in a general plan.	Ensure proposed alignment is consistent with policies identified in this Plan.

Name	Date	Prepared For	Prepared By	Approval	Summary	Relationship to MBSSTMP
The Forest of Nisene Marks State Park General Plan	Jul, 2005	California State Parks	California State Parks	Jul, 2005	The General Plan for The Forest of Nisene Marks State Park provides a vision for the park. Although broad in scope, the plan does identify and analyze park resources in order to provide an assessment of potential environmental impacts as a result of the plan's implementation. In order to do so, the plan recommends the development of a comprehensive trails plan, and a resource management plan that will guide future needs. These guidelines propose improvements for land use compatibility, the nature and location of possible future developments, possible acquisition, and other specific actions.	Ensure proposed alignment is consistent with policies identified in this Plan.
University of California, Santa Cruz 2008 Bicycle Plan	Nov-08	UCSC	UCSC	Nov-08	The purpose of the UCSC 2008 Bicycle Plan is to serve as a guide for improving bicycling conditions and continue to encourage and support bicycling as a sustainable transportation mode on, to and from the UC Santa Cruz campus. As such, this document describes the existing policies and facilities related to bicycling in the campus context, and it includes a list of projects and programs intended to improve bicycling as a viable commute mode in the future. The plan complies with the requirements and guidelines articulated in Section 891.2 of the California Streets and Highways Code. By complying with this element of the vehicle code, the plan meets the requirements of the Bicycle Transportation Account (BTA), a Caltrans funding source for bicycle improvements projects. The plan is not intended to serve as a standards manual for design and construction of bicycle facilities.	Ensure alignment includes a spur to connect to these facilities.
University of California, Santa Cruz Long-Range Development Plan 2005-2020		UCSC	UCSC		Similar to the 1963 founding plan for the campus and subsequent UCSC LRDPs, the 2005 LRDP identifies the need to extend development to the north to meet the academic, research, and housing needs of the campus as it matures. The plan balancesdevelopment opportunity with conservation of natural resources and open space by clustering new potential development areas and recognizing that additional density can be added to existing developed areas. The LRDP also identifies circulation patterns and improvements.	Ensure proposed alignment is consistent with policies and facilities identified in this Plan.
Watsonville VISTA 2030 General Plan Circulation Element	Oct, 2012	City of Watsonville	Calthorpe, Catalyst, TIP, RBF, Kimley-Horn		Circulation element policies are consistent with Watsonville bicycle plan and county RTP policies.	Use Watsonville bicycle plan, County General Plan, and RTP
Wilder Ranch State Park General Plan	Mar, 1980	California State Parks	California State Parks	Mar, 1980	The Wilder Ranch State Park General Plan recognizes the potential of Wilder Ranch State Park to help meet California's critical recreation demands. At the same time, it provides for the preservation of those natural and cultrual resources that are of special significance and for the proper protection of all resources.	Ensure proposed alignment is consistent with policies identified in this Plan.







APPENDIX C

Trail Segment Costs



MBSST Network: Master Plan

COST ESTIMATE - ALL SEGMENTS

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			SEGMENT 1		SEGMENT 2		SEGMENT 3		SEGMENT 4		SEGMENT 4A		SEGMENT 4B	
	SEGMENT LENGTH		5,600 LF / 1.06 MI		25,170 LF / 4.77 MI		5,870 LF / 1.11 MI		7,300 LF / 1.38 MI		7,470 LF / 1.41 MI		4,510 LF / 0.85 MI	
TYPE	**UNIT**	**COST**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**
Rail Trail														
Multi-Use Paved Path (Class I) (12' paved): moderate terrain, drainage, utilities	LF	$162							3,520	$570,240				
Multi-Use Paved Path (Class I) (12' paved): difficult terrain, retaining walls, drainage, utilities	LF	$405												
Multi-Use Paved (Class I)/Unpaved Path (12' paved, with 6' DG path): moderate terrain, drainage, utilities	LF	$180												
SUBTOTAL			**0**	**$0**	**0**	**$0**	**0**	**$0**	**3,520**	**$570,240**	**0**	**$0**	**0**	**$0**
Coastal Trail														
Multi-Use Paved Path (Class I) (12' paved): moderate terrain, drainage, utilities	LF	$162					5,870	$950,940	3,780	$612,360				
Multi-Use Paved Path (Class I) (12' paved): difficult terrain, retaining walls, drainage, utilities	LF	$405												
Unpaved Trail (native soil); 6' - 8' wide, level terrain	LF	$7	800	$5,600							7,470	$52,290		
Unpaved Trail (native soil); 10' - 12' wide on existing road	LF	$11	200	$2,200										
Class II Bike Lanes	LF	$20											4,510	$90,200
Class III Bike Route, wayfinding signage	LF	$6	4,600	$27,600	25,170	$151,020								
SUBTOTAL			**5,600**	**$35,400**	**25,170**	**$151,020**	**5,870**	**$950,940**	**3,780**	**$612,360**	**7,470**	**$52,290**	**4,510**	**$90,200**
Bridge Structures														
Modified Existing Bridge	EA	Varies												
New Pre-Engineered Bridge	EA	Varies					1	$400,000						
SUBTOTAL			**0**	**$0**	**0**	**$0**	**1**	**$400,000**	**0**	**$0**	**0**	**$0**	**0**	**$0**
Trail Amenities														
Trailhead signage	EA	$4,000	1	$4,000	2	$8,000								
Interpretive signage	EA	$500	3	$1,500	2	$1,000								
Wayfinding signage	Allow/Mile	$2,500	1.1	$2,750	5.0	$12,500	1.1	$2,750	1.4	$3,500				
Emergency locator system signage (rail trail only)	Allow/Mile	$3,000	1.1	$3,300	5.0	$15,000	1.1	$3,300	1.4	$4,200				
Bike rack	EA	$1,000	2	$2,000	2	$2,000								
Bench	EA	$1,500	2	$3,000	2	$3,000	1	$1,500						
Shade structure with bench	EA	$15,000	1	$15,000										
Fencing	LF	$40					5,883	$235,320	2,640	$105,600				
Lighting (at bridges/crossings within urban segments)	Each Xing	$25,000												
Restroom	EA	$30,000												
SUBTOTAL				**$31,550**		**$41,500**		**$242,870**		**$113,300**		**$0**		**$0**
Staging Area Access														
Trailhead, small (10 cars)	**EA**	$30,000												
Trailhead, medium (20 cars), portable restroom	**EA**	$50,000												
Trailhead, large (30 cars), restroom, drinking fountain	**EA**	$80,000												
SUBTOTAL			**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**
Rail Track and Street Crossings														
Type A: Tie into railroad control cab, ped gates, barriers,roadway treatments	EA	$250,000												
Type B: Traffic signal modication with new crosswalk, ped equipment, loops, striping	EA	$50,000												
Type C: HAWK including all elec and striping/signing	EA	$150,000							1	$150,000				
Type D: Active Enhanced Midblock, either IRWL or overhead, ppb, yield marks, signs, path controls	EA	$100,000												
Type E: Passive Enhanced Midblock, with yield marks, signs, crosswalk, path controls	EA	$25,000												
Type F: Standard Midblock with signs, crosswalk, path controls	EA	$20,000							2	$40,000				
Type G: Traffic Calming Measures, medians or curb extensions, warning signs, crosswalk	EA	$80,000												
Type H: Connection Facilities, with redirected path to ex xwalk and bike lanes or sharrows	EA	$60,000												
Type I: Rail xing w/out rr signal mods, with barriers at tracks/path, roadway xing signs/markings, path yields	EA	$40,000							1	$40,000				
Type J: Standard Private Crossing, with stops for local road crossing and path yield signs or marks*	EA	$10,000							1	$10,000				
SUBTOTAL			**0**	**$0**	**0**	**$0**	**0**	**$0**	**5**	**$240,000**	**0**	**$0**	**0**	**$0**

Note: *The maps show PUC designated crossings and may not reflect all private crossings.

	SEGMENT 1	SEGMENT 2	SEGMENT 3	SEGMENT 4	SEGMENT 4A	SEGMENT 4B
	TOTAL	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**
SEGMENT TOTALS	**$66,950**	**$192,520**	**$1,593,810**	**$1,535,900**	**$52,290**	**$90,200**
CONSTRUCTION COST TOTAL	**$66,950**	**$192,520**	**$1,593,810**	**$1,535,900**	**$52,290**	**$90,200**
DESIGN, ENGINEERING AND PS&E (15%)	**$10,043**	**$28,878**	**$239,072**	**$230,385**	**$7,844**	**$13,530**
ENVIRONMENTAL PERMITTING (10%)	**$6,695**	**$19,252**	**$159,381**	**$153,590**	**$5,229**	**$9,020**
CONSTRUCTION MANAGEMENT (15%)	**$10,043**	**$28,878**	**$239,072**	**$230,385**	**$7,844**	**$13,530**
CONTINGENCY (20%)	**$13,390**	**$38,504**	**$318,762**	**$307,180**	**$10,458**	**$18,040**
COMBINED CONSTRUCTION/SUPPORT COST TOTAL	**$107,120**	**$308,032**	**$2,550,096**	**$2,457,440**	**$83,664**	**$144,320**
SEGMENT AGGREGATED TOTAL	**$107,120**	**$308,032**	**$2,550,096**	**$2,685,424**		

MBSST Network: Master Plan

COST ESTIMATE - ALL SEGMENTS

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			SEGMENT 5.1		SEGMENT 5.2		SEGMENT 5.3		SEGMENT 5A		SEGMENT 5B		SEGMENT 5C		SEGMENT 5D		SEGMENT 5E		SEGMENT 5F	
SEGMENT LENGTH			7,890 LF / 1.49 MI		13,630 LF / 2.58 MI		18,520 LF / 3.51 MI		580 LF / 0.11 MI		3,390 LF / 0.64 MI		2,710 LF / 0.51 MI		7,280 LF / 1.38 MI		1,150 LF / 0.22 MI		570 LF / 0.11 MI	
TYPE	**UNIT**	**COST**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**
Rail Trail																				
Multi-Use Paved Path (Class I) (12' paved): moderate terrain, drainage, utilities	LF	$162	7,890	$1,278,180	13,630	$2,208,060	18,520	$3,000,240												
Multi-Use Paved Path (Class I) (12' paved): difficult terrain, retaining walls, drainage, utilities	LF	$405																		
Multi-Use Paved (Class I)/Unpaved Path (12' paved, with 6' DG path): moderate terrain, drainage, utilities	LF	$180																		
SUBTOTAL			**7,890**	**$1,278,180**	**13,630**	**$2,208,060**	**18,520**	**$3,000,240**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**
Coastal Trail																				
Multi-Use Paved Path (Class I) (12' paved): moderate terrain, drainage, utilities	LF	$162																		
Multi-Use Paved Path (Class I) (12' paved): difficult terrain, retaining walls, drainage, utilities	LF	$405																		
Unpaved Trail (native soil); 6' - 8' wide, level terrain	LF	$7							580	$4,060	3,390	$23,730	2,710	$18,970	7,820	$54,740	1,150	$8,050	570	$3,990
Unpaved Trail (native soil); 10' - 12' wide on existing road	LF	$11																		
Class II Bike Lanes	LF	$20																		
Class III Bike Route, wayfinding signage	LF	$6																		
SUBTOTAL			**0**	**$0**	**0**	**$0**	**0**	**$0**	**580**	**$4,060**	**3,390**	**$23,730**	**2,710**	**$18,970**	**7,820**	**$54,740**	**1,150**	**$8,050**	**570**	**$3,990**
Bridge Structures																				
Modified Existing Bridge	EA	Varies																		
New Pre-Engineered Bridge	EA	Varies																		
SUBTOTAL			**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**
Trail Amenities																				
Trailhead signage	EA	$4,000	1	$4,000	1	$4,000	2	$8,000												
Interpretive signage	EA	$500			2	$1,000	3	$1,500												
Wayfinding signage	Allow/Mile	$2,500	1.5	$3,750	2.6	$6,500	3.5	$8,750												
Emergency locator system signage (rail trail only)	Allow/Mile	$3,000	1.5	$4,500	2.6	$7,800	3.5	$10,500												
Bike rack	EA	$1,000	2	$2,000	2	$2,000	4	$4,000												
Bench	EA	$1,500	3	$4,500	4	$6,000	3	$4,500												
Shade structure with bench	EA	$15,000																		
Fencing	LF	$40			13,628	$545,120	18,520	$740,800												
Lighting (at bridges/crossings within urban segments)	Each Xing	$25,000																		
Restroom	EA	$30,000																		
SUBTOTAL				**$18,750**		**$572,420**		**$778,050**		**$0**		**$0**		**$0**		**$0**		**$0**		**$0**
Staging Area Access																				
Trailhead, small (10 cars)	**EA**	$30,000																		
Trailhead, medium (20 cars), portable restroom	**EA**	$50,000																		
Trailhead, large (30 cars), restroom, drinking fountain	**EA**	$80,000																		
SUBTOTAL			**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**
Rail Track and Street Crossings																				
Type A: Tie into railroad control cab, ped gates, barriers,roadway treatments	EA	$250,000	3	$750,000	1	$250,000	1	$250,000												
Type B: Traffic signal modication with new crosswalk, ped equipment, loops, striping	EA	$50,000																		
Type C: HAWK including all elec and striping/signing	EA	$150,000																		
Type D: Active Enhanced Midblock, either IRWL or overhead, ppb, yield marks, signs, path controls	EA	$100,000																		
Type E: Passive Enhanced Midblock, with yield marks, signs, crosswalk, path controls	EA	$25,000																		
Type F: Standard Midblock with signs, crosswalk, path controls	EA	$20,000																		
Type G: Traffic Calming Measures, medians or curb extensions, warning signs, crosswalk	EA	$80,000																		
Type H: Connection Facilities, with redirected path to ex xwalk and bike lanes or sharrows	EA	$60,000																		
Type I: Rail xing w/out rr signal mods, with barriers at tracks/path, roadway xing signs/markings, path yields	EA	$40,000																		
Type J: Standard Private Crossing, with stops for local road crossing and path yield signs or marks*	EA	$10,000	1	$10,000	3	$30,000	12	$120,000												
SUBTOTAL			**4**	**$760,000**	**4**	**$280,000**	**13**	**$370,000**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**

Note: *The maps show PUC designated crossings and may not reflect all private crossings.

	SEGMENT 5.1	SEGMENT 5.2	SEGMENT 5.3	SEGMENT 5A	SEGMENT 5B	SEGMENT 5C	SEGMENT 5D	SEGMENT 5E	SEGMENT 5F
	TOTAL	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**
SEGMENT TOTALS	**$2,056,930**	**$3,060,480**	**$4,148,290**	**$4,060**	**$23,730**	**$18,970**	**$54,740**	**$8,050**	**$3,990**
CONSTRUCTION COST TOTAL	**$2,056,930**	**$3,060,480**	**$4,148,290**	**$4,060**	**$23,730**	**$18,970**	**$54,740**	**$8,050**	**$3,990**
DESIGN, ENGINEERING AND PS&E (15%)	**$308,540**	**$459,072**	**$622,244**	**$609**	**$3,560**	**$2,846**	**$8,211**	**$1,208**	**$599**
ENVIRONMENTAL PERMITTING (10%)	**$205,693**	**$306,048**	**$414,829**	**$406**	**$2,373**	**$1,897**	**$5,474**	**$805**	**$399**
CONSTRUCTION MANAGEMENT (15%)	**$308,540**	**$459,072**	**$622,244**	**$609**	**$3,560**	**$2,846**	**$8,211**	**$1,208**	**$599**
CONTINGENCY (20%)	**$411,386**	**$612,096**	**$829,658**	**$812**	**$4,746**	**$3,794**	**$10,948**	**$1,610**	**$798**
COMBINED CONSTRUCTION/SUPPORT COST TOTAL	**$3,291,088**	**$4,896,768**	**$6,637,264**	**$6,496**	**$37,968**	**$30,352**	**$87,584**	**$12,880**	**$6,384**
SEGMENT AGGREGATED TOTAL	**$15,006,784**								



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			SEGMENT 6		SEGMENT 6A		**SEGMENT 7**		SEGMENT 7A		**SEGMENT 8**		**SEGMENT 9**		SEGMENT 9A		SEGMENT 9B	
SEGMENT LENGTH			7,160 LF / 1.36 MI		670 LF / 0.13 MI		11,450 LF / 2.17 MI		4,480 LF / 0.85 MI		4,070 LF / 0.77 MI		8,100 LF / 1.53 MI		310 LF / 0.06 MI		730 LF / 0.14 MI	
TYPE	**UNIT**	**COST**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**
Rail Trail																		
Multi-Use Paved Path (Class I) (12' paved): moderate terrain, drainage, utilities	LF	$162	7,160	$1,159,920			11,450	$1,854,900					6,750	$1,093,500				
Multi-Use Paved Path (Class I) (12' paved): difficult terrain, retaining walls, drainage, utilities	LF	$405											1,350	$546,750				
Multi-Use Paved (Class I)/Unpaved Path (12' paved, with 6' DG path): moderate terrain, drainage, utilities	LF	$180																
SUBTOTAL			**7,160**	**$1,159,920**	**0**	**$0**	**11,450**	**$1,854,900**	**0**	**$0**	**0**	**$0**	**8,100**	**$1,640,250**	**0**	**$0**	**0**	**$0**
Coastal Trail																		
Multi-Use Paved Path (Class I) (12' paved): moderate terrain, drainage, utilities	LF	$162							4,480	$725,760								
Multi-Use Paved Path (Class I) (12' paved): difficult terrain, retaining walls, drainage, utilities	LF	$405																
Unpaved Trail (native soil); 6' - 8' wide, level terrain	LF	$7																
Unpaved Trail (native soil); 10' - 12' wide on existing road	LF	$11			670	$7,370												
Class II Bike Lanes	LF	$20									2,000	$40,000						
Class III Bike Route, wayfinding signage	LF	$6													310	$1,860	730	$4,380
SUBTOTAL			**0**	**$0**	**670**	**$7,370**	**0**	**$0**	**4,480**	**$725,760**	**2,000**	**$40,000**	**0**	**$0**	**310**	**$1,860**	**730**	**$4,380**
Bridge Structures																		
Modified Existing Bridge	EA	Varies																
New Pre-Engineered Bridge	EA	Varies					1	$2,500,000			1	$6,000,000	3	$5,000,000				
SUBTOTAL			**0**	**$0**	**0**	**$0**	**1**	**$2,500,000**	**0**	**$0**	**1**	**$6,000,000**	**3**	**$5,000,000**	**0**	**$0**	**0**	**$0**
Trail Amenities																		
Trailhead signage	EA	$4,000					1	$4,000			1	$4,000	1	$4,000				
Interpretive signage	EA	$500																
Wayfinding signage	Allow/Mile	$2,500	1.4	$3,500														
Emergency locator system signage (rail trail only)	Allow/Mile	$3,000	1.4	$4,200			2.2	$6,600			0.8	$2,400	1.5	$4,500				
Bike rack	EA	$1,000											2	$2,000				
Bench	EA	$1,500											3	$4,500				
Shade structure with bench	EA	$15,000											1	$15,000				
Fencing	LF	$40	7,160	$286,400			3,000	$120,000					1,500	$60,000				
Lighting (at bridges/crossings within urban segments)	Each Xing	$25,000	7	$175,000			18	$450,000			2	$50,000	6	$150,000				
Restroom	EA	$30,000																
SUBTOTAL				**$469,100**		**$0**		**$580,600**		**$0**		**$56,400**		**$240,000**		**$0**		**$0**
Staging Area Access																		
Trailhead, small (10 cars)	**EA**	$30,000																
Trailhead, medium (20 cars), portable restroom	**EA**	$50,000																
Trailhead, large (30 cars), restroom, drinking fountain	**EA**	$80,000					1	$80,000										
SUBTOTAL			**0**	**$0**	**0**	**$0**	**1**	**$80,000**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**
Rail Track and Street Crossings																		
Type A: Tie into railroad control cab, ped gates, barriers,roadway treatments	EA	$250,000	1	$250,000			3	$750,000			1	$250,000	1	$250,000				
Type B: Traffic signal modication with new crosswalk, ped equipment, loops, striping	EA	$50,000									2	$100,000	1	$50,000				
Type C: HAWK including all elec and striping/signing	EA	$150,000																
Type D: Active Enhanced Midblock, either IRWL or overhead, ppb, yield marks, signs, path controls	EA	$100,000											2	$200,000				
Type E: Passive Enhanced Midblock, with yield marks, signs, crosswalk, path controls	EA	$25,000					10	$250,000										
Type F: Standard Midblock with signs, crosswalk, path controls	EA	$20,000	1	$20,000									1	$20,000				
Type G: Traffic Calming Measures, medians or curb extensions, warning signs, crosswalk	EA	$80,000					1	$80,000										
Type H: Connection Facilities, with redirected path to ex xwalk and bike lanes or sharrows	EA	$60,000					3	$180,000										
Type I: Rail xing w/out rr signal mods, with barriers at tracks/path, roadway xing signs/markings, path yields	EA	$40,000											1	$40,000				
Type J: Standard Private Crossing, with stops for local road crossing and path yield signs or marks*	EA	$10,000	4	$40,000			1	$10,000										
SUBTOTAL			**6**	**$310,000**	**0**	**$0**	**18**	**$1,270,000**	**0**	**$0**	**3**	**$350,000**	**6**	**$560,000**	**0**	**$0**	**0**	**$0**

Note: *The maps show PUC designated crossings and may not reflect all private crossings.

	SEGMENT 6	SEGMENT 6A	**SEGMENT 7**	SEGMENT 7B	**SEGMENT 8**	**SEGMENT 9**	SEGMENT 9A	SEGMENT 9B
	TOTAL	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**
SEGMENT TOTALS	**$1,939,020**	**$7,370**	**$6,285,500**	**$725,760**	**$6,446,400**	**$7,440,250**	**$1,860**	**$4,380**
CONSTRUCTION COST TOTAL	**$1,939,020**	**$7,370**	**$6,285,500**	**$725,760**	**$6,446,400**	**$7,440,250**	**$1,860**	**$4,380**
DESIGN, ENGINEERING AND PS&E (15%)	**$290,853**	**$1,106**	**$942,825**	**$108,864**	**$966,960**	**$1,116,038**	**$279**	**$657**
ENVIRONMENTAL PERMITTING (10%)	**$193,902**	**$737**	**$628,550**	**$72,576**	**$644,640**	**$744,025**	**$186**	**$438**
CONSTRUCTION MANAGEMENT (15%)	**$290,853**	**$1,106**	**$942,825**	**$108,864**	**$966,960**	**$1,116,038**	**$279**	**$657**
CONTINGENCY (20%)	**$387,804**	**$1,474**	**$1,257,100**	**$145,152**	**$1,289,280**	**$1,488,050**	**$372**	**$876**
COMBINED CONSTRUCTION/SUPPORT COST TOTAL	**$3,102,432**	**$11,792**	**$10,056,800**	**$1,161,216**	**$10,314,240**	**$11,904,400**	**$2,976**	**$7,008**
SEGMENT AGGREGATED TOTAL	**$3,114,224**		**$11,218,016**		**$10,314,240**	**$11,914,384**		

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			SEGMENT 10**		SEGMENT 11		SEGMENT 12		SEGMENT 13		SEGMENT 14		SEGMENT 15		SEGMENT 16		SEGMENT 16A		SEGMENT 16B	
	SEGMENT LENGTH		7,940 LF / 1.50 MI		16,880 LF / 3.20 MI		6,030 LF / 1.14 MI		4,510 LF / 0.85 MI		6,160 LF / 1.17 MI		7,240 LF / 1.37 MI		9,400 LF / 1.78 MI		2,100 LF / 0.40 MI		2,530 LF / 0.48 MI	
TYPE	**UNIT**	**COST**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**
Rail Trail																				
Multi-Use Paved Path (Class I) (12' paved): moderate terrain, drainage, utilities	LF	$162			12,430	$2,013,660	730	$118,260	3,510	$568,620	5,360	$868,320	6,200	$1,004,400	9,400	$1,522,800				
Multi-Use Paved Path (Class I) (12' paved): difficult terrain, retaining walls, drainage, utilities	LF	$405	7,940	$4,215,700	4,450	$1,802,250	5,300	$2,146,500	1,000	$405,000	800	$324,000	1,040	$421,200						
Multi-Use Paved (Class I)/Unpaved Path (12' paved, with 6' DG path): moderate terrain, drainage, utilities	LF	$180																		
SUBTOTAL			**7,940**	**$4,215,700**	**16,880**	**$3,815,910**	**6,030**	**$2,264,760**	**4,510**	**$973,620**	**6,160**	**$1,192,320**	**7,240**	**$1,425,600**	**9,400**	**$1,522,800**	**0**	**$0**	**0**	**$0**
Coastal Trail																				
Multi-Use Paved Path (Class I) (12' paved): moderate terrain, drainage, utilities	LF	$162															2,100	$340,200		
Multi-Use Paved Path (Class I) (12' paved): difficult terrain, retaining walls, drainage, utilities	LF	$405																		
Unpaved Trail (native soil); 6' - 8' wide, level terrain	LF	$7																		
Unpaved Trail (native soil); 10' - 12' wide on existing road	LF	$11																		
Class II Bike Lanes	LF	$20																	2,530	$50,600
Class III Bike Route, wayfinding signage	LF	$6																		
SUBTOTAL			**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**2,100**	**$340,200**	**2,530**	**$50,600**
Bridge Structures																				
Modified Existing Bridge	EA	Varies					1	$600,000												
New Pre-Engineered Bridge	EA	Varies	1	$450,000	2	$400,000	3	$3,000,000	1	$1,000,000			2	$1,450,000						
SUBTOTAL			**1**	**$450,000**	**2**	**$400,000**	**4**	**$3,600,000**	**1**	**$1,000,000**	**0**	**$0**	**2**	**$1,450,000**	**0**	**$0**	**0**	**$0**	**0**	**$0**
Trail Amenities																				
Trailhead signage	EA	$4,000	2	$8,000	2	$8,000	1	$4,000			1	$4,000								
Interpretive signage	EA	$500																		
Wayfinding signage	Allow/Mile	$2,500	1.5	$3,750	3.2	$8,000	1.1	$2,750							1.8	$4,500				
Emergency locator system signage (rail trail only)	Allow/Mile	$3,000	1.5	$4,500	3.2	$9,600	1.1	$3,300	0.9	$2,700	1.2	$3,600	1.4	$4,200	1.8	$5,400				
Bike rack	EA	$1,000			6	$6,000														
Bench	EA	$1,500			6	$9,000														
Shade structure with bench	EA	$15,000																		
Fencing	LF	$40	15,880	$635,200	5,280	$211,200	3,000	$120,000												
Lighting (at bridges/crossings within urban segments)	Each Xing	$25,000	6	$150,000	12	$300,000	12	$300,000												
Restroom	EA	$30,000																		
SUBTOTAL				**$801,450**		**$551,800**		**$430,050**		**$2,700**		**$7,600**		**$4,200**		**$9,900**		**$0**		**$0**
Staging Area Access																				
Trailhead, small (10 cars)	**EA**	$30,000							1	$30,000										
Trailhead, medium (20 cars), portable restroom	**EA**	$50,000																		
Trailhead, large (30 cars), restroom, drinking fountain	**EA**	$80,000																		
SUBTOTAL			**0**	**$0**	**0**	**$0**	**0**	**$0**	**1**	**$30,000**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**
Rail Track and Street Crossings																				
Type A: Tie into railroad control cab, ped gates, barriers,roadway treatments	EA	$250,000	1	$250,000	2	$500,000	1	$250,000							1	$250,000				
Type B: Traffic signal modication with new crosswalk, ped equipment, loops, striping	EA	$50,000					1	$50,000												
Type C: HAWK including all elec and striping/signing	EA	$150,000	2	$300,000			1	$150,000												
Type D: Active Enhanced Midblock, either IRWL or overhead, ppb, yield marks, signs, path controls	EA	$100,000			1	$100,000														
Type E: Passive Enhanced Midblock, with yield marks, signs, crosswalk, path controls	EA	$25,000	2	$50,000	1	$25,000	1	$25,000							1	$25,000				
Type F: Standard Midblock with signs, crosswalk, path controls	EA	$20,000									2	$40,000								
Type G: Traffic Calming Measures, medians or curb extensions, warning signs, crosswalk	EA	$80,000																		
Type H: Connection Facilities, with redirected path to ex xwalk and bike lanes or sharrows	EA	$60,000			2	$120,000			1	$60,000	1	$60,000			1	$60,000				
Type I: Rail xing w/out rr signal mods, with barriers at tracks/path, roadway xing signs/markings, path yields	EA	$40,000											1	$40,000						
Type J: Standard Private Crossing, with stops for local road crossing and path yield signs or marks*	EA	$10,000			3	$30,000							4	$40,000						
SUBTOTAL			**5**	**$600,000**	**9**	**$775,000**	**4**	**$475,000**	**1**	**$60,000**	**3**	**$100,000**	**5**	**$80,000**	**3**	**$335,000**	**0**	**$0**	**0**	**$0**

Notes: *The maps show PUC designated crossings and may not reflect all private crossings.

**Segment 10 Rail Trail cost includes $1,000,000 for moving the tracks due to constrained ROW.

	SEGMENT 10	SEGMENT 11	SEGMENT 12	SEGMENT 13	SEGMENT 14	SEGMENT 15	SEGMENT 16	SEGMENT 16A	SEGMENT 16B
	TOTAL	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**
SEGMENT TOTALS	$6,067,150	$5,542,710	$6,769,810	$2,066,320	$1,299,920	$2,959,800	$1,867,700	$340,200	$50,600
CONSTRUCTION COST TOTAL	$6,067,150	$5,542,710	$6,769,810	$2,066,320	$1,299,920	$2,959,800	$1,867,700	$340,200	$50,600
DESIGN, ENGINEERING AND PS&E (15%)	$910,073	$831,407	$1,015,472	$309,948	$194,988	$443,970	$280,155	$51,030	$7,590
ENVIRONMENTAL PERMITTING (10%)	$606,715	$554,271	$676,981	$206,632	$129,992	$295,980	$186,770	$34,020	$5,060
CONSTRUCTION MANAGEMENT (15%)	$910,073	$831,407	$1,015,472	$309,948	$194,988	$443,970	$280,155	$51,030	$7,590
CONTINGENCY (20%)	$1,213,430	$1,108,542	$1,353,962	$413,264	$259,984	$591,960	$373,540	$68,040	$10,120
COMBINED CONSTRUCTION/SUPPORT COST TOTAL	$9,707,440	$8,868,336	$10,831,696	$3,306,112	$2,079,872	$4,735,680	$2,988,320	$544,320	$80,960
SEGMENT AGGREGATED TOTAL	$9,707,440	$8,868,336	$10,831,696	$3,306,112	$2,079,872	$4,735,680	$3,613,600		

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			SEGMENT 17		**SEGMENT 18**		SEGMENT 18A		SEGMENT 18B		**SEGMENT 19**		SEGMENT 19A		**SEGMENT 20**	
	SEGMENT LENGTH		21,140 LF / 4.00 MI		6,350 LF / 1.20 MI		6,840 LF / 1.30 MI		7,980 LF / 1.51 MI		1,510 LF / 0.29 MI		950 LF / 0.18 MI		3,930 LF / 0.74 MI	
TYPE	**UNIT**	**COST**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**	**Qty.**	**Total**
Rail Trail																
Multi-Use Paved Path (Class I) (12' paved): moderate terrain, drainage, utilities	LF	$162	10,540	$1,707,480	6,350	$1,028,700									3,930	$636,660
Multi-Use Paved Path (Class I) (12' paved): difficult terrain, retaining walls, drainage, utilities	LF	$405	7,100	$2,875,500												
Multi-Use Paved (Class I)/Unpaved Path (12' paved, with 6' DG path): moderate terrain, drainage, utilities	LF	$180	3,500	$630,000												
SUBTOTAL			**21,140**	**$5,212,980**	**6,350**	**$1,028,700**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**3,930**	**$636,660**
Coastal Trail																
Multi-Use Paved Path (Class I) (12' paved): moderate terrain, drainage, utilities	LF	$162														
Multi-Use Paved Path (Class I) (12' paved): difficult terrain, retaining walls, drainage, utilities	LF	$405														
Unpaved Trail (native soil); 6' - 8' wide, level terrain	LF	$7														
Unpaved Trail (native soil); 10' - 12' wide on existing road	LF	$11														
Class II Bike Lanes	LF	$20					6,840	$136,800	7,980	$159,600			950	$19,000		
Class III Bike Route, wayfinding signage	LF	$6														
SUBTOTAL			**0**	**$0**	**0**	**$0**	**6,840**	**$136,800**	**7,980**	**$159,600**	**0**	**$0**	**950**	**$19,000**	**0**	**$0**
Bridge Structures																
Modified Existing Bridge	EA	Varies														
New Pre-Engineered Bridge	EA	Varies	7	$7,000,000											1	$1,000,000
SUBTOTAL			**7**	**$7,000,000**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**1**	**$1,000,000**
Trail Amenities																
Trailhead signage	EA	$4,000			1	$4,000									1	$4,000
Interpretive signage	EA	$500														
Wayfinding signage	Allow/Mile	$2,500	4.0	$10,000											0.7	$1,750
Emergency locator system signage (rail trail only)	Allow/Mile	$3,000	4.0	$12,000	1.2	$3,600					0.5	$1,500			0.7	$2,100
Bike rack	EA	$1,000														
Bench	EA	$1,500														
Shade structure with bench	EA	$15,000														
Fencing	LF	$40	5,280	$211,200	6,350	$254,000					3,320	$132,800			5,280	$211,200
Lighting (at bridges/crossings within urban segments)	Each Xing	$25,000			5	$125,000					1	$25,000			1	$25,000
Restroom	EA	$30,000			1	$30,000										
SUBTOTAL				**$233,200**		**$416,600**		**$0**		**$0**		**$159,300**		**$0**		**$244,050**
Staging Area Access																
Trailhead, small (10 cars)	**EA**	$30,000														
Trailhead, medium (20 cars), portable restroom	**EA**	$50,000														
Trailhead, large (30 cars), restroom, drinking fountain	**EA**	$80,000														
SUBTOTAL			**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**	**0**	**$0**
Rail Track and Street Crossings																
Type A: Tie into railroad control cab, ped gates, barriers,roadway treatments	EA	$250,000														
Type B: Traffic signal modication with new crosswalk, ped equipment, loops, striping	EA	$50,000														
Type C: HAWK including all elec and striping/signing	EA	$150,000														
Type D: Active Enhanced Midblock, either IRWL or overhead, ppb, yield marks, signs, path controls	EA	$100,000														
Type E: Passive Enhanced Midblock, with yield marks, signs, crosswalk, path controls	EA	$25,000														
Type F: Standard Midblock with signs, crosswalk, path controls	EA	$20,000			1	$20,000										
Type G: Traffic Calming Measures, medians or curb extensions, warning signs, crosswalk	EA	$80,000														
Type H: Connection Facilities, with redirected path to ex xwalk and bike lanes or sharrows	EA	$60,000			2	$120,000					1	$60,000				
Type I: Rail xing w/out rr signal mods, with barriers at tracks/path, roadway xing signs/markings, path yields	EA	$40,000														
Type J: Standard Private Crossing, with stops for local road crossing and path yield signs or marks*	EA	$10,000	3	$30,000												
SUBTOTAL			**3**	**$30,000**	**3**	**$140,000**	**0**	**$0**	**0**	**$0**	**1**	**$60,000**	**0**	**$0**	**0**	**$0**

Note: *The maps show PUC designated crossings and may not reflect all private crossings.

	SEGMENT 17	**SEGMENT 18**	SEGMENT 18A	SEGMENT 18B	**SEGMENT 19**	SEGMENT 19A	**SEGMENT 20**
	TOTAL	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**	**TOTAL**
SEGMENT TOTALS	**$12,476,180**	**$1,585,300**	**$136,800**	**$159,600**	**$219,300**	**$19,000**	**$1,880,710**
CONSTRUCTION COST TOTAL	**$12,476,180**	**$1,585,300**	**$136,800**	**$159,600**	**$219,300**	**$19,000**	**$1,880,710**
DESIGN, ENGINEERING AND PS&E (15%)	**$1,871,427**	**$237,795**	**$20,520**	**$23,940**	**$32,895**	**$2,850**	**$282,107**
ENVIRONMENTAL PERMITTING (10%)	**$1,247,618**	**$158,530**	**$13,680**	**$15,960**	**$21,930**	**$1,900**	**$188,071**
CONSTRUCTION MANAGEMENT (15%)	**$1,871,427**	**$237,795**	**$20,520**	**$23,940**	**$32,895**	**$2,850**	**$282,107**
CONTINGENCY (20%)	**$2,495,236**	**$317,060**	**$27,360**	**$31,920**	**$43,860**	**$3,800**	**$376,142**
COMBINED CONSTRUCTION/SUPPORT COST TOTAL	**$19,961,888**	**$2,536,480**	**$218,880**	**$255,360**	**$350,880**	**$30,400**	**$3,009,136**
SEGMENT AGGREGATED TOTAL	**$19,961,888**	**$3,010,720**			**$381,280**		**$3,009,136**

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TYPE	UNIT	COST	RAIL ONLY QTY. TOTAL	RAIL ONLY COST TYPE TOTAL	COASTAL ONLY QTY. TOTAL	COASTAL ONLY COST TYPE TOTAL	COMBINED QTY. TOTAL	COMBINED COST TYPE TOTAL
Rail Trail								
Multi-Use Paved Path (Class I) (12' paved): moderate terrain, drainage, utilities	LF	$162	127,370	$20,633,940	0	$0	127,370	$20,633,940
Multi-Use Paved Path (Class I) (12' paved): difficult terrain, retaining walls, drainage, utilities	LF	$405	28,980	$12,736,900	0	$0	28,980	$12,736,900
Multi-Use Paved (Class I)/Unpaved Path (12' paved, with 6' DG path): moderate terrain, drainage, utilities	LF	$180	3,500	$630,000	0	$0	3,500	$630,000
SUBTOTAL			**159,850**	**$34,000,840**	**0**	**$0**	**159,850**	**$34,000,840**
Coastal Trail								
Multi-Use Paved Path (Class I) (12' paved): moderate terrain, drainage, utilities	LF	$162	0	$0	16,230	$2,629,260	16,230	$2,629,260
Multi-Use Paved Path (Class I) (12' paved): difficult terrain, retaining walls, drainage, utilities	LF	$405	0	$0	0	$0	0	$0
Unpaved Trail (native soil); 6' - 8' wide, level terrain	LF	$7	0	$0	24,490	$171,430	24,490	$171,430
Unpaved Trail (native soil); 10' - 12' wide on existing road	LF	$11	0	$0	870	$9,570	870	$9,570
Class II Bike Lanes	LF	$20	0	$0	24,810	$496,200	24,810	$496,200
Class III Bike Route, wayfinding signage	LF	$6	0	$0	30,810	$184,860	30,810	$184,860
SUBTOTAL			**0**	**$0**	**97,210**	**$3,491,320**	**97,210**	**$3,491,320**
Bridge Structures								
Modified Existing Bridge	EA	Varies	1	$600,000	0	$0	1	$600,000
New Pre-Engineered Bridge	EA	Varies	23	$28,200,000	0	$0	23	$28,200,000
SUBTOTAL			**24**	**$28,800,000**	**0**	**$0**	**24**	**$28,800,000**
Trail Amenities								
Trailhead signage	EA	$4,000	18	$72,000	0	$0	18	$72,000
Interpretive signage	EA	$500	10	$5,000	0	$0	10	$5,000
Wayfinding signage	Allow/Mile	$2,500	30	$74,750	0	$0	30	$74,750
Emergency locator system signage (rail trail only)	Allow/Mile	$3,000	39.6	$118,800	0	$0	39.6	$118,800
Bike rack	EA	$1,000	20	$20,000	0	$0	20	$20,000
Bench	EA	$1,500	24	$36,000	0	$0	24	$36,000
Shade structure with bench	EA	$15,000	2	$30,000	0	$0	2	$30,000
Fencing	LF	$40	96,721	$3,868,840	0	$0	96,721	$3,868,840
Lighting (at bridges/crossings within urban segments)	Each Xing	$25,000	70	$1,750,000	0	$0	70	$1,750,000
Restroom	EA	$30,000	1	$30,000	0	$0	1	$30,000
SUBTOTAL				**$6,005,390**		**$0**		**$6,005,390**
Staging Area Access								
Trailhead, small (10 cars)	**EA**	$30,000	0	$0	1	$30,000	1	$30,000
Trailhead, medium (20 cars), portable restroom	**EA**	$50,000	0	$0	0	$0	0	$0
Trailhead, large (30 cars), restroom, drinking fountain	**EA**	$80,000	0	$0	1	$80,000	1	$80,000
SUBTOTAL			**0**	**$0**	**2**	**$110,000**	**2**	**$110,000**
Rail Track and Street Crossings								
Type A: Tie into railroad control cab, ped gates, barriers,roadway treatments	EA	$250,000	16	$4,000,000	0	$0	16	$4,000,000
Type B: Traffic signal modication with new crosswalk, ped equipment, loops, striping	EA	$50,000	4	$200,000	0	$0	4	$200,000
Type C: HAWK including all elec and striping/signing	EA	$150,000	4	$600,000	0	$0	4	$600,000
Type D: Active Enhanced Midblock, either IRWL or overhead, ppb, yield marks, signs, path controls	EA	$100,000	3	$300,000	0	$0	3	$300,000
Type E: Passive Enhanced Midblock, with yield marks, signs, crosswalk, path controls	EA	$25,000	15	$375,000	0	$0	15	$375,000
Type F: Standard Midblock with signs, crosswalk, path controls	EA	$20,000	7	$140,000	0	$0	7	$140,000
Type G: Traffic Calming Measures, medians or curb extensions, warning signs, crosswalk	EA	$80,000	1	$80,000	0	$0	1	$80,000
Type H: Connection Facilities, with redirected path to ex xwalk and bike lanes or sharrows	EA	$60,000	11	$660,000	0	$0	11	$660,000
Type I: Rail xing w/out rr signal mods, with barriers at tracks/path, roadway xing signs/markings, path yields	EA	$40,000	3	$120,000	0	$0	3	$120,000
Type J: Standard Private Crossing, with stops for local road crossing and path yield signs or marks*	EA	$10,000	32	$320,000	0	$0	32	$320,000
SUBTOTAL			**96**	**$6,795,000**	**0**	**$0**	**96**	**$6,795,000**

Note: *The maps show PUC designated crossings and may not reflect all private crossings.

SEGMENT TOTALS				
CONSTRUCTION COST TOTAL	**$75,601,230**	**$3,601,320**		**$79,202,550**
DESIGN, ENGINEERING AND PS&E (15%)	**$11,340,185**	**$540,198**		**$11,880,383**
ENVIRONMENTAL PERMITTING (10%)	**$7,560,123**	**$360,132**		**$7,920,255**
CONSTRUCTION MANAGEMENT (15%)	**$11,340,185**	**$540,198**		**$11,880,383**
CONTINGENCY (20%)	**$15,120,246**	**$720,264**		**$15,840,510**
COMBINED CONSTRUCTION/SUPPORT COST TOTAL	**$120,961,968**	**$5,762,112**		**$126,724,080**
SEGMENT AGGREGATED TOTAL	**$120,961,968**	**$5,762,112**		**$126,724,080**



APPENDIX D

Trail Crossing Descriptions

TABLE D-1 - Crossing Description and Cost

Segment #	Crossing Location #	Crossing Location Description	Recommended Crossing Treatment Type	Recommended Crossing Treatment Description	Jurisdiction
4	1	Private Crossing	J	The trail is on the east side of the tracks. Provide a standard private road crossing	County
4	2	Private Driveway (RMC Pacific)	F	The trail is on the east side of the tracks. Provide a standard midblock crossing, as use is expected to exceed 20 pph at least once daily by employees.	County
4	3	State Route 1(SR1	A,D	To/from the north the trail aligns on the east side of the tracks and to/from the south it's on the west side. This creates a trail at-grade rail crossing, which will need to be integrated into the existing SR 1 crossing of the rail. The addition of the trail crossing requires modifying the rail signal, together with the addition of an active enhanced crossing for trail users to cross SR 1.	County
5.1	4	Davenport parking lot	A	The proposed trail is on the west side of the tracks. A new railroad crossing is proposed to formalize a popular pedestrian crossing between a parking lot on the east side of the tracks and Davenport Beach on the west side, and to allow east-west access to the trail. The new railroad crossing could be accomplished with installation of a new pedestrian-only rail signal.	NEW CROSSING County
5.1 (1) 5.2 (3) 5.3 (12) 6 (4)	5-24	Private crossings, including Wilder Ranch Park (7), Scaroni Rd (2) & agricultural crossings (11)	J	The trail is on the west side of the tracks. Provide standard private road crossings at all 20 locations.	County

Table prepared by by W-Trans

Notes: pph = pedestrians per hour

TABLE D-1 - Crossing Description and Cost

Segment #	Crossing Location #	Crossing Location Description	Recommended Crossing Treatment Type	Recommended Crossing Treatment Description	Jurisdiction
6	25	Shaffer Road	A,F	The trail is on the west side of the tracks. A new railroad crossing is proposed to formalize a popular pedestrian crossing between two existing dead ends of Shaffer Road on either side of the tracks. The new railroad crossing should include pedestrian rail signal improvements. The City plans new roadway crossing with bike lanes. Additional markings would be required on street crossing for bike guidance.	NEW CROSSING Santa Cruz
7	26	Natural Bridges Dr	F	The trail is on the west side of the tracks. Provide a standard midblock crossing.	Santa Cruz
7	27	Swift St	E	The trail is on the west side of the tracks. Provide a passive enhanced crossing.	Santa Cruz
7	28	Fair Ave	E	The trail is on the west side of the tracks. Provide a passive enhanced crossing.	Santa Cruz
7	29	Almar Ave	E	The trail is on the west side of the tracks. Provide a passive enhanced crossing.	Santa Cruz
7	30	Rankin St	H	The trail is on the west side of the tracks. Provide connection facilities, adding a crosswalk and AWSC at the intersection of Rankin St/ Seaside St., together with a path on the south side of Seaside St. between Rankin St and the rail crossing location 100 ft east.	Santa Cruz

Notes: AWSC = All-Way Stop Controlled

Table prepared by by W-Trans

TABLE D-1 - Crossing Description and Cost

Segment #	Crossing Location #	Crossing Location Description	Recommended Crossing Treatment Type	Recommended Crossing Treatment Description	Jurisdiction
7	31	Seaside St	F,I	The trail is on the west side to/from the north and on the east side to/from the south. Rather than the trail crossing Seaside St, it may be possible to locate the trail in a vacant triangular parcel on the SW corner of Seaside/ Younglove St. While the trail will not cross Seaside, it will cross the rail, with the crossing to be oriented perpendicular to the tracks. The existing vehicular rail crossing of Seaside St will remain, and since it is unsignalized, it's recommended that the new rail-trail crossing also be provided without signal equipment.	Santa Cruz
7	32	Younglove Ave	H	The trail is on the east side of the tracks. Provide a pedestrian connection to the intersection of Younglove Ave and Seaside St and adding a crosswalk on the southeast leg of the intersection.	Santa Cruz
7	33	Bellevue St	F	The trail is on the east side of the tracks. Provide a standard midblock crossing.	Santa Cruz
7	34	Dufour St	F	The trail is on the east side of the tracks. Provide a standard midblock crossing.	Santa Cruz
7	35	Palm St	J	The trail is on the east side of the tracks. Provide a standard private crossing (existing barricades prohibit vehicle travel across rail tracks).	Santa Cruz
7	36	Lennox St	F,H	The trail is on the east side of the tracks. Provide pedestrian connection along the north side of the street and a bicycle connection via SLM in Lennox Street, to minimize the distance pedestrians and bicyclists have to travel in the street at this acute angled crossing. Provide a standard midblock crossing at the far easterly end of the existing rail-street crossing.	Santa Cruz
7	37	Bay St	D	The trail is on the east side of the tracks. Provide an active enhanced midblock crossing.	Santa Cruz

Table prepared by by W-Trans

Notes: SLM = Bicycle Shared Lane Markings
NB = Northbound
SB = Southbound

TABLE D-1 - Crossing Description and Cost

Segment #	Crossing Location #	Crossing Location Description	Recommended Crossing Treatment Type	Recommended Crossing Treatment Description	Jurisdiction
7	38	California St	E,G	The trail is on the east side of the tracks. Provide traffic calming at the intersection of Bay St/California St (north) to reduce the curb radii and travel speeds of NB right turning vehicles. Move the trail crossing 20 feet north of the existing crossing on California Street, to increase the distance from the Bay St intersection. The path should shift to the north side of the City's water treatment plant access road so that it minimizes interference with truck movements at the intersection with California Street. Curb extensions and a passive enhanced crossing should be provided at the relocated street crossing. Barriers should be installed as necessary to discourage crossings at the existing location.	Santa Cruz
7	39-40	Neary Lagoon Park (2)	A	The trail is on the east side of the main line tracks. The 2 new railroad crossings are spur track crossings rather than mainline crossings. May need to tie into rail signal controls due to high volume of trail pedestrians/bicyclists expected at this popular Santa Cruz location.	2 NEW CROSSINGS Santa Cruz

Table prepared by by W-Trans

Notes: NB = Northbound
SB = Southbound

TABLE D-1 - Crossing Description and Cost

Segment #	Crossing Location #	Crossing Location Description	Recommended Crossing Treatment Type	Recommended Crossing Treatment Description	Jurisdiction
8	41	Pacific Ave	A	The trail is on the east side of the tracks. The city has designed a roundabout to control the intersection of Pacific Ave/Beach St, which includes pedestrian and bicycle crossing facilities of the streets but does not extend north to the railroad. There is an existing sidewalk crossing of the tracks on the west side of Pacific Avenue, while the street crossing has signalized rail equipment, the sidewalk/ pedestrian facility is not. Modify this railroad signal to include pedestrian crossing signals, allowing trail users to use the new roundabout to cross Beach Street, and travel along the boardwalk, some distance west of the tracks. Concept plans also include the recommended trail crossing features for the existing intersection conditions should the roundabout not be pursued by the City.	Santa Cruz
8	42	Main St	K	The trail is on the west side of the tracks. No additional improvements.	Santa Cruz
8	43	Westbrook St	K	The trail is on the east side of the tracks. No additional improvements.	Santa Cruz
8	44	Cliff St/Beach St	K	The trail is on the east side of the tracks. No additional improvements.	Santa Cruz
8	45-50	Boardwalk crossings (6)	K	The trail is on the east side of the tracks. No additional improvements.	Santa Cruz
8	51	Mott Ave	F	The proposed trail is on the east side of the tracks and this street crossing of Mott Ave is approximately 20 feet north of the north leg of the intersection of Mott Ave/ Murray Street. However there is a partial road closure of Mott Ave at the crossing, with SB traffic prohibited at the crossing. The NB crossing is situated such that a standard midblock crossing is recommended.	Santa Cruz

Table prepared by by W-Trans

TABLE D-1 - Crossing Description and Cost

Segment #	Crossing Location #	Crossing Location Description	Recommended Crossing Treatment Type	Recommended Crossing Treatment Description	Jurisdiction
9	52	Seabright Ave	B	The trail is on the east side of the tracks. Modify the traffic signal at the intersection of Seabright Ave/Murray Street to add pedestrian phases to north leg of the intersection for crossing Seabright Ave. There may be concern for westbound queuing in the through/right turn combined lane on Murray Street. Although not part of these concept plans, the need and feasibility in providing a westbound right turn lane should be explored.	Santa Cruz
9	53	7th Ave	A,D	To/from the north the trail is on the east side and to/from the south the trail is on the west side. This represents a rail crossing, which will need to be integrated into the existing signalized rail crossing. Trail users can use the existing sidewalks on both sides of the street to travel south of the tracks approximately 50 feet, and cross 7th Avenue on the north leg of the intersection of 7th Ave/ Harbor Beach Court. As an alternative, the crosswalk could be located north of the crossing. This street crossing includes an active enhanced crosswalk, and the rail signal should be modified to add pedestrian gates and barriers on either side of 7th Ave. One parking space would be eliminated on the west side of the street.	Live Oak
9	54	El Dorado Ave/ Simkins Swim Center	A	The trail is on the west side of the tracks. A new railroad crossing is proposed, to formalize a popular pedestrian crossing between El Dorado Ave and the Simkins Swim Center. The new railroad crossing should include a new pedestrian-only rail signal.	NEW CROSSING Live Oak

Table prepared by by W-Trans

TABLE D-1 - Crossing Description and Cost

Segment #	Crossing Location #	Crossing Location Description	Recommended Crossing Treatment Type	Recommended Crossing Treatment Description	Jurisdiction
10	55	17th Ave	A,C	To/from the north the trail is on the west side and to/from the south the trail is on the east side. This represents a rail crossing, which will need to be integrated into the existing signalized rail crossing. Trail users can use the existing sidewalks on both sides of the street to travel south of the tracks approximately 30 feet, and cross 17th Avenue on the north leg of the intersection of 7th Ave/Simkins Swim Center driveway. This street crossing includes an active enhanced crosswalk and improved median. The rail signal should be modified to add pedestrian gates and barriers on either side of 17th Ave.	Live Oak
10	56	30th Ave	E	The trail is on the east side of the tracks. Provide a passive enhanced midblock crossing	Live Oak
10	57	38th Ave	E	The trail is on the east side of the tracks. Provide a passive enhanced midblock crossing.	Live Oak
10	58	41st Ave	C	The trail is on the east side of the tracks. There is sidewalk on both sides of the street between the railroad and Melton St to the north. Install a HAWK signal on either th south leg of Melton Street or just on the north side of the tracks.	Capitola
11	59	47th Ave	A,H	To/from the north the trail is on the east side and to/from the south the trail is on the west side. This represents a rail crossing, which will need to be integrated into the existing signalized rail crossing. Trail users can use the existing crosswalk on 47th Ave at the intersection of 47th Ave/Portola Dr. This leads the trail users outside the railroad crossing barrier on the east side and also to a controlled crossing of 47th Ave. The existing walkway on the west side of 47th Ave should be extended across the tracks to the crosswalk. Pedestrian gates and barriers should be added to the rail signal.	Capitola

Table prepared by by W-Trans

TABLE D-1 - Crossing Description and Cost

Segment #	Crossing Location #	Crossing Location Description	Recommended Crossing Treatment Type	Recommended Crossing Treatment Description	Jurisdiction
11	60	49th Ave/Cliff Dr	A,D	The trail is on the west side of the tracks. A new railroad crossing is proposed, to formalize a popular pedestrian crossing between 49th Ave/Propsect Ave and Cliff Drive/ Capitola Wharf. The new railroad crossing should include a new pedestrian-only rail signal and be located in proximity to the existing crosswalk on Cliff Drive.	Capitola
11	61	Monterey Ave	E	The trail is on the west side of the tracks. To avoid expensive railroad signal changes, the trail users will be directed to cross Monterey Avenue in a new midblock crosswalk 50 feet south of the tracks. Barriers at the back of sidewalk must be placed to prevent pedestrians crossing within the existing rail barriers. Existing sidewalk is available on both sides of Monterey Ave. Provide a passive enhanced midblock crosswalk.	Capitola
11	62	Grove Ln	J	The trail is on the west side of the tracks. Provide a standard private crossing treatment.	County
11	63	New Brighton Rd	J	The trail is on the west side of the tracks. Provide a standard private crossing treatment.	County
11	64	Estates Dr	J	The trail is on the west side of the tracks. Provide a standard private crossing treatment.	County

Table prepared by by W-Trans



TABLE D-1 - Crossing Description and Cost

Segment #	Crossing Location #	Crossing Location Description	Recommended Crossing Treatment Type	Recommended Crossing Treatment Description	Jurisdiction
11	65	Mar Vista Dr	A,H	To/from the north the trail is on the west side and to/from the south the trail is on the east side. The existing rail signal must be modified to add pedestrian gates and barriers on both sides of Mar Vista Dr, and the trail users must be provided guidance (barriers) and connection facilities to cross 2 streets, including a new sidewalk on the west side of the street between the tracks and Cedars Street, a new crosswalk on Cedar Street at its intersection with Mar Vista Dr, and a new crosswalk on the south leg of Mar Vista Dr at Cedar St. A sidewalk connection is also needed on the east side of Mar Vista Dr between Cedar St and the new trail entrance on the north side of the tracks.	County
12	66	State Park Dr	C, G, H	The proposed trail is on the east side of the tracks. Provide a HAWK signal and medians on State Park Dr at the south leg of its intersection with Sea Ridge Rd. This HAWK signal location should eliminate the need to modify the railroad signal on State Park Dr. Sidewalk must be added on the east side of State Park Dr between the new trail and Sea Ridge Rd, to connect to the new HAWK crossing.	County
12	67	Aptos Creek Rd	E,G	The trail is on the east side of the tracks. Provide a passive enhanced midblock crossing on Aptos Creek Rd and install a striped or raised curb extension on the SE corner of the intersection of Aptos Creek Rd/Soquel Dr., in an effort to reduce the speed of right turning vehicles. Crossing should consider planned traffic signal installation at Soquel Drive intersection.	County
12	68	Parade Street	J	The trail is on the east side of the tracks. Provide a standard private crossing, and if the private crossing is paved, add a marked crosswalk.	County

Notes: EVA = emergency vehicle access

Table prepared by by W-Trans

TABLE D-1 - Crossing Description and Cost

Segment #	Crossing Location #	Crossing Location Description	Recommended Crossing Treatment Type	Recommended Crossing Treatment Description	Jurisdiction
12	69	Trout Gulch Rd	A,H	To/from the north the trail is on the east side and to/from the south the trail is on the west side. A trail at-grade rail crossing should be added to the north side of Trout Gulch Rd, including a 10 foot long sidewalk between Aptos St and Soquel Dr, and incorporated into the rail signal controls, including pedestrian barriers and gates. Provide a marked crosswalk on Trout Gulch Rd on the west leg of its intersection with Aptos St. The trail to/from the north appears to require removal of 7 parking spaces in a shopping center. Crossing should consider planned traffic signal installation at Soquel Drive intersection.	County
13	70	Clubhouse Dr	H	The proposed trail is on the east side (it appears on RRM May update as switching from the west to the east at Hidden Beach Park to the north, which is not a study crossing). Provide connection facilities, including a curvilinear sidewalk from both trail heads that lead to a new crosswalk on Clubhouse Dr at its intersection with Sumner Ave, which is presently a stop-controlled approach. Install pedestrian barriers to guide trail users to the new intersection crosswalk.	County
14	71	Seascape Blvd	H	The trail is on the east side of the tracks. The trail must deviate towards Sumner Ave to align the trail outside the existing rail signal at Seascape Blvd. There is a landscaped area that appears sufficiently wide to accommodate the necessary sidewalks. Provide a new crosswalk on the west leg of the intersection of Seascape Blvd/Sumner Ave. The landscaped median in Seascape Blvd will need to be reconstructed to accommodate the new crosswalk.	County

Table prepared by by W-Trans

TABLE D-1 - Crossing Description and Cost

Segment #	Crossing Location #	Crossing Location Description	Recommended Crossing Treatment Type	Recommended Crossing Treatment Description	Jurisdiction
15	72	EVA (Seascape)	J	The proposed trail is on the east side of the tracks. The EVA for Seascape currently is equipped with rail signal equipment, including lights and signs but no barriers. Consistent with this approach, pedestrian should be permitted to pass the EVA without modifying the rail signal equipment. Provide a standard private crossing treatment, as the EVA is cordoned off, restricting vehicular crossing of EVA and therefore functioning like a private street.	County
15	73	Camp St. Francis/ agricultural access	J	The trail is on the east side of the tracks. Provide a standard private crossing treatment.	County
15	74	Private agricultural access	J	The trail is on the east side of the tracks. Provide a standard private crossing treatment.	County
15	75	Camino Al Mar	I, J	To/from the north the trail is on the east side of the tracks and to/from the south the trail is on the west side of the tracks. A connection across the tracks is necessary but signalization appears unnecessary. In addition, provide a standard private crossing across Camino Al Mar.	County
16	76	Private driveway	J	The trail is on the west side of the tracks. Provide a standard private crossing treatment.	County
16	77	Spring Valley Rd	A,E,H	To/from the north the proposed trail is on the west side of the tracks and to/from the south the trail is on the east side. This creates a trail at-grade rail crossing, which will need to be integrated into the existing Spring Valley Rd crossing of the rail. The proposed trail crossing requires modifying the rail signal, together with the addition of connecting sidewalks or paths to the adjacent school campus and a passive enhanced midblock crosswalk on Spring Valley Road east of the tracks. Barriers should be installed at trail/street intersections to guide trail users towards the new crosswalk.	County

Table prepared by by W-Trans

TABLE D-1 - Crossing Description and Cost

Segment #	Crossing Location #	Crossing Location Description	Recommended Crossing Treatment Type	Recommended Crossing Treatment Description	Jurisdiction
17	78	Elicott Slough Rd	J	The trail is on the east side of the tracks. Provide standard private crossing treatment.	County
17	79	Buena Vista Dr	J	The trail is on the east side of the tracks. Provide standard private crossing treatment.	County
18	80	Private crossing	J	The trail is on the east side of the tracks. Provide standard private crossing treatment.	County
18	81	Private crossing	J	The trail is on the east side of the tracks. Provide standard private crossing treatment.	County
18	82	Lee Rd	H	The trail is on the east side of the tracks. Lee Rd is stop-controlled at the rail crossing. This is an unsignalized rail-street crossing. Provide a new crosswalk on Lee Road at the trail, with no additional railroad modifications due to the existing controls.	Watsonville
18	83	Ohlone Parkway	F,H	The trail is on the east side of the tracks. This is an existing signalized rail crossing and in order to avoid the expense associated with modifying the signal for pedestrian controls, the trail should be redirected north 50 feet. Both the existing and proposed crossing locations represent a standard midblock crossing of a low-volume road that has excellent sight distance. New connection facilities are needed on both sides of the street.	Watsonville
19	84	Walker St/ Beach St	H	The trail is on the east side of the tracks. Add a new crosswalk on the east leg of the intersection of Walker St/Beach St, to provide a connection to the existing bike lanes on Walker St.	Watsonville

Table prepared by by W-Trans





APPENDIX E

Trail Funding Sources

FUNDING TABLE

Table E.1 compiles the funding sources and their relevant information into a matrix format for review and comparison of the source requirements such as matching requirements. Funding opportunities are constantly evolving, therefore agencies should use the following table as a guide but should research desired funding sources further to ensure the latest rules, regulations, and funding sources are applicable.

TABLE E.1 - Funding Opportunities

Funding Source	Application Deadline	Administering Agency	Match Required	Maximum Grant	Eligible Applicants	Comments
FEDERAL						
MAP -21 Federal Lands Access Program	Varies	Federal Highway Administration (FHWA)	11.47%	N/A	State, county, tribal, or city government that owns or maintains the transportation facility	Project must be located on, adjacent to, or provide direct access to federal lands. http://www.cflhd.gov/programs/flap/ca/index.cfm; Approximately $38M available/year in California.
Five Star Restoration Grant Program	Varies - Fall	U.S. Environmental Protection Agency	100%	$20,000	Government agencies, grass roots organizations, and tribes	Five or more partners required in each project to contribute funding, land, technical assistance, workforce support, or other in-kind services.
Highway Safety Improvement Program	Varies	Caltrans	10%	Varies - $1.5M in 2013	Agency that assumes responsibility for a publicly-owned roadway	Highway safety improvement projects benefiting publicly owned bicycle and pedestrian trails and pathways. Must have collision data. 100% based on data.
Land and Water Conservation Fund	May	National Parks Service	50%	$3.5M	Cities, counties, or district authorized to acquire, develop, operate, and maintain park and recreation facilities	No more than 25% of the grant may be spent on non-construction costs, $3.5 million was the maximum grant awarded for FY2009; Focus- National Parks.

TABLE E.1 - Funding Opportunities

Funding Source	Application Deadline	Administering Agency	Match Required	Maximum Grant	Eligible Applicants	Comments
Transportation Alternatives Program	TBD	CTC	TBD	N/A	Public agencies, non-profit organizations managing public lands	To be administered as part of the California Active Transportation Program.
Rivers, Trails and Conservation Assistance	August	National Park Service (NPS)	None	N/A	State or local agency, tribe; non-profit organization or citizens' group; federal agencies, including NPS, may apply with non-federal partner.	Technical assistance for projects demonstrating tangible conservation and recreational results in the near future; Focus - federal lands.
Regional Surface Transportation Program (RSTP)	Varies	SCCRTC	11.47%	Varies	Project must be sponsored by a Public Agency that has a Master Agreement with Caltrans	Est. $3M/year available in Santa Cruz County.
Highway Bridge Program (HBP)	Varies	Caltrans	Varies	Varies	Local agencies owning bridges that carry public highways and have a minimum center line clear span of 20 feet.	Funding to improve the condition of existing highway bridges through replacement, rehabilitation, and systematic preventive maintenance.
STATE						
California Coastal Conservancy	None	California State Coastal Conservancy	None	Varies	Public agencies and non-profits with purposes consistent with California Code Division 21	Trails with statewide significance (California Coastal Trail).
Conservation Corps	None	Local + California Conservation Corps (CCC+ CALCC)	N/A	N/A	Public land managers	CCC provides labor assistance for building and maintaining trails.



TABLE E.1 - Funding Opportunities

Funding Source	Application Deadline	Administering Agency	Match Required	Maximum Grant	Eligible Applicants	Comments
Community-Based Transportation Planning Program	April	Caltrans	10%	$300,000	Public agencies, transit agencies, tribes, non-profits as sub-applicants	Purpose is to fund integrated transportation and land use planning.
Active Transportation Program	TBD	CTC	TBD	TBD	Public agencies	Consolidation of several state and federal bicycle and pedestrian funding programs through SB99. Guidelines under development by CTC 2013/14.
Environmental Enhancement Program	Varies	California Natural Resources Agency	None	$350,000	Public agencies, non-profits	Project must be directly or indirectly related to mitigating the environmental impact of existing transportation facility.
Habitat Conservation Funds	October	California Dept. of Parks and Recreation	50% non-state	None	Cities, counties, park districts	Funds nature trail interpretation and habitat restoration near trails.
Partnership Planning Grant	April	Caltrans	20%	$300,000	Metropolitan Planning Organizations and Regional Transportation Planning Agencies	Fund transportation planning studies of multi-regional and statewide significance in partnership with Caltrans.
River Parkways Program	Varies	California Natural Resources Agency	None	Approximately $1M	Governments, non-profits, community organizations	Funds river parkway development projects.
Statewide Park Program	Varies	California State Parks	None	$5M	Cities, counties, districts and Joint Powers Authorities	Projects must be in the most undeserved communities in California and part of a development project.

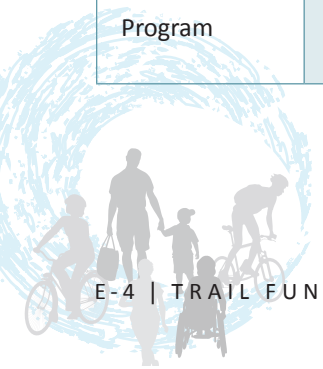


TABLE E.1 - Funding Opportunities

Funding Source	Application Deadline	Administering Agency	Match Required	Maximum Grant	Eligible Applicants	Comments
Urban Greening Grants	Varies	Resources Agency	None	Varies	Cities, counties, special districts, non-profits, joint power authorities	Projects must accomplish several criteria, including decreasing air pollution, increase adaptability to climate change, and reduce greenhouse gas emissions, etc.
Wildlife Conservation Board Public Access Program	Continuous	Wildlife Conservation Board	None	$250,000	Public agencies, non-profits	Support wildlife oriented public access.
LOCAL						
AB 2766	June	Monterey Bay Unified Air Pollution Control Dist.	None	$200,000 - $400,000	Public agencies located within Monterey County, Santa Cruz County, and/or San Benito County	$4 in motor vehicle registration fees to fund various air pollution reduction efforts.
City of Santa Cruz Special Sales Tax: Measure H	N/A	City of Santa Cruz	None	N/A	City of Santa Cruz	Projects selected by the City.
General Fund	Ongoing	Cities, County	None	N/A	Local jurisdictions, cities, and County	Funds typically spent on maintenance of existing facilities; often used as match for grants.
Gas Tax	Ongoing	Cities, County	None	N/A	Local jurisdictions, cities, and County	Funds typically spent on maintenance of existing facilities.
Development Impact Fees	N/A	Public land agencies	N/A	N/A	Local jurisdictions, cities, and County	Fees placed on new development.

TABLE E.1 - Funding Opportunities

Funding Source	Application Deadline	Administering Agency	Match Required	Maximum Grant	Eligible Applicants	Comments
Transportation Development Act (TDA)	Ongoing	SCCRTC	None	2% of LTF funds	Local Jurisdictions, cities, agencies through RTC	LTF returned to each county based on sales tax revenues. Article 3 of the TDA sets out 2% of LTF for bicycle and pedestrian projects. Eligible trail projects include construction and engineering for capital projects, maintenance of bikeways, and development of bicycle or pedestrian facilities. These funds may be used to meet local match requirements for federal funding sources.
OTHER SOURCES						
Community Block Grants	Continuous	Housing and Urban Development	N/A	Varies	Cities	Restricted to cities with populations under 50,000.
Bikes Belong	Continuous	Bikes Belong	None	$10,000	Non-profit organizations and public agencies	Grants may be used for facility implementation and advocacy efforts.
Private Foundations	Varies	Multiple	Varies	N/A	Varies	100's of private foundations that provide grants to support development of bicycle and pedestrian facilities.





APPENDIX F

Custom Crossing Treatments

Crossings are conceptual and subject to change based on landscape, topography, environmental constraints, design requirements, cost, etc.

CUSTOM CROSSING TREATMENTS

Twenty six (26) custom crossing treatments have been identified for the Coastal Rail Trail. Each custom treatment contains unique features not found in treatment types A-K in Section 5.3.2. Figures F-4 to F-30 represent the proposed custom treatments. Figures F-1 to F-3 illustrate the location of the crossings and the red dot symbols represent a custom crossing design.

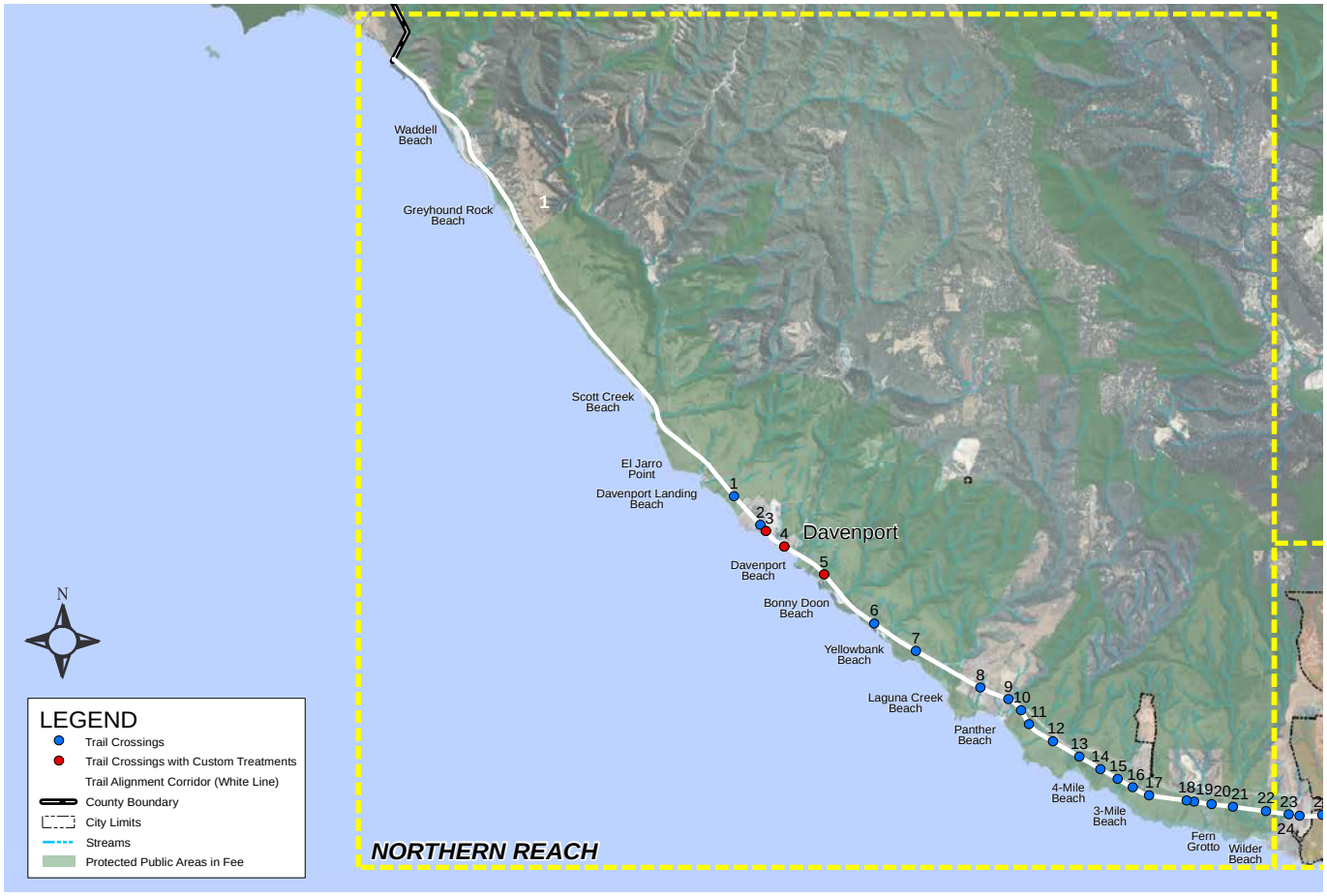


Figure F-1 Crossing treatments in the Northern Reach

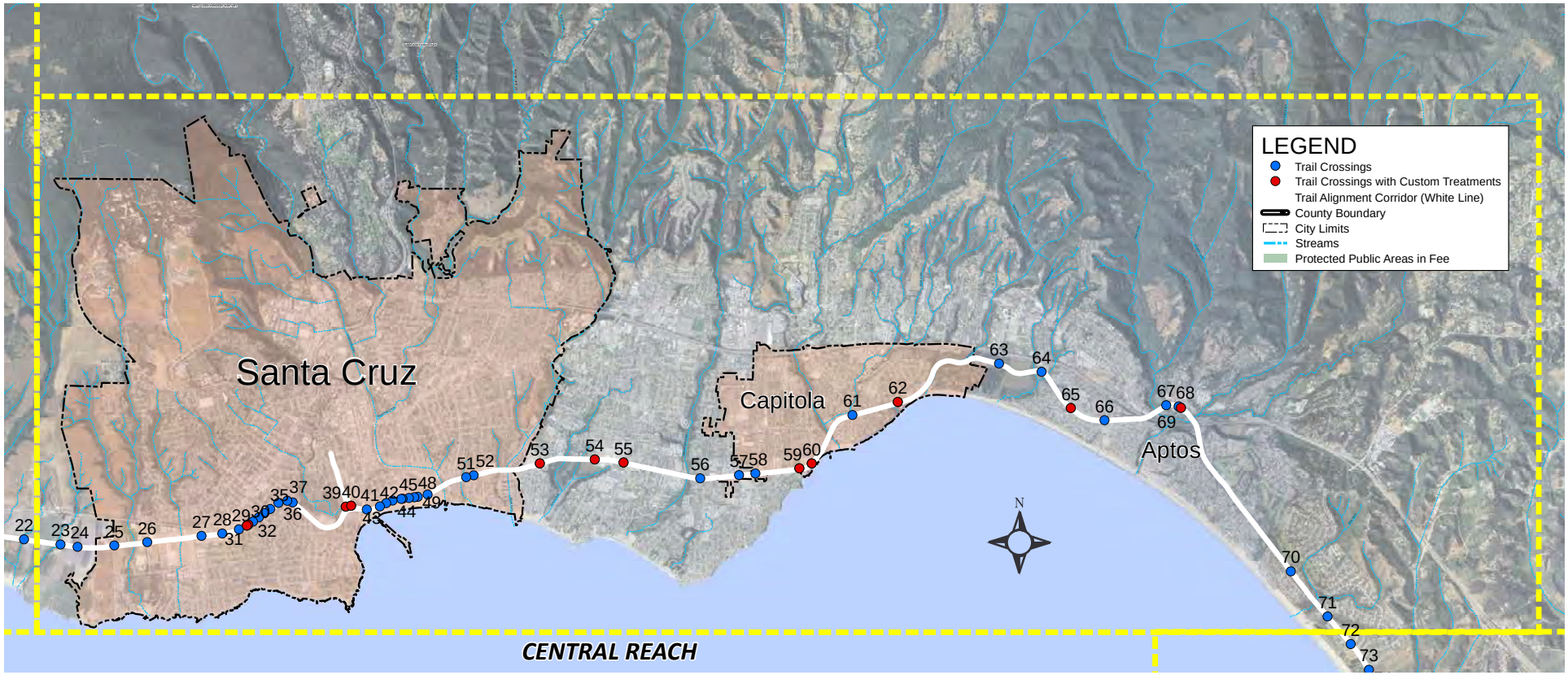


Figure F-2 Crossing Treatments in the Central Reach

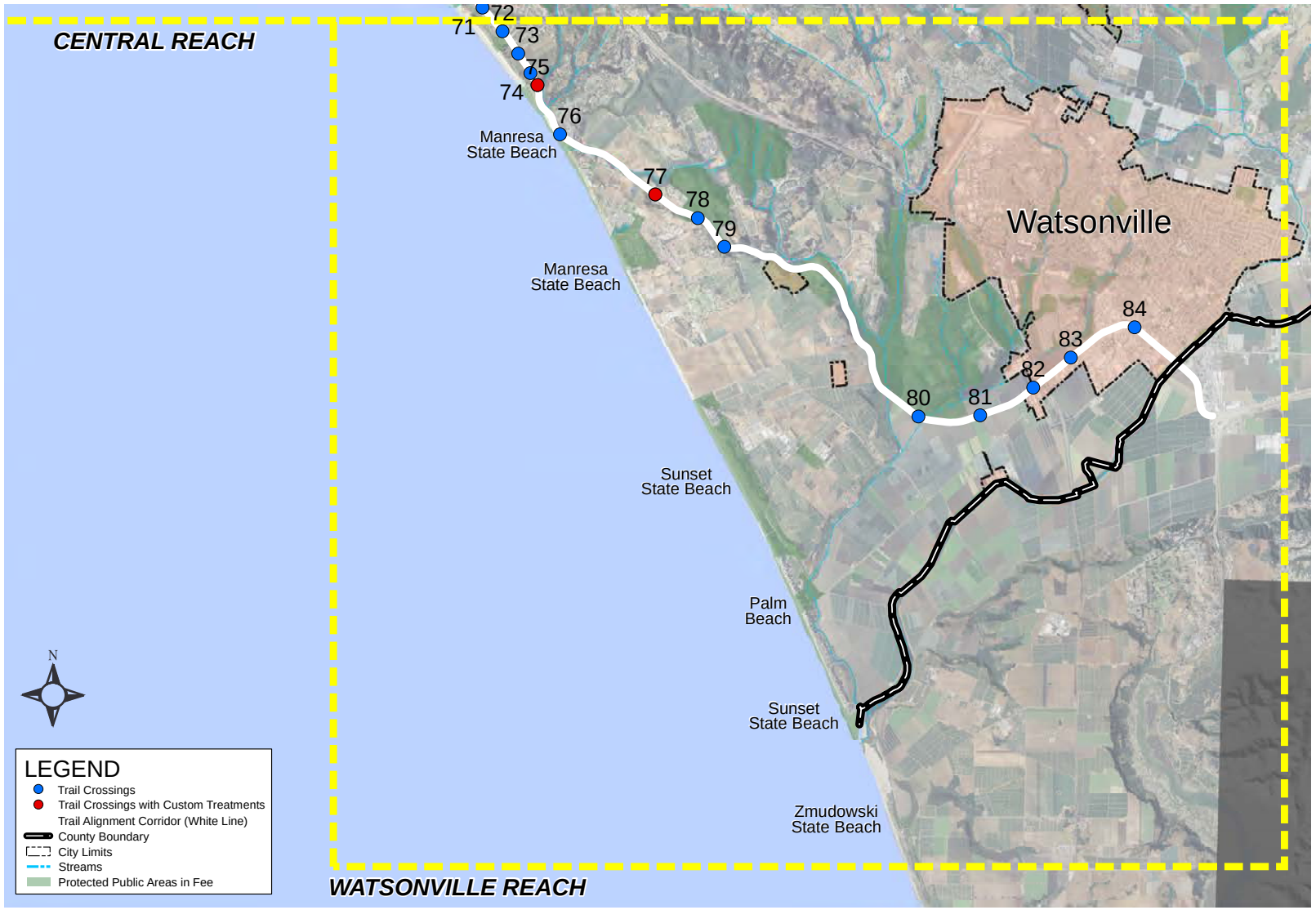


Figure F-3 Crossing treatments in the Watsonville Reach



Figure F-4 Crossing No. 3, State Route 1

Figure prepared by W-Trans



Figure F-5 Crossing No. 4, Davenport Parking Lot

Figure prepared by W-Trans

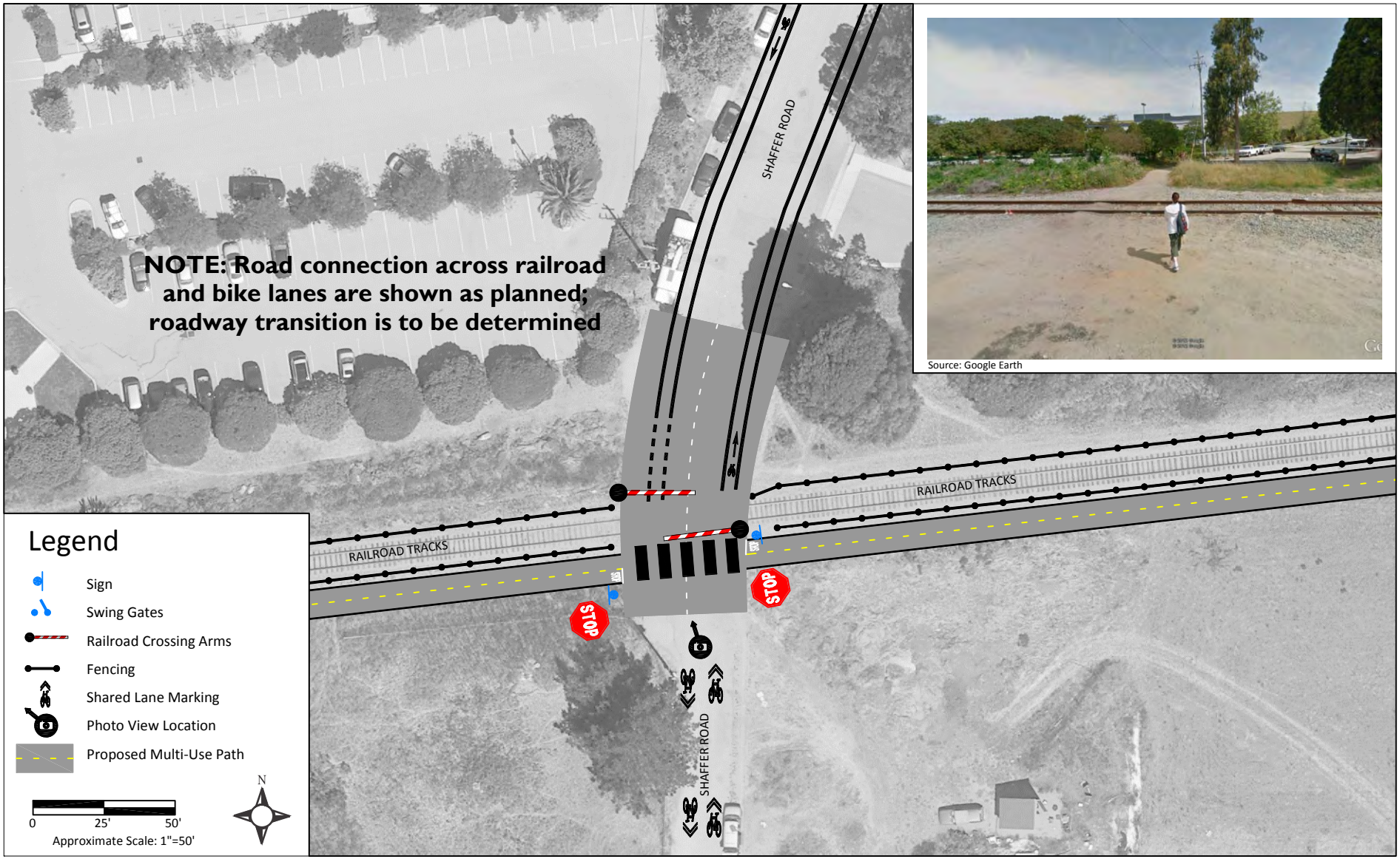


Figure F-6 Crossing No. 25, Shaffer Road

Figure prepared by W-Trans

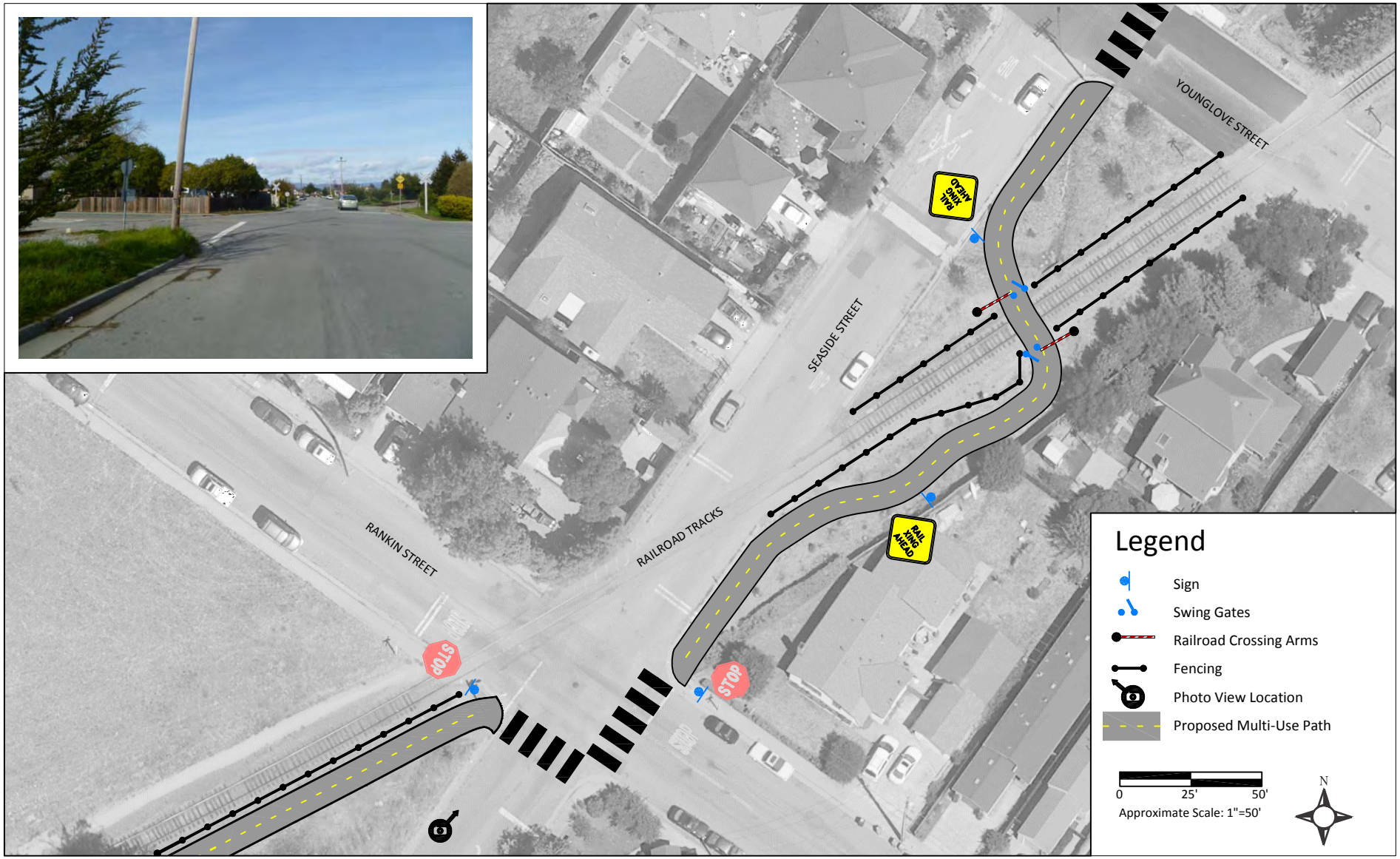


Figure F-7 Crossing No. 30-31, Seaside Street and Rankin Street

Figure prepared by W-Trans



Figure F-8 Crossing No. 32, Younglove Avenue

Figure prepared by W-Trans



Figure F-9 Crossing No. 36, Lennox Street

Figure prepared by W-Trans



Figure F-10 Crossing No. 37, Bay Street

Figure prepared by W-Trans

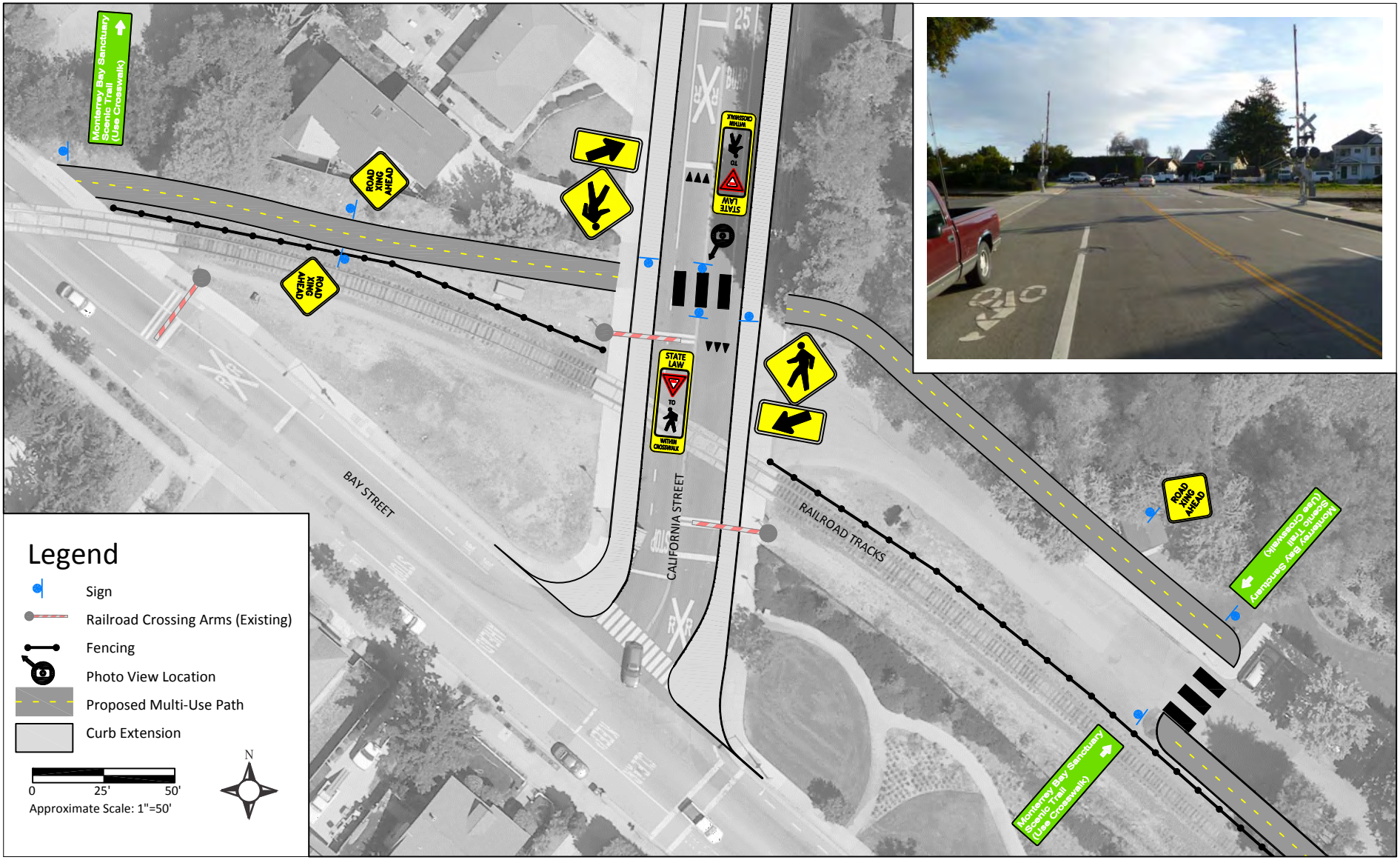


Figure F-11 Crossing No. 38, California Street

Figure prepared by W-Trans

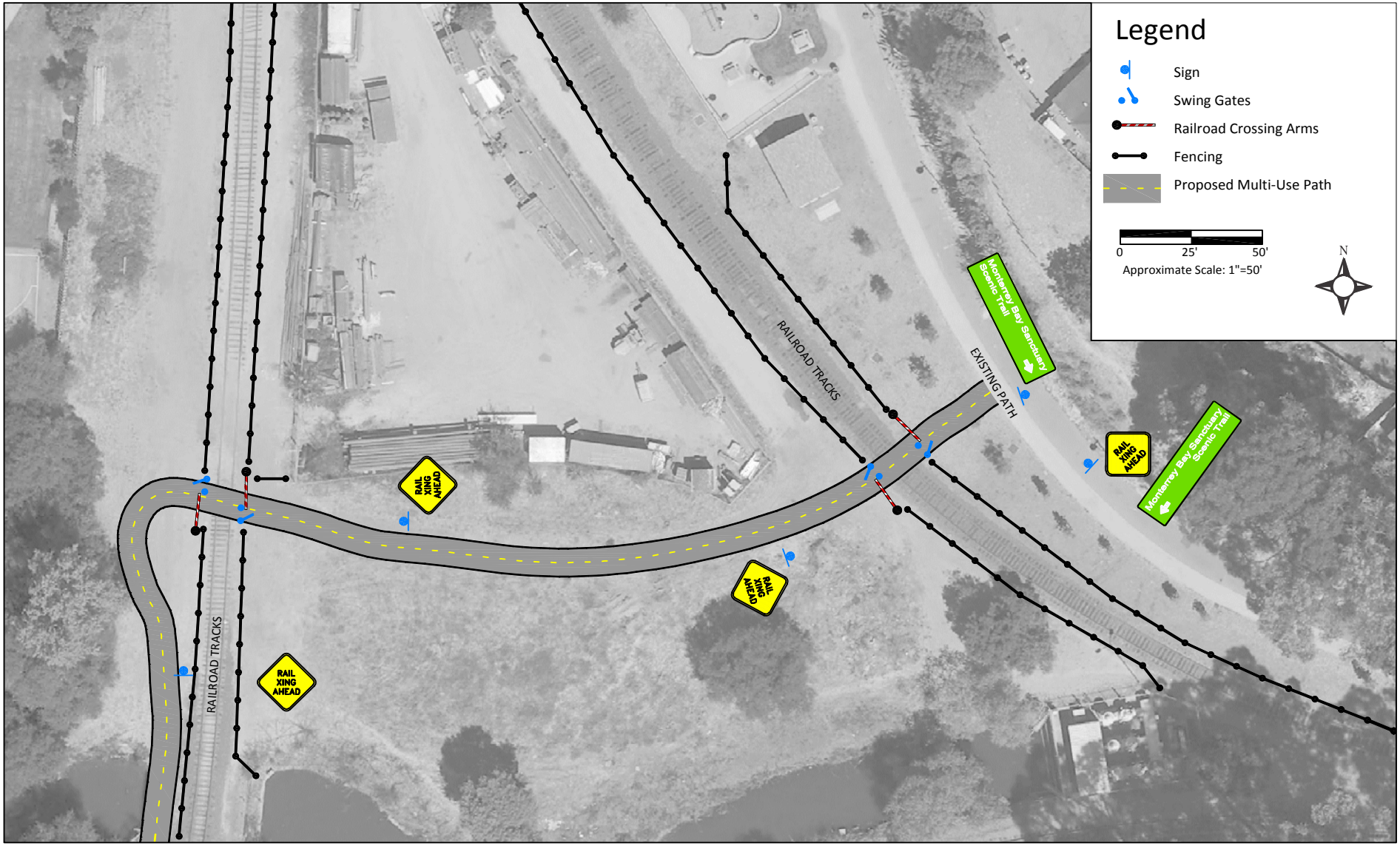


Figure F-12 Crossing No. 39-40, Neary Lagoon Park

Figure prepared by W-Trans

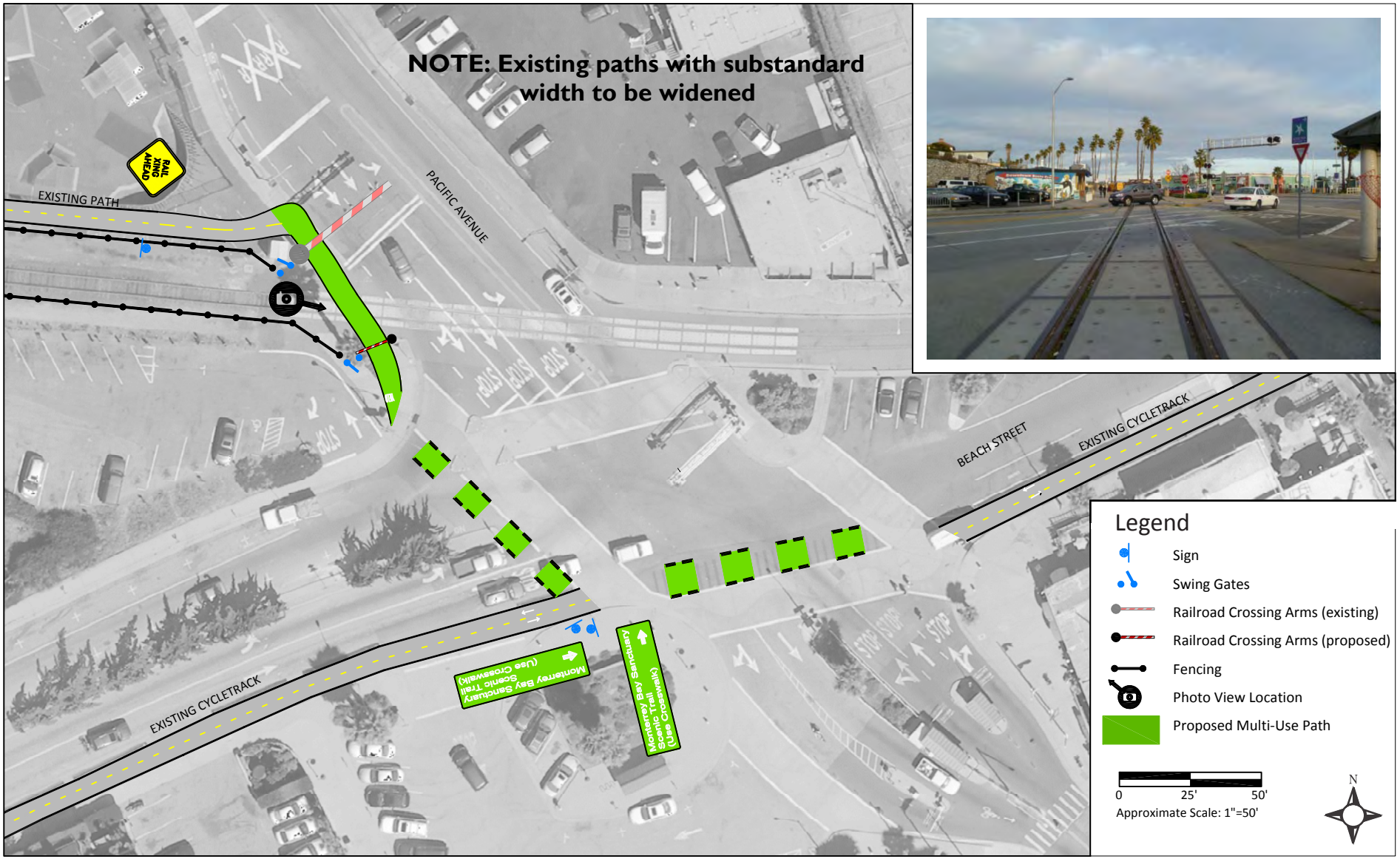


Figure F-13 Crossing No. 41, Pacific Avenue - No Roundabout Option

Figure prepared by W-Trans

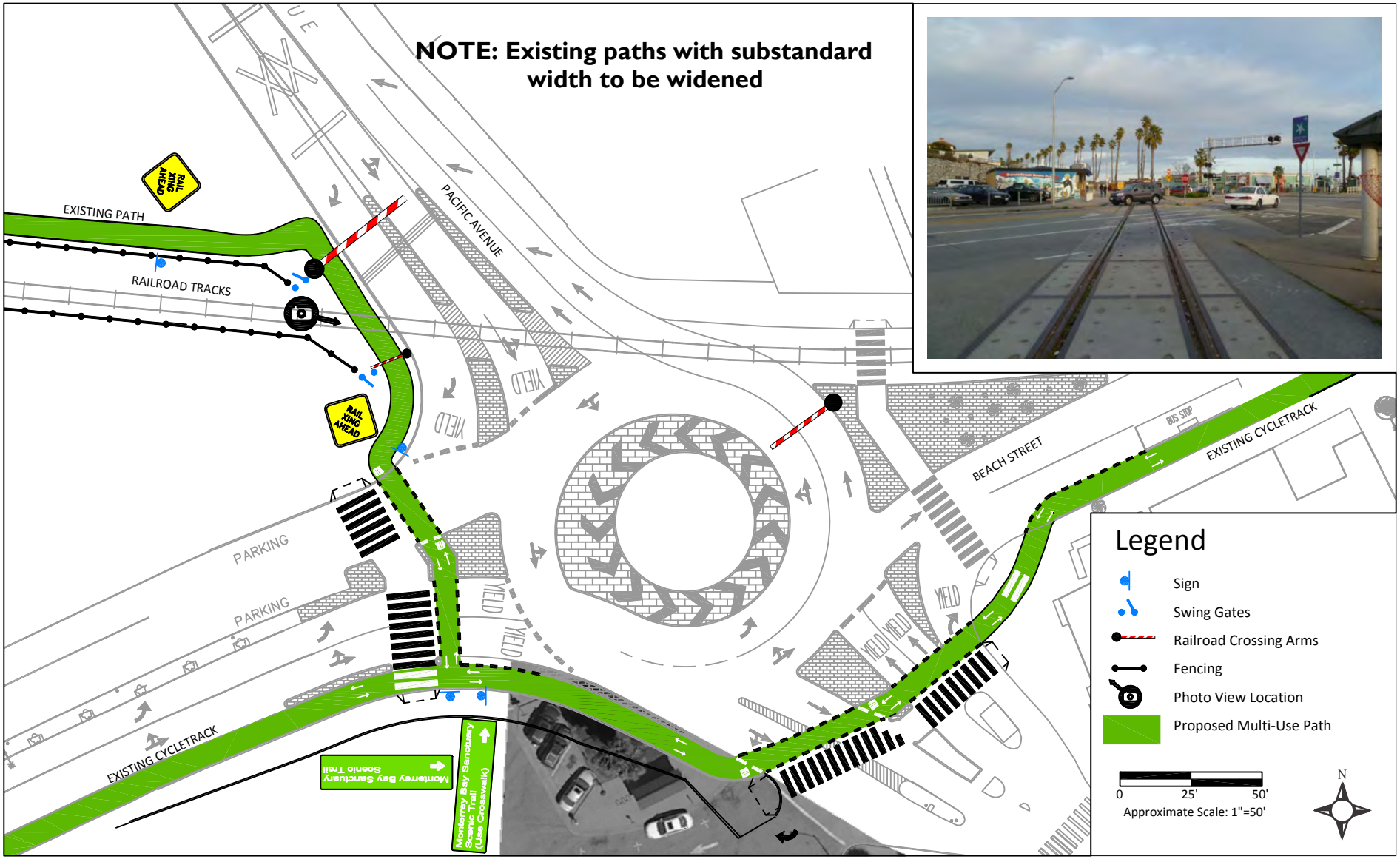


Figure F-14 Crossing No. 41, Pacific Avenue

Figure prepared by W-Trans

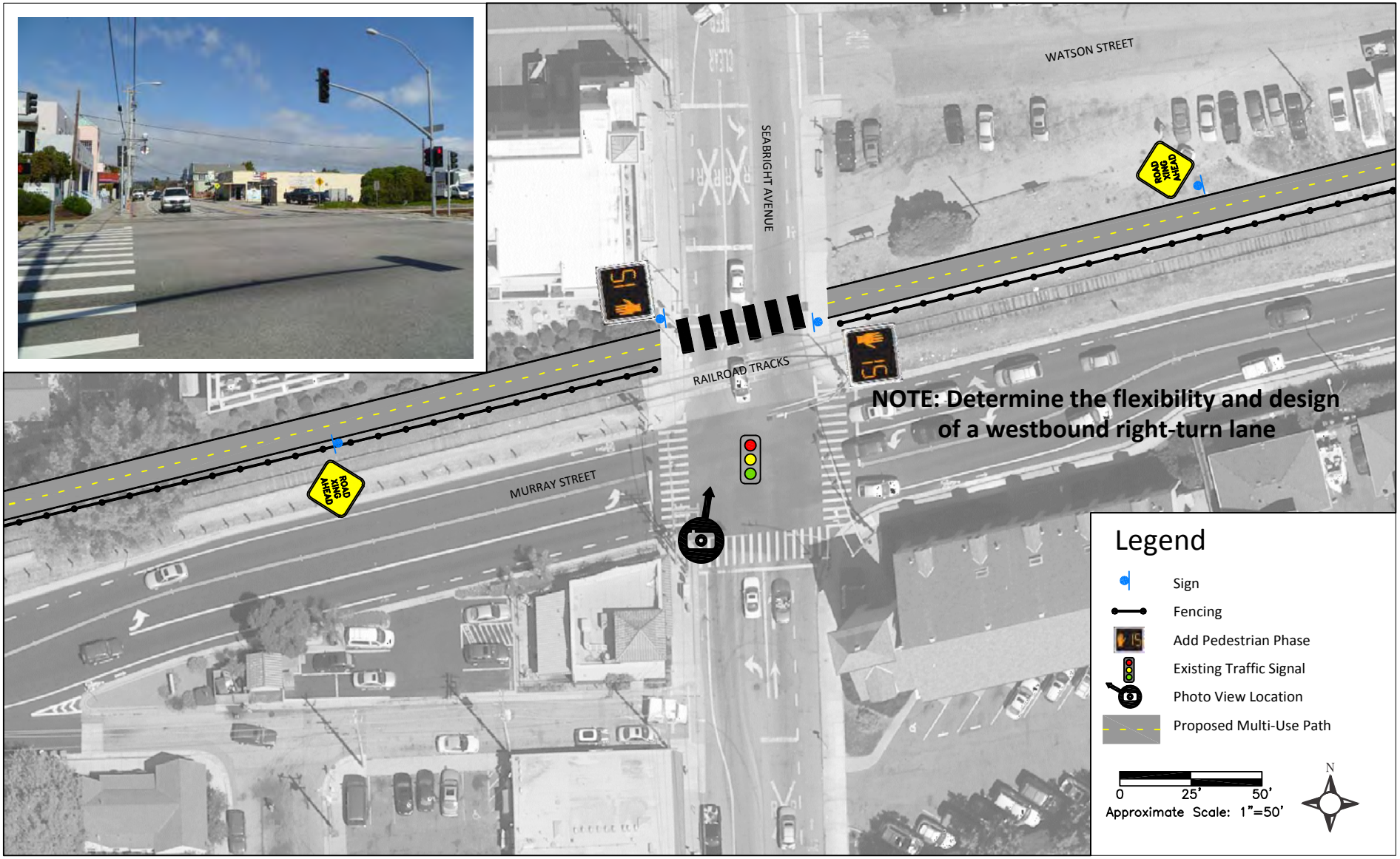


Figure F-15 Crossing No. 52, Seabright Avenue

Figure prepared by W-Trans



Figure F-16 Crossing No. 53, 7th Avenue

Figure prepared by W-Trans

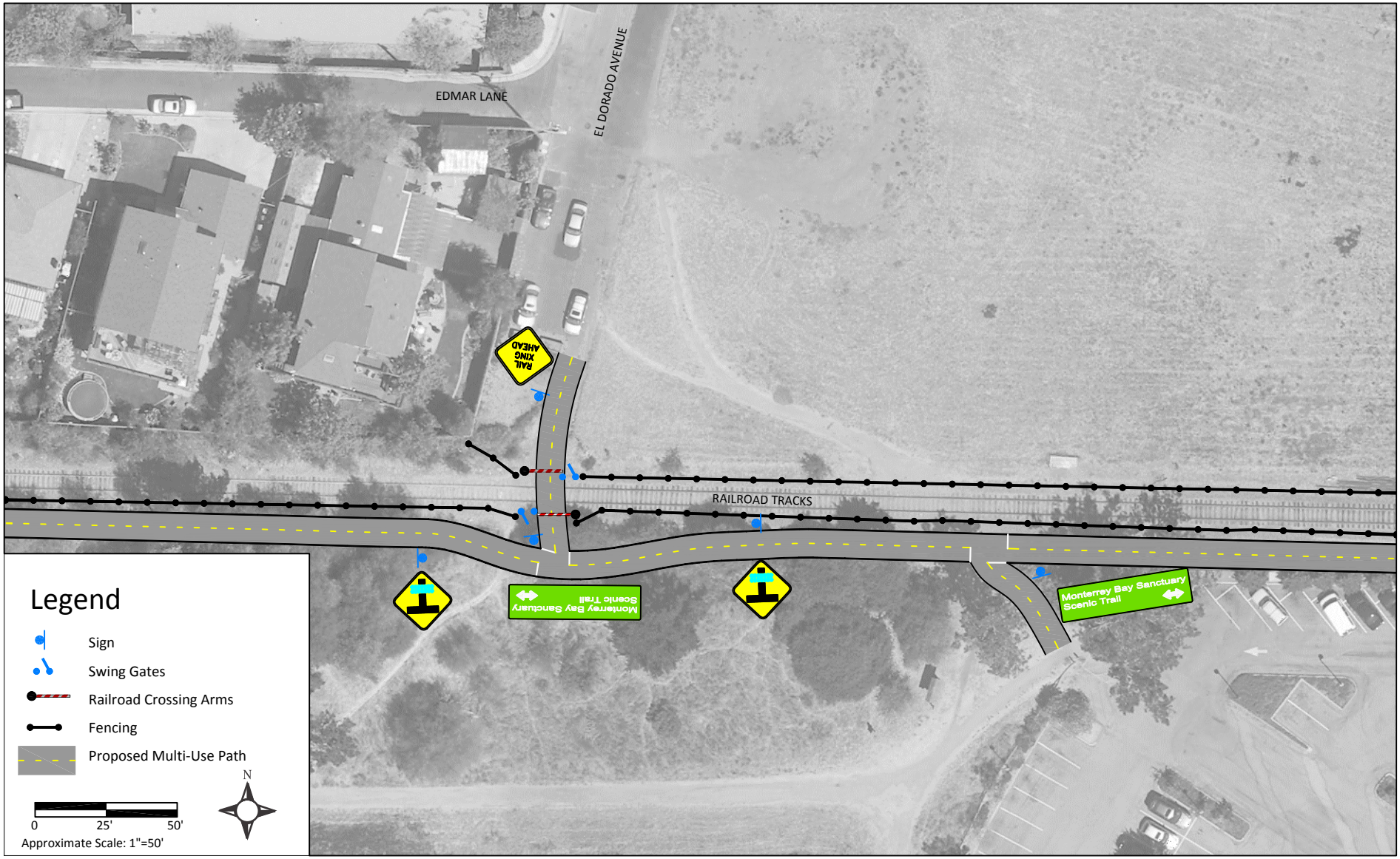


Figure F-17 Crossing No. 54, El Dorado Avenue/Simkins Swim Center

Figure prepared by W-Trans

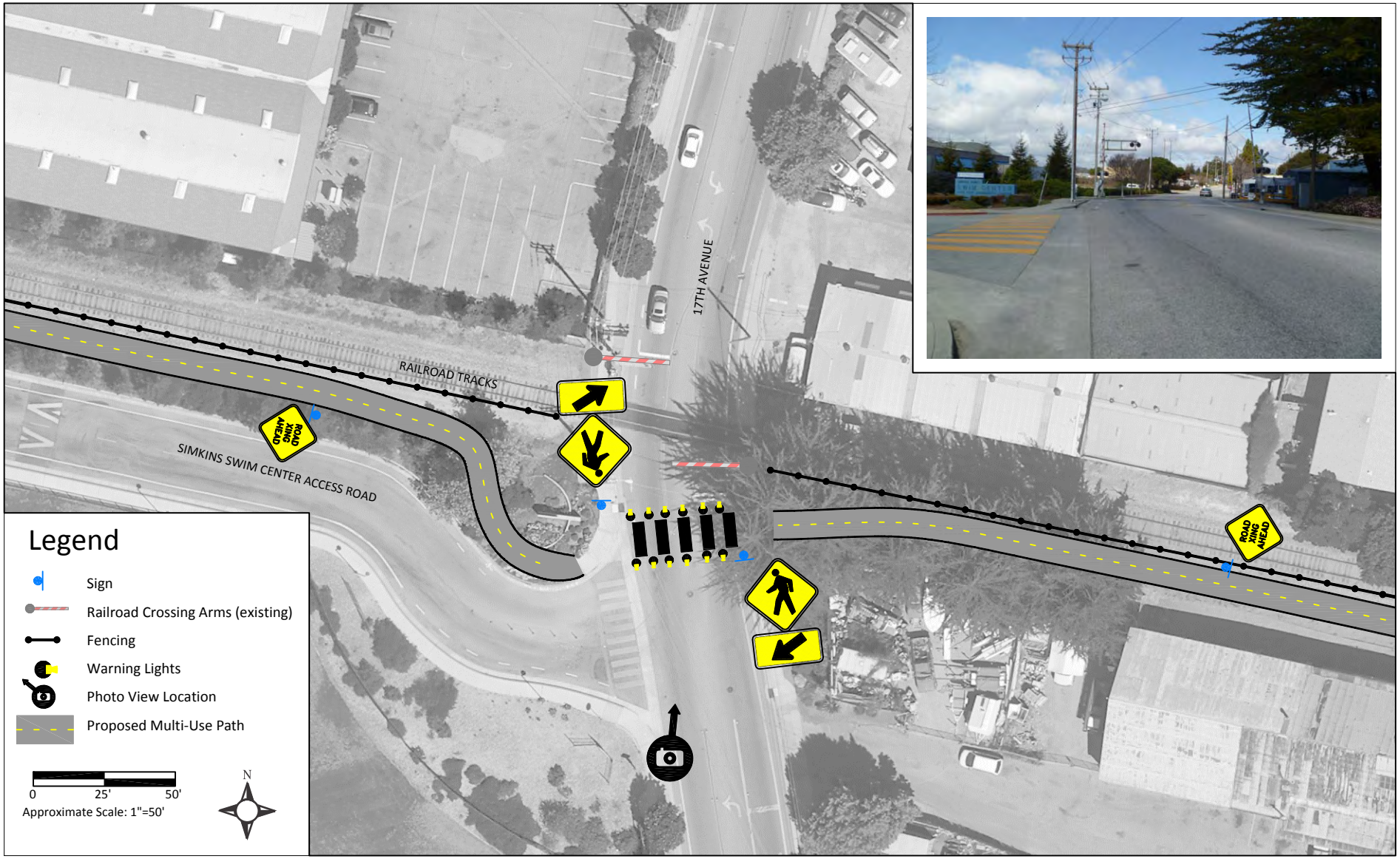


Figure F-18 Crossing No. 55,17th Street

Figure prepared by W-Trans

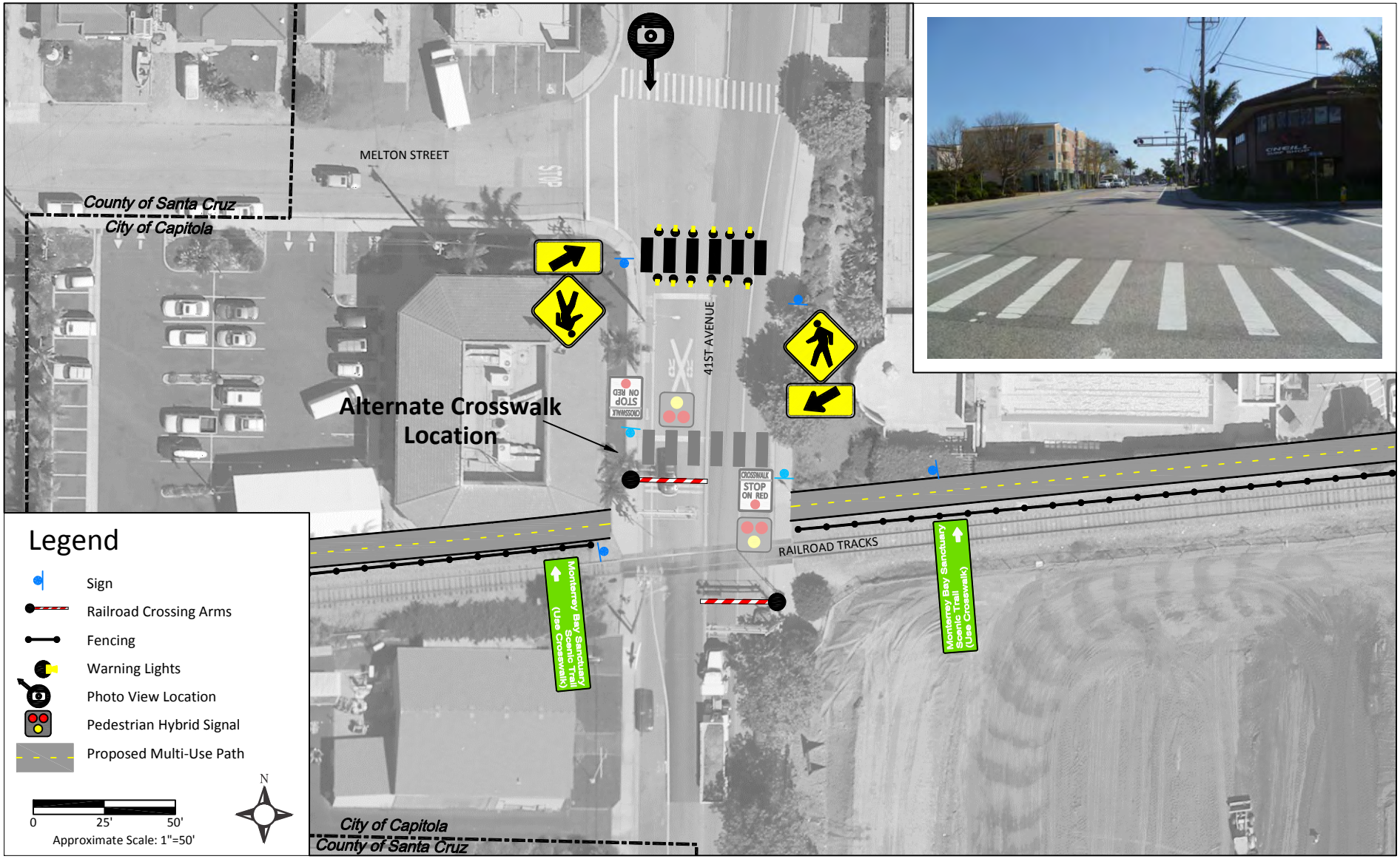


Figure F-19 Crossing No. 58, 41st Avenue

Figure prepared by W-Trans

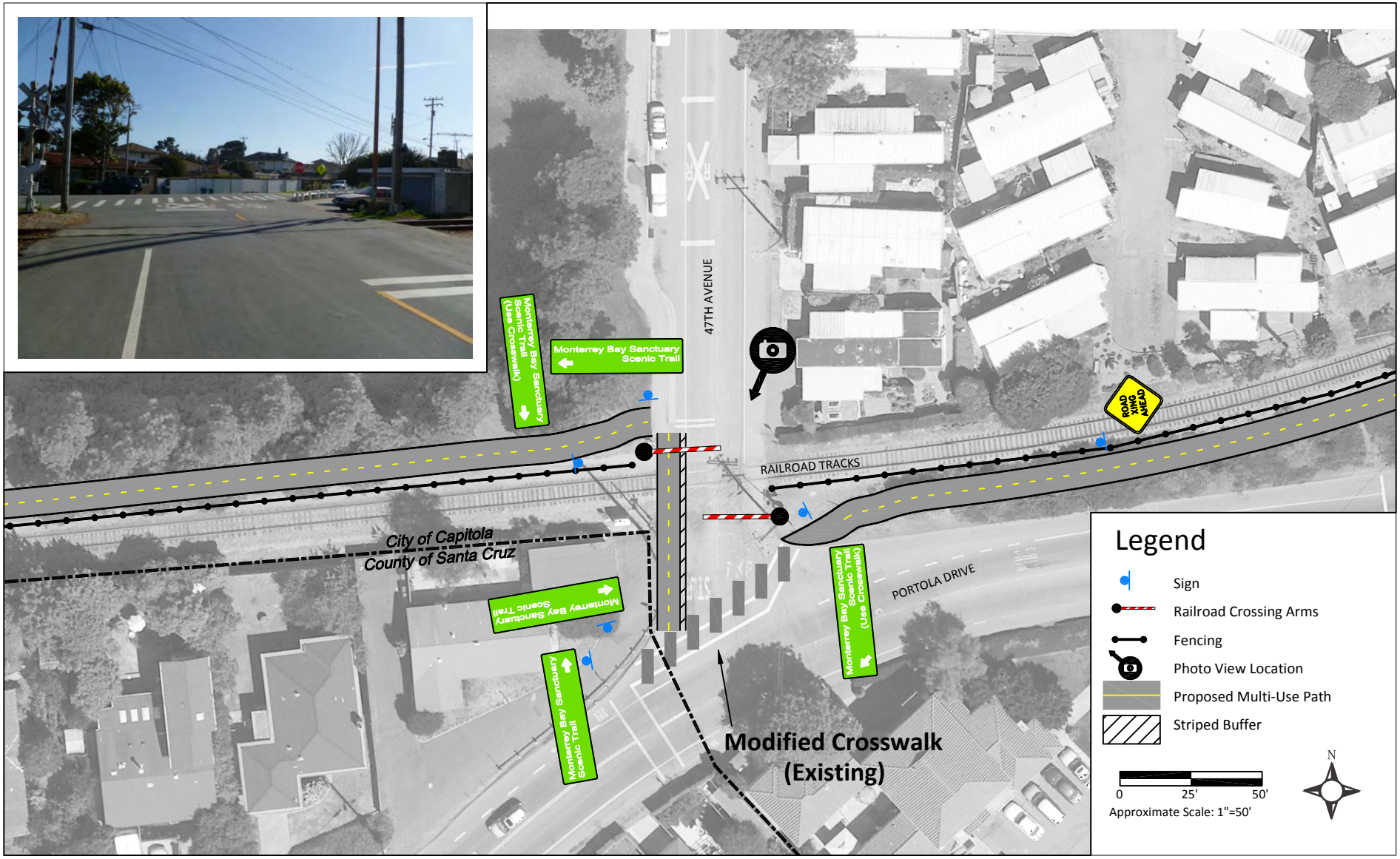


Figure F-20 Crossing No. 59, 47th Avenue

Figure prepared by W-Trans

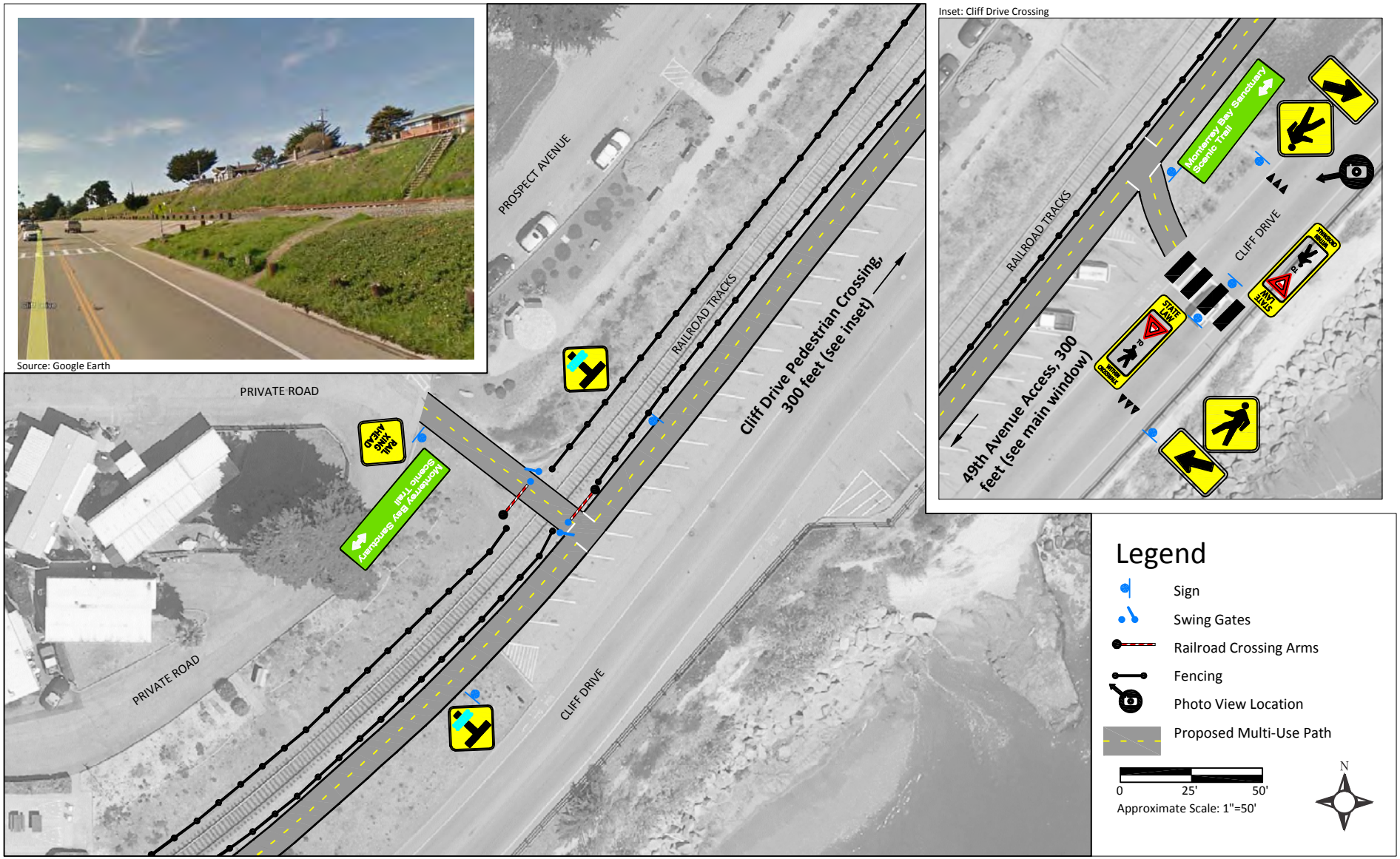


Figure F-21 Crossing No. 60, 49th Avenue/Cliff Drive

Figure prepared by W-Trans

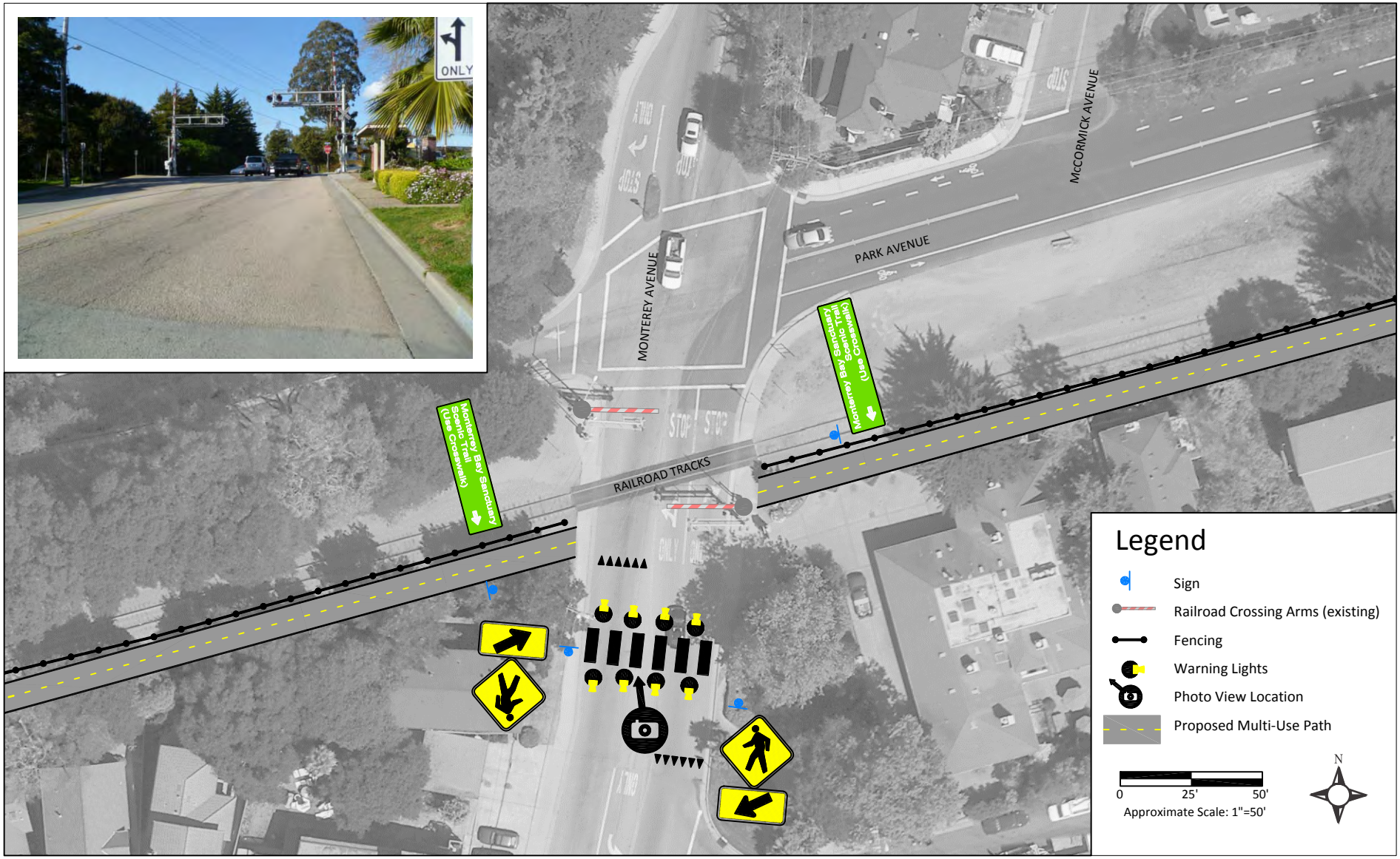


Figure F-22 Crossing No. 61, Monterey Avenue

Figure prepared by W-Trans



Figure F-23 Crossing No. 62, Grove Lane

Figure prepared by W-Trans

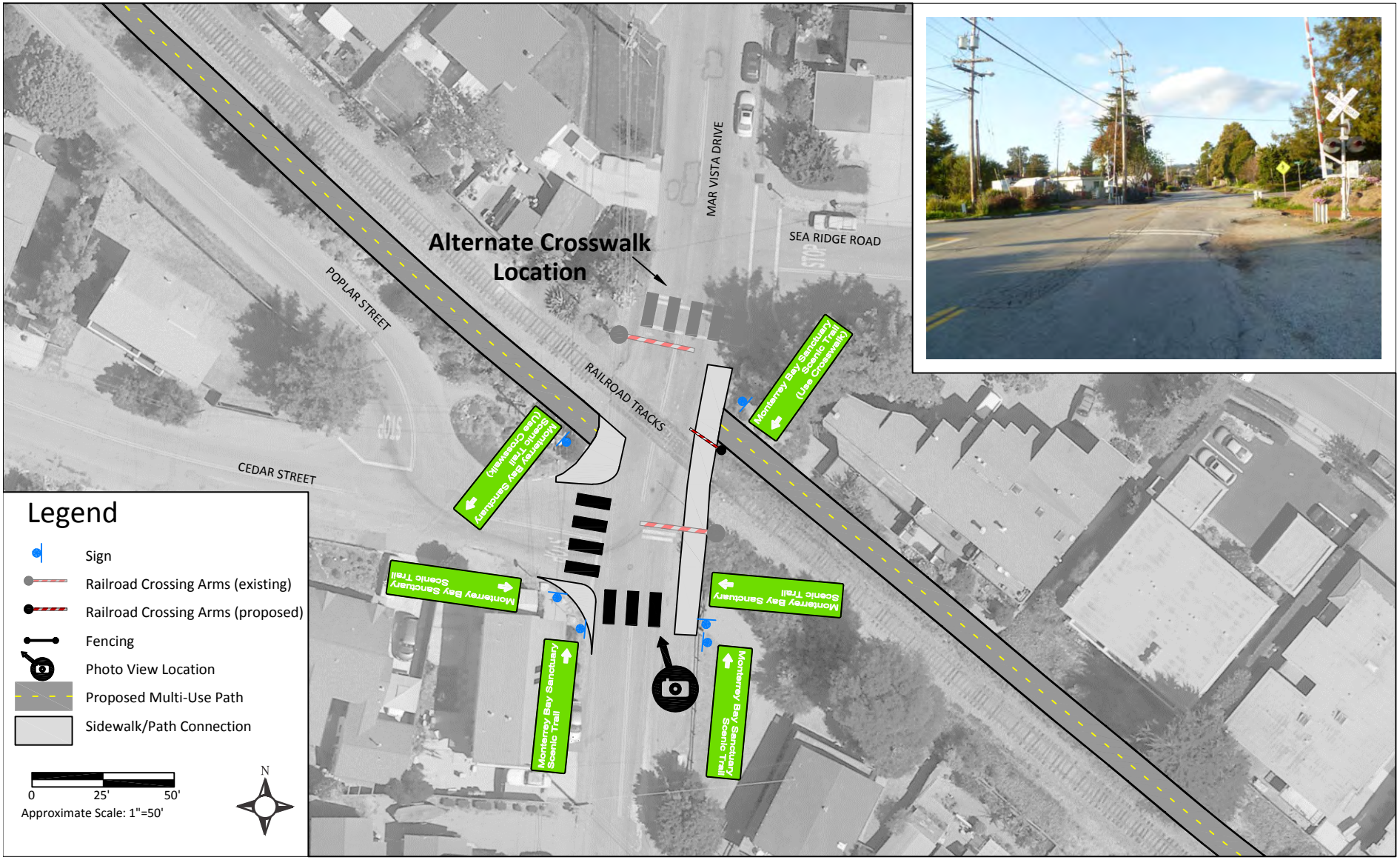


Figure F-24 Crossing No. 65, Mar Vista Drive

Figure prepared by W-Trans

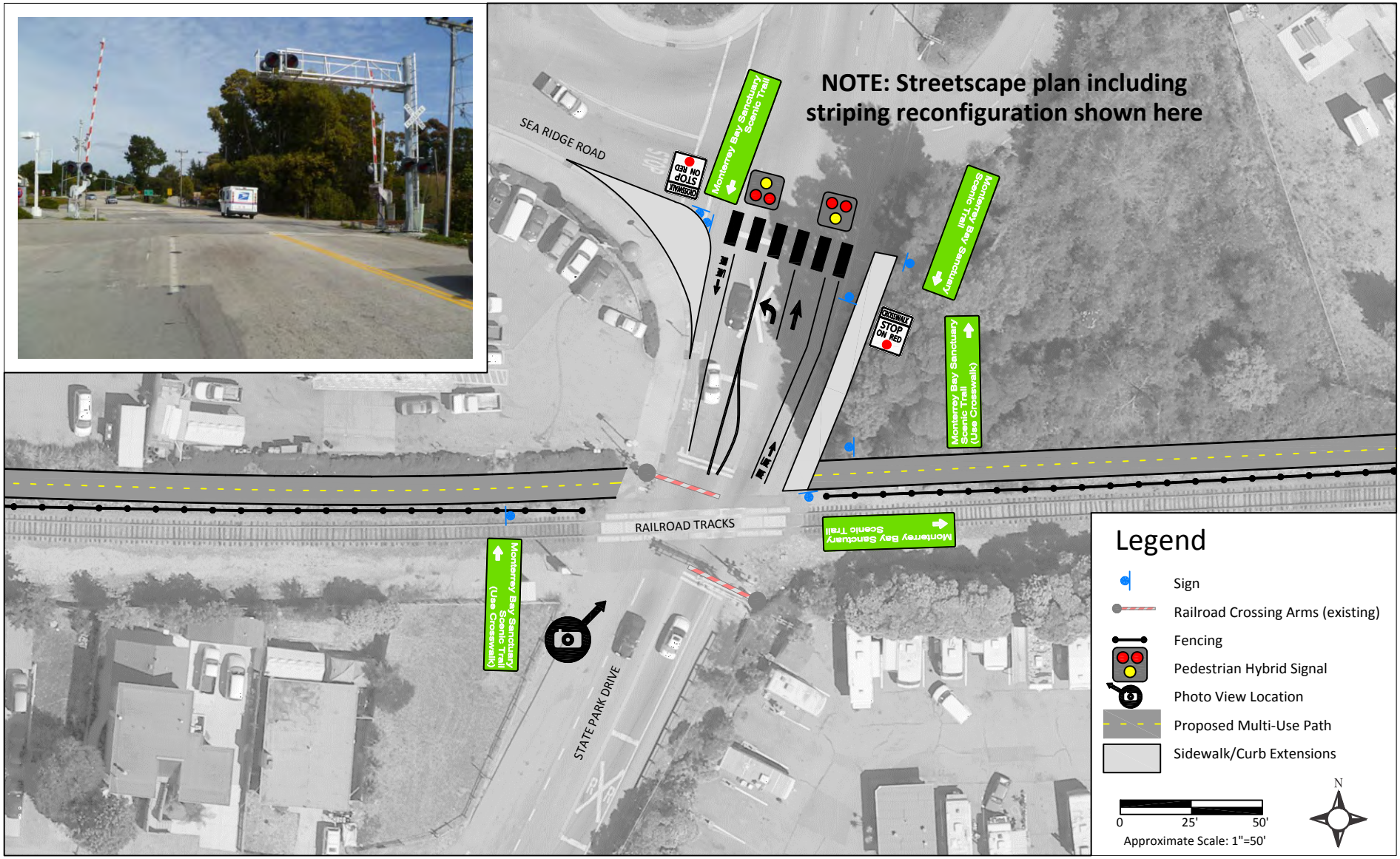


Figure F-25 Crossing No. 66, State Park Drive

Figure prepared by W-Trans



Figure F-26 Crossing No. 67, Aptos Creek Road

Figure prepared by W-Trans

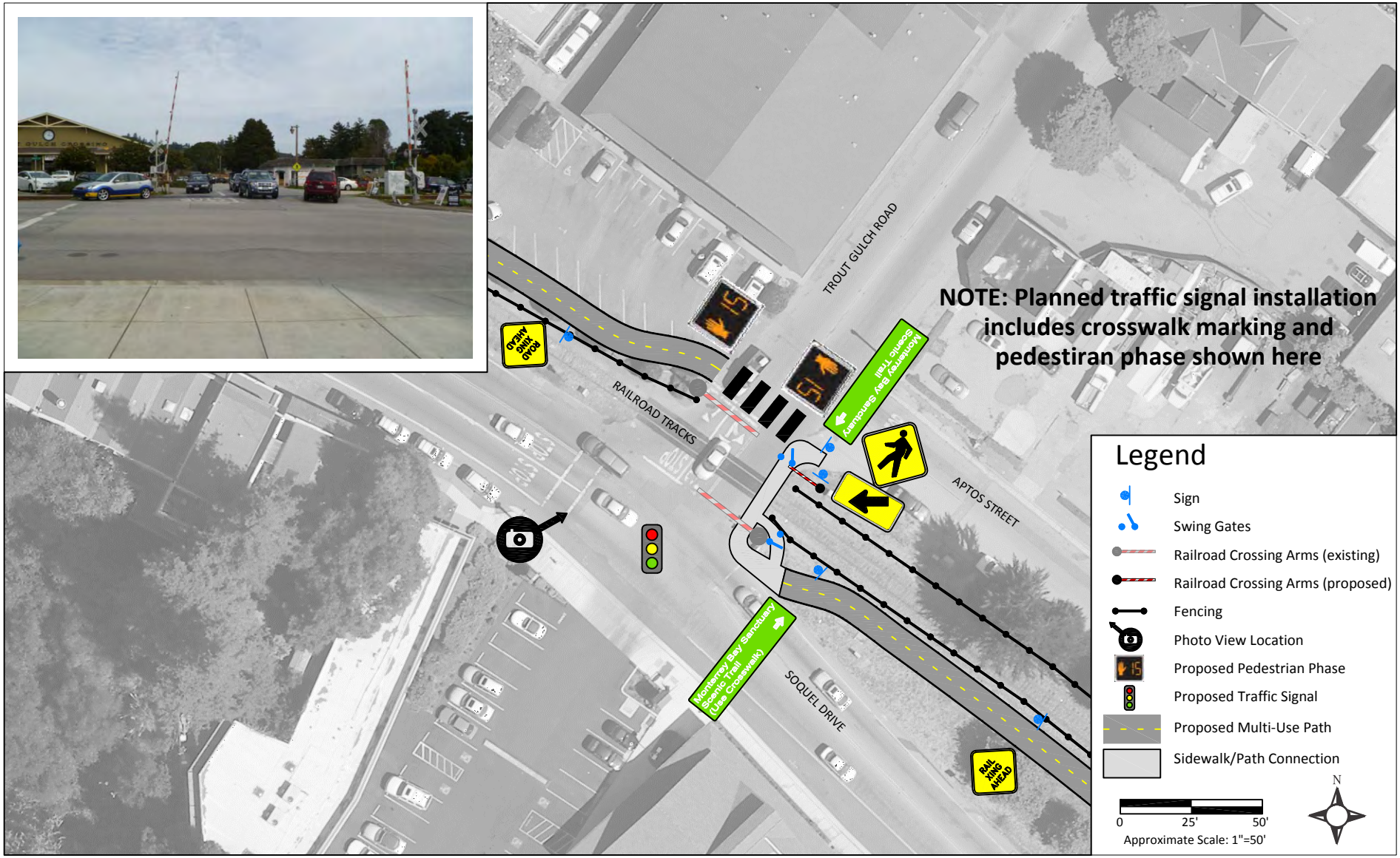


Figure F-27 Crossing No. 69, Trout Gulch Road

Figure prepared by W-Trans

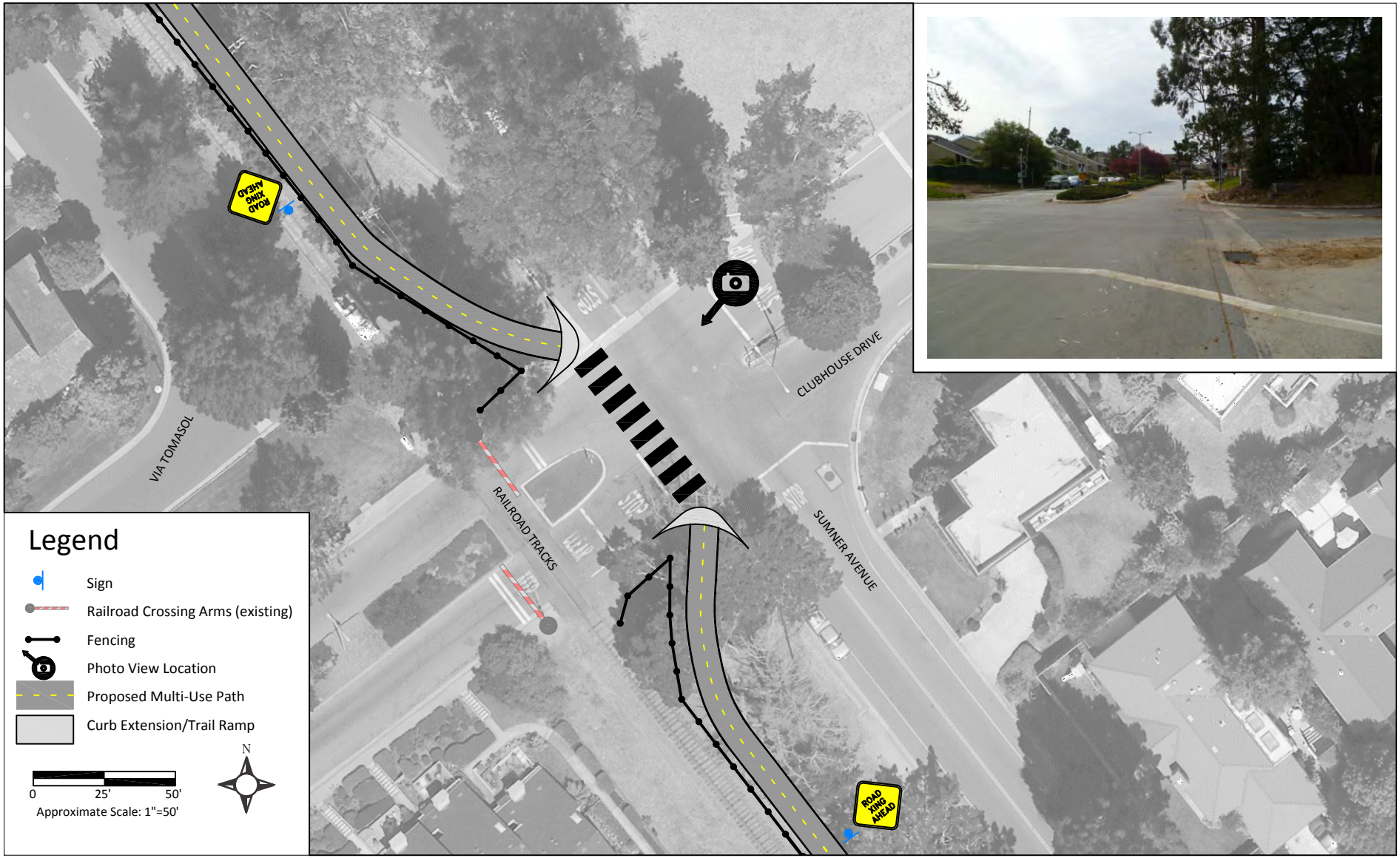


Figure F-28 Crossing No. 70, Clubhouse Drive

Figure prepared by W-Trans

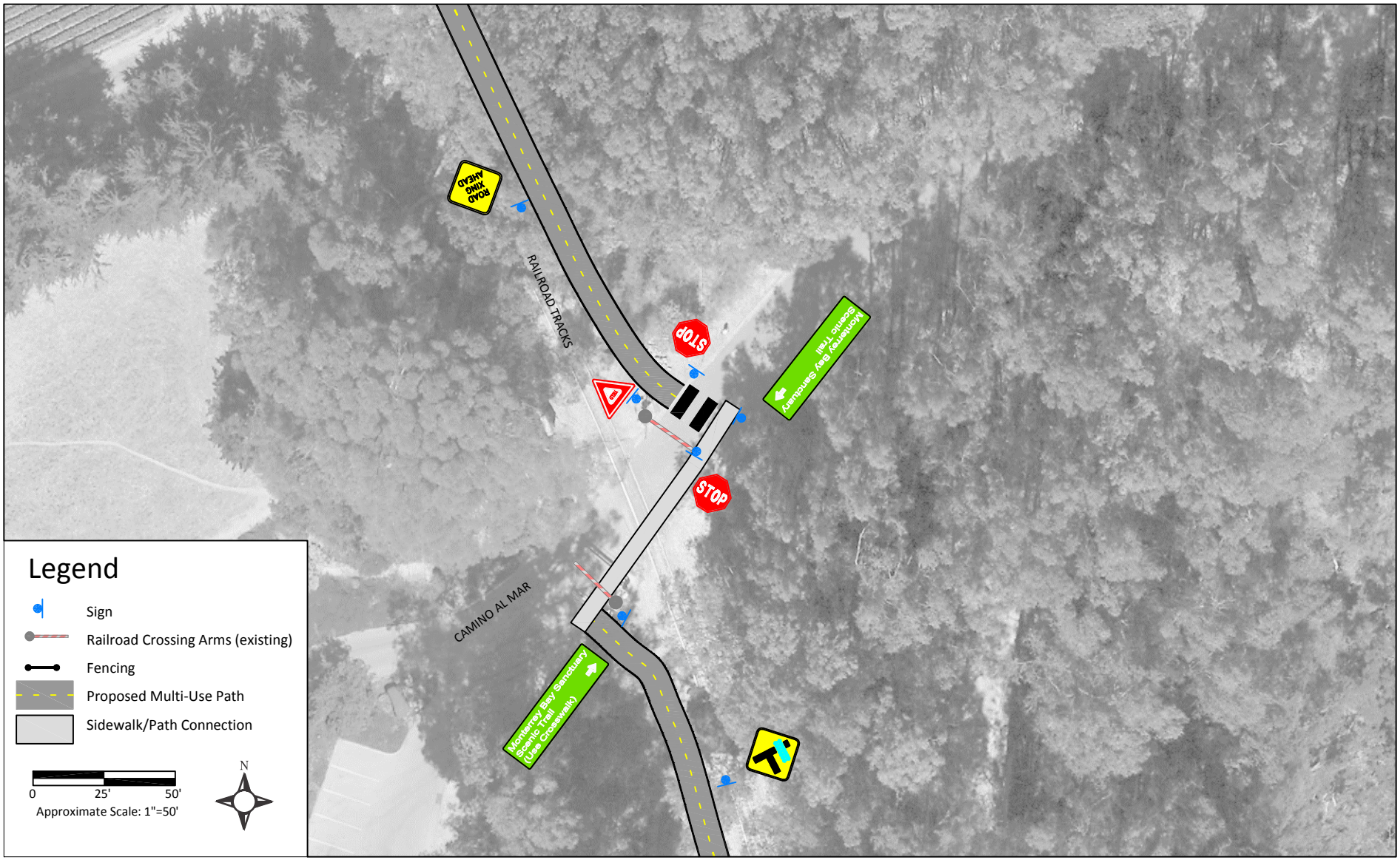


Figure F-29 Crossing No. 75, Camino Al Mar

Figure prepared by W-Trans

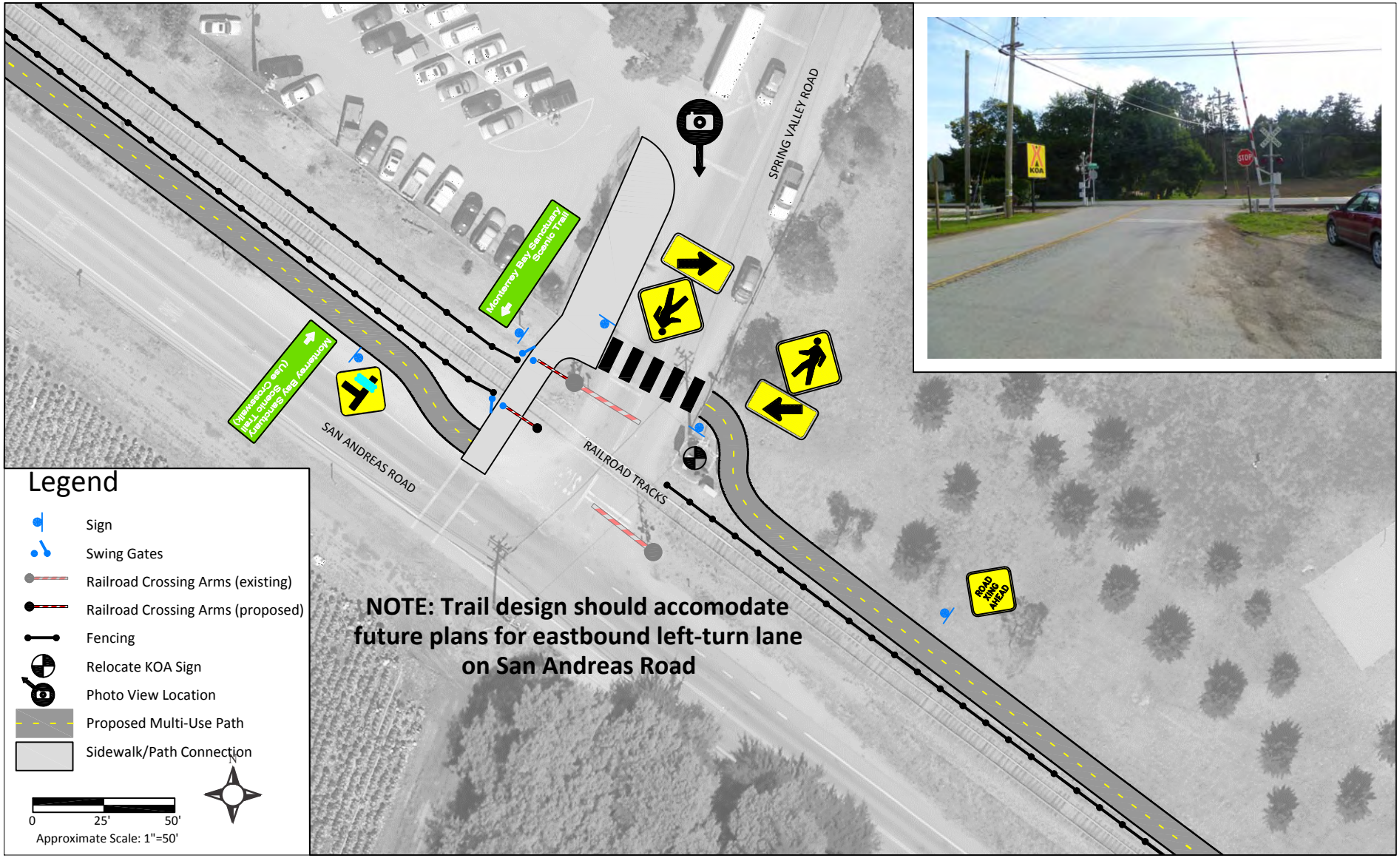


Figure F-30 Crossing No. 77, Spring Valley Road

Figure prepared by W-Trans



Natural Bridges State Beach



APPENDIX G

California Coastal Commission & Conservancy Accessibility Standards

STANDARDS AND RECOMMENDATIONS FOR ACCESSWAY LOCATION AND DEVELOPMENT

These standards provide guidelines for the location, size and type of accessways along the California coast. San Francisco Bay accessway standards are available from the San Francisco Bay Conservation and Development Commission. The California Coastal Commission and Conservancy adopted these standards to ensure a consistent approach is used for access construction. Since sites and circumstances vary along the coast the application of these standards is flexible. These standards apply to all new and existing developments.

STANDARD NO. 1 PROTECT THE PUBLIC AND COASTAL RESOURCES

Coastal access facilities should be located where they safely accommodate public use. Their distribution should prevent crowding, parking congestion, and misuse of coastal resources. To fulfill this goal, accessway design and location should: a) minimize alteration of natural landforms and be subordinate to the setting's character; b) prevent unwarranted hazards to the land and public safety; c) ensure the privacy of adjoining residences; and d) protect environmentally sensitive habitats and agricultural areas.

STANDARD NO. 2 CORRECT HAZARDS

The management and construction of accessways should correct or at least not increase the potential of any hazard, such as fire or erosion. At times when there is an increased hazard, for example during pesticide application in agricultural areas, the accessway should be closed.

STANDARD NO. 3 ACCESS EASEMENTS: CONSTRUCTION AND LOCATION

Accessways built on easements, such as offers-to-dedicate, should be no wider than necessary. Width of accessways can vary from a minimum of 30 inches for a trail to 10 feet or wider for ramps or paved walkways, depending on topography and the existing development. Wheelchair access should be provided wherever possible.

STANDARD NO. 4 PRIVACY

The design and location of accessways should consider the privacy of adjoining residences. Vertical accessways may be fenced or screened with landscaping on the property line and be closed at night, depending on the needs of the adjoining residences.

STANDARD NO. 5 ENVIRONMENTALLY SENSITIVE AREAS

Access projects to areas such as wetlands, tidepools, or riparian areas should be evaluated on a case-by-case basis to ensure that the projects: a) are consistent with the policies of Chapter Three of the Coastal Act; b) avoid adverse effects on the resource and, if possible, enhance the resource; c) are reviewed by the Department of Fish and Game and the California Coastal Commission.



STANDARD NO. 6 LATERAL ACCESSWAYS: CONSTRUCTION AND LOCATION

A lateral accessway is an area of land that provides the public with access and recreational use along the water's edge.

Lateral accessways should include a minimum of 25 feet of dry sand at all times of the year or the entire sandy area if the beach is less than 25 feet. They should not extend further inland than any shoreline protective structures; nor should they come closer than 10 feet to an existing single-family home. Specifications for construction will vary depending on the Local Coastal Program (LCP) requirements or Commission permit conditions.

Due to the proximity of the ocean and winter storm waves, construction of support facilities on lateral accessways should be kept to a minimum. Retractable ramps or boardwalks, however, not only enable the handicapped to reach the water, but they also can be removed as the seasons dictate.

STANDARD NO. 7 VERTICAL ACCESSWAYS: CONSTRUCTION AND LOCATION

A vertical is an area of land connecting the first landward public road, trail, or use area with a public beach or lateral accessway, used to get people to the shore. Vertical accessways should be a minimum 10 feet wide.

Urban areas: Vertical accessways in urban areas should be located where streets end at the shoreline, once every six parcels, or up to once every 500 feet. New multiple-family residential projects of five dwelling units or more should provide sufficient space for a vertical accessway and public parking and pay for their construction. Condominium conversions of the same type of units should provide a vertical accessway, either on-site or in the same general area. The existence of public beaches nearby could reduce the number of verticals needed.

Commercial development should incorporate or preserve views of the ocean and vertical access, as well as construct and maintain the accessway as part of the project. Industrial development should provide vertical access and parking improvements according to the extent to which the potential public use is displaced by the facility.

Rural areas: When beachfront parcels are subdivided in rural areas, owners should provide a vertical accessway either as a separate parcel or as an easement over the parcels to be created. More than one vertical accessway may be required if the parcels contain more than one beach area or the beach is ¼ mile or longer. Residential developments should use the standards suggested for urban development.

Vertical accessways in agricultural and timberlands should be wide enough to protect accessway users as well as the crops. At least one accessway should be provided or acquired on such lands if they contain a beach appropriate for safe public use.

Stairways, ramps, trails, over- or underpasses are some of the facilities that can be built on vertical accessways. Drainage systems to prevent erosion may also be necessary.



STANDARD NO. 8 TRAILS

A trail provides continuous public access either along a coastal bluff or links inland recreational facilities to the shoreline. Specifications for construction will vary according to the LCP.

Trail easements should be a minimum of 25 feet in width. They should never be closer than 10 feet to an existing residence.

Trails should be established on ocean front parcels, depending on the topographic conditions. These trails should connect: a) the shore with inland units of the federal, state, or local park systems; b) access easements; or c) the road with a scenic overlook. Such trails must avoid geologically unstable and erosive soils. Prime agricultural soils should also be avoided except where the trail will not interfere with agricultural production.

Trails can feature steps, footbridges, appropriate paving materials, adequate trail drainage system, trash receptacles, benches, barriers, restrooms, and signs.

STANDARD NO. 9 SCENIC OVERLOOKS

A scenic overlook provides the public a unique or unusual view of the coast.

Development of scenic overlooks can vary from a simple roadside turnout with only trashcans, parking, and fencing as appropriate, to a more elaborate roadside rest area. Overlooks that are not next to a road should be accessible by trail, ramps or stairs, and be accessible to those with physical disabilities.

STANDARD NO. 10 COASTAL BIKEWAYS

Coastal bikeways are paths specifically designated to provide access to and along the coast by nonmotorized bicycle travel as defined in Section 2373 of the Streets and Highway Code. There are three classes of bikeways:

Class I Bikeway – Bike Path: A completely separated right-of-way designated for the exclusive use of bicycles and pedestrians. Minimum surface width of 8 feet for a two-way path and 5 feet for a one-way path and provision for a 2 foot wide graded area adjacent to either edge of the paths.

Class II Bikeway – Bike Lane: A Class II bikeway is a right-of-way in the paved areas of highways that is restricted for the use of bicycles. Motor vehicle parking and cross-flows are permitted. To be classified as a Class II bikeway, the bikeway should be four feet wide on roads in outlying areas where parking is prohibited, 5 feet wide when parallel parking is allowed, or 11 to 13 feet wide when parallel parking is allowed and designated by specific striping.

Class III Bikeway – Bike Route: A Class III bikeway is a surface street that is shared with pedestrians or motorists. These routes are used primarily to provide a continuous link between Class I and II bikeways.

All classes of bikeways must feature a graded and paved path, bike racks, vehicle barriers, fencing, and signs. On a Class II and III, signs and striping are required.



STANDARD NO. 11 HOSTELS

Hostels are low-cost public travel accommodations that provide sleeping, kitchen, and bath facilities for traveling families, groups, and individuals of all ages. Following the example of the hostels in Europe, which generally allow a maximum stay of three nights, California coastal hostels combine low-cost lodging with educational, social, and cultural opportunities.

Hostels should have sufficient space for a minimum of 24 people, and one parking space for every eight guests and each residential staff person. Existing buildings, such as lighthouse stations, preferably on public or parkland, should be used for hostel sites whenever renovation is economically feasible and the structures are appropriate to current surrounding land use.

Ideally, hostels should be located at intervals of 20 to 40 miles, on or near the coast, and within two miles of recreational trails. If more than five miles of normal bicycle travel is required to get from one campground or hostel to another then campgrounds should be used to provide lodging.

Hostels should feature beds, kitchens, and bathrooms mentioned above as well as public telephones, location signing along highways, and public transit stops.

STANDARD NO. 12 SUPPORT FACILITIES

Support facilities are structures that make it easier for people to use and maintain coastal accessways: signs, trash receptacles, public telephones, restrooms, showers, bike security racks, public transit loading and unloading areas, campgrounds, and parking areas fit into this category. The support facilities that each accessway will require should be decided on a case-by-case bases. Directional and resource interpretation signs are available from the Coastal Conservancy.

STANDARD NO. 13 BARRIER-FREE ACCESS

All accessways must be made wheelchair-accessible unless this would present an unreasonable hardship. Grounds for an unreasonable hardship are to be determined by the enforcement agency for the region.

Accessways that accommodate or plan to accommodate those with mobility problems are the highest priority for State funding. The standards for these accessways and their support facilities should at least meet, if not exceed, the requirements of Title 24 of the California Administrative Code. The Office of the State Architect has written a guide to Title 24, the California State Accessibility Standards Interpretive Manual. This manual is available for $8.00 from the Office of the State Architect, Access Compliance Unit, P.O. Box 1079, Sacramento, CA 95805.







APPENDIX H

Rails-with-Trails Supporting Documents

A Survey of Trails Along Active Rail Lines



SAN FRANCISCO BAY TRAIL (PHOTO: RAILS-TO-TRAILS CONSERVANCY)

Rails-to-Trails Conservancy

Rails-to-Trails Conservancy (RTC) serves as the national voice for more than 100,000 members and supporters. We've help develop more than 15,000 miles of rail-trail throughout the country, and thousands of miles of potential rail-trails waiting to be built. We have supported the tremendous growth and development of rail-trails since opening our doors on February 1, 1986, and we remain dedicated to the creation of a nationwide network of trails and connecting corridors. Further, RTC is committed to enhancing the health of America's environment, transportation, economy, neighborhoods and people—ensuring a better future made possible by trails and the connections they inspire.

rails·to·trails
conservancy

NOVEMBER 2009

RAILS-TO-TRAILS SURVEY ALONG ACTIVE RAIL LINES

The following report has been extracted from the original report and does not contain any of the original images. The original report can be viewed on the Rails to Trails conservancy website at this link: http://www.railstotrails.org/resources/documents/ourWork/west/California_RWT_Survey.pdf

EXECUTIVE SUMMARY

Every day, thousands of Californians safely use and enjoy trails located along active rail lines. Because these trails offer access to transit, transportation options to important destinations, and recreational and exercise opportunities, rail-with-trail projects are booming in California. Railroads and transit agencies have mixed responses to the trails, but in some cases they have been embraced to increase ridership and reduce trespassing across the tracks. Rail-with-trails projects are a valuable tool to improve the transportation network for bicycles and pedestrians, while at the same time improving access to open space and providing recreation opportunities. ROSE CANYON BIKE PATH, SAN DIEGO (PHOTO: RAILS-TO-TRAILS CONSERVANCY)

Purpose: This report gives a California-focused update to the November 2000 Rails-with-Trails report published by Rails-to-Trails Conservancy. It is intended to help trail project advocates by providing information gleaned from Rails-with-Trails, existing projects and specific examples of design. For more general information on rail-with-trail projects, the November 2000 report can give additional case studies and figures from a nationwide perspective. Rails-with-Trails is easily accessed on the RTC website: www.railstotrails.org/resources/documents/resource_docs/Rails-with-trails%20Report%20reprint_1-06_lr.pdf

In 2002, the U.S. Department of Transportation also published an exhaustive report on rail-with-trail projects that includes design, planning and safety guidance. It is available on their website: www.fhwa.dot.gov/environment/rectrails/rwt/toc.htm

CALIFORNIA RAILS-WITH-TRAILS 2

GROWTH: The growth and popularity of rails-with-trails appears to parallel the growth of traditional rail-trails. This report analyzes 21 existing rail-with-trail projects—up from the seven California rails-with-trails that were identified in Rails-to-Trails Conservancy's 2000 report. At least another five rails-with-trails are being planned.

DUAL BENEFIT: Constructing a trail along an active railroad doubles the value a community derives from the rail corridor and provides citizens with an extra transportation choice. In many places it is difficult to find land on which trails can be built, so using an existing rail corridor can be a good option. In some cases, trails support railways by providing enhanced access for transit riders to stations.

SAFETY: Despite fears that rails-with-trails expose users to greater danger by their proximity to active rail lines, rails-with-trails have been shown to be just as safe as other trails. Our survey of trails found no incidents in California between a trail user and a train. In fact, using a rail-with-trail may well be significantly safer than walking or cycling next to a busy main road, and it may serve to keep people from walking on active rail tracks. Developed trails next to active rail lines funnel trail users to controlled crossing points or new tunnels and bridges across the rail line. Barriers and fences constructed as a part of trail projects can provide separation from the rail lines and discourage trespassing onto the active lines. Designs to reduce potential conflicts are especially important in coastal areas where access across the tracks is highly desirable.

RANGE OF DESIGNS: Rails-with-trails in California are operating successfully under a wide variety of conditions. Some are very close to rail tracks, and others farther away. Some use extensive separating fences or barriers. Some are next to high-speed, high-frequency train services; others are on industrial branch lines or tourist railroads with slower trains operating only a few times per week. Some have at-grade crossings while others use underpasses or overpasses. These successful projects shared two common threads; the involvement of stakeholders and the railroad throughout the process, and designing to maximize safety and function.

RAILROADS: Railroad companies are understandably cautious of such projects, and the majority of trail managers reported that adjacent railroads had mixed feelings or did not initially want to discuss the possibility of a trail along the active line. However, 25 percent of the responding trail managers described the attitude of the railroad involved with their trail as supportive, positive or good.

LIABILITY: The survey revealed the vast majority of rails-with-trails are insured by existing city or transit district insurance coverage in a similar manner to other trails. An increasing number of railroad companies are requiring trail managers to indemnify them against liability. The report found one claim made against trail managing agencies due to increased noise of train horns blowing at new at-grade crossings. According to the survey results, no claims were made against railroad companies.

INTRODUCTION

California offers a wonderful climate, a growing public transit system and a variety of urban and town centers that make trails along active rail corridors an excellent option for commuting, transit access and recreation. Rail corridors can be attractive sites for trails because they often provide a direct connection between popular community locations, such as downtown districts and residential areas. At a time when demand for trails is increasing, finding land for them can be difficult. Placing trails alongside active rail corridors can be an excellent method of securing land for safe, popular and effective trail development.

Rails-with-trails are multi-use trails along rail lines that are still active. In recognition of the growing popularity and use of rails-with-trails, this report presents findings gathered from a survey and interviews of managers of 18 California rails-with-trails. An additional three rails-with-trails were included with partial data that will be completed when the trail managers give additional information. Our intention is to provide all stakeholders considering rails-with-trails projects with information so that decisions are based as much as possible on objective facts.

WHO CAN USE THIS REPORT?

This report is designed to be of assistance primarily to trail planners, advocates and managers. By clearly laying out the California rails-with-trails experience, the report is designed to help answer questions such as:

- Are rails-with-trails safe?
- Will a rail-with-trail work in our community?
- How do we design our rail-with-trail to make it safe and effective?
- How can we work cooperatively with a railroad company?
- How do we handle liability issues?
- Who has experience with different aspects of rails-with-trails?

The report can also be useful to the railway industry, elected officials, federal, state and local transport officials, consultants, planning departments and anyone interested in the rail-with-trail concept.



GROWTH OF RAILS-WITH-TRAILS

California came late to the rail-trail movement, but momentum is building rapidly to build a network of trails that helps the population access public transit and find recreational opportunities in urban areas.

There are currently at least 21 open rails-with-trails with 60 miles of trail, up from seven rail-with-trails and 11.4 miles of trail in 2000, a fivefold increase in mileage. At least five more rails-with-trails are known to be in various stages of development, with major projects such as the Coastal and Inland Rail Trails in San Diego County, the Coastal Rail Trail in Santa Cruz County, and the SMART corridor in Sonoma and Marin proposed to add considerable mileage to trail networks in those areas. Not all rails-with-trails run along active rail lines for their total length. Of the 60 miles of rails-with-trails in California, 45 miles lie adjacent to an active line.

Rails-with-trails appear to be as popular as any other type of multi-use trail. The eight rails-with-trails with usage estimates reported a total annual patronage of 406,000 visits.

Interestingly, the longest rail-with-trail is actually adjacent to a bus rapid transit line that operates similar to light rail. Because the characteristics of the busway are similar to a rail line, we chose to include the information in this report.

Rails-with-trails projects vary greatly in length, separation from the rail line and usage, just as the active rail lines they parallel vary greatly in traffic and speed.

DUAL BENEFIT

Once constructed, rails-with-trails offer similar benefits to trail users and the general community as other types of trails. They are safe places for walking, jogging, cycling and other forms of recreation or human-powered travel, and they provide recreation, commuter and utility links between and within communities. In California coastal communities, they can attract tourist use and steer those seeking beach access to controlled crossing points. Rails-with-trails also make efficient use of rail corridors by providing more transportation choices for the community. In many places, particularly urbanized areas, it is increasingly difficult to create a contiguous corridor on which trails can be built, so utilizing an existing rail line can be the best option.

For example, the 2.5-mile Folsom Parkway Trail in Folsom was developed with the specific goal of making the best use of the existing transport corridor. The trail is helping to boost rail ridership as train commuters use the trail to cycle or walk to the stations for their commute to Sacramento. The trail project also reduced costs for the rail construction by helping fund relocation of an existing gas line, and the transit district included the trail in their construction of the Glenn Road station.

LOGICAL LINKS

Rail corridors were developed to form links between many of the places that cyclists, walkers and other trail users want to go. These include links between downtowns and residential areas, often running along attractive waterfronts or serving historical tourist destinations.

Just like unused train lines, active lines have bridges and culverts designed to help trains avoid at-grade road crossings. Trails can sometimes take advantage of these, improving the safety for trail users by keeping them away from road crossings and making the trail route smoother, more direct and attractive.



LAND OWNERSHIP

Because the rail lines adjacent to rails-with-trails have various uses, the ownership of the corridors also varies. Three corridors are owned by cities, eight by transit districts for commuter rail, light rail or bus rapid transit, and 10 are owned by railroad companies. Most city-owned corridors are used for excursion trains.

EASEMENTS

The survey showed that 10 of the rails-with-trails projects were granted an easement from the corridor owner. Seven did not need an easement, either because the corridor owner also manages the trail or because the trail is just outside the railroad property on an adjacent right-of-way. The San Clemente Pedestrian Beach Trail did not get an easement but did enter into a license agreement similar to a lease with the State Lands Commission. Easement information was unknown for four of the trails.

SAFETY

Safety is the most important aspect of developing any rail-trail, whether along an operating railroad or not. The good news is that rails-with-trails have been shown to be just as safe as other trails. Every day, thousands of people across the United States safely use existing rails-with-trails. Fears that more trail users would be severely injured due to the proximity of moving trains have never been realized.

UNDERSTANDING THE RAILROAD

It is not surprising that railroads are so concerned about safety and liability. The rail industry is strongly committed to improving the safety of its operations and to keeping people off railroad tracks. It spends millions of dollars each year on this effort through Operation Lifesaver and other campaigns.

Apart from the obvious desire to preserve life, the rail industry is concerned with the trauma that train incidents can cause to train drivers and other staff, the possibility of vandalism of railroad property which may be expensive to repair or create a threat to safety, and the threat of litigation.

Trails are sometimes seen as attracting additional people and problems to the corridor, directly conflicting with railroad maintenance, operations and safety.

TRAIN-TRAIL USER CONFLICTS

California trail managers reported that no incidents with trains and trail users have occurred on rails-with-trails. Previous nationwide studies in 2000, 2002 and 2005 found two incidents that were not directly trail related, but did occur near rail-with-trail projects. A bicyclist was injured in Illinois on an adjacent preexisting road/rail crossing when the bicyclist ignored warning bells and flashing lights and rode around a lowered crossing gate. Another injury occurred in Alaska when a young person crossed a trail from a residential area to “hop” a slow-moving train. No other trail-related train accidents have been reported nationwide.

Contrast the absence of conflicts on rail-with-trail corridors to injuries and deaths sustained on rail corridors without active trails. The 2002 U.S. Department of Transportation and Alta Planning Rails-with-Trails: Lessons Learned study reported that from 1995 to 2002 the number of trespass fatalities had reached approximately 500 per year, exceeding highway-rail crossing deaths. Per the report, “trespasser fatalities represent the greatest loss of life associated with railroad operations.”



Rails-with-trails projects have the potential to reduce train and trail user conflicts by guiding trail users to controlled crossings and designated access points. For example, in the case of the new San Clemente Pedestrian Beach Trail, the railroad operator sees the trail as a safety improvement after initially having concerns. The trail constructed a tunnel under the tracks at one of the points that had the most pedestrian traffic, but planners also added new at-grade crossings. San Clemente reported that there were incidents prior to the trail construction, but none since. Similarly, the San Luis Obispo Railroad Safety Trail provided a new pedestrian and bicycle bridge over the active rail line where trespassing was common and constructed fences in the vicinity to funnel trail users to the bridge.

There were several incidents unrelated to the trail reported on the Metro Orange Line busway where cars ran red lights and collided with the bus rapid transit vehicles used on the Orange Line. Details can be found in an LA Times article: http://articles.latimes.com/2005/nov/03/local/me-orange3. For cyclists using the bikeway, the survey found that measures were taken to warn riders of intersections through a striping plan, "Signal Ahead" signs, and curves in the path to slow riders and lead them to wheelchair ramps for crossing.

RELATIVE SAFETY OF ROAD AND RAIL

Opponents of rails-with-trails have said that introducing people to active railroad corridors will reduce the safety of the corridor. However, questions on the safety of active railroad corridors are only relevant in comparison with existing bicycle and pedestrian safety on roadways and with current incident levels on rail lines without adjacent trails.

Rails-with-trails can be safer than trails next to roads. "In the last 15 years, more than 76,000 Americans have been killed while crossing or walking along a street in their community," according to the 2009 Dangerous by Design report by Transportation for America and the Surface Transportation Policy Partnership. Trails separated from roads can provide a safer option. Even with an active rail line near the trail, the exposure from a track carrying ten to twenty trains per day is much less than a road carrying thousands of vehicles per day.

SAFE DESIGNS

Trail managers can do a great deal to ensure that their trail is designed, operated and maintained to be as safe as possible. Each of the trail managers surveyed for this study faced a variety of safety challenges that they have solved.

Key safety design factors include:

- Providing adequate distance between track and trail. The separation between track and trail varied widely and averaged 45 feet. Measurements are from the centerline of the track to the nearest edge of the trail. Trail planners strive to maximize the setbacks of the trail from the track, but in some cases geography and right of way limit the available space. The San Clemente Beach trail, Folsom Parkway, Sacramento River Parkway, Inland Rail Trail, Santa Maria Valley Railroad trail, and Martin Luther King Promenade all have segments that are within 20 feet of the track centerline.
- Providing safe fencing, barriers or grade separation between track and trail where necessary. The survey found 15 of the 21 rails-with-trails have installed some kind of barrier between the rails and the trail. Barriers used include vegetation, grade separation, fences, ditches and cement walls. Crossings are at-grade, tunnels or overpasses. Four trails did not have a barrier, and two did not have information.
- Designing safe rail crossings, and creating enough of them at convenient locations to serve local uses.
- Installing adequate trail-user warning signs.



LIABILITY ISSUES

While liability is a vitally important issue, building a trail along an active railroad does not, in itself, expose the trail manager to unacceptable risk of liability. In other words, the concept of rails-with-trails is not an inherently negligent design. As is the case with most trails, public trail managers and private landowners have some liability protection in many states due to recreational use statutes. These statutes reduce the liability of landowners and managers who provide free public access on their land for recreational uses such as trails.

Railroads have, for many years, had some protection against liability for injuries on their tracks due to the impracticality of fencing many thousands of miles of railway, some of which have been in place for more than a century. However, railroads are naturally interested in keeping their liability to a minimum. In some cases the mere threat of possible legal action, and the amount of the railroad's time and effort that may be needed to resolve even frivolous suits, will be enough to deter rail companies—particularly small companies—from involvement in rail-with-trail.

INSURANCE POLICIES

All of the trail managers responded that the trails are covered by existing insurance policies that cover the city, open space or transit entity that operates the trail.

CLAIMS AGAINST TRAIL MANAGERS

Of the 18 trail managers interviewed for this report, one has a current claim, but it is not safety related. San Clemente is dealing with a current claim from homeowners regarding train horn noise due to the new at-grade pedestrian crossings constructed as a part of the trail project. The city is testing "wayside horns" and a Safety/Quiet Zone as possible solutions to reduce the noise and settle the claim.

INDEMNIFICATION

Indemnification of the railroad in California rail-with-trail projects varied greatly. In many cases, the trail manager did not know if they were required to indemnify the railroad, or it was not applicable because the trail is outside the rail right-of-way (such as in an adjacent road right-of-way owned by the city). Most trails that were actually in the rail right-of-way were required to indemnify the railroad, with the exception of Folsom Parkway and the city-owned Sacramento River Parkway. Of the eight trails studied where indemnification would be applicable, seven (88 percent) were required to release the corridor's owner from liability for incidents on the trail. This percentage is an increase from previous nationwide studies which had figures of 17 percent of trails in 1996 and 26 percent in 2000.

This result may be because the trails studied previously were those that were easiest for the trail managers to develop, or because rail operators are becoming more concerned about their liability. Trail managers will need to negotiate the indemnity with the railroad as a part of the trail development process. Offering to incorporate the trail into the city, county or state umbrella policy can be an effective way to alleviate railways' liability concerns.



RISK MANAGEMENT

The key to minimizing exposure to liability for rails-with-trails is the same as for other types of trails. The trail should be designed by professionals to accepted state and national standards, and the trail must be systematically maintained and managed with clear, well-documented records.

The manager of any trail, especially a rail-with-trail, should obtain legal advice on their exposure to liability.

The three main types of scenarios likely to expose trail managers to potential liability are:

- Injuries caused by trail defects;
- Injuries caused by conditions on adjacent property including the active railroad;
- Injuries resulting from conflicts among users or where a trail crosses a road or railroad track.
- Special care should be taken to ensure that crossings are properly designed with the correct signage and that any barriers designed to improve safety are well-maintained. (See the AASHTO Guide for the Design of Bicycle Facilities.)

WORKING WITH RAILROADS

The California survey shows that while railroad operators are concerned about any proposal that might bring more people into contact with their rail lines, many also are supportive of the concept of rail-with-trail, as well as the benefits trails can bring to the community and the railroad company.

When developing a rail-with-trail, including both parallel rail lines and rail crossings, trail developers must consider the safety of trail users with respect to active rail lines. Trail managers should bring key stakeholders—including the railroad operator, railroad customers, government leaders and trail users—together early in the trail-development process. Coordinating efforts guided by best practices as outlined by the Federal Highway Administration's rails-with-trails study will ensure that safety elements are an integral part of the trail's master plan.

CHARACTERISTICS OF ADJACENT RAILROADS

Rails-with-trails run along a wide variety of active rail lines with different speeds, frequency and types of trains, ranging from bus rapid transit to slower-speed excursion trains to high-speed transit and freight trains. The charts below reflect this variability in the percentages of trails next to the types of rail traffic.

DESIGN ISSUES

Trail managers noted several aspects of the trail designs that drastically increased maintenance costs or had to be replaced within a few years of the trails opening.

The city of Carlsbad included bollard lights along their trail that have become a target of repeated vandalism. The three-foot-tall bollard lights are just off the asphalt trail in a two–foot-wide decomposed granite area. The lights have repeatedly been hit with baseball bats and have caused most of the $80,000 to $90,000 costs of maintenance that the city is absorbing. The railroad operator would not allow taller lights, fearing they would distract the train engineers. For future phases the city will request taller lighting with shielding to prevent any light issues for the railroad operator.

Carlsbad also has recurring issues with people cutting through the new welded-wire fence in areas where they were accustomed to crossing the tracks for beach access. The illegal crossings have caused increased tension with the railroad operator.

In another case, the Metro Orange Line in Los Angeles was originally landscaped with dense greenery and shrubs, which led to transient use, vandalism and complaints from neighbors. The landscaping was then changed out and is now being routinely maintained by a subcontractor.

The Metro Orange Line in Los Angeles also faced safety concerns with bicycle speeds at street crossings. They solved the problem with a slurve, where the bike path encounters a sharp curve and diagonal curb cut at the crossing. This design reduces the speed of the approaching bicyclists, forcing them to acknowledge the traffic signals and making them more visible to cars. A short film spotlighting the trail can be found at: www.streetfilms.org/archives/las-orange-line-bus-rapid-transit-plus-bike-path/

Most of the trails cited additional permitting and environmental issues that needed to be worked through, in some cases with the Public Utilities Commission, before the trail could be developed. These extra steps were especially common along the coast, where rail lines run across inlets, lagoons and rare habitat areas.

TRAIL FUNDING

Similar to other transportation projects, trail funding is a long and complex process. Rails-with-trails projects use a variety of sources to fund planning and construction, including government and private sources. Half of the trails surveyed used multiple sources of funding, with seven using federal, state and local sources. Many jurisdictions in California have passed local sales tax measures to raise transportation funds that are used to match state and federal transportation and parks grants. These projects may include new grade-separated crossing of the rail tracks, new bridges, environmental mitigation measures and complicated engineering solutions that tend to be more expensive than local funds can support independently. Three of the surveyed trails were built with only local funding sources; these are commonly conditioned as a part of an adjacent development project or funded through impact fees.

Maintenance funding came exclusively through the cities in which the trails are located, and funding levels varied wildly depending on the landscaping and amenities that are offered along the corridor. When new trails are planned, a thorough maintenance plan and funding sources should be prepared to ensure that the trails are safe, attractive and useful additions to the communities they serve.

ADDITIONAL RESOURCES

- “Rails–with-Trails: Design, Management, and Operating Characteristics of 61 Trails Along Active Rail Lines” (Rails-to-Trails Conservancy, 2000). www.railstotrails.org/resources/documents/resource_docs/Rails-with-trails%20Report%20reprint_1-06_lr.pdf
- “Rails-with-trails: Lessons Learned” (U.S. Department of Transportation and Alta Planning, 2002). www.fhwa.dot.gov/environment/rectrails/rwt/toc.htm
- “Rails-with-trails: A Preliminary Assessment of Safety and Grade Crossings” (Rails-to-Trails Conservancy, 2005). www.railstotrails.org/resources/documents/resource_docs/RwT_Grade_Crossings_Report_final_lr.pdf
- “Guide for the Development of Bicycle Facilities” (American Association of State Highway and Transportation Officials, 1999). http://safety.fhwa.dot.gov/ped_bike/docs/b_aashtobik.pdf
- “Manual on Uniform Traffic Control Devices” (U.S. Department of Transportation, 2003). http://mutcd.fhwa.dot.gov/ Rails-to-trails Survey along active rail lines

U.S. Department
of Transportation

Federal Highway Administration

Federal Railroad Administration

National Highway Traffic Safety Administration

Federal Transit Administration

Rails-with-Trails: Lessons Learned

Literature Review, Current Practices, Conclusions



August 2002

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The following report has been extracted from the original report and does not contain any of the original images. The original report can be viewed on the Rails to Trails conservancy website at this link: http://www.railstotrails.org/resources/documents/ourWork/west/California_RWT_Survey.pdf

U.S. DEPARTMENT OF TRANSPORTATION RAILS-TO-TRAILS LESSONS LEARNED

The following executive summary has been extracted from the original report and is not in the original formatting, nor does ot contain any of the original images. The original report can be viewed on the U.S. Department of Transportation website at this link:http://www.fhwa.dot.gov/environment/recreational_trails/publications/rwt/page00.cfm

EXECUTIVE SUMMARY

This report offers conclusions about the lessons learned in the development, construction, and operation of "rails-with-trails" so that railroad companies, trail developers, and others can benefit from the history of trails in existence today. "Rail-with-trail" (RWT) describes any shared use path or trail located on or directly adjacent to an active railroad corridor. About 65 RWTs encompass 385 km (239 mi) in 30 States today. These trails are located adjacent to active rail lines ranging from a few slow-moving short-haul freight trains weekly, to high-frequency Amtrak trains traveling as fast as 225 km/h (140 mi/h). Dozens of RWTs are proposed or planned. While most are located on public lands leased to private railroads, many are on privately owned railroad property. Hundreds of kilometers of RWTs traverse Western Australia, Canada, and Europe. RWT advocates and railroad company representatives often offer contrasting viewpoints. Trail planners view railroad property, often located in scenic areas with favorable topography, as a better alternative than bike lanes on roadways. They note that legal protections of varying degrees exist in all States, and that a litany of successful RWTs should provide comfort. Railroads generally oppose RWTs for the following business reasons: the trails are not related to railroad operations and generally do not generate revenue for the railroads; railroad rights-of-way may be needed for future enhancements to system capacity; poor design or maintenance of trails could lead to increased trespassing, with consequent increases in injuries and deaths; narrowing the railroad's portion of the right-of-way drives up the cost of maintaining track and structures (includingcomplicating safety protection for roadway workers); and significant new populations of pedestrians close to the active track structure may result in additional stress on train crews seeking to ensure the safety of train movements. Railroad company representatives respond to assurances of legal protections by noting that the court system has not yet tested the lease and/or use agreements for existing RWTs. Railroads have borne the burden of litigation for many incidents on their property, even for crashes with at-fault trespassers or automobile drivers who ignored obvious warning systems. Further, they note that the railroad may be determined by civil courts to owe a higher duty of care to trail users than to trespassers, particularly at new, designated crossings.

Policy officials at the U.S. Department of Transportation's Federal Railroad Administration (FRA) have shared the railroads' public safety concerns. They also have pointed out that, for certain main lines, creation of a trail, under circumstances that could foreclose adding additional main line tracks or passing sidings to increase capacity, could result in a constriction of future freight rail service across the Nation or dramatically increased cost as a result of less-than-optimum routing. Nationally, railroads carry the highest percentage of freight of any mode on a "tonnage times distance" basis, and–for the bulk commodities they are well suited to handle–they do so at lower cost than trucks in terms of transportation charges, fossil fuel use, and greenhouse emissions. Although most existing service railroads could never replace the flexibility of trucking, the railroads will remain an essential transportation provider as the economy continues to grow into the future. In the meantime, public pressure is increasing for railroads to free up space adjacent to rail lines for trail usage, pitting the railroad industry's safety, capacity, and liability concerns against trail proponents' desires to create shared use paths and other trails. This situation gave rise to the need to study the issue of RWTs to determine where they are appropriate, recommend design treatments and management strategies, find ways to reduce liability impacts on the railroad industry, and address other public interest considerations.

RWT DEVELOPMENT PROCESS

The current RWT development process varies from location to location, although common elements exist. Trail advocacy groups and public agencies often identify a desired RWT as part of a bikeway master plan. They then work to secure funding prior to initiating contact with the affected railroad. The railroad agency or company typically lacks an established, accessible review and approval process. While some RWTs move forward quickly (typically those where the trail development agency owns the land), many more are outright rejected or involve a lengthy, contentious process. RWT processes typically take three to ten years from concept to construction.

FEASIBILITY REVIEW

Trail managers should undertake a comprehensive feasibility analysis of proposed RWTs. An RWT feasibility study should describe the setting, relationship to local planning documents, land ownership patterns, railroad activity, and other information necessary to determine feasibility. The study should identify and evaluate multiple alternative alignments, including at least one that is not on the railroad right-of-way, and determine a preferred alignment.

ASSESSING POTENTIAL BENEFITS

Identifying potential benefits to railroad companies is crucial to developing a successful RWT. Such benefits may include the following:

- Reduced liability costs;
- Financial compensation;
- Reduced petty crime, trespassing, dumping, and vandalism;
- Reduced illegal track crossings through channelization of users to grade-separated or well-designed at-grade crossings;
- Increased public awareness o f railroad company service;
- Increased tourism revenue;
- Increased adjacent property values; and
- Improved access to transit for law enforcement and maintenance vehicles.

INVOLVING THE STAKEHOLDERS

Involving the railroad and affected agencies early in the process is a common theme heardfrom surveys and interviews on existing RWTs around the country.

Stakeholders may include:

- Railroad companies, in cluding representatives of real estate, operations, maintenance,and legal departments;
- Railroad customers (businesses that ship by rail or receive shipments by rail that are located on the line segment, such as passenger organizations, transit authorities, and
- State departments of transportation that may have an interest in funding new service on the line–either on the same tracks or on new tracks built within the right-of-way);
- Utility companies, su ch as telephone, cable, water, sewer, electric, and gas;



- Law enforcement officials;
- Other adjacent landowners;
- Trail user groups; an d
- Transportation, pu blic transit, parks and recreation, and health departments.

Stakeholders should be involved through a technical advisory committee or frequent communication via meetings, newsletters, phone calls, and e-mails.

CAPACITY CONSTRAINTS

Privately-owned Class I railroads tend to be reluctant to grant non-rail usage of their rights-of-way because loss of right-of-way width at any given location could reduce the ability of the railroad to add main track and sidings necessary to provide increased capacity and serve customer needs across the breadth of their systems. Freight railroads spent the decades of the 1980s and 1990s reducing excess capacity in order to control costs and survive in a competitive marketplace. This has resulted in concentrating more traffic on fewer lines and reducing the options for reaching given marketsfrom other locations (e.g., there are essentially three corridors to the west coast from the Mississippi).

State departments of transportation and area transit authorities may have long-term plans for new service that could be foreclosed by permanent trail improvements on the particular line. To the extent the full width of the right-of-way may be needed for these purposes (including responding to air quality nonattainment requirements), the significant investments that would be required for a trail to cohabit with an active rail line may not be warranted. It should be noted that the property interest held by railroads at many locations is an easement or similar right subject to an express reversionary interest should the line cease to be used for rail service. In many cases, the purpose for which the railroads hold the easement is to provide for intrastate rail transportation. If a portion of the right-of-way is allocated for trail use, and if this restricts allocation for later railroad demands for increased capacity, that is inconsistent with the purpose of the easement.

LIABILITY

In the context of RWT, liability refers to the obligation of a trail manager or railroad to compensate a person who is harmed through some fault of the trail manager or railroad. Railroads have a number of liability concerns about the intentional location of a trail near or on an active railroad corridor:

- Trail users m ay not be considered trespassers if a railroad permits trail use within a portion of their right-of-way, and thus the railroad would owe a higher duty of care to trail users.
- Incidents of trespassing and injuries to trespassers will occur with greater frequency.
- Trail users m ay be injured by railroad activities, such as falling or protruding objects, hazardous materials, or a derailment.
- Injured trail users might sue railroad companies even if the injury is unrelated to railroad operations, incurring expensive legal costs.



The level of railroad company concern is dependent in part on the class of railroad and the type of operations they perform. The Class I railroads' perceived deep financial pockets make them a frequent target of lawsuits, and they see no financial benefits from RWTs that would offset any increased exposure. Transit and tourist train operators may support RWT projects because they often are quasi-governmental entities, with a mission of attracting people to their service. Finally, locally based short-line operators have less reason to be concerned about future track expansion, and may be inclined toward the potentialfinancial rewards of permitting an RWT project along their rights-of-way.

AVAILABLE LEGAL PROTECTIONS

There is a range of options that can reduce railroad liability exposure. These include the following:

- State-enacted recreational use statutes (RUS) and rails-to-trails statutes. All 50 Stateshave RUSs, which provide protection to landowners who allow the public to use their land for recreational purposes. An injured person must prove the landowner deliberately intended to harm him or her. Additionally, about 20 States have enacted specific laws to clarify, and in some cases, limit, adjacent landowner liability. This can rangefrom protecting adjacent landowners from liability to making the RUS for the State specifically applicable to a rails-to-trails program.
- Property acquisition. Governments under civil law are treated differently from private landowners due to their unique status as sovereign entities. Many States have recently enacted statutes that limit the amounts or kinds of damages recoverable against governments (Isham, 1986). Public agencies considering RWTs should be prepared to identify financial incentives for a railroad to consider. This may be in the form of land transfers, tax breaks from donated land, cash payments, zoning bonuses on other railroad non-operating property, taking over maintenance of the trail right-of-way and structures, and measurably reducing the liability a railroad experiences.
- Easement and license agreements that indemnify the railroad owner against certain or all potential claims. In most cases, the railroad will retain property control, thus the form of legal agreement will be an easement or license agreement that, to the extent permissible under State law, reduces the railroad's liability exposure. Because of the many jurisdictions that have some involvement in an RWT—including the owner of the right-of-way, the operator of the railroad, and the trail manager(s)—the license or easement agreement should identify liability issues and responsible persons through indemnification and assumption of liability provisions.
- Insurance. Railroads may be concerned that trail users might sue them regardless of whether the injuries were related to railroad operations or the proximity of the trail.
- In most instances, the trail management entity should provide or purchase comprehensive liability insurance in an amount sufficient to cover foreseeable railroad liability and legal defense costs.

The research team for this report was unable to find a history of crashes or claims on the existing RWTs. There is only one known case of a specific RWT claim (in Anchorage, Alaska). The railroad was held harmless from any liability for the accident through the terms of its indemnification agreement. Research on other relevant cases has found that the State RUSs and other statutes do hold up in court.



DESIGN

No national standards or guidelines dictate RWT facility design. Guidance must be pieced together from standards related to shared use paths, pedestrian facilities, railroad facilities, and/or roadway crossings of railroad rights-of-way. Useful documents include the Manual on Uniform Traffic Control Devices, the AASHTO Guide for the Development of Bicycle Facilities (1999), Americans with Disabilities Act publications for trails and pedestrian facilities, and numerous FRA documents regarding grade crossing safety and trespass prevention.

Trail designers should work closely with railroad operations and maintenance staff to achieve a suitable RWT design. The research in this report has shown that well-designed RWTs meet the operational needs of railroads, often providing benefits in the form of reduced trespassing and dumping. A poorly designed RWT will compromise safety and function for both trail users and the railroad.

SETBACK DISTANCE

The term "setback" refers to the distance between the paved edge of an RWT and the centerline of the closest active railroad track. Although RWTs currently are operating along train corridors of varying types, speeds, and frequencies, there simply is no consensus on an appropriate setback recommendation. Thus, trail planners should incorporate into the feasibility study an analysis of technical factors relating to setback distance. These should include the following factors:

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

Another determining factor may be corridor ownership. Trails proposed for privately owned property, particularly on Class I railroad property, will have to comply with the railroad's own standards. Trail planners need to be aware that the risk of injury should a train derail will be high, even for slow-moving trains. Discussions about liability assignment need to factor this into consideration. For example, an RWT in a constrained area along a low frequency and speed train could be located as close as 3 m (10 ft) from the track centerline assuming that (a) the agency indemnifies the railroad for all RWT-related incidents, (b) separation (e.g., fencing or a solid barrier) is provided, (c) the railroad has no plans for additional tracks or sidings that would be impacted by the RWT, and (d) the RWT is available to the railroad for routine and emergency access. In contrast, along a high speed line located on private property, the railroad may require 15.2 m (50 ft) or more setback or not allow the trail at all.

Because every case is different, the setback distance should be determined on a case-by-case basis after engineering analysis and liability assumption discussions. The minimum setback distance ranges from 3 m (10 ft) to 7.6 m (25 ft), depending on the circumstances. In many cases, additional setback distance may be recommended. The lower setback ditances may be acceptable to the railroad company or agency, RWT agency, and design team in such cases as constrained areas, along relatively low speed and frequency lines, and in areas with a history of trespassing where a trail might help alleviate a current problem. The presence of vertical separation or techniques such as fencing or walls also may allow for a narrower setback.

SEPARATION

This refers to the treatment of the space between an RWT and the closest active railroad tracks, including fences, vegetation, ditches, and other items. More than 70 percent of existing RWTs utilize fencing and other barriers (vegetation, vertical grade, walls, and/or drainage ditches) for separation from adjacent active railroads and other properties. Fencing style varies considerably from chain link to wire, wrought iron, vinyl, steel picket, and wooden rail. From the trail manager's perspective, fencing is considered a mixed blessing. Installing and maintaining fencing is expensive. Improperly maintained fencing is a higher liability risk than no fencing at all. In all but the most heavily constructed fencing, vandals find ways to cut, climb, or otherwise overcome fences to reach their destinations. Fencing may detract from the aesthetic quality of a trail. To the extent possible, RWT planners should adhere to the railroad company's request or requirements for fencing.

CROSSINGS

The point at which trails cross active tracks is the area of greatest concern to railroads, trail planners, and trail users. When it is necessary to intersect a trail with an active railway, there are three options: an at-grade crossing, a below-grade (underpass) crossing, or an above-grade (overpass) crossing.

AT-GRADE CROSSINGS

With many railroads actively working to close existing at-grade roadway-track crossings, consistent with U.S. Department of Transportation policy, new at-grade crossings will be difficult to obtain. Each trail-rail intersection is unique; most locations will require engineering analysis and consultation with existing design standards and guidelines. Issues that should be considered include the following:

- Train frequency and speed;
- Location of th e crossing;
- Specific geometrics of the site (angle of the crossing, approach grades, sight distance);
- Crossing surface;
- Nighttime illumination; and
- Types of w arning devices (p assive and/or active).

GRADE-SEPARATED CROSSINGS

Overpasses and underpasses are expensive and typically are installed in limited circumstances, such as locations where an at-grade crossing would be extremely dangerous due to frequent and/or high speed trains, limited sight distances, or other conditions. How ever, grade-separated crossings eliminate conflicts at trail-rail crossings by completely separating the trail user from the active rail line. Issues to consider include the following:

- Existing and future railroad operations: Bridges and underpasses must be designed to meet the operational needs of the railroad both in present and future conditions. Trail bridges should be constructed to meet required minimum train clearances and the structural requirements of the rail corridor.
- Safety and security of the facility: Dark, isolated underpasses that are hidden from public view can attract illegal activity. Underpasses should be designed to be as short as possible to increase the amount of light in the underpass.
- Maintenance: The decision to install a bridge or underpass should be made in full consideration of the additional maintenance these facilities require.

OTHER DESIGN ISSUES

A whole host of other issues that must be considered in RWT design include the following:

- RWT-roadway crossings
- Utilities
- Future tracks and sidings
- Trestles and bridges
- Tunnels
- Environmental constraints
- Trailheads and parking areas
- Landscaping
- Drainage
- Lighting
- Signs an d marking

OPERATIONS/MAINTENANCE

Once a RWT is constructed, trail maintenance and operations should seek to minimize impacts on railroad companies and offer a safe and pleasant use experience Representatives from railroad operating, track, and signal departments should be invited for technical discussions and advice in the feasibility analysis phase of an RWT. RWT proponents should consider the maintenance and access needs of the railroad operator in the alignment and design of the RWT. In areas with narrower than 7.6 m (25 ft) setback, the trail likely will be used as a shared maintenance road. In all cases, the railroad should be provided adequate room and means for access to and maintenance of its tracks and other facilities. The feasibility study and easement/license agreement also should identify the designs and costs of any improvements that would become the responsibilit of the RWT agency.

Trail managers should develop a phasing and management plan and program for the RWT. Trail managers should consult with railroad engineering and operating departments to determine the appropriate steps, approvals, permits, designs, and other requirements. They should ensure that the proposed RWT does not increase railroad employee stress or decrease their safety. An education and outreach plan should be part of the trail plan. Trail managers should provide supplemental information through maps, bicycle rental and support services, trail user groups, and other avenues. Trail managers also should develop, in coordination with local law enforcement and the railroad, a security and enforcement plan, and develop and post RWT user regulations.



CONCLUSION

Based on the lessons learned in this study, it is clear that well-designed RWTs can bring numerous benefits to communities and railroads alike. RWTs are not appropriate in every situation, and should be carefully studied through a feasibility analysis. Working closely with railroad companies and other stakeholders is crucial to a successful RWT. Trail proponents need to understand railroad concerns, expansion plans, and operating practices. They also need to assume the liability burden for projects proposed on private railroad property. Limiting new and/or eliminating at-grade trail-rail crossings, setting trails back as far as possible from tracks, and providing physical separation through fencing, vertical distance, vegetation, and/or drainage ditches can help create a well-designed trail. Trail planners need to work closely with railroad agencies and companies to develop strong maintenance and operations plans, and educate the public about the dangers of trespassing on tracks. Railroad companies, for their part, need to understand the community desire to create safe walking and bicycling spaces. They may be able to derive many benefits from RWT projects in terms of reduced trespassing, dumping, and vandalism, as well as financial compensation. Together, trail proponents and railroad companies can help strengthen available legal protections, trespassing laws and enforcement, seek new sources of funding to improve railroad safety, and keep the railroad industry thriving and expanding in its services (freight and passenger).





APPENDIX I

Revised Segment 17



4.17 SEGMENT 17 - HARKINS SLOUGH

Segment 17A

Length: 4.00 miles (21,140 LF) - Buena Vista Drive and San Andreas Road intersection to Lee Road - cost reflected in table on page 4-94 for planning purposes only.

Segment 17B

Length: 3.58 miles (18,920 LF) - Buena Vista Drive and San Andreas Road intersection to Lee Road and rail line intersection via San Andreas Road/West Beach Street/Segment 18A/Lee Road. Segment length does not include Segment 18A length. Segment 17B cost and distance not reflected in project summary table nor total project figures.



Harkins Slough train trestle

4.17.1 SEGMENT 17 BOUNDARY DETERMINATION

Segment 17A

The boundary is determined by the physical setting and the change in rail corridor character from the northern starting point at San Andreas Road down the coast to Harkins Slough, a primary branch of Watsonville Slough. This is the one (1) spot where the rail corridor diverts away from the coastal edge and heads inland as it continues down the coast to Watsonville.

Segment 17B

The boundary is determined by the intersection of the rail line at Buena Vista Drive and San Andreas Road and proceeding downcoast to West Beach Street via existing San Andreas Road on-street facilities and then northeast to the intersection of West Beach Street and Thurwacher Road. The down coast boundary is determined by connecting via Lee Road back to the Segment 18 Coastal Rail Trail.



Harkins Slough fauna

4.17.2 SEGMENT 17 DESCRIPTION

Segment 17A

Starting from the intersection crossing at San Andreas Road and Buena Vista Drive, the proposed Coastal Rail Trail will parallel Gallighan Slough to its convergence with Harkins Slough, following the inland side of the rail tracks. The rail right-of-way width varies from forty-five- (45-) feet wide to one-hundred-and-forty-eight- (148-) feet wide as it continues along the steep slope just down the coast from mile marker 7 to mile marker 4.5 at the Harkins Slough trestle. The Segment 17 stretch will require retaining walls to create a bench for the trail tread. This segment is heavily wooded with several smaller rail trestle bridge crossings over small drainages and sloping ravines.

The proposed Coastal Rail Trail will follow the inland rail right-of-way along several agricultural fields, a mineral quarry, and wooded slopes as it descends towards the Gallighan Slough-Harkins Slough wetland area. The alignment will require several preengineered bridges and culverts to cross several of the drainages along the steep slopes. Harkins Slough is the largest freshwater slough in California's Central Coast region, and the four-hundred- (400-) foot crossing of the slough may require a boardwalk bridge structure adjacent to the rail line to



Harkins Slough looking south

reach down the coastal side of the slough. A possible interim alignment will divert the trail from the rail line at Gallighan Slough to an on-road alignment at Rountree Lane, Harkins Slough Road, and Lee Road, and will reconnect with the rail at the Lee Road junction. (This alignment was not evaluated or identified in this Master Plan.) The trail will require fencing along the agricultural operations and there is one (1) private, agricultural, dirt road, non-signalized rail crossing west of Lee Road. This segment connects with four (4) activity centers identified in Table 3.1.

Segment 17A proposed improvements include:

- 4.0 miles (21,140 LF) multi-use paved path (Class I) along the inland rail right-of-way
- Seven (7) rail bridge/culvert crossings of varying lengths
- One (1) private farm road crossing (one-half [1/2] mile west of Lee Road)
- One (1) private road crossing at Buena Vista Drive and one (1) additional private crossing
- This segment also includes fencing for agricultural operations and safety; additional fencing may be considered when project is implemented

Segment 17B

Starting from the intersection crossing at Buena Vista Drive and San Andreas Road, the project would utilize the existing San Andreas Road on-street network to provide connectivity to West Beach Street, then northeast to the intersection of West Beach Street and Thurwacher Road (southwest terminus of Coastal Trail segment 18A). San Andreas Road serves as the Pacific Coast Bicycle Route and connects down coast via West Beach Street and Thurwacher Road to Monterey County.

The Segment 17B alignment will utilize Coastal Trail segment 18A along West Beach Street to reach the intersection of West Beach Street and Lee Road. Segment 17B will continue from this intersection north along Lee Road back to the Rail Trail at the Segment 18 up coast terminus. This portion of Segment 17B will require development of on-street facilities.

Segment 17B proposed improvements include:

- 3.31 miles (17,490 LF) - Improvements to existing bicycle lane (Class II) facilities along San Andreas Road to West Beach Street
- 0.13miles (680 LF) - Improvements to existing bicycle lane (Class II) facilities along West Beach Street to Thurwacher Road
- 0.14 miles (750 LF) - Development of bicycle lane (Class II) facilities along Lee Road to the Rail Trail Segment 18 up coast terminus

Note: Segment 17B improvements are not costed out on page 4-94 nor is the mileage reflected in the total project mileage. Segment 17A improvements are costed out for planning purposes only and are not to indicate an alignment preference.

For Segment 17 there shall be established a joint planning and implementation task force to make recommendations to the RTC and any other implementing agency prior to any trail design, development, or construction activities for this segment. The task force shall consider alternative trail alignments, including those identified in the Final Environmental Impact Report, for Segment 17 and recommend a final alignment. Membership on the task force shall include representation from adjacent property owners recommended by the County Farm Bureau, representation from the disabled community as recommended by the Commission on Disabilities, and representation from the bicycle community.

TABLE 4.17 Segment 17 - Harkins Slough

Segment Length	**4.00 miles (21,140 LF) - Harkins Slough**
Rail Trail Portion	4.00 miles (21,140 LF)
Coastal Trail Portion	0.0 miles (0 LF)
Segment Cost	**$19,961,888**

Rail Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	21,140	Linear Feet	Varies	$5,212,980
Amenities (Fencing, Benches, Signeage, Etc.)	1	Lump Sum	Varies	$233,200
Bridge Structures	7	Each	Varies	$7,000,000
At-Grade Crossings (Rail Tracks or Streets)	3	Each	Varies	$30,000
			Rail Trail Construction SUBTOTAL	**$12,476,180**

Coastal Trail Components	Quantity	Unit	Unit Price	Cost
Paved Multi-Use Path	0	Linear Feet	Varies	$0
Unpaved Trail	0	Linear Feet	Varies	$0
On Street Facilites (Class II, III, and Sidewalks)	0	Linear Feet	Varies	$0
			Coastal Trail Construction SUBTOTAL	**$0**

COST SUMMARY	
Construction TOTAL	**$12,476,180**
Design, Engineering, and PS&E (Plans, Specifications, and Estimates) (15%)	$1,871,427
Environmental Permitting (10%)	$1,247,618
Construction Management (15%)	$1,871,427
Contingency (20%)	$2,495,236
SEGMENT TOTAL COST	**$19,961,888**

Segment Features	Description	Quantity
Segment Jurisdictional Area	RTC - Rail ROW Owner, City of Watsonville, California Dept. of Fish and Wildlife (CDFW)	-
Rail Bridge Crossing (Wood Trestle)	Various bridges along segment	4
Major Drainage	Watsonville Slough	1
Minor Drainage	Various drainages along segment	2

Rail Trail portion costed for planning purposes only and not to imply priority over other possible alignments.



Existing Watsonville Slough trail



Harkins Slough looking south



Existing Watsonville Slough trail

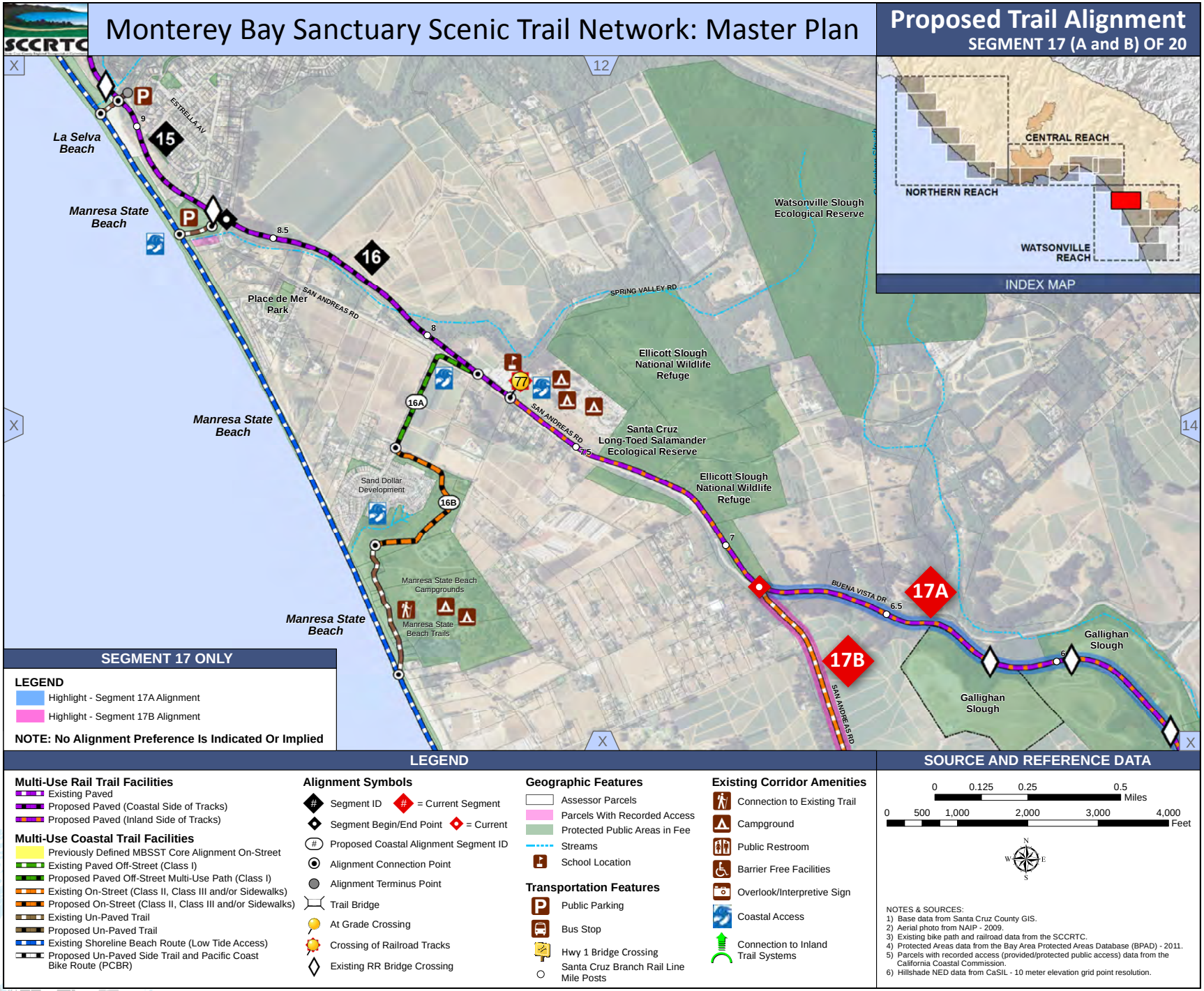


Figure I-1 Segment 17 (A and B) proposed trail alignment

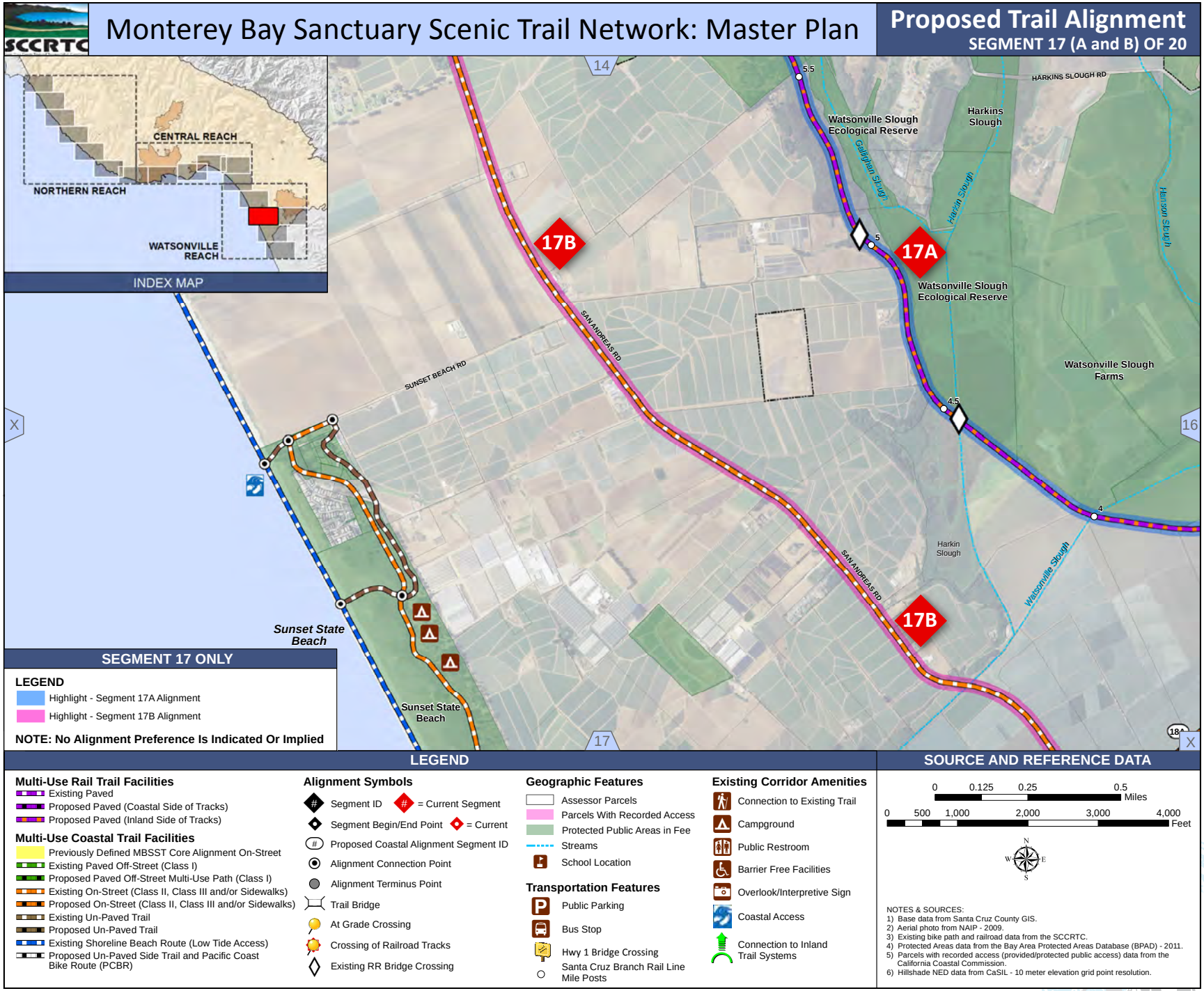


Figure I-2 Segment 17 (A and B) proposed trail alignment (continued)

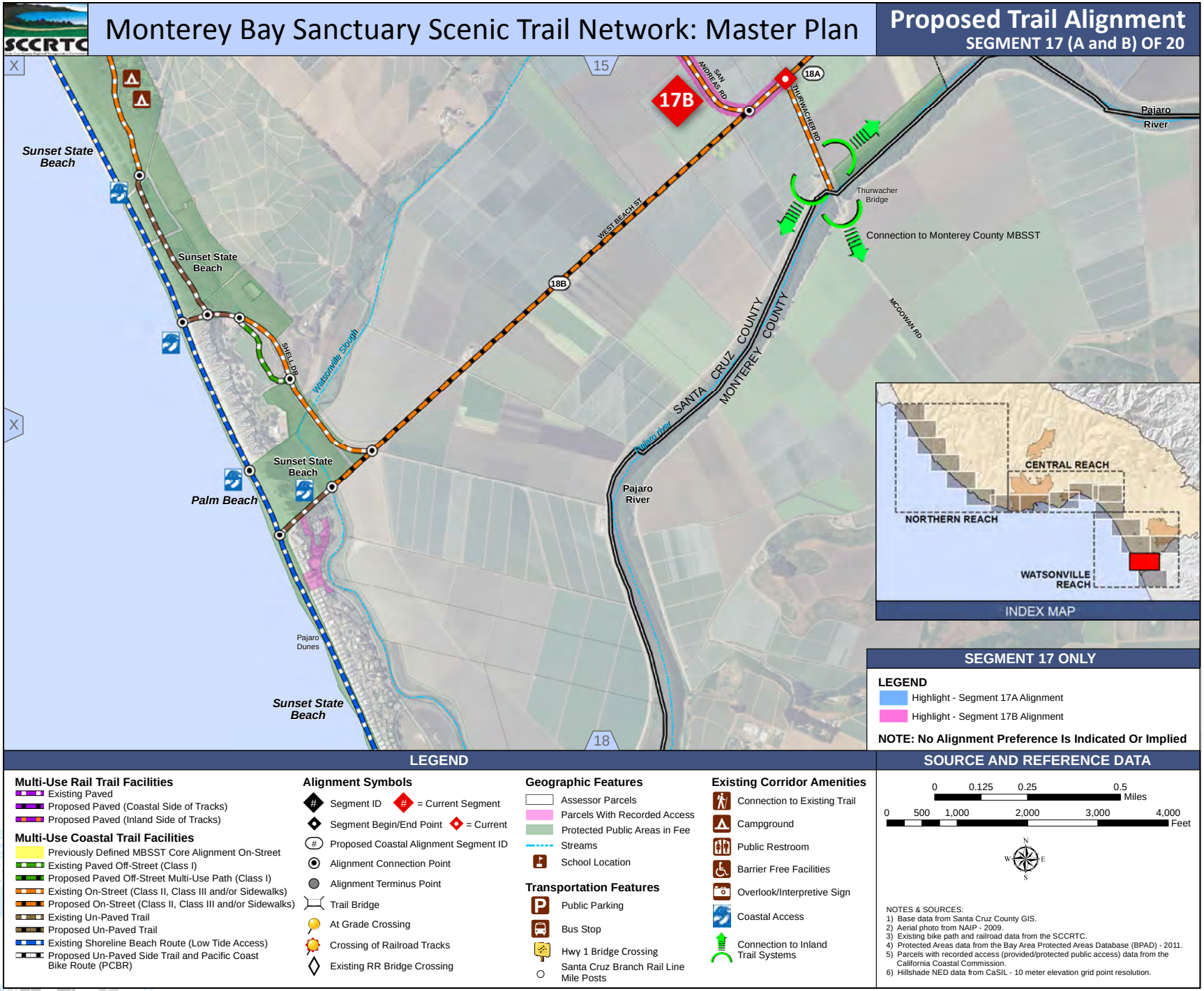


Figure I-3 Segment 17 (A and B) proposed trail alignment (continued)

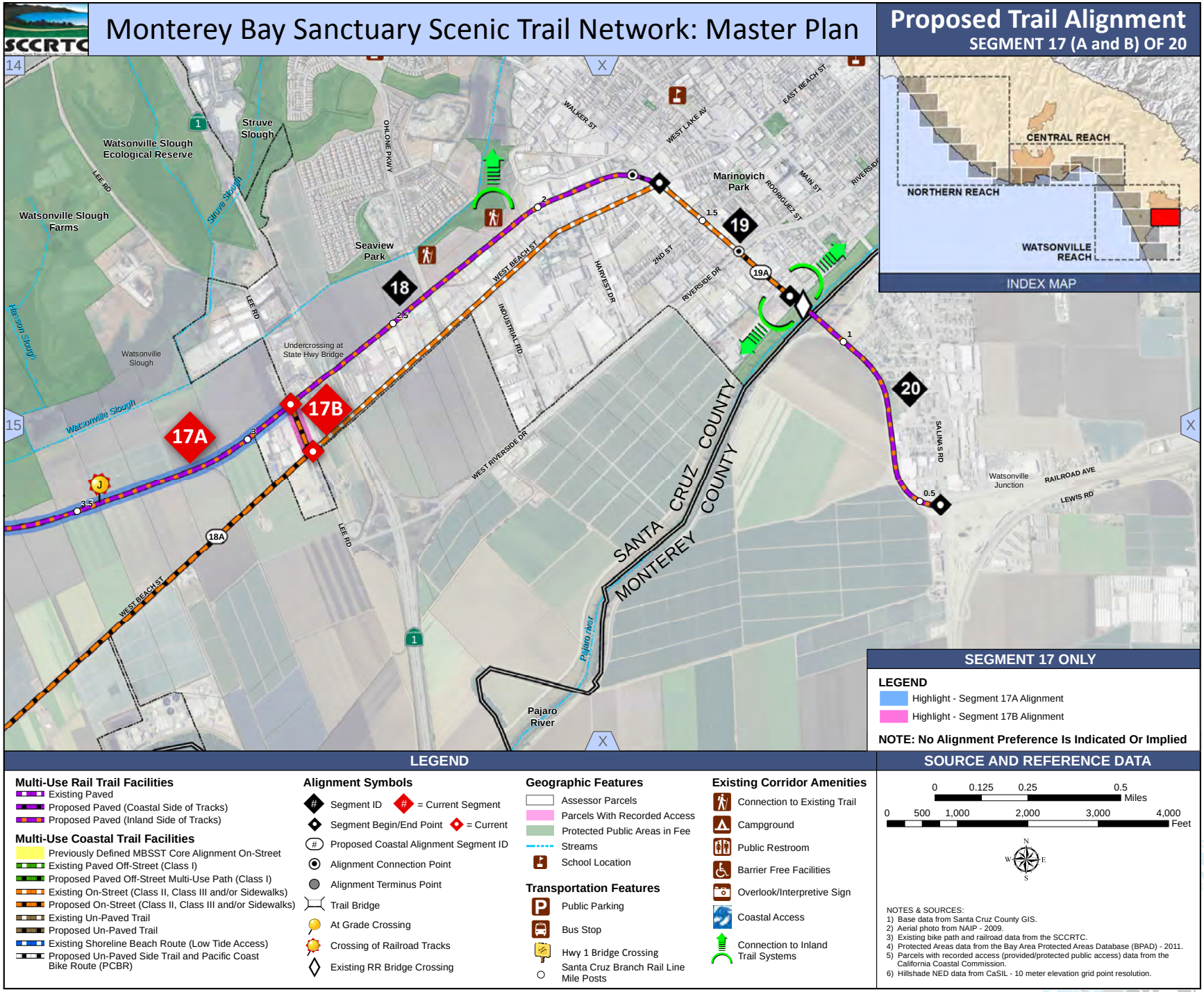


Figure I-4 Segment 17 (A and B) proposed trail alignment (continued)

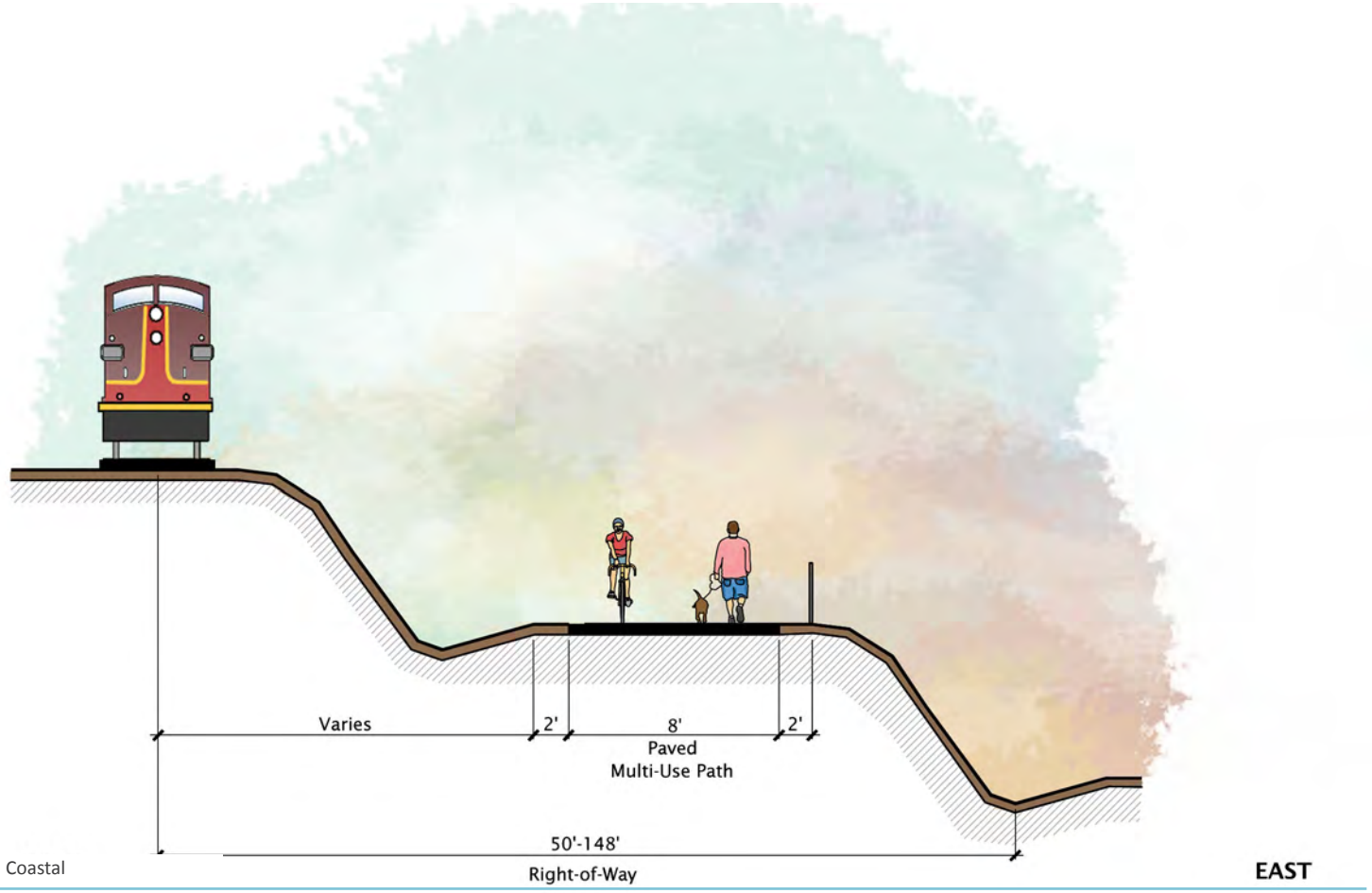


Figure I-5 Segment 17A trail section