

The cofferdams will be constructed of clean sand bags, washed gravel; sheet metal, or water inflated cofferdam method (such as AquaDam). If necessary, the temporary fill used to construct the cofferdam will occupy the minimum footprint possible. Water will be pumped from the upstream location to the downstream location via a temporary flexible pipe. At the discharge location, to minimize the potential for erosion, the water flows from the pipe will be discharged via one of two alternative methods: 1) a T-pipe to reduce velocities over a riprap apron or 2) into a containment area between two cofferdams adjacent to San Pablo Bay. The riprap apron and containment area will be constructed over visquine or similar material to facilitate clean-up and removal of materials. Upon completion of construction, all temporary fill and material associated with the dewatering including sandbags, sheet metal piling, and/or rock will be removed and the area restored to preconstruction contours. Additionally, the cofferdam would be used to restrict tidal flow into the construction area.

Effectively, the entire channel from the upstream project boundary to the bay side edge of the UPRR ballast will be regraded and a new meandering channel will be constructed. Approximately 2,400 cubic yards of clean fill will be required to fill in the existing channel. Stream crossings at the UPRR, Transit Loop, and Bayfront Bridges would be constructed so that the bridges completely span the new creek channel and footings/abutments are placed outside of the channel. However, the new UPRR will require supporting piles that will be placed in the middle of the channel under the UPRR where the channel widens before it enters the Bay. The Transit Loop and UPRR Bridges will also require rock slope protection and armor placed in the channel bed to prevent scour. Approximately three feet of rock slope protection will be keyed in and placed within the channel bed.

Restoration of Refugio Creek may be completed in one or in multiple phases depending on seasonal variation and construction progress. Under either condition, phases of construction would be planned to be completed within a construction season to ensure that channel construction and modification does not occur during the wet season or to adversely affect protected flora or fauna. Restoration of Refugio Creek would be timed with the construction of other project elements to ensure efficient construction timelines as well as to minimize potential impacts and adverse effects. Construction the new UPRR bridge would likely be constructed either prior or concurrent to the realignment of Refugio Creek at this reach. However, the restoration of Refugio Creek may be constructed prior to or concurrent with the construction of the Bayfront and/or Transit Loop bridges.

Erosion control measures including wattles, jute netting, mulching, and seeding would be installed throughout the restoration area to stabilize disturbed soils and minimize erosion when the cofferdams are removed. When the primary channel grading and restoration work is completed and the bridge installed, the cofferdams would be removed and Refugio Creek would be allowed to flow naturally through the newly constructed channel.

Constructing the new mouth of Refugio Creek in San Pablo Bay would be done using a long reach excavator from the shore. Excavation work within the Bay would be done during low tide.

Creek excavation work is anticipated to be done from the landside. The mouth of Refugio Creek can most likely be excavated from the landside, but excavation may require an excavator be placed on pontoons. The creek channel would be continued into San Pablo Bay for approximately 150-200 feet to provide an initial unobstructed tidal connection. Excavation would be done during low tide. Silt curtains would be installed for work in open water. Long-term maintenance is not expected to be required.

The tidal wetlands would be constructed by excavating and widening the steep banks of the existing creek into a gradually sloped, floodplain to allow tidal influence. The water sources for the wetlands would be tidal flows from San Pablo Bay, influenced by freshwater flows from upstream runoff, sheetflow, and stormwater discharge from adjacent developed areas.

### **Transit Loop and Bridge**

In order to prepare the site to begin earthwork activities, areas to be developed would be cleared of all surface and subsurface deleterious materials, including: existing building foundations; slabs; buried utility and irrigation lines; pavement; debris; and designated trees, shrubs, and associated roots. Excavations extending below the planned finished site grades would be cleaned and backfilled with suitable compacted material. Following clearing, the site would be stripped to remove surface organic materials. Organic materials would be stripped from the ground surface to a depth of at least 2 to 3 inches below the surface. Strippings would be removed from the site or, if considered suitable by the landscape architect and owner, they would be used in landscape fill in other parts of the Hercules ITC.

Approximately 20 piles, approximately 60 to 80 feet deep, would be driven to construct the single-span bridge over Refugio Creek. Driven piles would be used instead of drilled piles due to shallow groundwater and soft/loose deposits that are anticipated to make vertical excavations problematic. Piles would be driven into the banks and adjacent areas. Equipment would be staged adjacent to the creek beginning on the east side and would be completed on the west side of the creek.

Ground improvement such as cement deep soil mixing would be implemented for Transit Loop Drive as protection against roadway and bridge/road interface differential settlement. Deep soil mix columns would be installed throughout the bus facility extending toward the Young Bay Mud to provide support and reduce settlement of the roadway.

### **Creekside Park and Plaza**

The Creekside Park and Plaza would be built at grade and would be an open space park. The Creekside Park would be approximately 17,000 sf (0.4 acre) and would be landscaped with a variety of local plant species as well as non-invasive ornamentals and turf for active recreation areas. Approximately, 4,400 sf would include impervious surfaces such as pavers, concrete and asphalt for walkways and the Creekside Trail. The remainder of the park and plaza would be comprised of pervious planted areas including lawn, trees, a bio-infiltration area, and some

ornamental planting. The creek corridor would be planted with local and California native drought resistant vegetation.

### **Café/Transit Annex Building**

The Café/Transit Annex Building would be built at approximately nine feet above existing grade. The structures would likely be placed on driven piles.

### **Transit/Civic Plaza**

The Transit/Civic Plaza would be built at approximately nine feet above existing grade by placement of lightweight fills. The plaza open space would be a combination of impervious hardscape and softscape areas planted with vegetation.

### **Railroad Plaza**

The Railroad Plaza would be built on surcharge fills approximately ten feet above original grade and five feet below anticipated settled finish ground. The plaza would be an open space planted with vegetation.

#### ***2.2.1.3b Operation***

The Train Station would not be staffed. Maintenance would be performed by Amtrak and the City's Public Works Department.

The Café/Transit Annex Building would be privately operated. Outside maintenance would be performed by the City's Public Works Department.

Maintenance of Refugio Creek and the various trails and plazas would also be performed by the City's Public Works Department.

## **2.2.2 Alternative 2: East of Refugio Creek Location**

Alternative 2 would provide the same public transportation benefits as Alternative 1 described above. The primary differences between the two action alternatives is that the configuration of Alternative 2 would reroute vehicle traffic, provide pedestrian access to the transit facility at the eastern end of the train platform, and place the transit-related features, including the parking structure, east of Refugio Creek. In addition, the future ferry terminal would be moved east of the mouth of Refugio Creek (Figure 2.2-17). Development of Alternative 2 would be phased similarly as Alternative 1 described above, and the components would be similar.

Alternative 2 would route bus traffic through a transit loop located within the Hercules ITC development area and would consequently not require construction of the Transit Loop and Bridge (Figure 2.2-17). The transit-related facilities would be located east of Refugio Creek on the planned John Muir Parkway extension near its intersection with Bayfront Boulevard. A looped driveway from John Muir Parkway would provide separate vehicle access for commuter

bus/paratransit drop-off and turnaround, and for passenger vehicle drop-off. A three-level parking structure would be located along John Muir Parkway, adjacent and east of the proposed Transit Center. Additional parking spaces would be provided for buses, taxis, and short-term automobile parking along the passenger vehicle access driveway, for a total of about 400 spaces.

### **2.2.2.1 Proposed Facilities**

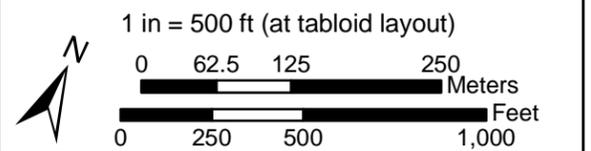
The main difference between the two action alternatives would be that Alternative 2 would not require construction of the Transit Loop Bridge and the transit-related facilities would be located east of Refugio Creek. Alternative 2 facilities that are different from Alternative 1 are described below.

#### **Station Building and Bus Turnaround**

Under Alternative 2, the Station Building would be located east of Refugio Creek on the planned John Muir Parkway extension near its intersection with Bayfront Boulevard (Figure 2.2-17). The Station Building would be a one-story structure maintaining similar architectural elements as Alternative 1 with an area of approximately 3,600 sf. The Station Building would be situated within an elevated pedestrian plaza constructed one level above grade, allowing passengers to enter the building at a level several feet above the rail line grade. This would serve to reduce the height of the ramps/stairs needed to reach the pedestrian overpass to the rail platform. Access to the train platform would be similar to that described for Alternative 1, with a combination of ramps, stairs, or elevators connecting to the proposed pedestrian overpass above the rail line.



- Legend**
- Project Boundary
  - Retaining Wall
  - Gas Line
  - Bay Trail
  - Creekside Trail
  - Emergency Vehicle Access
  - Interim Transit Parking Lot
  - John Muir Parkway, Bayfront Blvd, and Bridge
  - Landside Ramp
  - Long Term Parking
  - North Channel Restoration/Wetland Mitigation Area
  - Parking, Conference, and Banquet
  - Point Pedestrian Bridge
  - Pointside Viewing Platform
  - Railroad Plaza
  - Refugio Creek Restoration
  - Station Building
  - Station Platform



**Figure 2.2-17: Alternative 2 Track Option B**

City of Hercules  
Hercules Intermodal Transit Facility  
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3

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### **Parking**

A three-level parking structure, consisting of approximately 385 spaces, would be located along John Muir Parkway, adjacent and east of the proposed Station Building. The main entry and top floor of parking would be at the level of the station plaza, with two floors of parking below extending beneath the proposed Station Building, conference/banquet facility, and plaza. Access to the garage would be provided by a separate driveway from the extension of Bayfront Boulevard east of John Muir Parkway. The parking structure would provide parking for train and bus patrons as well as for conference/banquet facility users. Additional parking spaces would be provided for buses, taxis, and short-term automobile parking along the passenger vehicle access driveway, for a total of about 400 spaces.

### **Station Platform and Emergency Vehicle Access**

Under Alternative 2, the proposed passenger platform would be identical to that in Alternative 1. Pedestrian access to the platform would be provided from the pedestrian overpass through a combination of stairs, ramps, or elevators; these would also be covered or enclosed for weather protection. Under Alternative 2, the pedestrian overpass would be located at the easternmost end of the platform connecting to the transit center station and the Ferry Plaza structure located on the bay side of the UPRR.

Construction of Alternative 2 would also require the construction of an EVA that would be located in the same location as in Alternative 1. Within Phase 1, the EVA crossing would not extend to the east (parallel) with the UPRR tracks. The ferry EVA connection would be completed in the future if the ferry is approved and constructed (Phase 5).

The EVA would be 20 feet wide by 129 feet long within the UPRR ROW, and 20 feet wide by 230 feet long south of the UPRR ROW. The future connection to the ferry is planned to be 20 feet wide by approximately 720 feet long north of the UPRR ROW. This additional length would require an additional bridge to cross the mouth of Refugio Creek. The bridge would be approximately 80 feet long; bridge footings and abutments would be constructed outside of the bed and banks of Refugio Creek.

## **2.2.3 Alternatives Considered and Withdrawn**

### **2.2.3.1 Alternative 3: Rodeo Station Location**

In the 1990s, the West Contra Costa Transportation Advisory Committee (WCCTAC) performed a screening process of potential Capitol Corridor station sites between Martinez and Richmond and narrowed the selection down to two: Hercules and Rodeo. A site analysis was performed using CCJPA Policy on Train Stations criteria (adopted October 14, 1998) and WCCTAC requirements (Korve Engineering 1999). These criteria included travel measures, site design measures, land use/environmental consideration, institutional viability, and cost measures.

The evaluation of land use, policy, and environmental considerations revealed constraints associated with both the Hercules and Rodeo sites; however, neither site had a fatal flaw that

would render it infeasible for locating a train station (Korve Engineering 1999). The Hercules site was strongly supported by the General Plan and the intensity of future development. The Rodeo site was envisioned as a catalyst for downtown redevelopment; however, the location was not supported by Contra Costa County's General Plan. In addition, ridership projections indicated that the Hercules site would have a higher patronage potential than the Rodeo site.

The proposed Hercules station site is more centrally located with respect to the densely populated areas of west Contra Costa County. The proposed development in Hercules would have a greater pedestrian market area (4,400 pedestrians) than Rodeo (1,300 pedestrians). The transit ridership potential from Hercules would be three times that of Rodeo. At Rodeo, the surrounding property is mostly developed, thus limiting expansion; the site at Hercules is vacant and the development design would provide for future expansion. Environmental constraints for both Hercules and Rodeo were similar. In every category except cost, the Hercules site was rated superior to the Rodeo site (Korve Engineering 1999).

Additionally, the 2003 WTA Program EIR included analysis for a "Hercules/Rodeo" site, but did not include a site-specific analysis of a Rodeo location. While a potential ferry terminal could be sited at the existing Rodeo Marina (Figure 2.2-18), to serve as a multi-modal transit station and facilitate alternative modes of travel, a train station and potential future ferry terminal would be better served if constructed at a location within Hercules. For these reasons, this alternative was not carried forward for detailed analysis.

### **2.2.3.2 Alternative 4: Hercules Point Location**

This alternative would locate the future ferry terminal on Hercules Point, with the ferry pier located on the north or west side of the point (Figure 2.2-18). A new vehicle and pedestrian bridge would be required to cross the UPRR tracks and provide access to the point. Roadways and parking areas would be constructed on Hercules Point near the future ferry terminal. The new train station would be constructed in the same location as proposed under Alternatives 1 and 2 and, under Alternative 5 discussed below. There would be no direct physical connection between the ferry terminal and the transit station/bus terminal. Buses, private vehicles, and pedestrians/cyclists would gain access to the ferry terminal by way of the separate rail overcrossing.

This alternative would achieve some of the objectives of the Hercules ITC and, in the future, could reduce ferry terminal initial and maintenance dredging, dredge spoils generation, and associated costs. However, this alternative would require construction of a highly visible vehicle bridge over the train tracks, at significant cost. In addition, the geotechnical and hazard (soil contamination) conditions on Hercules Point make this location less suitable for development of the bridge, ferry terminal, and other necessary improvements. Impacts related to these issues would be greater than those of the project alternatives. The Hercules Point location would not meet the objectives of providing easy connections among existing and planned ground transit facilities as effectively as Alternatives 1 and 2. This alternative would be inconsistent with the General Plan, as amended by the Waterfront Initiative, and the Waterfront District Master Plan, as amended by the Waterfront Initiative, which designate Hercules Point for open space and recreational uses. Additionally, Hercules Point is within the jurisdiction of

the BCDC and siting the facility on the Point would require parking facilities which would be an incompatible use with BCDC guidelines relating to the promotion of visual resources and public access. For these reasons, this alternative was not carried forward for detailed analysis.

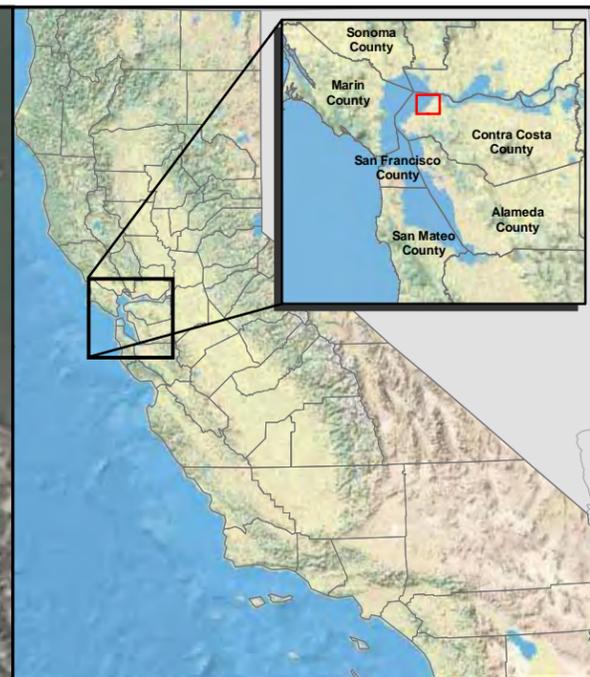
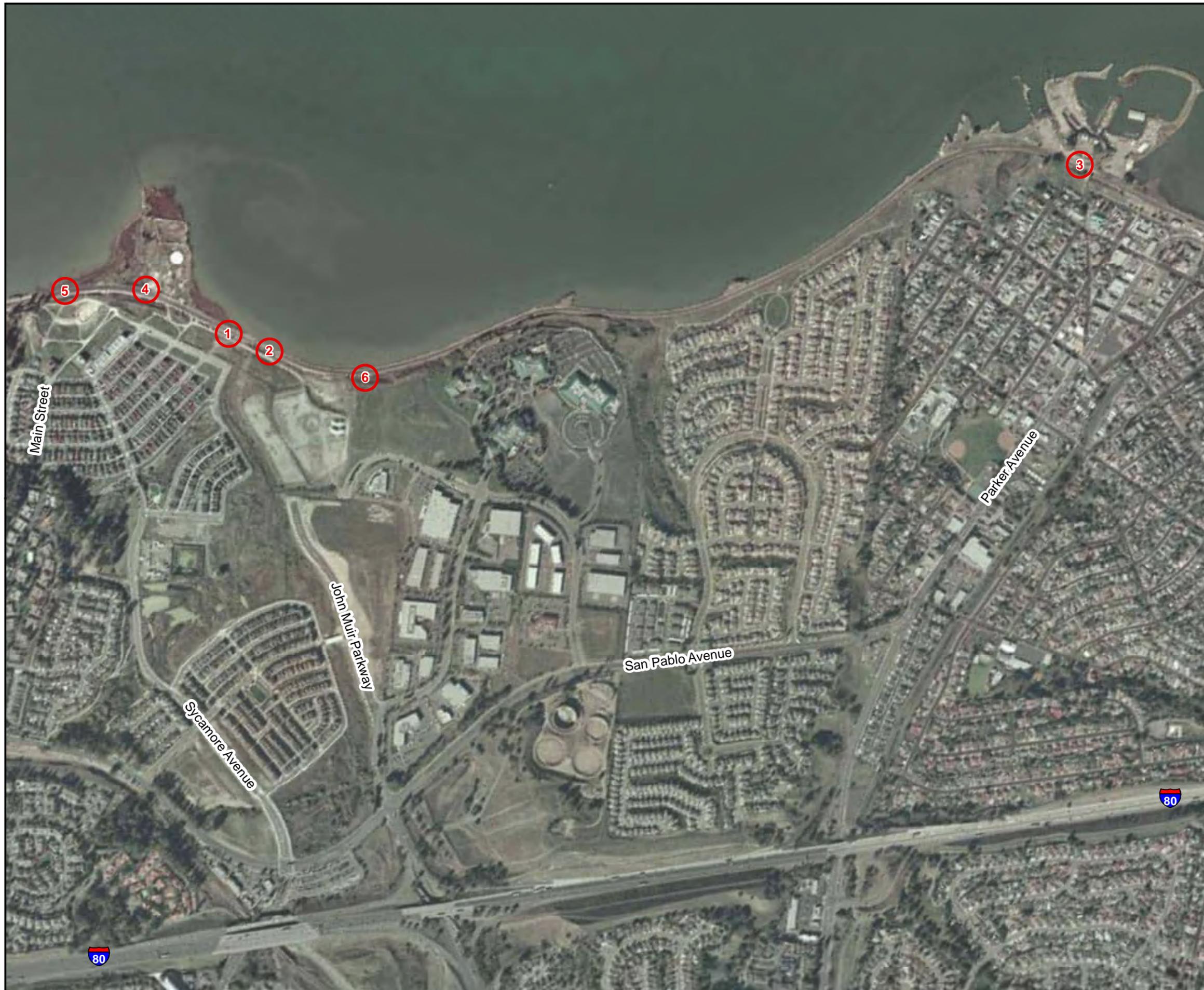
#### **2.2.3.3 Alternative 5: Main Street Location**

This alternative would locate the train station on the UPRR at a location southwest of Hercules Point at a location extending Main Street towards San Pablo Bay (Figure 2.2-18). Primary access to the train station would be via John Muir Parkway and Sycamore Avenue. As described above, there would be no direct physical connection between the ferry terminal and the transit station/bus terminal. Buses, private vehicles, and pedestrians/cyclists would gain access to the ferry terminal by way of a separate rail overcrossing. This location would not provide a convenient location to a future ferry terminal. Additionally, immediately adjacent to the proposed location is an existing open space area owned by the California State Lands Commission and leased to the East Bay Regional Parks, which inhibits development potential. Most importantly, design restrictions require a minimum length of 800 feet for the construction of a passenger platform and be located on tangent track, that is straight and without curve (Capitol Corridor Joint Powers Authority 2006). Locating a train station at this location would not provide the minimum geometry necessary to meet the design standards established by UPRR, Amtrak and the CCJPA. For these reasons, this location was not carried further for detailed analysis.

#### **2.2.3.4 Alternative 6: Business Park Location**

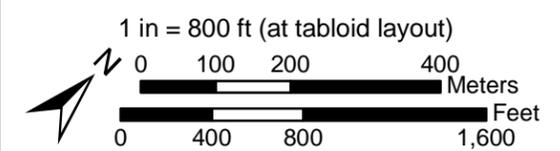
This alternative would locate the train station on the UPRR at a location northeast of Refugio Creek near the Bio-Rad facility (Figure 2.2-18). Primary access to the train station would be via John Muir Parkway. This area was not studied further due to the severe elevation differential between the railroad mainline and adjoining property. There is no feasible or practicable way to construct the station and transit improvements and connect with a passenger loading platform in the right-of-way. Additionally, similar to Alternative 5, locating a train station at this location would not provide the minimum geometry necessary to meet the design standards established by UPRR, Amtrak and the CCJPA. For these reasons, this location was not carried further for detailed analysis.

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**Legend**

- 1 - West of Refugio Creek Location
- 2 - East of Refugio Creek Location
- 3 - Rodeo Station Location
- 4 - Hercules Point Location
- 5 - Main Street Location
- 6 - Business Park Location



**Figure 2.2-18: Alternatives Evaluated**

City of Hercules  
 Hercules Intermodal Transit Facility  
 Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3.



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## 2.0 Alternatives Considered

### 2.1 No-Action Alternative

The No-Action (No Build) Alternative is a base scenario for comparison with the Action Alternatives. Under the No-Action Alternative, conditions in the waterfront area would remain as they currently exist with no bus service, and without the construction of a train station or a bus terminal. Land-based transit services and roadways would remain in their present state with no new improvements other than those that have already been programmed and funded. In addition, new roadways would not be constructed in the waterfront area, and improvements to Refugio Creek to address flooding would not occur.

## 2.2 Action Alternatives

The City proposes to construct the Hercules ITC along the Union Pacific Railroad (UPRR) tracks on the City's waterfront in Contra Costa County. The Hercules ITC would include a bus terminal (served by WestCAT), intercity passenger rail service, a new Capitol Corridor stop, parking for transit passengers, and the roadway/trail/sidewalk infrastructure to support the multimodal transit facility. The Hercules ITC would redevelop a brownfield site, promote access to and views of San Pablo Bay, improve existing mass transit, provide an alternative travel mode for I-80 commuters out of the Bay Area's most congested corridors, and bring together the City's public and private spaces while orienting the community to the bay. The Hercules ITC would also serve to facilitate connection to future ferry service being proposed by the San Francisco Bay Area WETA.

As part of the City's General Plan, the Hercules ITC is intended to be the central element within the Waterfront District that would include residential and commercial development clustered around transit facilities to encourage local residents to use public transit, thereby reducing automobile use. Part of the waterfront area is already developed. The remaining area to develop, the Hercules Bayfront (HB) mixed-use neighborhood development project, is not part of the project being considered in this FEIS, and will be the subject of a separate environmental review. However, impacts associated with the HB project will be considered in the cumulative impact analysis for this project.

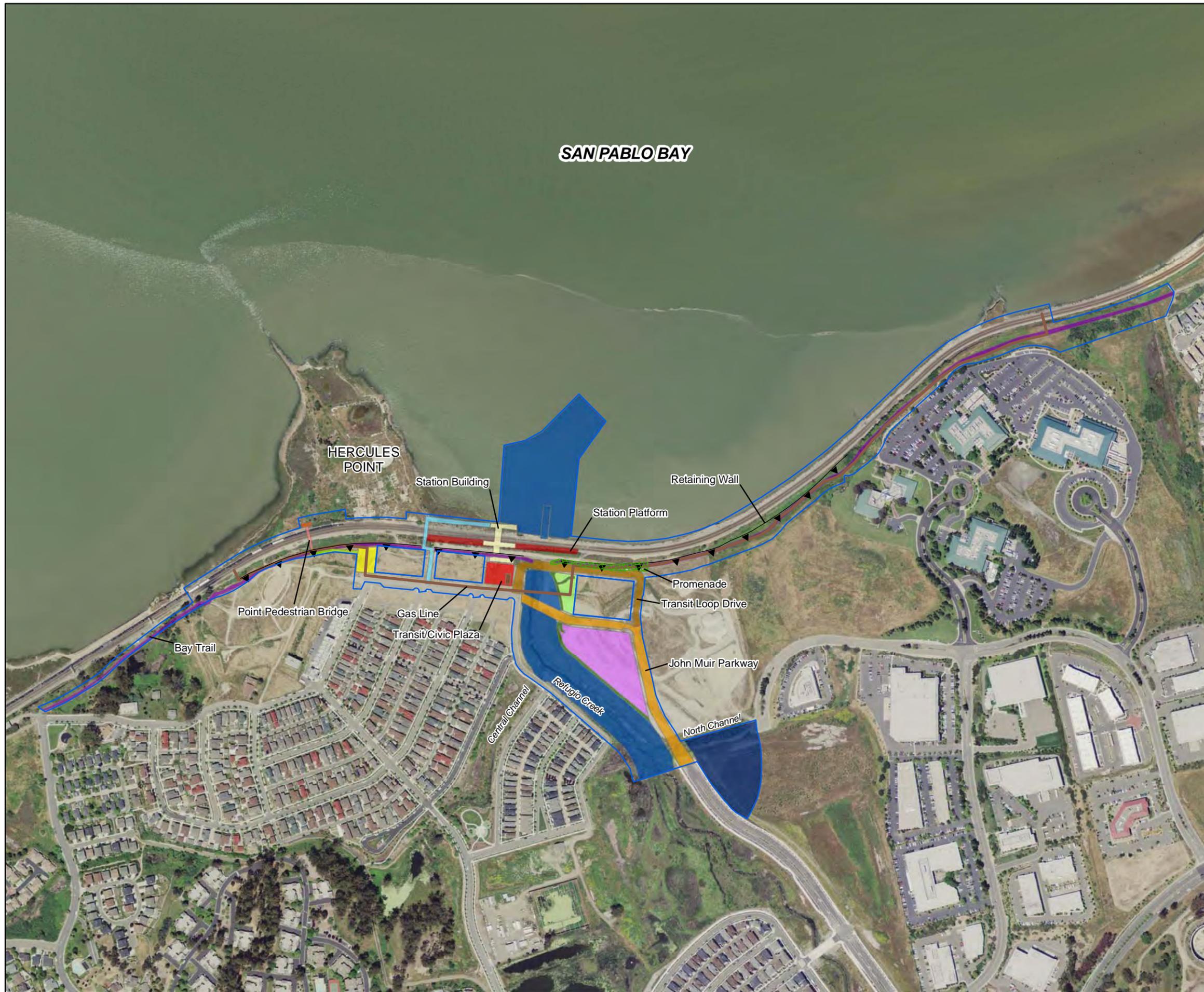
This FEIS includes the discussions of both Action Alternatives (1 and 2) that were included in the Draft EIR/EIS. In addition, two track options are described and evaluated: Track Option A constructs a double track shoofly and Track Option B constructs dedicated station and passing tracks. For most project elements, Track Options A and B are the same; where project elements differ, Track Options A and B are described separately. At the conclusion of the Draft EIR/EIS, Alternative 1 with Track Option B was identified as the Preferred Alternative, as discussed more fully in Chapter 5.

### 2.2.1 Alternative 1: West of Refugio Creek Location

The Hercules ITC would be designed to promote alternative modes of transportation. It would be pedestrian- and bicyclist-oriented, and include walkable streets, trails, and other open space areas. In addition, the Hercules ITC would link CCJPA passenger rail service and WestCAT bus service through its intermodal transit center, and also be designed to facilitate the development of a future ferry terminal to serve commuters traveling to and from San Francisco.

#### 2.2.1.1 Overview of Alternative 1

With Alternative 1, the Hercules ITC would include the construction of a station building located southwest of Refugio Creek, and a center platform accessed via a pedestrian bridge spanning the UPRR tracks to the train platform and future ferry pier (Figure 2.2-1). Primary vehicle access to the transit station from I-80 would be provided through the extension of John Muir Parkway from its current terminus northeast of Tsushima Bridge. The extension of John Muir Parkway would be coupled with the extension of Bayfront Boulevard to provide an east-west connection over Refugio Creek.



**Legend**

- Project Boundary
- Retaining Wall
- Gas Line
- Bay Trail
- Cafe/Retail
- Creekside Park and Plaza
- Creekside Trail
- Emergency Vehicle Access
- Interim Transit Parking Lot
- John Muir Parkway, Bayfront Blvd, and Bridge
- Landside Ramp
- North Channel Restoration/Wetland Mitigation Area
- Point Pedestrian Bridge
- Pointside Viewing Platform
- Promenade
- Railroad Plaza
- Refugio Creek Restoration
- Station Building
- Station Platform
- Transit Loop Drive and Bridge
- Transit/Civic Plaza

1 in = 500 ft (at tabloid layout)

0 62.5 125 250 Meters

0 250 500 1,000 Feet

**Figure 2.2-1: Alternative 1 Track Option A**

City of Hercules  
 Hercules Intermodal Transit Facility  
 Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3



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The John Muir Parkway/Bayfront Boulevard improvements would require a new bridge over Refugio Creek (Bayfront Bridge). Bus and commuter vehicles would access the transit station via the John Muir Parkway extension. Buses would continue from John Muir Parkway onto Transit Loop Drive (counter clock-wise direction), cross Refugio Creek via Transit Loop Bridge then connect back to Bayfront Boulevard and exit via the Bayfront Bridge back to John Muir Parkway. Commuter vehicular traffic would access the transit center via John Muir Parkway to the Bayfront Bridge connecting to the extension of Bayfront Boulevard onto Transit Loop Drive (clock-wise direction). These new roads would be pedestrian and bicycle friendly.

Additionally, construction of the Hercules ITC would require improvements to the UPRR rail line, including replacement of the railroad bridge over Refugio Creek; realignment and straightening of UPRR tracks; and safety improvements, such as retaining walls and railing grade providing separation of the tracks from the HB development area. Other improvements would include the Hercules Point Bridge across the UPRR tracks to provide access for the future Hercules Point open space, temporary surface parking to service the Hercules ITC, a neighborhood park, the completion of the East Bay Regional Parks District (EBRPD) trail (Bay Trail) along the waterfront area, Creekside Trail, and the realignment and restoration of Refugio Creek.

The Hercules ITC would include elements that promote the establishment and public use of open spaces oriented towards the bay. These elements would include the Bay Trail, a promenade, plazas, and a neighborhood park. Additionally, bay views would be maximized from the Transit Loop, the Bay Trail, plazas, and the project bridges by creating vertical separation from the tracks allowing pedestrians and park users' views toward the bay over the railroad tracks and trains. For example, Railroad Avenue, an existing street connecting the neighborhood to the waterfront, would terminate in an open plaza, thus providing the public a destination to enjoy bay views.

In keeping with "new urbanist" principles of creating a safe, walkable community, pedestrian and bicycle use would be promoted by orienting streets, wide sidewalks, and dedicated trails to enhance safety and separating cyclists and pedestrians from vehicular traffic. Vehicular access would be limited to public streets. Commuter buses would be routed along John Muir Parkway and the Transit Loop. Clearly defined pedestrian areas would be demarcated by paving, planters, street furniture, and landscaping. Crosswalks and sidewalks would be located in areas that are clearly visible and marked and would be separated from vehicular traffic by islands or curbs, where feasible. The project would be Americans with Disabilities Act (ADA) compliant.

Additionally, the Hercules ITC design would incorporate energy conservation measures and be designed to achieve a U. S. Green Building Council (USGBC) LEED for Building Design & Construction (LEED BD& C) Silver certification. A number of LEED credits in the following categories are being pursued: Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, and Indoor Environmental Quality. The project team is also considering pursuing a number of Innovation & Design and Regional Priority credits that are resonant with the site, program, and project goals. To receive a LEED Silver certification, the

project design and construction process must achieve 50 to 59 LEED points as defined by the USGBC.

Development of the Hercules ITC would be completed in five phases as follows (Figure 2.2-2):<sup>1</sup> Phases 1 through 3 would complete all of the land-based transit and infrastructure components of the Hercules ITC including the necessary crossings of the UPRR. Phases 4 and 5 are considered separate projects from the ITC and would support the planned future projects of developing the City's Hercules Point Park and Open Space Project and WETA's San Francisco to Hercules/Rodeo Ferry Service. Phases 4 and 5 will be considered under a separate environmental review subject to CEQA and NEPA as appropriate.

- ◆ Phase 1 – Intermodal Transit Center
  - ▲ John Muir Parkway Extension
  - ▲ Bayfront Boulevard Extension and Bridge
  - ▲ UPRR Track Relocation, Railroad Bridge Replacement, and Relocation of Existing Utilities
  - ▲ Station Platform and Emergency Vehicle Access
  - ▲ Station Building
  - ▲ Bay Trail and Promenade
  - ▲ Creekside Trail
  - ▲ Refugio Creek and North Channel Restoration
  - ▲ Transit Loop and Bridge
  - ▲ Creekside Park
  - ▲ Transit Parking
  
- ◆ Phase 2 – Café/Transit Annex Building and Transit/Civic Plaza
  - ▲ Café/Transit Annex Building
  - ▲ Transit/Civic Plaza
  
- ◆ Phase 3 – Hercules Point Bridge
  - ▲ Hercules Point Bridge
  - ▲ Landside Ramp
  - ▲ Railroad Plaza
  - ▲ Hercules Point Viewing Platform
  
- ◆ \*Phase 4 (Future) – Hercules Point Park and Open Space Public Access
  - ▲ Hercules Point-side Ramp/Berm

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<sup>1</sup> The future mixed-use HB project may be overlaid with some or all of the phases described.

- ◆ \*Phase 5 (Future) – Ferry Terminal
  - ▲ Ferry Pier/Dock
  - ▲ Ferry Emergency Vehicle Access Connection

\*Phases 4 and 5 of the ITC provide connections to planned future projects. While reasonably foreseeable, these future projects remain speculative. Consequently, this FEIS does not evaluate them as part of the Hercules ITC. If these projects move forward, they would be evaluated under separate environmental documents. However, elements of these planned future projects have been considered in the overall design for the Hercules ITC and the potential impacts of these phases and the larger project's they support have been considered in the analyses of cumulative impact for this project.

### 2.2.1.2 Proposed Facilities

#### 2.2.1.2a Phase 1 – Intermodal Transit Center

##### **John Muir Parkway Extension**

John Muir Parkway, an existing four-lane median separated roadway, would be extended north approximately 700 feet from its existing terminus, approximately 1,000 feet west of the Tsushima Bridge across the North Channel. This extension would connect to the proposed extension of Bayfront Boulevard and Transit Loop (Figures 2.2-1 and 2.2-2). The parkway would serve as the primary transit access route to the Hercules ITC, Transit Loop, and Transit Parking Lot. The John Muir Parkway extension would require a concrete culvert to cross the North Channel. The John Muir Parkway crossing at the North Channel was designed to accommodate a 100-year storm event that would include the run-off from the adjacent business park, adjacent streets, and the planned flow from the Bayfront Development. The proposed crossing type was evaluated in consideration of technical constraints, functional requirements, and cost, and to mitigate environmental concerns. A clear span bridge was considered as an alternative to cross the North Channel. However, due to the soft soils present on the site and utility constraints, construction of a bridge or an open bottom culvert would require an elaborate foundation system and significantly higher costs to address the low flows anticipated in the intermittent drainage, and thus standard culvert construction is considered more practicable.

The new roadway segment would have two paved 12-foot lanes traveling north and one 12-foot lane traveling south, and include 14-foot-wide sidewalks. Southbound traffic may eventually be expanded to two lanes, which would result in restriping all the travel lanes to be 11-foot in both directions. John Muir Parkway includes parking and sidewalks on both sides of the street, for a total ROW width of 80 feet. Figure 2.2-1 depicts the proposed alignment of the John Muir Parkway extension. The extension would require construction of a culvert crossing of the North Channel of Refugio Creek. The proposed North Channel culvert crossing would incorporate a 48-inch-diameter reinforced concrete pipe or 48-inch-high by 72-inch-wide precast concrete box culvert. It would be approximately 91 feet long, with an additional 40 feet of culvert apron (heavy rocks placed at the culvert outlet) (Figure 2.2-3).

### **Bayfront Boulevard Extension and Bridge**

The Bayfront Boulevard extension would be a two-lane roadway connecting the existing boulevard segment, which ends at Sanderling Drive, to the planned John Muir Parkway extension. The new roadway segment would be approximately 620 feet long. The extension would include construction of the Bayfront Bridge over Refugio Creek (Figure 2.2-1).

The proposed Bayfront Bridge would be a two-lane, cast-in-place reinforced concrete box girder span, approximately 200 feet long and 50 feet wide. The two-span bridge would be supported above Refugio Creek by three 4-foot-diameter columns, which would form a single pier aligned with the width of the bridge (i.e., in the upstream-downstream direction). The pier would be supported under the creekbed by piles. The bridge would include two 12-foot-wide traffic lanes, two 3-foot-wide shoulders, and 10-foot-wide sidewalks on both sides. The bridge sides would be enclosed by traffic rated railing on both sides. The bridge would consist of a constant depth (flat bottom) girder with decorative railings along the sidewalk and abutments that would be consistent with the architectural character of the waterfront.

### **Union Pacific Railroad Track Relocation and Railroad Bridge Replacement**

The UPRR ROW extends across the site on a generally east-west orientation (Figure 2.2-2). The existing railroad ROW runs along the shoreline of San Pablo Bay and is 100 feet wide with two main tracks approximately 13 to 14 feet apart. Near the west end of the project site there is an additional track (storage 'house' track) located on the water side. Along the tracks, there are signals and utilities, including two petroleum pipelines (one active and one non-active), fiber-optic and telephone cables, and electrical lines located along the south side of the existing UPRR ROW. The tracks range in elevation from approximately 9 feet above mean sea level (msl) to approximately 12.5 feet above msl. The ground on either side of the track within the UPRR ROW ranges from near sea level adjacent to the bay on the water side to approximately 20 feet above msl on the land side, particularly near the eastern limit of the project site.

At the proposed train station, the existing tracks would be realigned, and spread to accommodate a center platform. Approximately 5,000 linear feet of track would be affected, in an area extending eastward from Hercules Point to about 3,000 feet east of Refugio Creek. Both waterside and landside tracks would be realigned vertically and horizontally in order to satisfy rail geometric constraints as well as adjust for prior track settlement.

The UPRR track realignment would include expanding the rail ROW to the south to provide adequate clearances and straighten the curvature of the tracks through the station area. This would also require the relocation of a crossover and associated signals in order to accommodate the proposed Station Platform and train operations. The Hercules ITC would also necessitate replacing the UPRR timber trestle bridge (a two-span structure, approximately 30 feet long) over Refugio Creek with a new bridge and installing new riprap within the creek (Figure 2.2-4). The existing bridge would be replaced because it does not meet current 50-year or 200-year storm event design criteria, and because it redirects surface water runoff into Refugio Creek.

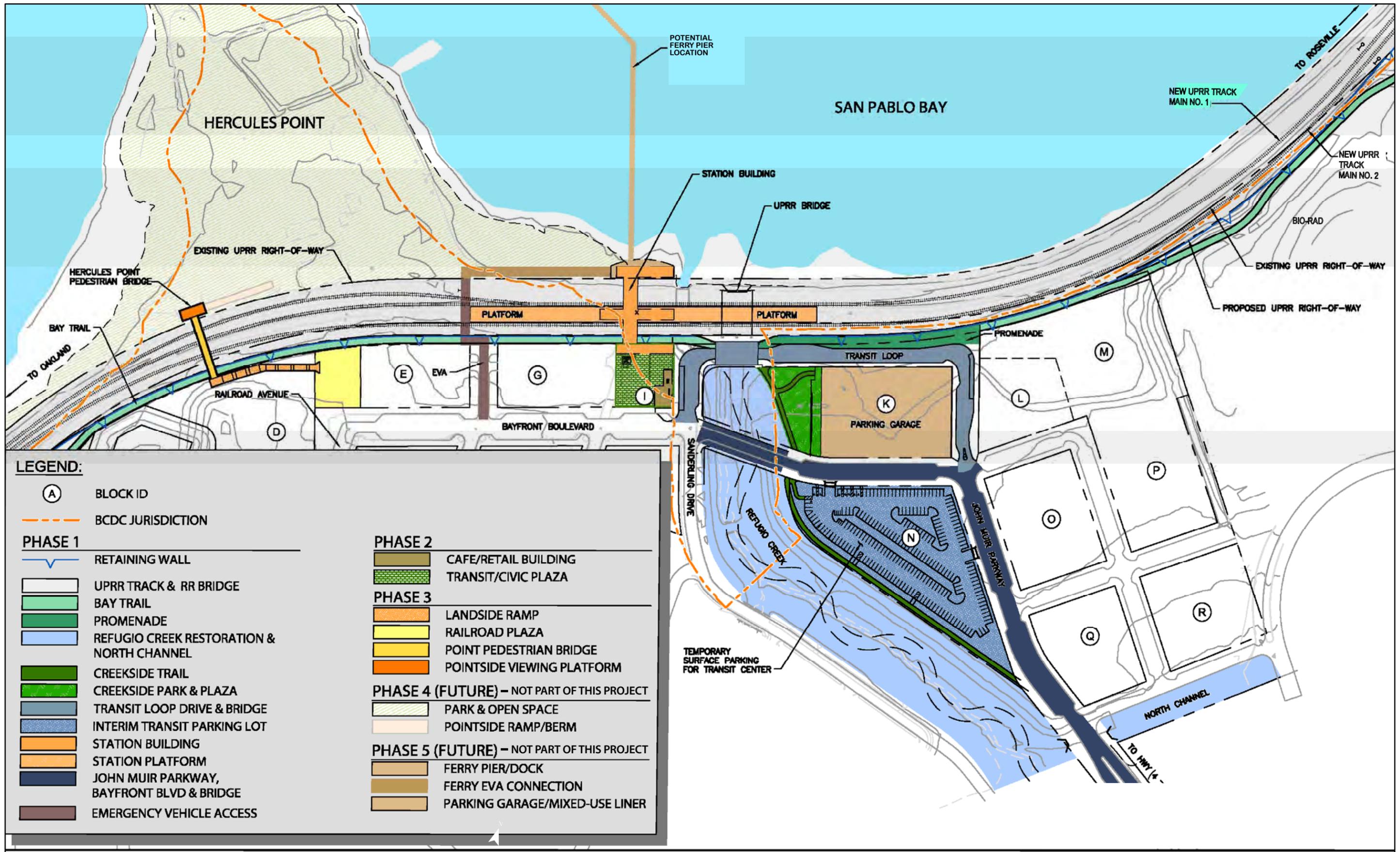
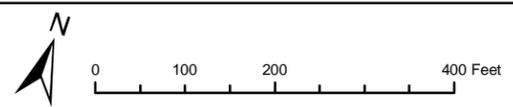


Figure 2.2-2: Alternative 1 Phasing Plan



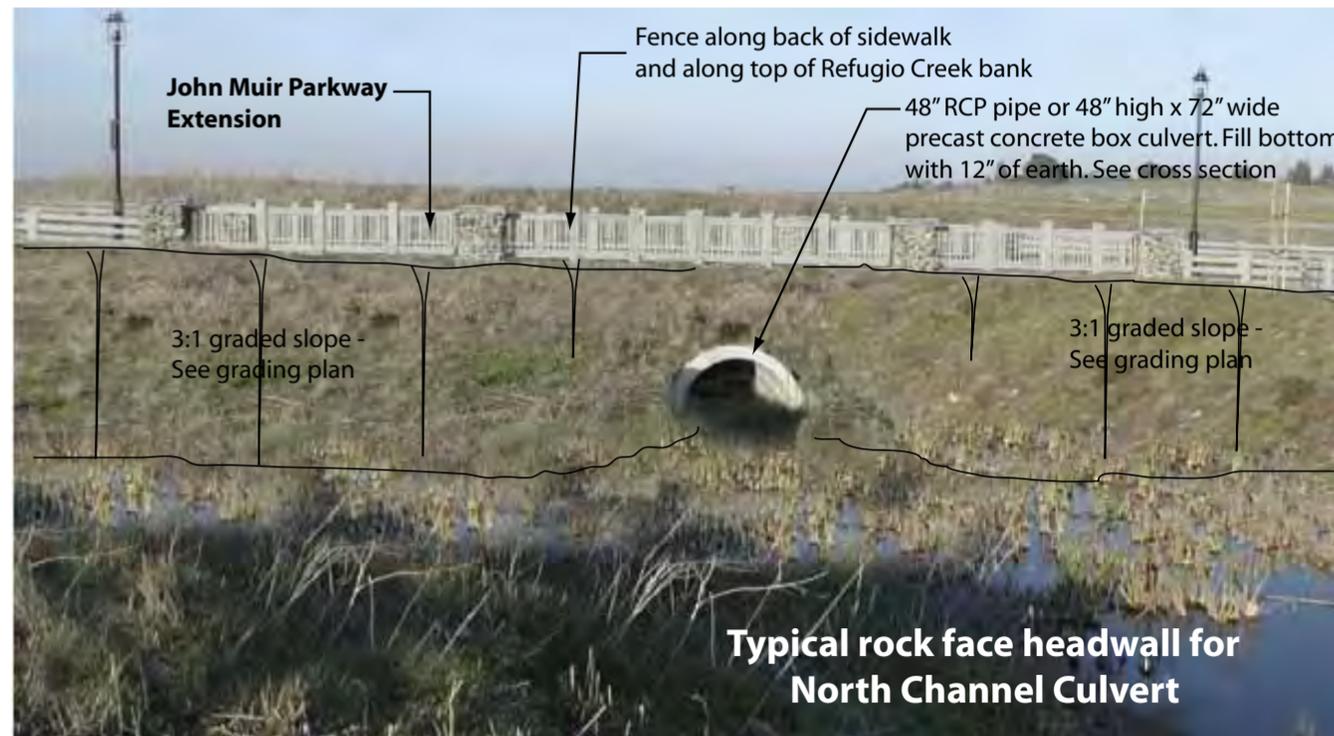
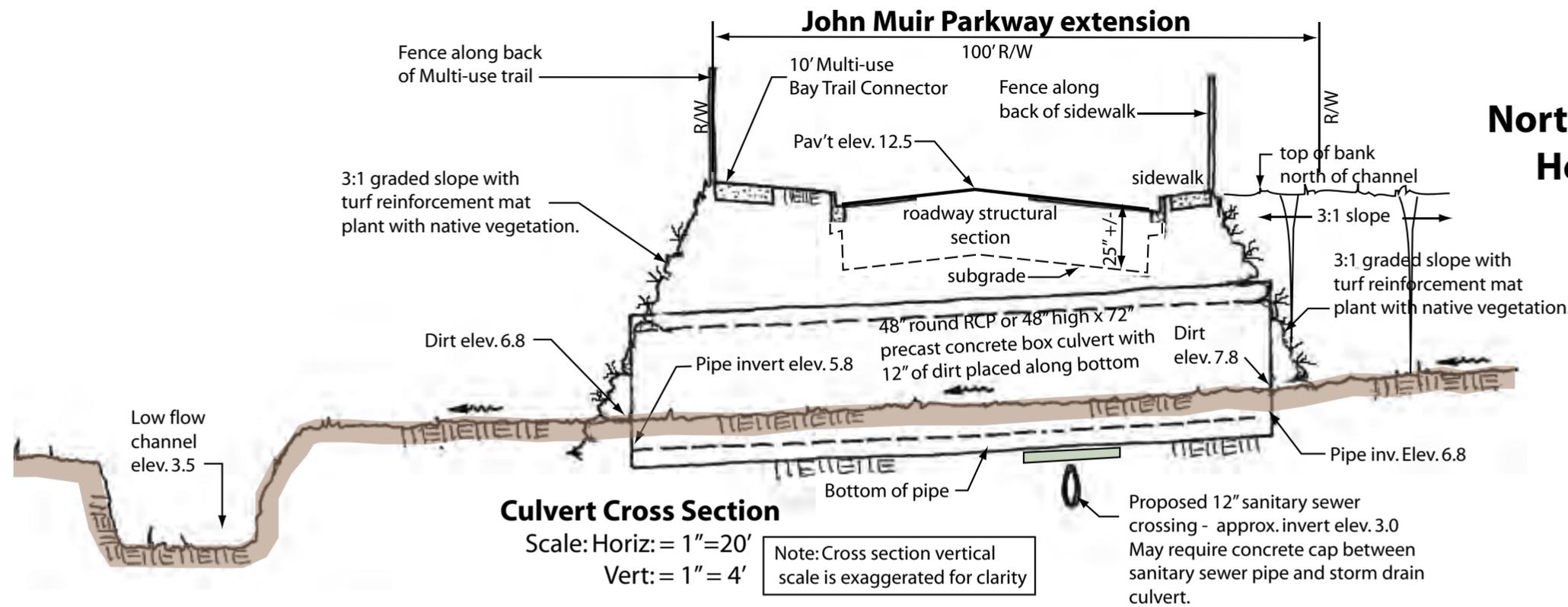
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# Conceptual Northern Channel Culvert Hercules Waterfront The Village Area

October 16, 2007



HerculesBayfront, LLC  
Anderson Pacific LLC  
Opticos Design, Inc.



**Notes:**

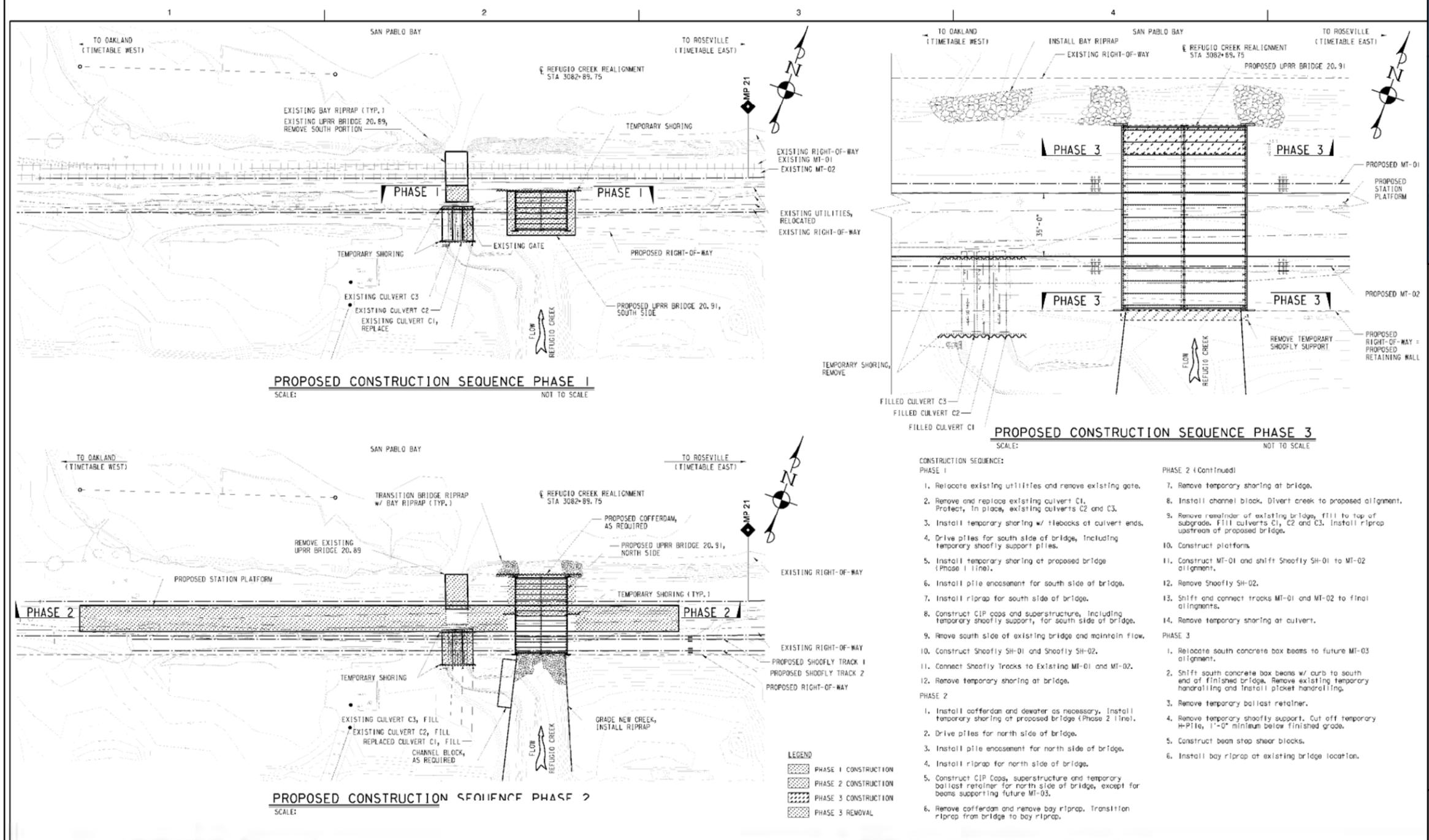
1. For grading of Refugio Creek area see drawing prepared by Balance Hydrologics, Inc., dated 10-03-07.
2. For Wetland Mitigation Plan see drawing prepared by WRA, dated Sept 2007.

Revised July 22, 2008



**Figure 2.2-3: Rock culvert crossing for John Muir Parkway at North Channel**

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**Figure 2.2-4: UPRR Bridge 20.91 Over Refugio Creek Construction Sequence**

City of Hercules  
Hercules Intermodal Transit Facility  
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3.



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The new railroad bridge would be located approximately 100 feet east of the current bridge location. The new railroad bridge would be positioned to accommodate the new mouth for Refugio Creek that is part of the creek restoration (see Refugio Creek and North Channel Restoration) and would have a larger span to accommodate the realigned enhanced creek. The proposed 2-span railroad bridge would be approximately 68 feet long and 100 feet wide. The railroad bridge would be supported on two abutments and a center pile bent. The railroad bridge foundation would consist of steel H-piles. The driven pile foundation would include a combination of vertical and battered piles. The railroad bridge deck would consist of precast, prestressed concrete box girders connected to the abutments and bent with restrainer rods and deck plates.

Relocation of the UPRR bridge will require demolition and removal of the existing bridge structure including the removal of the wood trestles. Removal of the existing UPRR timber trestle at Refugio Creek will take place during the staged track work improvements for MT1 (Main Track 1) and MT2 (Main Track 2) and after installation of the temporary pipe culverts, and the construction of the Station Track. Due to the age of the materials, the wood trestles are assumed to have been treated with creosote.

The rail traffic will be routed to the Station Track and one of the main tracks while the bridge is removed from under the other adjacent main track, which will be inactive. The drainage in Refugio Creek will be carried through the bridge removal area by the temporary pipe culverts installed under the existing bridge. The rail, ties, and ballast can then be removed from the existing bridge deck on the inactive track. The bridge timber plank decking, handrails, timber bridge stringers, and timber caps can be removed from above by a small crane. The existing timber piles will be cut off and removed to 1 foot below the existing mud line. Any debris dislodged during the bridge removal process will be prevented from entering the creek or the Bay since the temporary culverts are in place to carry the creek flow through the bridge removal area. The culverts are to be augmented with silt fences to prevent the migration of any spoils to the bay. Once the bridge components are removed the area can be backfilled around the temporary pipe culverts. When the fill is in place the ballast, ties, and rails can be rebuilt and the track placed in operation.

The procedure described above will be repeated for the removal of the remaining half of the bridge by making the inactive main track active and the active main track inactive. The remaining bridge portion can then be removed from under the inactive track.

The new UPRR bridge can then be constructed at the new location of Refugio Creek. Following this construction, Refugio Creek can be diverted to the new alignment under the new UPRR bridge. The existing temporary pipe culverts on the old creek alignment will be completely filled in and abandoned in place. During the filling of the culverts the downstream end of the pipe culvert will be protected by a cofferdam and silt fences to prevent debris and sediment from entering the bay.

Contaminated materials, such as the wood trestles, will be removed, contained and off-hauled to an approved facility in accordance with local, state, and federal requirements. Upon

completion of the demolition activities, the area would be filled with suitable material and compacted to construct the rail road berm.

Stormwater runoff from areas outside of the UPRR tracks including the platform will be treated using infiltration treatment facilities. UPRR is exempt from stormwater treatment requirements according to 40 Code of Federal Regulations Section 122.26(a)(9)(D)(iii)(b)(14). Runoff from within the UPRR right of way will drain through the ballast into open channels, or the San Pablo Bay, or Refugio Creek.

Footings and abutments for the new UPRR bridge and the Transit Loop bridge will be armored with approximately 21,890 square feet (0.5 acre) of rock slope protection (RSP) to ensure stability of the rail and transit bridges. Upstream, the Bayfront Bridge and the John Muir Parkway crossing of the North Channel will not include any RSP but will be stabilized and protected using native vegetation.

Track realignment would result in a need for soil nail retaining walls up to 25 feet high and 1,900 feet long along the section of track adjacent to the Bio-Rad Laboratories, Inc. (Bio-Rad) boundary. The Bio-Rad property (1000 Alfred Nobel Drive) is located at a point approximately 200 feet northeast of the proposed boarding platform at the eastern limit of the project. The soil nail wall is needed to allow for the track realignment, while accommodating the Bay Trail alignment and minimizing impacts to adjacent properties. West of Bio-Rad, the existing site grades drop and design grades would be achieved through construction of a mechanically stabilized earth (MSE) with ground improvement supporting design fills. Approximately 18,000 cubic yards of ground improvement would be required to support the MSE retaining wall. Ground improvements could include treatment, such as cement deep soil mixing (CDSM) or other in-situ soil improvement. The retaining wall would extend west just beyond the proposed Hercules Point pedestrian bridge for a total length of approximately 3,050 feet. The retaining walls would be located adjacent to the UPRR ROW to accommodate the Bay Trail at an elevation above the tracks and south horizontally to the tracks. The retaining walls would also provide an elevated trail and promenade with extended views of San Pablo Bay (Figure 2.2-5).

Several communication utilities including Qwest, Comcast, MCI, and Level 3 fiber optic lines are all currently located within the UPRR ROW. In addition, Kinder Morgan and Shell Oil have petroleum pipelines within and adjacent to the UPRR ROW. These lines would be relocated to avoid conflicts with the proposed track, platform, and railroad bridge. The lines would be rearranged within the UPRR ROW and adjacent to the proposed retaining wall based on input from and coordination with the utility and petroleum companies. The relocated pipelines would be installed within the proposed Bay Trail and roadway for a section of the alignment; the fiber optic lines would be realigned on the south side of the proposed tracks but remain within the UPRR ROW to the extent feasible. The pipelines would be directionally drilled under Refugio Creek and the fiber optic conduits would be jack-and-bored underneath the creek.



**Figure 2.2-5: Retaining Walls for Grade Separation at UPRR**

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The track realignment would require acquisition of approximately two acres of additional ROW to accommodate rail service to the passenger platform and maintain operations for UPRR. The additional ROW would have a width of up to 30 feet and a length of approximately 3,365 feet for a total of approximately 1.77 acres. Figure 2.2-2 depicts the overall phasing and site layout for the Station Building and surroundings.

The UPRR Track Relocation Option A (Track Option A) design includes the installation of two temporary shoofly tracks<sup>2</sup> consistent with the initial requirements of the UPRR (see discussion Project Construction and Operation below). The shoofly tracks allow train operations to continue during construction by detouring trains around the project on the landside creating sufficient clearance to construct the train station and platform. However, the design also adds significant complexity to the construction staging due to conflicts with the proposed retaining walls, utilities, and bridges. The construction requires removal of one temporary shoofly track and shifting of the other shoofly track to create the final mainline station track alignment. The other mainline station track would be partially replaced, tied into the existing storage track and realigned to accommodate the new platform being constructed for the station.

The UPRR Track Relocation Option B (Track Option B) would eliminate the temporary shoofly track, and instead would create permanent station and passing tracks through the project area and past the station stop to meet freight and passenger operational requirements. The station and passing tracks would minimize the interruptions to through traffic and passenger services. Constructing station and passing tracks would simplify the Hercules ITC construction staging and reduce construction related impacts.

Track Option B emerged from a value engineering (VE) study, undertaken by the City of Hercules to identify improvements to the Hercules ITC project. The study was conducted to ensure that the Hercules ITC project considered the most cost effective solutions in the current design. Track Option B realignment work would be completed within the existing UPRR right-of-way and would not require new right-of-way.

Track Option B would be comprised of the following modifications from the Option A for main tracks (MT1 and MT2), (Figure 2.2-6).

1. A new signal controlled station passing track (MT1) at Hercules capable of holding a full length freight train.
2. A new right hand turnout<sup>3</sup> on MT2 at the existing crossover<sup>4</sup> at milepost (MP) 20.4 at the west end of the ITC Project
3. Construction of a new dedicated station track on the land side of MT2 at MP 20.4 to MP 22.1, approximately 8,600 feet of new track.

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<sup>2</sup> Shoofly track is a temporary track of minimum standards, which is used as a detour around a construction area such as a bridge replacement.

<sup>3</sup> A turnout is a track structure that allows trains to move from one track to another track or branch-line.

<sup>4</sup> A crossover is comprised of two turnouts (one at either end with a connecting track) permitting movement of rail cars from one track to another.

4. Construction of a new crossover and turnout at MP 22.1 connection to the new dedicated station track that would be used primarily by passenger trains.
5. The crossover configuration would also allow parallel moves between all tracks.
6. Adjust the horizontal alignment of MT2 to shift the track landward by approximately 1.5-ft or less from MP 22.1 to MP 22.3.
7. Surface and dress MT2 to correct track settlement of 8-inches or less between MP 22.1 to MP 22.3, approximately 1475 feet.

Track Option B provides added benefit to UPRR and CCJPA effectively mitigating freight-passenger train conflicts during operations and reducing the additional impact of an added station stop to the Capitol Corridor schedule.

Track Option B would require utility relocations to avoid conflicts with the proposed station track (ST1) and main track (MT2) and would be comprised of the following modifications from the Option A:

1. Construction of approximately an additional 4,400 lineal feet of communication utilities including Quest, Comcast, MCI, and Level 3 fiber optic lines would need to be relocated on the south side within the UPRR ROW. This work would require approximately 8,700 cubic yards of additional excavation.
2. Construction of approximately 1,900 lineal feet of Shell Oil petroleum pipeline would need to be relocated outside of yet adjacent to the UPRR ROW landside of the tracks until such point that the pipeline diverts to the east at approximately MP 21.6. The Shell Oil line relocation would require approximately 3,150 cubic yards of excavation.
3. Construction of approximately 4,350 lineal feet of Kinder Morgan petroleum pipeline would be needed to be relocated outside of yet adjacent to the UPRR ROW landside of the tracks. The Kinder Morgan pipeline relocation would require approximately 6,800 cubic yards of excavation.

The additional utility relocations are anticipated to be direct buried to the extent feasible. In isolated locations, utilities would be installed utilizing directional drilling or boring as necessary to avoid conflict with sensitive resources.

The City of Hercules has been coordinating with UPRR as the owner of the right-of-way regarding track relocation, bridge replacement, platform and station design. In October 2010, UPRR confirmed tentative approval of advancing the design of Track Option B. The City's rail engineering design team has continued coordination with UPRR, including most recently a February 2012 site visit with the railroad's responsible department. The City has also confirmed with UPRR that the Track realignment and signal re-spacing are acceptable to UPRR.



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### **Station Platform and Emergency Vehicle Access**

The proposed passenger platform would be a mat foundation deck, 35 feet wide by 800 feet long, constructed between the new main UPRR track and Station track (Figure 2.2-7). The center platform would have two passenger shelter structures to provide protection from the elements. Pedestrian access to the platform would be provided from the pedestrian overpass by a combination of stairs, ramps, and elevators; these would also be covered or enclosed for weather protection.

The Hercules ITC would include a restricted, private at-grade crossing for emergency ingress and egress only. The route would extend from the Bay Trail to the north across the UPRR ROW and connect to the west end of the Station Platform. The crossing would provide emergency access to the west end of the passenger platform and be secured by locked gates. Within Phase 1, the EVA crossing would be constructed up to the UPRR ROW fence (Figure 2.2-1). The ferry EVA connection would be completed in the future if the ferry terminal project is approved and constructed (Phase 5).

The EVA would be approximately 20 feet wide by 129 feet long within the UPRR ROW, and approximately 20 feet wide by 230 feet long south of the UPRR ROW). The future connection to the ferry is planned to be 20 feet wide by approximately 350 feet long north of the UPRR ROW.

### **Station Building**

The proposed Station Building would be located on Bayfront Boulevard, west of Refugio Creek (Figure 2.2-8). The approximately 11,075 square-foot land side Station Building would provide grade-separated pedestrian access over the railroad tracks to an approximately 25,100-square-foot platform and future ferry terminal. The Station Building would be an open 30 foot tall, from plaza level, steel-frame structure with a basement, with a glass-enclosed ADA-compliant ramp, stairs, and elevator to provide access to the passenger rail platform and over the UPRR tracks by way of a pedestrian bridge. The station building includes an 85-foot tall clock tower at the south-west corner, which will include a storage room at the plaza level and a security room at the bridge level.

The pedestrian bridge would be elevated approximately 16 feet above the plaza ground level (approximately 26 feet above existing ground level and top of rail) to maintain required vertical clearance above the train tracks. The height of the pedestrian overcrossing is set by the UPRR and California Public Utility Commission clearance requirements. Pedestrian ramps would provide access from the station entry to the pedestrian bridge. The pedestrian bridge would connect to the rail platform by way of ramps and stairs. ADA-compliant elevators for emergency/freight use would also be placed at the transit terminal and the rail platform. The ramps would be ADA-compliant and designed with a series of landings and turns to maintain ease of access and accommodate peak passenger foot traffic, while reducing safety hazards and the potential for nuisance or vandalism.

The design of the building reflects historic train shed forms, including the open curved roof, would incorporate functional elements (stairs, ramps) lower in height to minimize its perceived height and mass. The structure would be glass reinforced with steel frames, which would provide panoramic views of San Pablo Bay and beyond. Seating and architectural elements associated with the station would be largely determined by the functional requirements of Amtrak and CCJPA. The building would have louvered or open-able windows to provide ventilation. Additionally, there will be a mechanical ventilation system in the station building; however there will be no mechanical heating or cooling connected with the ventilation system. There will be a radiant floor heating system in the platform area.

The Station Building's frame would be extensively glazed, with over 22,000 sf of glass wall area, and a window-to-wall ratio of over 66 percent. Laminated glass would both limit overheating and provide passive solar heating. Overheating for most hours would be controlled with proper ventilation. If necessary, solar gains could also be used to heat the building for most of the day or evening.

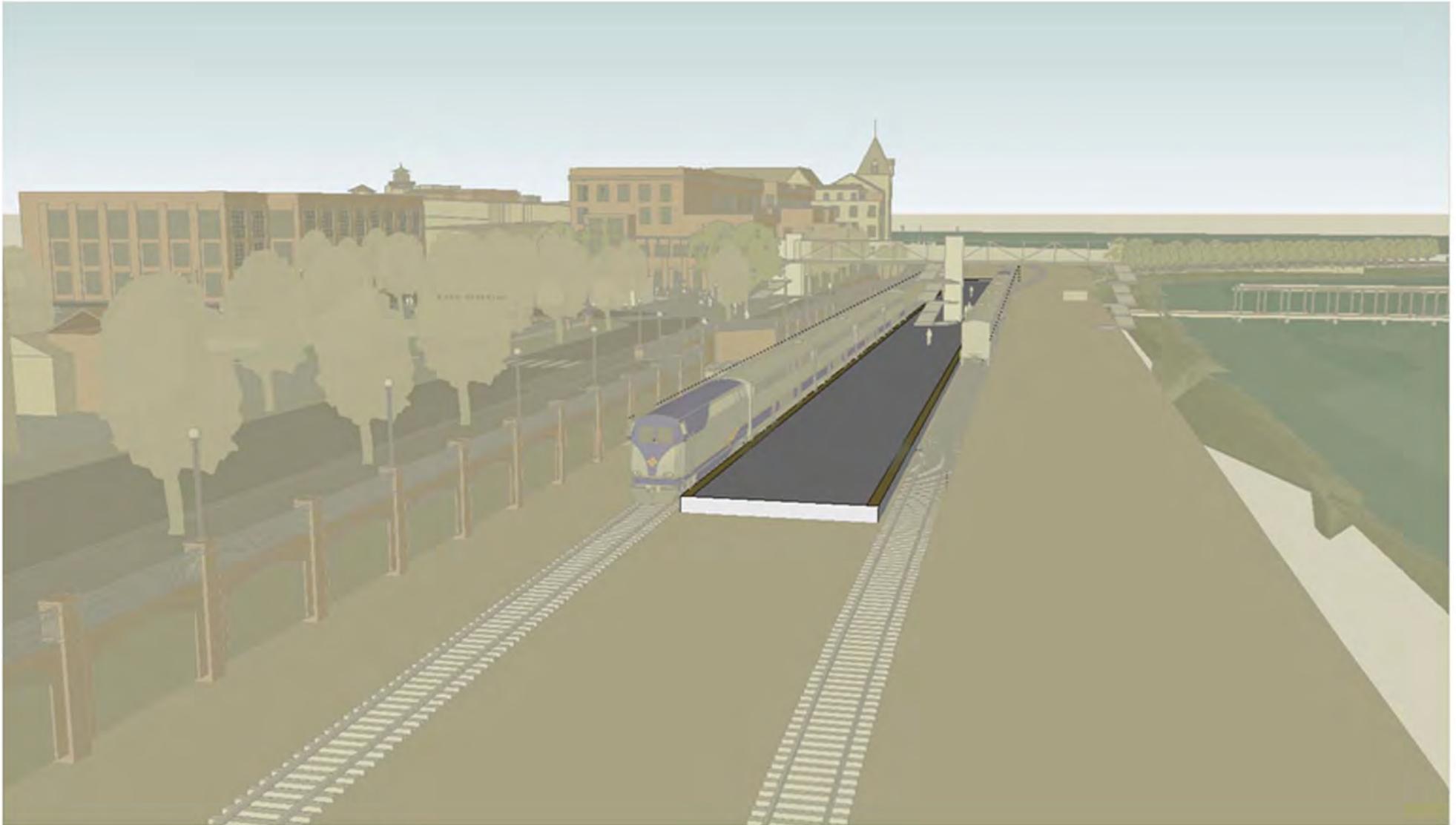
The platform would have glass awnings above the North and South entrances to provide adequate shade from direct sun at eye level throughout the day. To reduce visual glare when illuminated by direct sun, opaque or a clear glass would be used for awning material.

The roof would be covered with glare-resistant photovoltaic cells (Figure 2.2-9). The approximately 5,100 sf of photovoltaic cells would generate about 47,100 kilowatt-hours (kWh) of alternating current (AC) energy per year.

Access to the Ferry Plaza would not be open until the ferry pier and dock are constructed. Access would be limited to the mezzanine level (upper) only, except for maintenance and security personnel; no access would be allowed to the ground level of the Ferry Plaza.

The Station Building would serve to provide for the passenger loading and unloading of the local and regional buses operated by WestCAT. Buses would reach the terminal by way of a proposed extension of John Muir Parkway that would cross Bayfront Boulevard and connect with the proposed Transit Loop Drive around the parcel east of the terminal (shown as "Block K" on Figure 2.2-2) in a counter-clockwise direction.

A maximum of twelve small-scale Mariah Power wind power turbines are proposed for installation at the Station Platform. The turbines would generate modest amounts of energy and be representative elements of the green character of the project (Figure 2.2-10). Each wind turbine could potentially generate approximately 200 kWh of energy per year, which would provide enough energy to operate a small residence for a month. While the turbine generated power cannot completely provide for the annual energy needs to light the interior of the Transit Building (about 20 megawatt hours), it would be provide sufficient energy to operate a limited area of exterior lighting or other iconic element.



**Figure 2.2-7: Hercules ITC Center Platform**



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**Figure 2.2-8: Hercules ITC Station Building**

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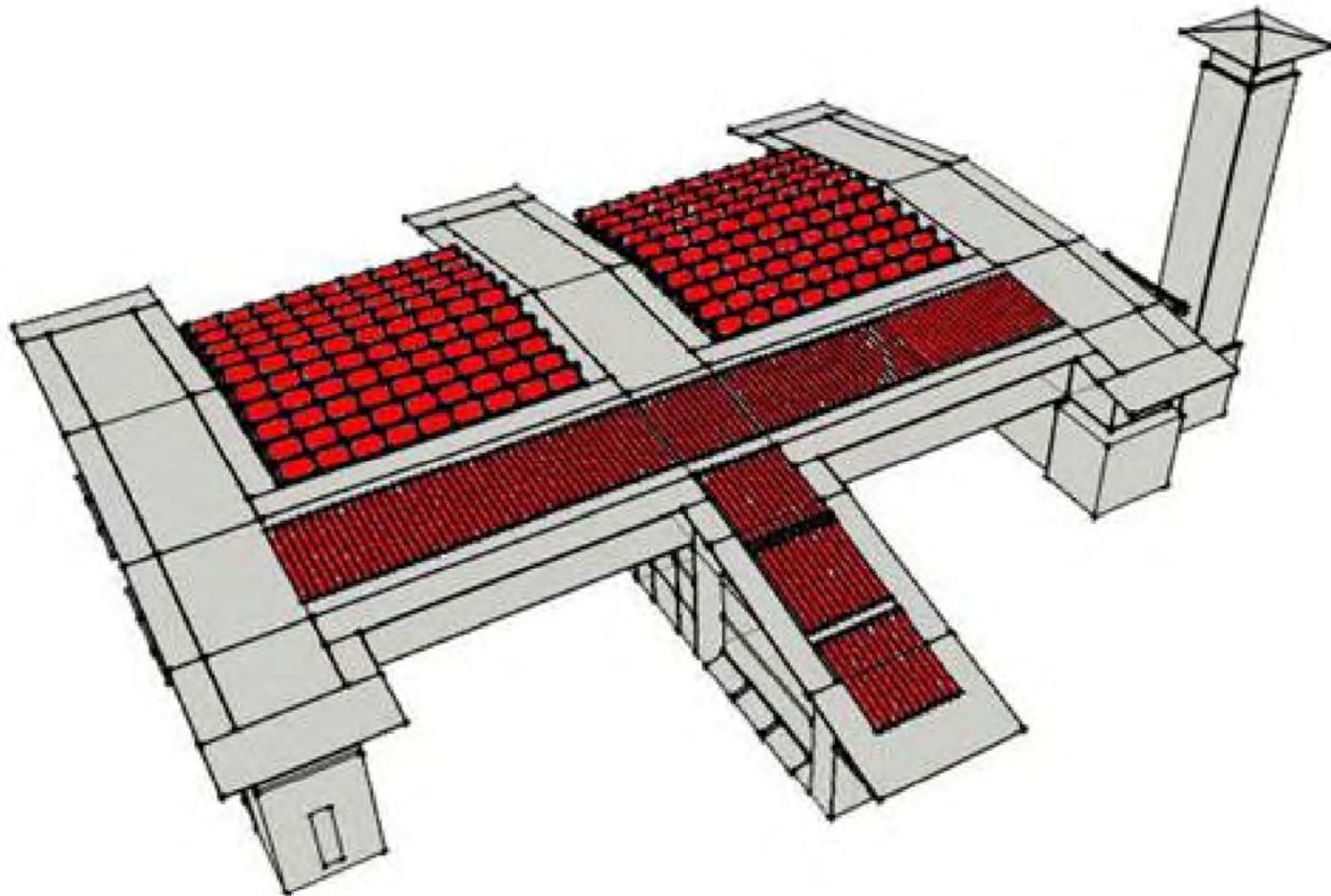


Figure 2.2-9: Photovoltaic Panels on Top of Station Building

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### **Bay Trail and Waterfront Promenade**

The Bay Trail would be a newly constructed Class I trail, approximately 5,900 feet long by 10-foot-wide (paved) with two foot wide gravel shoulders within a 27-foot-wide easement, excluding the promenade, and would connect existing segments of the Bay Trail (Figure 2.2-1). The trail would extend from Bio-Rad on the east end of the project and connect to the existing Bay Trail terminus near the west end of the project. The trail would cross over Refugio Creek on the north side of the Transit Loop Bridge. When complete, the trail would close a critical gap in the existing trail (in the Carquinez Strait region) from Pinole to the south and a residential development (Victoria-by-the-Bay) to the north and provide opportunities for biking, walking, and scenery viewing. Switchbacks or ramped trail sections would be ADA compliant to the extent feasible. The waterfront promenade would be a 500-foot-long public space that varies from about 18 feet wide on its west end to about 26 feet wide on its east end. The promenade would have a walking path of stamped and/or colored concrete integrated benches and bay viewing areas.

### **Creekside Trail**

Excluding the trails located within Creekside Park, the Creekside Trail would be a 960-foot-long trail of varying width (8 feet minimum to 20 feet maximum) (Figure 2.2-1). This trail would serve as a pathway for bicyclists and pedestrians, connecting users from John Muir Parkway near the North Channel along the east bank of Refugio Creek with the Hercules ITC facility across Bayfront Boulevard. Pedestrian crossing protections such as flashing lights would be installed at street crossings to alert drivers to the potential presence of pedestrians and designs to encourage safety and reduced bicycles speeds would be incorporated.

### **Refugio Creek and North Channel Restoration**

Refugio Creek is currently a channelized annual stream and a low-flow tributary of San Pablo Bay that traverses the UPRR ROW east of Hercules Point (Figure 2.2-11). The creek passes through three culverts under a service road, then under the railroad bridge, and empties into San Pablo Bay. The creek channel is about 30 feet wide (measured from the tops of the banks) in the vicinity of the site. An earthen pedestrian bridge with two culverts crosses the creek channel approximately 300 feet southeast of the project site. The nearest existing road crossings over the creek are at Tsushima Street, approximately 0.4 mile southeast of the project site, and at Sycamore Avenue and San Pablo Avenue, approximately 0.75 mile southeast of the project site.

The segment of Refugio Creek channel between Hercules ITC's southern (upstream) boundary and immediately north of the proposed railroad crossing bridge, where it enters San Pablo Bay, includes approximately 1,200 linear feet of tidal channel. As a result of historic filling, the creek banks have developed very steep to vertical profiles, and are supported by sand and concrete bags along the banks. The creek banks within the project site range in height from 8 to 14 feet from creekbed to top-of-bank. Part of the lower creek area is within the 100-year flood zone identified by the Flood Insurance Rate Map (FIRM) (Map Number 06013C0043F),

effective June 16, 2009. Within the project area, the existing low-flow creek channel varies in width (top-of-bank to top-of-bank) from approximately 20 feet in the upstream portion to about 40 feet in the downstream portion. A non-tidal tributary, referred to as the North Channel, enters the main creek channel from the northeast near the southern (upstream) project boundary (Figure 2.2-1). An additional non-tidal tributary (referred to as the Central Channel) enters the main creek channel from the south, approximately in the middle of the main channel length on the project site (Figure 2.2-1).

The Hercules ITC project would involve realigning and restoring Refugio Creek from San Pablo Bay upstream approximately 1,000 feet to the existing restored segment (Figure 2.2-12). The realignment would require a new mouth into San Pablo Bay. A new railroad bridge over the new creek alignment would also be constructed. The existing railroad bridge does not meet UPRR design criteria, and the bridge is overtopped in the 50-year and 100-year flood events (HDR 2009). Additionally, HDR (2009) found that due to development within the Refugio Creek watershed, the flows through Refugio Creek would increase from 1,100 cubic feet per second (cfs) to 2,400 cfs in a 100-year flood event.

The existing creek and culverts near the existing railroad bridge would be filled. The creek upstream would be modified by realigning the creek, cutting back the existing slopes and constructing new creek embankments. On the upstream side of the existing railroad bridge, there are currently three 72-inch-diameter culverts under the access road near the proposed location of the Transit Loop Bridge (Figure 2.2-11). These culverts restrict flow during flood events and result in overtopping of the access road and railroad tracks. The existing channel has a 90-degree bend where Refugio Creek encounters the access road and a second 90-degree bend, where flows enter the culverts under the access road. These man-made sharp bends in the existing channel further reduce channel capacity to convey flows. As part of the restoration, these bends would be eliminated, the creek straightened, and a new outlet to San Pablo Bay constructed. The new railroad bridge would cross Refugio Creek at the new mouth. The railroad bridge abutments would be constructed outside of the creekbed and banks. New riprap slope protection would also be installed to protect the bridge abutments through the UPRR prism.

A new meandering low flow channel and enlarged marsh would be incorporated to improve hydraulic and ecological function. The marsh would gradually increase the floodplain width to a maximum of approximately 200 feet upstream of Bayfront Bridge. Restoration work in the channel would include planting of native plant species. It is also anticipated that there would be some voluntary colonization of tidal marsh species, including pickleweed (*Sarcocornia pacifica*), gumplant, and other native species.

Currently, the existing Refugio Creek channel is approximately 1590 feet (0.54 acre) from the proposed southern project boundary at the previously restored portion of the creek to San Pablo Bay at edge of the UPRR ballast. As described above, this restoration will remove two 90 degree turns of Refugio Creek. However, constructing the new meandering channel will create an increase in the overall length and acreage of Refugio Creek resulting in a channel approximately 1652 feet long (0.97 acre). An upstream portion of the creek was reconstructed as

a habitat restoration project as part of previous development projects; reconstruction and habitat restoration of the lower section of the creek from the North Channel to the mouth of Refugio Creek would be performed as part of the Hercules ITC.

Additionally, the North Channel will be re-graded and enhanced to accommodate an expanded wetland area and provide mitigation to compensate for the impacts associated with the crossing of John Muir Parkway across the North Channel (Figure 2.2-13). This area may also serve to provide some stormwater detention and water quality improvements prior to discharge back into the North Channel and downstream into Refugio Creek and ultimately into San Pablo Bay. Immediately north of North Channel, a 10 foot-wide pedestrian trail will connect residents from Linus Pauling to John Muir Parkway.

Restoration work conducted under the Hercules ITC project would include similar elements as restoration work upstream to allow a seamless and complete habitat restoration of the entire lower creek. The creek channel would be regraded and widened in order to restore a more natural serpentine form, increase flood-flow capacity, provide a creek floodplain, and restore associated tidal wetlands. The restored creekbed would be approximately 180 to 185 feet wide from top-of-bank to top-of-bank, with the restored banks at a slope no greater than 2:1, and some of the slopes on the two riparian planting area slope banks varying between 6:1 and 9:1. The restoration and flood control components would connect with the portion of Refugio Creek upstream of the Waterfront District that was similarly restored in December 2000.

The portion of the restored creek wetland area included in the Hercules ITC (between North Channel and the creek mouth) may provide compensatory mitigation for wetlands affected by development activity within the project site. Approximately 0.08 acre of jurisdictional waters within the existing North Channel would be permanently affected by the installation of the John Muir Parkway culvert. Other jurisdictional waters would be temporarily impacted by the creek restoration grading; this temporary impact would be mitigated when the channel is regraded and restored (the restored serpentine form would make the channel longer than the original main channel by approximately 120 linear feet). Tidal marsh and freshwater wetlands adjacent to Refugio Creek would be affected by the restoration work. At a minimum, restoration work would reestablish the same amount of acreage to ensure that restoration activities are entirely self-mitigating.

The approximate 10-foot-wide Creekside Trail flanked with landscaping and split rail fencing would be constructed along the creek's eastern edge and would ultimately connect to the proposed Bay Trail to adjacent to the UPRR tracks.

### **Transit Loop and Bridge**

Transit Loop Drive would serve as a transit loop to allow transit vehicles to enter and exit the Hercules ITC and would provide drop-off, pick-up, and short-term parking areas for non-transit vehicles. Transit Loop Drive would be a two-lane paved roadway that extends north from John Muir Parkway at the intersection with Bayfront Boulevard, west at the northern end of a parcel known as Block K, across Refugio Creek, then south to Bayfront Boulevard (Figure 2.2-1).

Transit Loop Drive Bridge would consist of a single span (approximately 72 foot long), cast-in-place concrete bridge spanning Refugio Creek (Figure 2.2-14). The Transit Loop Drive Bridge would be supported on two abutments with wing walls supported on driven steel H-piles. The bridge would consist of a variable depth (arched bottom) girder with decorative railings along the sidewalk and a brick façade at the abutments. The face of the bridge girder may include decorative elements that relate to the waterfront's architectural character.

### **Creekside Park and Plaza**

Creekside Park and Plaza would make up the area within the Transit Loop, Bayfront Boulevard, Refugio Creek, and the footprint of the future building on Block K (Figure 2.2-15). The area is about 100 feet by 200 feet inclusive of Creekside Trail, which would wind along the western edge of the park adjacent to Refugio Creek. The area is a more natural space taking design references from Refugio Creek and San Pablo Bay. An open lawn would fill the center of the space and transition into tidally influenced native plants as the space blends into the creek to the west. The Creekside Park would be bound by a linear footpath corridor to the east, adjacent to Block K. The north edge would be formed by a distinctive swale providing stormwater treatment with rocks and stepping stones; it would also be planted with trees as a windscreen. The area also would have a small trellis along the edge of the trail providing a small staging area that would be screened from the sun and provide a focal point down Bayfront Boulevard and beyond.

### **Parking**

In the near term (prior to build-out of the proposed HB Project), a 220-space surface parking lot located southwest of the planned intersection of John Muir Parkway and Bayfront Boulevard (Block N) would provide parking for train and bus patrons. Figure 2.2-2 identifies the surrounding parcels and their locations. This parking lot would eventually be replaced by mixed-use and residential development as part of the proposed HB project at Block N; replacement parking available to transit terminal commuters would be included in the HB development project. Long-term parking for the Hercules ITC would be provided in a multi-story building on a waterfront parcel east of Refugio Creek (identified as Block K on Figure 2.2-2) and could accommodate approximately 250 parking spaces, meeting all forecasted transit parking needs.



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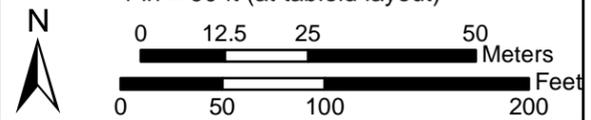


**Legend**

- Project Boundary
- Restoration Habitat**
- Brackish and Freshwater Stream
- Cattail Marsh
- Rip Rap and Poles
- Riparian Woodland
- Seasonal Wetland
- Shade Hindered Tidal Marsh
- Tidal Marsh
- Upland

Refugio Creek Restoration:  
Restoration data prepared by RDG, 2012.

1 in = 90 ft (at tabloid layout)



**Figure 2.2-12: Refugio Wetland Mitigation**

City of Hercules  
Hercules Intermodal Transit Facility  
Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3.



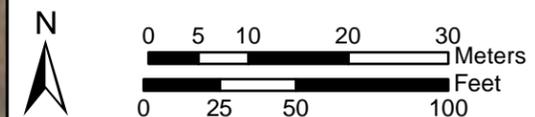
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**Legend**

- Project Boundary
- Restoration Habitat**
- Brackish and Freshwater Stream
- Cattail Marsh
- Rip Rap and Poles
- Riparian Woodland
- Seasonal Wetland
- Shade Hindered Tidal Marsh
- Tidal Marsh
- Upland

Refugio Creek Restoration:  
 Restoration data prepared by RDG, 2012.  
 1 in = 60 ft (at tabloid layout)



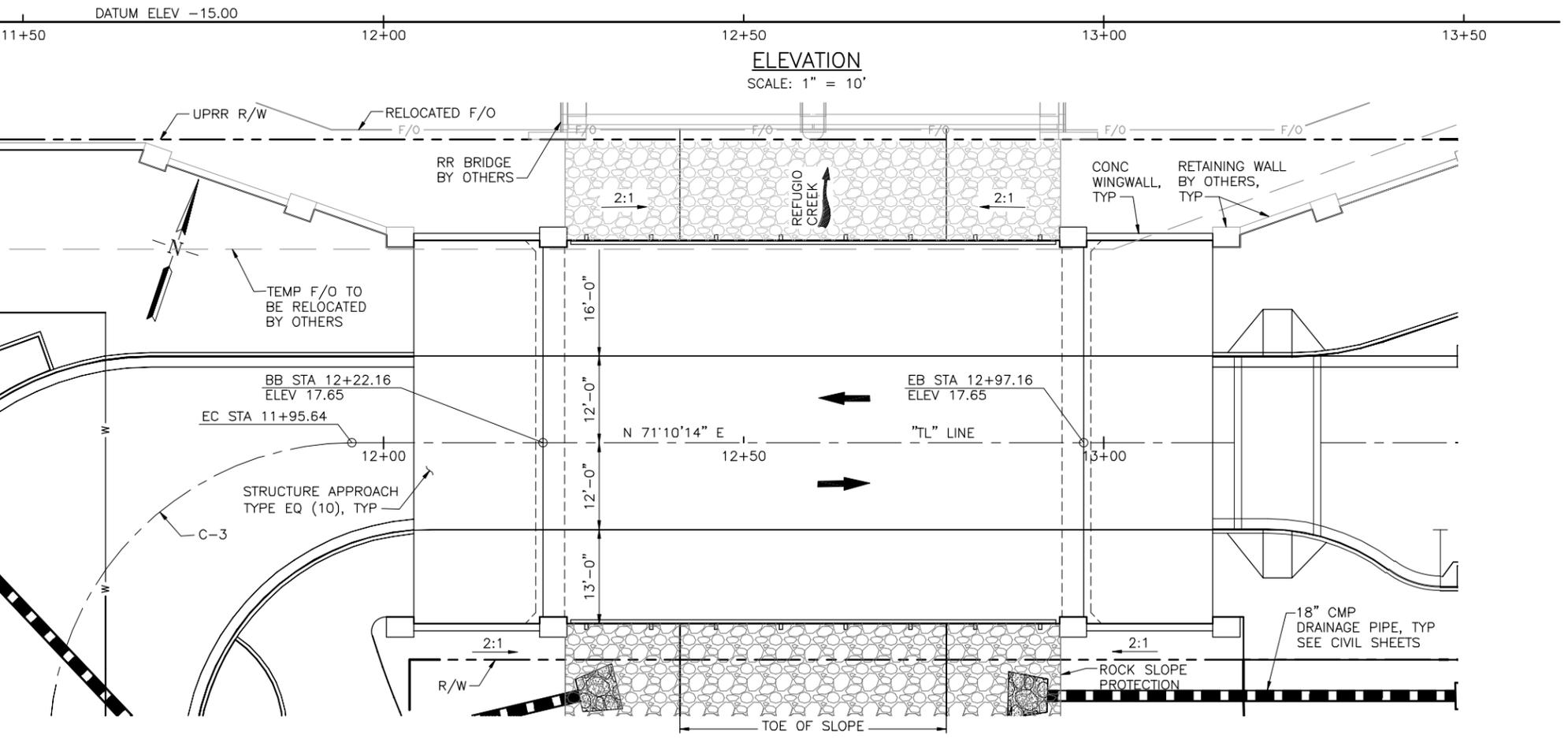
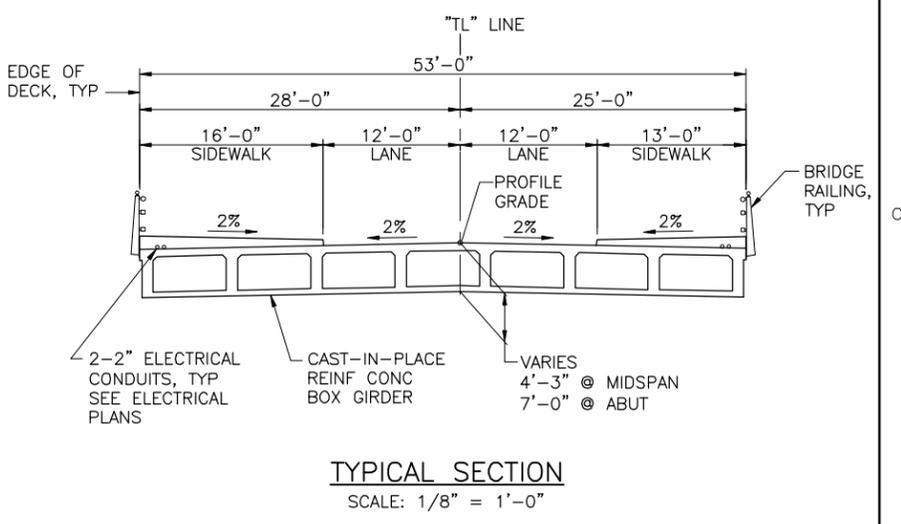
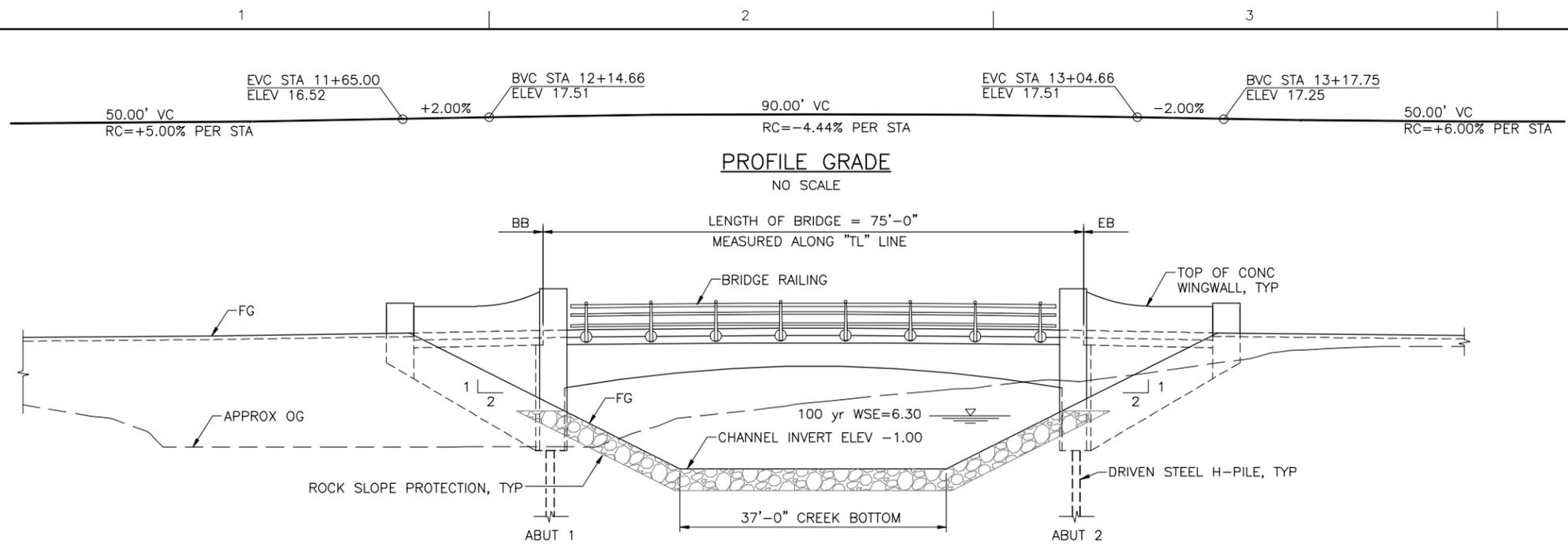
**Figure 2.2-13:  
 North Channel Wetland Mitigation**

City of Hercules  
 Hercules Intermodal Transit Facility  
 Contra Costa County, California

Data Sources: Map information was compiled from the best available sources. No Warranty is made for its accuracy or completeness. Topographic Base Map, Aerial photography from ESRI ArcGIS Online; Hydrography from National Hydrography Dataset; NWI Data from U.S. Fish and Wildlife Service and soils data from USDA NRCS Soil Survey. Data is State Plane Feet, NAD83 Zone 3.



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**INDEX TO BRIDGE PLANS**

SHEET NO.	TITLE
S001	GENERAL PLAN
S002	DECK CONTOURS
S003	ROCK SLOPE PROTECTION DETAILS
S004	FOUNDATION PLAN
S005	ABUTMENT LAYOUT
S006	ABUTMENT DETAILS NO.1
S007	ABUTMENT DETAILS NO.2
S008	TYPICAL SECTION
S009	GIRDER LAYOUT
S010	GIRDER REINFORCEMENT

**CALTRANS STANDARD PLANS DATED MAY 2006**

A-10A	ACRONYMS AND ABBREVIATIONS (SHEET 1 OF 2)
A-10B	ACRONYMS AND ABBREVIATIONS (SHEET 2 OF 2)
A-10C	SYMBOLS (SHEET 1 OF 2)
A-10D	SYMBOLS (SHEET 2 OF 2)
A62-C	LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL BRIDGE
B0-1	BRIDGE DETAILS
B0-3	BRIDGE DETAILS
B0-5	BRIDGE DETAILS
B0-13	BRIDGE DETAILS
B7-1	BOX GIRDER DETAILS

CALTRANS STANDARD PLAN SHEET NO.  
 DETAIL NO.

**PLAN**  
SCALE: 1" = 10'

CONTRACTOR TO VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIALS.

DESIGNED BY	J. NAUMAN
CHECKED BY	
DRAWN BY	J. TAI
APPROVED BY	
PROJECT NUMBER	115958

ISSUE	DATE	DESCRIPTION
B	02-10-2010	60% SUBMITTAL - PROGRESS SET
A	11-2009	30% SUBMITTAL - PRELIMINARY DESIGN

**60% SUBMITTAL  
NOT FOR  
CONSTRUCTION  
OR  
RECORDING**



**CITY OF HERCULES  
CALIFORNIA  
TRANSIT LOOP DRIVE**

**Figure 2.2-14: Transit Loop Bridge  
GENERAL PLAN**

FILENAME	S001.dwg	SHEET	S001
SCALE	AS SHOWN		

Feb 09, 2010 - 4:28pm C:\Working\MCS\_EXPORT\2010-02-09\_Submittal\CAD\S001.dwg - S001.malegal

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### ***2.2.1.2b Phase 2 – Café/Transit Annex Building and Transit/Civic Plaza***

#### **Café/Transit Annex Building**

This building design would integrate both public and private uses into a single structure (Figure 2.2-16). At the eastern edge a covered transit waiting area, adjacent to the Transit Loop, would serve the bus bay (ticket vending machines may also be incorporated into this area). The end of the building at Bayfront Boulevard would accommodate a café or other small retail use. The café would be a single-story, approximately 1,400-square-foot building with seating, private restroom, and kitchen facilities included in the main building. The kitchen facility would accommodate either deli-style or short-order food. Connected by a roofed breezeway are two single-occupancy, handicapped-accessible public restrooms. Refuse storage would be within and enclosed area located behind the restrooms.

#### **Transit/Civic Plaza**

The Transit/Civic Plaza would be an active gathering space oriented towards the main street of Bayfront Boulevard with clear, direct connections to the Bay Trail and Waterfront Promenade (Figure 2.2-16). From the plaza, three routes would connect to the promenade. South of the plaza there would be a passage between the Station Building and adjacent private development. The primary station access from the plaza would connect through a building passage where elevators, ramps, and other transit services would be located. To the north edge of the plaza and Station Building, the Transit Loop sidewalk would extend directly to the Waterfront Promenade.

With approximately 12,273 sf of open space area, the Transit/Civic Plaza would provide access openings with the following dimensions:

- ◆ South – 88 feet,
- ◆ East – 38 feet plus a 22.5-foot opening in the cafe building,
- ◆ West – 12.5 feet plus 20 feet from Block G, and
- ◆ North – 22-foot opening from the Bay Trail and 12-foot openings below the station stairs.

### ***2.2.1.2c Phase 3 – Hercules Point Bridge***

#### **Hercules Point Bridge and Land Side Ramp**

The Hercules Point Bridge and the land side concrete ramp would connect the community to a viewing platform at Hercules Point via a ramp from the Railroad Plaza at the base of Railroad Avenue with a 130-foot prefabricated steel bridge spanning over the UPRR tracks (Figure 2.2-2). Completion of the water side ramp connecting the viewing platform down to the point would be dependent upon completion of the Hercules Point Park and open space (Phase 4). The Hercules Point bridge will serve primarily pedestrians to access Hercules Point. The

bridge will also provide restricted access to accommodate light utility trucks and public service vehicles for maintenance on Hercules Point and public safety.

The landside bridge and ramp are anticipated to be constructed on in-situ ground improvement or pile foundation. The ramp is anticipated to have six intermediate supports, in addition to the shared support where the ramp meets the bridge. Total excavation for the six intermediate support foundations and the shared foundation between the bridge and ramp will be approximately 1200 cubic yards. For the pile foundation option, the ramp would likely require 12 driven piles (two at each intermediate support), while the shared bridge foundation would likely require six piles.

The Hercules Point side of the bridge is anticipated to be founded on either a spread footing or piles supported base. The spread footing would have approximate dimensions of 25 feet wide by 50 feet long by 3 feet deep, and this option would require removal of historic fills extending three feet below the bottom of the footing and five feet horizontally beyond the footing perimeter. Assuming bottom of footing is placed five feet below existing ground, this results in a total excavation quantity of approximately 600 cubic yards. The pile supported foundation is anticipated to be approximately 25 feet wide by 50 feet long by 2 feet deep with six piles. This option would not require over excavation of historic fills. Total excavation would be approximately 200 cubic yards. The six foundation piles would extend approximately 20 feet below existing ground.

### **Railroad Plaza**

The proposed Railroad Plaza would be approximately 100 feet by 150 feet in size and located at the terminus of Railroad Avenue. It would provide a destination to for views the bay and access the proposed Hercules Point Bridge, which would ultimately provide a connection to the proposed Hercules Point Park and open space (Figure 2.2-1 and 2.2-2).

#### ***2.2.1.2d Phase 4 (Future Project) – Hercules Point and Open Space***

Hercules Point is a planned open space and designated public park on 10.96 acres. This phase of the project is beyond the scope of this document; however, it is included in the cumulative effects analysis. Additional environmental documentation and approval would be completed before this phase of the project proceeds to construction.



**Cafe / Transit Annex**



**Civic Plaza**



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### ***2.2.1.2e Phase 5 (Future Project) – Ferry Terminal***

**2.2.1.3 A future connection to a ferry terminal is anticipated to complete the City's goal to fulfill the multimodal transit opportunity afforded by the waterfront property. While the connection is planned to occur as part of the City's long-range goal, planning and accommodations are included in the current proposal (including the Station Building, transit/civic plaza, and emergency vehicle access) to help facilitate the future ferry service. While this phase of the project is beyond the scope of this document, analysis of required project components and potential impacts is included for the purposes of cumulative effects analysis. Additional environmental documentation and approval of the ferry terminal and ferry service would be required before this phase of the project begins construction. Project Construction and Operation**

#### **2.2.1.3a Construction**

Construction of the Hercules ITC would proceed in phases over approximately five years. The initial phase, beginning in 2012, would include construction of retaining walls, the Bay Trail, John Muir Parkway extension, Bayfront Boulevard extension, upstream portions of Refugio Creek restoration, North Channel, and Bayfront Bridge. Construction of the rail platform, track relocation, signals, railroad bridge, and downstream portion of Refugio Creek is anticipated to begin in 2014 and require from 24 to 30 months to complete. Construction of the station building Transit Loop and surface parking lot is anticipated to begin 2015, with the intention that the train station and bus terminal could be completed and operation commence in 2016. No schedule has been established at this time for the construction of the permanent parking structure. Timing of these facilities would depend on funding, economic conditions, and the development phasing of the surrounding the Bayfront development.

Grading and demolition occurred on much of the project site between 2002 and 2007. In general, grading included removal and reworking of existing fills and buried subsurface debris, abandonment of pile elements (cut off in place to an elevation 5 feet below existing grade), environmental remediation under the observation of the California Department of Toxic Substance Control, and installation of wick drains and placement of surcharge fills imported from various sites. East of Refugio Creek, construction of Phase I surcharge fills was completed in the summer of 2009. West of Refugio Creek, surcharge fills were placed and monitored based on existing fill load conditions. An existing sanitary sewer pump station has since been constructed at this site. This work was completed in conjunction with the development of the adjacent residential development.

#### **John Muir Parkway and Bayfront Boulevard Extensions**

The proposed John Muir Parkway and Bayfront Boulevard extensions would include standard earthmoving equipment (e.g., bulldozers, excavators), plus specialized equipment (e.g., backhoes) to be used adjacent to Refugio Creek for construction. Approximately 40,000 cubic yards (cy) of soil surcharge about 6 to 8 feet in height was previously placed on portions of the project site to consolidate the underlying bay mud. A portion of this material would need to be removed from the vicinity of the parkway.

### **Bayfront Bridge**

The Bayfront Bridge would include standard earthmoving equipment (e.g., bulldozers, excavators), plus specialized equipment (e.g., backhoes) adjacent to Refugio Creek.

### **Union Pacific Railroad Track Relocation and Bridge Replacement**

The UPRR track relocation and railroad bridge replacement would be constructed in three stages. The project would include standard earthmoving equipment (e.g., bulldozers, excavators), pile driving equipment (e.g. cranes, hammers), plus specialized equipment (e.g., backhoes and long reach excavator) near Refugio Creek. There are two track options (Track Options A and B) that were considered in the Draft EIR/EIS, differentiated by the method of construction and ultimate UPRR track relocation, as described below. Track Option B is the preferred option and has been incorporated into the Preferred Alternative.

#### ***Track Option A***

**Stage 1.** Stage 1 would necessitate that rail traffic to remain on the existing tracks. The site would initially be rough graded. Retaining walls would be constructed in areas where required track clearances can be maintained. The foundation for the Hercules Point Bridge and the landside and platform Station Building would be constructed.

The Kinder Morgan and Shell Oil pipelines currently within the UPRR ROW would be relocated outside of it. Directional drilling under the creek (25 feet below bottom) would be used to relocate the pipelines. Qwest, Comcast, and MCI level 3 fiber optic lines would remain within the ROW, but would be relocated to the south.

Next, the southern portion of the railroad bridge over the realignment of Refugio Creek would be constructed. Piles would be driven and timber lagging would be placed at Refugio Creek to support the rail ballast and shoofly tracks<sup>5</sup> for Stage 2 (see below). Portions of the existing culvert would be removed and replaced with a new culvert.

The remaining retaining walls that do not conflict with the shoofly track would then be constructed, and the south portion of the Station Platform and corresponding station utilities would be constructed. The portion of the existing railroad bridge over Refugio Creek would be removed.

The structural frame for the landside and platform sections of the Station Building would be completed, and the pedestrian bridge connecting the two sections would be constructed. Once the bridge and framing are complete, building glazing clear of rail traffic would be erected.

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<sup>5</sup> Shoofly track is a temporary track of minimum standards, which is used as a detour around a construction area such as a bridge replacement.

The shoofly alignment not in conflict with the existing tracks would be constructed. Rail traffic may need to be temporarily suspended or consolidated when shoofly tracks are tied into the existing tracks and train operation is redirected onto the shoofly tracks.

**Stage 2.** During Stage 2, active rail traffic would utilize the shoofly tracks for approximately 12 months. The northern portion of the railroad bridge would be constructed over the realignment of Refugio Creek. The remaining portion of the Station Platform and corresponding utilities would then be constructed, and the Station Building would be constructed within the limits of the Station Platform. The northernmost Station Building and the pedestrian bridge between the platform and northernmost Station Building would be constructed. The Station Building would be constructed on piles.

Excavation would begin on the south side of the railroad bridge to tie into the existing alignment of Refugio Creek to prepare for creek realignment. This would be followed by excavation on the north side of the railroad bridge and tie into San Pablo Bay to complete realignment of the creek. The existing railroad bridge and culverts over Refugio Creek would be removed. The creek would be backfilled to its new alignment.

The portion of the final track alignment would be constructed. Rail traffic may need to be temporarily suspended or consolidated onto one track during the period while the track tie-in is constructed. The waterside shoofly track (temporary tracks used for detours) would be shifted for the final alignment of track MT-02 immediately prior to the next stage of construction.

**Stage 3.** At the end of Stage 3, UPRR traffic would be placed on its ultimate alignment. To accomplish this, the shoofly tracks and other track work not required for the ultimate alignment would be removed. The south portion of the train bridge over Refugio Creek that was needed for the shoofly tracks would be removed.

The final (northernmost) portion of the railroad bridge over Refugio Creek would be constructed. The remaining portion of the retaining wall would be constructed. The remaining elements of the Station Buildings and corresponding utilities would be constructed. Railroad bridge work would be completed prior to diverting the creek into the realigned segment.

### ***Track Option B***

**Stage 1:** In this phase, traffic on existing main lines (MT1 and MT2) is maintained as is without interruption. Implementation would require work within 25 feet of the existing track. Due to the proximity of live traffic, UPRR or its contractor would construct the new railroad bridge under MT1 and MT2 existing tracks, and separately under the proposed platform area and new station track. The contractor would then install pile foundations for the landside station structure, center (platform) station structure and foundation for center platform. The contractor then would construct the main ITC station building, pedestrian overcrossing from Civic Plaza to the center platform, retaining walls, pipeline and fiber optic relocations, bike path and part of center platform including ramps, stairs.

**Stage 2:** UPRR or its contractor would construct the new station track, realign MT1, MT2 and install crossovers and signals. This effectively provides three tracks through the station site allowing construction staging flexibility while maintaining two tracks in operation. Along the northeastern portion of the UPRR corridor, construction of the new track would require the placement of new ballast to support the track and widening the railroad envelope by approximately 20 feet. Prior to the placement of the new ballast, the area would be excavated and prepared by placing sub-ballast and compacting prior to the placement of new ballast. This new and wider corridor would require an expansion of the drainage crossing located in the northeast section of the corridor just south of the Victoria by the Bay Development. Additionally, construction of Track Option B requires some minor track maintenance work be completed for an additional 1,500 feet to approximately the marina at Rodeo. This work involves restoration of vertical sags in the current track condition, which arise as a result of natural settlement, and horizontal relining of the existing track by 0-18 inches from the tie-in to the new track alignment for the project. This maintenance work will not require any ground disturbance, grading or compaction and will be carried out solely by rail-mounted equipment accessing the site by existing train tracks. The track work will first require a machine to tamp and line the tracks. This process raises and realigns the tracks, but can leave voids in the ballast. Second, the contractor will place new ballast as necessary to meet necessary grades. Following, a Ballast Regulator will dress the ballast to smooth, clean, fill voids, and establish ballast shoulders. This track maintenance work can likely be completed in one to two work days.

**Stage 3:** The passing track, MT1 (Figure 2.2-6), would then be used as the primary route through the construction site. The contractor could construct the ferry terminal station structure concurrently with the railroad bridge construction.

Track Option A and B would accommodate the same train traffic volumes and speeds. By constructing the dedicated station and passing tracks (Track Option B) in place of the double track shoofly (Track Option A), the project could realize the benefit of several other significant cost savings that would not be feasible otherwise, and combined, reduce overall project capital costs.

By constructing Track Option B, the project could realize the benefit of several other significant cost savings that would not be feasible otherwise, and combined, reduce the overall project capital costs by approximately \$11 million.

If implemented, Track Option B could offer the following additional benefits to the Hercules ITC over Track Option A:

- ◆ Significantly shorten the overall construction duration: potentially by as much as by six to nine months less than anticipated 30 months for Track Option A.
- ◆ Simplify the construction staging therefore minimizing possible delays.
- ◆ Reduce net project costs (through combination of reduced construction duration, improved design and lower risk to the contractor).

- ◆ Eliminate the temporary shoofly tracks that would be needed to detour train traffic around the station construction area.
- ◆ Potentially reduce the number of piles required, substantially reducing local disruption and noise experienced by nearby residents during the construction period.
- ◆ Reduce impacts to Refugio Creek by eliminating the need to extend the existing culverts at Refugio Creek and reducing the period of disturbance in the area.
- ◆ Reduce the temporary noise and vibration impacts associated with diverting train traffic closer to residential areas during use of the shoofly tracks.
- ◆ Improve train operations by reducing delay caused by passenger-freight operations conflicts.

### **Station Building, Pedestrian Bridge, Plaza, and Platform**

A pile foundation system would be used to support the Station Building and Pedestrian Bridge. Two foundation options have been recommended.

- ◆ Option 1 consists of the incorporation of lightweight fills under Station Building and Plaza. The Station Plaza area would be graded to an elevation dependent on the loading and fill to near design grade with lightweight foam concrete slurry fill. The Station Building and Pedestrian Bridge would be supported on pile foundations. Piles would be designed for downdrag<sup>6</sup> forces induced by the lightweight fill loads. The lightweight retail structure would be supported on shallow foundations.
- ◆ Option 2 consists of the incorporation of cement deep soil mixing ground improvement. The east side of the southern Station Building pad (adjacent to Refugio Creek) would be filled with lightweight, low-strength foam concrete. Shoring would be required at Refugio Creek. Deep soil mix columns would be installed throughout the plaza extending to the bottom of the Young Bay Mud to provide support of fills and reduce settlement of the plaza. The Station Building and pedestrian bridge would be supported on soldier pile foundations.

The passenger platform and main tracks on the land side would require minor grading for the roadbed, installation of tracks, placement and compaction of ballast, drainage facilities, utility relocation, and installation of security fencing.

Transit terminal including the Station Building, the Pedestrian Bridge Crossing, Station Plaza, and Platform work would include site clearing, demolition, grading, and construction of the Station Building, pedestrian plaza, and access driveways; this work would be carried out from the land side of the railroad tracks to minimize and/or avoid the need to cross the tracks during construction.

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<sup>6</sup> Downdrag is a downward force exerted on a drilled shaft, pile, or other structural element by settling soil. It is sometimes called “negative skin friction.”

The Ferry Plaza foundation would be constructed on a concrete mat supported by piles. Approximately 250 cubic yards of concrete would be placed within the Bay to construct the foundation.

### **Bay Trail at Bio-Rad**

The portion of the Bay Trail near Bio-Rad is hilly, steep, and approximately 40-feet higher in elevation than the adjacent tracks. As a result, the area is subject to landslides. During construction, design cut slope areas containing adverse conditions, such as dip slope conditions, water seepage, intensely sheared materials, and unconsolidated sandy materials, may be exposed. Such adverse conditions could lead to potentially unstable situations and slope failures. Therefore, as part of construction, the existing landslides would be mitigated by earthwork repair, stabilization using soldier piles, and stabilization using drilled piers. In order to mitigate for removal of the entire landslide debris of postulated landslides, the following measures would be required: (1) excavation of keyways;<sup>7</sup> (2) installation of subdrains; and (3) reconstruction of the cut slopes within the landslide limits. The modifications of the slope gradient downhill of the proposed trail would modify the slope to a 2:1 ratio (horizontal:vertical).

### **Remainder of Bay Trail and Waterfront Promenade**

The remainder of the Bay Trail and the Waterfront Promenade would be constructed according to ABAG and East Bay Regional Park District standards.

### **Creekside Trail**

The Creekside Trail would be constructed according to City of Hercules standards. The trail width will vary from 8 to 20 feet and would likely be paved with asphalt.

### **Refugio Creek and North Channel Restoration**

The proposed Refugio Creek Restoration would include standard earthmoving equipment (e.g., bulldozers, excavators), plus specialized equipment (e.g., backhoes) to be used near Refugio Creek. Within the Refugio Creek corridor area, approximately 16,381 cy of material would be cut and approximately 2,524 cy would be filled to implement the Refugio Creek restoration component of the project. This grading activity would generate 13,587 cy of export material that would be used within the currently undeveloped portion of the waterfront area as surcharge materials, or moved to an off-site storage area within the City limits.

Restoration and realignment of Refugio Creek will require dewatering during construction to minimize erosion and sedimentation and allow for excavation in dry conditions. Cofferdams or a similar dewatering technique would be installed at upstream and downstream locations to dewater Refugio Creek to enable constructing in dry conditions. The contractor will construct cofferdams approximately fifteen feet upstream and downstream of the proposed work limits.

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<sup>7</sup> Keyway is an excavated trench into competent earth material beneath the toe of a proposed fill slope.