

Chapter 6 provides unit cost estimates for developing on-street bicycle and pedestrian facilities and preliminary budget estimates for constructing the various pedestrian/bicycle path segments considered for closing the gap in the Stevens Creek Trail. This chapter also identifies six areas along the pedestrian/bicycle path alignments where acquisition of land or easements would facilitate construction.

Numerous routes and types of facilities were investigated during this study. The budget estimates do not reflect the selection of any alignment. Unit cost estimates are provided for the on-street bicycle and pedestrian improvements identified as feasible on many roadways (See Figure 33). More detailed line item budget estimates are provided for the pedestrian/bicycle path segments, which require significantly more engineering, environmental review and permitting by regulatory and resource agencies (See Figures 34-40).

The preliminary budget estimates for developing the pedestrian/bicycle path segments are based upon the various alignments and conceptual engineering options. The unit costs were developed by reviewing a range of recently awarded trail construction costs that included pedestrian overcrossings, concrete trail underpasses, clear span pedestrian/bicycle bridges, trail paving in asphalt and concrete, native plant landscaping, habitat enhancement and typical trailside amenities. The construction subtotals are increased by 30% for design and engineering for trail segments along the creek or within Caltrans right-of-way. All other trail segment subtotals are increased by 20% for design and engineering. The estimates include costs for other services associated with delivering construction projects. These costs include technical studies, permitting, construction management and testing and inspections. The estimates do not include internal city project management and administration costs.

The figures should be viewed as rough estimates to develop functional trails. These estimates would require review through the trail master plan and further refinement through construction plans and specifications. Due to the preliminary nature of a feasibility study a 20% project contingency is applied to the totals to capture the uncertainties associated with the conceptual alignments and engineering solutions. Annual cost escalations have not been included in the budget estimates. Trail development costs, like all other capital projects, vary with the bidding climate that has fluctuated significantly over the past decade. The cost estimates in this report reflect the 2014 bidding climate.

Budget Assumptions

The budget estimates reflect current trail design standards including Caltrans Highway Manual, ADA Standards for Accessible Design, Santa Clara County Uniform Inter-jurisdictional Trail Design, Use and Management Guidelines and Valley Transportation Authority Bicycle Technical Guidelines. The budget estimates are based on a 12-foot wide asphalt trail with 2-foot shoulders.

Trail overcrossings, underpasses and pedestrian/bicycle bridges are based on a 10-foot wide trail. In many instances, the constrained areas that require these structures will support only the 10-foot width due to limited land availability or cross-sectional area of the creek channel needed to pass high storm flows. Ramps to these grade-separated structures are based upon 5% grade to meet access guidelines. Vertical clearance for trail underpasses is assumed to be a minimum of eight feet. Overcrossing clearance above roadways is assumed to be 18.5 feet and above rail lines to be 23.5 feet. Trail segments that are proposed below the top-of-bank are estimated as poured concrete structures. All engineered structure lengths are considered approximations and are based upon the topographic information available at each location.

The budget estimates provided in this study do not include the cost for acquiring land or easements. The budget estimates do not address potential mitigation measures associated with trail development that may be determined in the course of conducting the environmental review under California Environmental Quality Act (CEQA). The estimates do not include elements that may enhance the visual appeal or user experience that may include interpretive elements or specialty entry features. These estimates are for standard materials that fulfill the functional requirements of the design. Different construction materials may be selected during design. The selection of unique materials may alter budget estimates.

**PRELIMINARY UNIT COST ESTIMATES FOR
ON-STREET BICYCLE AND PEDESTRIAN IMPROVEMENTS**

Intersection Treatments

ITEM	UNIT	COST/UNIT
Traffic Signal	Each	\$250,000-\$350,000
Push Button Activated Pedestrian Signal	Each	\$70,000-\$90,000
Curb Extensions	Each	\$20,000-\$40,000
Signal Timing Change	Each	\$3,000-\$4,000
Bicycle Signal	Each	\$6,000-\$7,000
Neighborhood Crosswalk	Each	\$2,000-\$4,000
Bicycle Loop Detector	Each	\$1,500-\$2,000
Bicycle Loop Detector Pavement Legend	SF	\$5-\$6
Video Detection	Each	\$20,000-\$25,000
Push Buttons	Each	\$2,000-\$2,500

Signage

ITEM	UNIT	COST/UNIT
Trail Sign and Post	Each	\$700-\$800
Trail Sign on Existing Post	Each	\$500-\$550
Relocate Existing Sign and Post	Each	\$400-\$500
Remove and Salvage Sign and Post	Each	\$150-\$200

Stripping

ITEM	UNIT	COST/UNIT
Class II Bike Lanes	LF	\$2-\$3
Class II Buffered Bike Lanes	LF	\$3-\$4
Bicycle Lane Pavement Legend	SF	\$5-\$6
Sharrow Legend	SF	\$5-\$6
Integral Colored AC Paving	SF	\$10-\$15

Figure 33 – Unit Cost Estimates for On-Street Bicycle and Pedestrian Improvements

PRELIMINARY COST ESTIMATE

CREEK CORRIDOR PATH – OPTION 1 TRAIL UNDERPASS BENEATH STATE ROUTE 85

Dale/Heatherstone Overpass to 500’ South of the Permanente Creek Bypass (3,000 feet)

Two-Span Steel Truss Bridge over Stevens Creek (180 + 120 feet)	\$ 800,000
Pile with Curtain Wall at First Pinch Point – S. of Stevens Creek (100 feet)	\$ 275,000
Pile with Curtain Wall at Second Pinch Point – S. of Permanente Bypass (350 ft)	\$ 825,000
Remove and Reconstruct Soundwall and Retaining Wall (1,000 feet)	\$ 2,800,000
Asphalt Paving (1,200 feet)	\$ 180,000
Fencing and Railings (1,200 feet)	\$ 65,000
Native Plant Landscaping and Irrigation	\$ 200,000
Trail Amenities and Signage	\$ 50,000
Clear and Grub	\$ 50,000
Mobilization 10%	\$ 500,000
Subtotal	\$ 5,745,000

Option 1 – Permanente Creek Bypass to State Route 85 Underpass to Fremont Avenue

State Route 85 Underpass and Ramps (480 feet)	\$ 750,000
Pedestrian/Bicycle Bridge downstream of Fish Ladder Structure (150 feet)	\$ 450,000
Pedestrian/Bicycle Bridge at Remington Court (180 feet)	\$ 600,000
Fremont Off Ramp Trail Improvements (275 feet)	\$ 350,000
Asphalt Paving (2,900 feet)	\$ 435,000
Native Plant Landscaping and Irrigation	\$ 275,000
Trail Amenities and Signage	\$ 50,000
Clear and Grub	\$ 35,000
Mobilization 10%	\$ 260,000
Subtotal	\$ 3,205,000

Construction Subtotal	\$ 8,950,000
Design and Engineering 30%	\$ 2,685,000
Construction Management 15%	\$ 1,345,000
Testing and Inspections 5%	\$ 445,000

Design and Construction Subtotal	\$ 13,425,000
Caltrans Review Fees	\$ 200,000
Technical Studies	\$ 180,000
Permitting	\$ 180,000
Project Contingency 20%	\$ 2,685,000
Project Total	\$ 16,670,000

Budget Note – The construction subtotal for a Pedestrian Overcrossing to Mountain View High School is estimated at \$5,000,000.

Figure 34 – Creek Corridor Path – Option 1 Trail Underpass beneath Highway 85 Construction Budget Estimates.

PRELIMINARY COST ESTIMATE

CREEK CORRIDOR PATH – OPTION 2 TRAIL OVERCROSSING SPANNING FREMONT AVE

Dale/Heatherstone Overpass to 500' South of the Permanente Creek Bypass (3,000 feet)

Two-Span Steel Truss Bridge over Stevens Creek (180 + 120 feet)	\$ 800,000
Pile with Curtain Wall at First Pinch Point – S. of Stevens Creek (100 feet)	\$ 275,000
Pile with Curtain Wall at Second Pinch Point – S. of Permanente Bypass (350 ft)	\$ 825,000
Remove and Reconstruct Soundwall and Retaining Wall (1,000 feet)	\$ 2,800,000
Asphalt Paving (1,200 feet)	\$ 180,000
Fencing and Railings (1,200 feet)	\$ 65,000
Native Plant Landscaping and Irrigation	\$ 200,000
Trail Amenities and Signage	\$ 50,000
Clear and Grub	\$ 50,000
Mobilization 10%	\$ 500,000
Subtotal	\$ 5,745,000

Option 2 – Permanente Creek Bypass to Fremont Avenue Pedestrian Overcrossing

Fremont Avenue Pedestrian Overcrossing (1,100 feet)	\$ 2,500,000
Pedestrian/Bicycle Bridge adjacent to Highway 85 (135 feet)	\$ 425,000
Pedestrian/Bicycle Bridge at Remington Court (180 feet)	\$ 600,000
Pile with Curtain Wall at Third Pinch Point u/s of Fish Ladder (150 feet)	\$ 275,000
Asphalt Paving (3,700 feet)	\$ 555,000
Native Plant Landscaping and Irrigation	\$ 325,000
Trail Amenities and Signage	\$ 50,000
Clear and Grub	\$ 50,000
Mobilization 10%	\$ 475,000
Subtotal	\$ 5,255,000

Construction Subtotal	\$ 11,000,000
Design and Engineering 30%	\$ 3,300,000
Construction Management 15%	\$ 1,500,000
Testing and Inspections 5%	\$ 550,000

Design and Construction Subtotal	\$ 16,350,000
Technical Studies	\$ 180,000
Permitting	\$ 180,000
Project Contingency 20%	\$ 3,350,000
Project Total	\$ 20,060,000

Figure 35 – Creek Corridor Path – Option 2 Trail Overcrossing Spanning Fremont Avenue Construction Budget Estimates.

**PRELIMINARY COST ESTIMATE
BERNARDO AVENUE PATH**

Fremont Avenue to The Dalles (2,700 feet)

Asphalt Paving (2,700 feet)	\$ 540,000
Rough Grading and Off-haul	\$ 80,000
Finish Grading	\$ 15,000
Split Rail Fence in Planting Strip (2,700 feet)	\$ 135,000
6" Concrete Curb (2,700 feet)	\$ 135,000
Irrigation	\$ 45,000
24" Box Trees (20 trees)	\$ 5,000
5 Gallon Shrubs (350 shrubs)	\$ 10,000
Bark Mulch and Soil Amendments (50 CY)	\$ 5,000
Trail Amenities and Signage	\$ 15,000
Demolition	\$ 40,000
Clear and Grub	\$ 20,000
Mobilization 10%	\$ 125,000
Subtotal	\$ 1,170,000

The Dalles to Homestead Road (2,900 feet)

Asphalt Paving (2,900 feet)	\$ 580,000
Rough Grading and Off-haul	\$ 80,000
Finish Grading	\$ 15,000
Split Rail Fence in Planting Strip (2,900 feet)	\$ 145,000
6" Concrete Curb (2,900 feet)	\$ 145,000
Trail Amenities and Signage	\$ 15,000
Demolition	\$ 40,000
Clear and Grub	\$ 20,000
Mobilization 10%	\$ 125,000
Subtotal	\$ 1,165,000

Construction Subtotal	\$ 2,335,000
Design and Engineering 20%	\$ 465,000
Construction Management 15%	\$ 350,000
Testing and Inspections 5%	\$ 120,000

Design and Construction Subtotal	\$ 3,270,000
Project Contingency 20%	\$ 655,000
Project Total	\$ 3,925,000

Figure 36 – Bernardo Avenue Path Construction Budget Estimate.

**PRELIMINARY COST ESTIMATES
STATE ROUTE 85 CROSSING AT HOMESTEAD ROAD
PROVIDING TRAIL CONNECTION TO BERNARDO AVENUE**

Alternative 1 – State Route 85 Pedestrian/Bicycle Bridge (325 feet)

Pedestrian/ Bicycle Bridge adjacent to Homestead Road Bridge (325 feet)	\$ 1,200,000
Trail Amenities and Signage	\$ 10,000
Demolition	\$ 10,000
Clear and Grub	\$ 20,000
Mobilization 10%	\$ 125,000
Subtotal	\$ 1,365,000
Construction Subtotal	\$ 1,365,000
Design and Engineering 30%	\$ 275,000
Construction Management 15%	\$ 200,000
Testing and Inspections 5%	\$ 70,000
Design and Construction Subtotal	\$ 1,910,000
Caltrans Review Fees	\$ 80,000
Technical Studies	\$ 50,000
Project Contingency 20%	\$ 410,000
Project Total for Alternative 1	\$ 2,450,000

Alternative 2 – Homestead Road Bridge Widening over State Route 85 (325 feet)

Widening of Homestead Road Bridge – No new substructure (325 feet)	\$ 350,000
Trail Amenities and Signage	\$ 10,000
Demolition	\$ 40,000
Clear and Grub	\$ 20,000
Mobilization 10%	\$ 45,000
Subtotal	\$ 465,000
Construction Subtotal	\$ 465,000
Design and Engineering 30%	\$ 140,000
Construction Management 15%	\$ 70,000
Testing and Inspections 5%	\$ 25,000
Design and Construction Subtotal	\$ 700,000
Caltrans Review Fees	\$ 80,000
Technical Studies	\$ 50,000
Project Contingency 20%	\$ 170,000
Project Total for Alternative 2	\$ 1,000,000

Figure 37 – State Route 85 Crossing at Homestead Road Construction Budget Estimates.

**PRELIMINARY COST ESTIMATE
FOOTHILL EXPRESSWAY PATH PASSING BENEATH INTERSTATE 280**

Grant Road/Vineyard Drive to Cristo Rey Drive (2,400 feet)

Reconfiguration of Interstate 280 Bridge – West Side Underpass (200 feet)	\$ 450,000
Interstate 280/Foothill Interchange Improvements	
- Square-up three intersections to eliminate free-right hand turns	\$ 800,000
- Add two signals and adjust signalization	\$ 400,000
Asphalt Paving (2,200 feet)	\$ 330,000
Trail Amenities and Signage	\$ 30,000
Demolition	\$ 80,000
Clear and Grub	\$ 40,000
Mobilization 10%	<u>\$ 215,000</u>
Construction Subtotal	\$ 2,345,000
Design and Engineering 30%	\$ 700,000
Construction Management 15%	\$ 350,000
Testing and Inspections 5%	<u>\$ 115,000</u>
Design and Construction Subtotal	\$ 3,510,000
Caltrans Review Fees	\$ 60,000
Technical Studies	\$ 30,000
Project Contingency 20%	<u>\$ 700,000</u>
Project Total	\$ 4,300,000

Figure 38 – Foothill Expressway Path Construction Budget Estimate



Foothill Expressway beneath Interstate 280.

**PRELIMINARY COST ESTIMATE
PEDESTRIAN OVERCROSSING AT INTERSTATE 280**

Interstate 280 Pedestrian Overcrossing (POC) – Estimate is for either POC location.

Interstate 280 Pedestrian Overcrossing and Ramps (1,500 feet)	\$ 7,500,000
Paving (255 feet)	\$ 40,000
Native Plant Landscaping and Irrigation	\$ 30,000
Trail Amenities and Signage	\$ 10,000
Clear and Grub	\$ 60,000
Mobilization 10%	<u>\$ 760,000</u>
Construction Subtotal	\$ 8,400,000
Design and Engineering 30%	\$ 2,520,000
Construction Management 15%	\$ 1,250,000
Testing and Inspections 5%	<u>\$ 420,000</u>
Design and Construction Subtotal	\$ 12,590,000
Caltrans Review Fees	\$ 200,000
Technical Studies	\$ 180,000
Permitting	\$ 120,000
Project Contingency 20%	<u>\$ 2,520,000</u>
Project Total	\$ 15,615,000

Figure 39 – Pedestrian Overcrossing at Interstate 280 Construction Budget Estimate



Dale/Heatherstone pedestrian overcrossing spanning State Route 85 on the Stevens Creek Trail.

**PRELIMINARY COST ESTIMATE
STAGING AREA AND TRAIL ACCESS TO
RANCHO SAN ANTONIO COUNTY PARK AND OPEN SPACE PRESERVE**

Stonebridge to Hammond-Snyder Loop Trail

Asphalt Paving – SC Blvd. to Hammond-Snyder Loop Trail (1,670 feet)	\$ 425,000
Rough Grading and Limited Off-haul for Trail Ramps	\$ 165,000
Finish Grading – Entire Site	\$ 50,000
Steel Truss Ped/Bike Bridge spanning UPRR (130 feet x 10 feet)	\$ 150,000
Restroom	\$ 100,000
Utilities for Restroom	\$ 20,000
Gravel Parking Lot	\$ 380,000
Split Rail Fence around Parking Lot	\$ 30,000
Gathering Area and Kiosk	\$ 50,000
Native Plant Landscaping	\$ 25,000
Trail Amenities and Signage	\$ 15,000
Clear and Grub	\$ 30,000
Mobilization 10%	\$ 75,000
Construction Subtotal	\$ 1,515,000
Design and Engineering 30%	\$ 450,000
Construction Management 15%	\$ 225,000
Testing and Inspections 5%	\$ 75,000
Design and Construction Subtotal	\$ 2,265,000
UPRR Fees	\$ 40,000
Technical Studies	\$ 60,000
Permitting	\$ 40,000
Project Contingency 20%	\$ 450,000
Project Total*	\$ 2,855,000

Budget Note: This estimate does not include land acquisition costs associated with UPRR and Santa Clara County Roads and Airports Department.

Figure 40 – Staging Area and Trail Access to Rancho San Antonio County Park and Open Space Preserve Construction Budget Estimate

LAND ACQUISITION

The budget estimates provided in this study do not include the cost for acquiring land or easements. The trail alignments are primarily proposed on creek corridor parcels and city streets that are in public ownership. However, not all of the parcels reviewed as a part of this study are publicly held or held by the public agency that may develop and maintain the Stevens Creek Trail. It is likely the trail will be implemented by the individual cities with support and collaboration from neighboring cities and resource and regulatory agencies. Each city that develops a segment of the trail may be required to enter into a joint use agreement with the Santa Clara Valley Water District and possibly other public and quasi-public agencies with ownership along the trail alignments.

There are six areas along the trail alignments where acquisition of additional land or easements would facilitate trail construction. In other areas, property leases, transfers or joint use agreements must occur between different County departments and the cities or between cities. Encroachment agreements would be required where the trail enters or spans Caltrans property. The land acquisition or trail easement areas are detailed below and previously referenced in Chapter 4 in connection with the feasible trail alignments.

HEATHERSTONE APARTMENTS 877 HEATHERSTONE WAY MOUNTAIN VIEW, CALIFORNIA

The 5.11-acre privately held parcel at 877 Heatherstone Way is bordered by State Route 85, Village Court, Heatherstone Way and the Dale/Heatherstone pedestrian overcrossing on the Stevens Creek Trail. Pacific Gas & Electric Company has an easement over a portion of the site. Acquisition or a trail easement along the State Route 85 soundwall on the edge of the property would provide an opportunity to directly extend the trail from the Dale/Heatherstone pedestrian overcrossing

to the Stevens Creek corridor. Various trail alignment options, some that include relocation of a segment of the soundwall, have been highlighted in this area. Acquisition or a trail easement through this property would facilitate trail development.

1195 W. FREMONT AVENUE SUNNYVALE, CALIFORNIA

The 5.88-acre privately-held parcel at 1195 W. Fremont Avenue is bordered by Stevens Creek, State Route 85 and Fremont Avenue. Pacific Gas & Electric Company and Santa Clara Valley Water District have easements over a portion of the site. Acquisition or a trail easement along the edge of the property bordering the creek would provide the opportunity to extend the trail to Fremont Avenue and assist with development of a grade-separated trail underpass beneath the Fremont Avenue bridge spanning Stevens Creek. A trail underpass is not feasible with the current bridge. However, securing a portion of the property would immediately facilitate a trail connection to Fremont Avenue farther away from the State Route 85 on and off ramps. The trail underpass proposed beneath State Route 85 that connects to Fremont Avenue is currently proposed to extend between the southbound off ramp and 1195 W. Fremont Avenue on Caltrans property. Access through 1195 W. Fremont Avenue would facilitate a connection to Fremont Avenue and provide a future opportunity for developing a trail underpass along the creek when the Fremont Avenue bridge is replaced.

SANTA CLARA COUNTY ROADS AND AIRPORTS DEPARTMENT PROPERTY ON FOOTHILL EXPRESSWAY LOS ALTOS, CALIFORNIA

Santa Clara County Roads and Airports Department (County Roads) controls Foothill Expressway right-of-way between Vineyard Drive and Cristo Rey Drive. Excess right-of-way may be available to the west of the expressway. This potentially excess right-of-way could provide sufficient land to extend the trail from the intersection of Grant Road and Foothill

Expressway in Los Altos under Interstate 280 to intersection of Cristo Rey Drive and Foothill Boulevard in Cupertino. The trail would then connect with existing bicycle lanes on Foothill Boulevard. This potentially feasible route would also require reconfiguration of the Interstate 280 on and off ramps to control traffic. The intersections would be squared up, eliminating free right-hands turns and requiring signalization. Acquisition or a trail easement through this County Roads property would facilitate development of a separate bicycle/pedestrian pathway.

NORTHWEST CORNER OF STEVENS CREEK BOULEVARD BRIDGE SPANNING STEVENS CREEK CUPERTINO, CALIFORNIA

The 0.85-acre privately-held floodplain parcel off Crescent Court is bordered by Stevens Creek, Varian Park, Stevens Creek Boulevard and private residences on the hill above the stream corridor. Acquisition of this property bordering the creek may provide an opportunity for a grade separated crossing west of Stevens Creek connecting to the Stocklmeir Ranch in Cupertino.

SANTA CLARA COUNTY ROADS AND AIRPORTS DEPARTMENT PROPERTY ON STEVENS CREEK BOULEVARD CUPERTINO, CALIFORNIA

Santa Clara County Roads and Airports Department (County Roads) controls a 2.83-acre parcel between Stevens Creek Boulevard and the Union Pacific Railroad line extending to the Lehigh Permanente Quarry and Cement Plant. Rancho San Antonio County Park is adjacent to the Union Pacific Railroad property. This site is proposed as a trail staging area to access Rancho San Antonio County Park and Open Space Preserve via the Hammond-Snyder Loop Trail. This long narrow parcel parallels Stevens Creek Boulevard and is bordered by Union Pacific Railroad, Lehigh Permanente Plant and the Stonebridge residential development. The site would provide an ideal location for parking, restrooms and other trail amenities.

UNION PACIFIC RAILROAD PROPERTY ON STEVENS CREEK BOULEVARD CUPERTINO, CALIFORNIA

Union Pacific Railroad owns the land adjacent to the 2.83-acre County Roads parcel on Stevens Creek Boulevard. This parcel is approximately three times the size of County Roads property and the rail line runs along the northern edge of the site. Acquisition of a portion of this property would further facilitate development of the trail staging area. In addition, an easement over the rail line would be required for the proposed pedestrian and bicycle bridge, which would provide a grade-separated crossing of this transportation corridor. This parcel is bordered by Rancho San Antonio County Park to the north and County Roads property to the south.

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