

Appendix G. Bicycle Facility Cost Estimates

Napa County Bicycle Master Plan

Opinion of Probably Cost for Bike Facilities

The following tabs provide planning-level cost estimates for the facility types listed below. When applicable, low-end and high-end costs are provided to account for the various implementation methods and/or materials used.

Facility Types

Class I Shared-Use Path
Class II Bicycle Lanes (Low Cost - Without Buffer)
Class II Bicycle Lanes (High Cost - Without Buffer)
Class II Bicycle Lanes (Low Cost - With Buffer)
Class II Bicycle Lanes (High Cost - With Buffer)
Class III Bike Boulevards (Shared Lanes)
Class III Rural Routes (Shared Lanes)
Class IV Separated Bike Lanes - Buffer+Posts
Class IV Separated Bike Lanes - Concrete Curb

Disclaimer

Opinions of probable cost were developed by identifying major pay items and establishing rough quantities, to determine a rough order of magnitude cost. Additional pay items have been assigned approximate lump sum prices based on a percentage of the anticipated construction cost. Planning-level cost opinions include a 20% to 50% contingency to cover items that are undefined or are typically unknown early in the planning phase of a project. Unit costs are based on 2018 dollars and were assigned based on historical cost data from Alameda CTC recent bid prices, the Alameda CTC Cost Estimation Tool, and Caltrans Contract Cost Data. If cost data came from a year other than 2018, costs were adjusted to match 2018 dollars using an annual compounding interest of 3% for inflation.

Cost opinions do not include easement and right-of-way acquisition; permitting, inspection, or construction management; engineering, surveying, geotechnical investigation, environmental documentation, special site remediation, escalation, or the cost for ongoing maintenance. A cost range has been assigned to certain general categories such as utility relocations; however, these costs can vary widely depending on the exact details and nature of the work. The overall cost opinions are intended to be general and used only for planning purposes. Toole Design Group, LLC makes no guarantees or warranties regarding the cost opinion herein. Construction costs will vary based on the ultimate project scope, actual site conditions and constraints, schedule, and economic conditions at the time of construction.

Class I Shared-Use Path

Assumes an average path width of 10 feet, and that path can be constructed within existing Right of Way

Assumes a bike symbol marking at each street crossing

Assumes 2 non-signalized street crossings per mile

Unit prices per recent Bid Items on the Alameda CTC Cost Estimating Tool website and Caltrans Contract Cost Data

All costs adjusted to 2018 dollars

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Roadway Excavation	CY	4693	\$16.42	\$77,082	Per Caltrans
Class 2 Aggregate Subbase	CY	3520	\$42.15	\$148,356	Per Caltrans
Asphalt Path	SF	52800	\$9.00	\$475,200	Per recent bid items via Alameda CTC Cost Estimating Tool
Thermoplastic Bike Symbol	EA	4	\$300.00	\$1,200	Per recent bid items via Alameda CTC Cost Estimating Tool
Path Curb Ramp	EA	2	\$3,000.00	\$6,000	Per recent bid items via Alameda CTC Cost Estimating Tool
Construction Cost Subtotal				\$707,837	

20% Construction Cost Contingency	\$141,567.49
10% Environmental Contingency	\$70,783.74
20% Utility/Drainage Contingency	\$141,567.49
15% Design Costs	\$106,175.62

Total Cost/Mile	\$1,167,931.79
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Rounded Cost/Mile	\$1,170,000.00
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Actual costs may vary based on project scope and current market conditions.

Future project costs should be inflated relative to a base year of 2018. Caltrans maintains historical cost indices and forecast at:

<http://www.dot.ca.gov/design/pjs/index.html>

Class II Bicycle Lanes (Low Cost - Without Buffer)

Assumes a lane width of 6 feet, bike symbol every 200 feet, along with R81(CA) signs with posts every 1000'

Assumes adding a bike lane in **both** directions, on each side of the street, without any painted buffer

Assumes bike lanes are added **as part of an existing re-paving project** - costs shown are for the bike lane component **only**

Unit prices per recent Bid Items on the Alameda CTC Cost Estimating Tool website and Caltrans Contract Cost Data

All costs adjusted to 2018 dollars

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Bike Lane Line (6")	LF	10560	\$2.00	\$21,120	Per recent bid items via Alameda CTC Cost Estimating Tool
R81(CA) Signs/Posts	EA	10	\$450.00	\$4,500	Per recent bid items via Alameda CTC Cost Estimating Tool
Thermoplastic Bike Symbol	EA	53	\$300.00	\$15,840	Per recent bid items via Alameda CTC Cost Estimating Tool
Construction Cost Subtotal				\$41,460	
20% Construction Cost Contingency				\$8,292.00	
15% Design Costs				\$6,219.00	
Total Cost/Mile				\$55,971.00	
Rounded Cost/Mile				\$60,000.00	

Actual costs may vary based on project scope and current market conditions.

Future project costs should be inflated relative to a base year of 2018. Caltrans maintains historical cost indices and forecast at:

<http://www.dot.ca.gov/design/pjs/index.html>

Class II Bicycle Lanes (High Cost - Without Buffer)

Assumes a lane width of 6 feet, bike symbol every 200 feet, along with R81(CA) signs with posts every 1000'

Assumes adding a bike lane in **both** directions, on each side of the street, without any painted buffer

Assumes bike lanes are added **as part of a lane reduction/reallocation project (Road Diet)**

Unit prices per recent Bid Items on the Alameda CTC Cost Estimating Tool website and Caltrans Contract Cost Data

All costs adjusted to 2018 dollars

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Remove Existing Channelization Line (8")	LF	10560	\$ 0.50	\$5,280	Per Caltrans
Remove Existing Channelization Line (8" - Skip)	LF	3168	\$ 0.50	\$1,584	Per Caltrans
Remove Existing Channelization Line (8")	LF	10560	\$ 0.50	\$5,280	Per Caltrans
Thermoplastic Bike Lane Line (6")	LF	21120	\$2.00	\$42,240	Per recent bid items via Alameda CTC Cost Estimating Tool
Channelization Line (8")	LF	10560	\$5.00	\$52,800	Per recent bid items via Alameda CTC Cost Estimating Tool
Channelization Line (8" - Skip)	LF	2640	\$5.00	\$13,200	Per recent bid items via Alameda CTC Cost Estimating Tool
R81(CA) Signs/Posts	EA	10	\$450.00	\$4,500	Per recent bid items via Alameda CTC Cost Estimating Tool
Thermoplastic Bike Symbol	EA	53	\$300.00	\$15,840	Per recent bid items via Alameda CTC Cost Estimating Tool
Construction Cost Subtotal				\$140,724	

20% Construction Cost Contingency	\$28,144.80
15% Design Costs	\$21,108.60

Total Cost/Mile	\$189,977.40
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Rounded Cost/Mile	\$190,000.00
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Actual costs may vary based on project scope and current market conditions.

Future project costs should be inflated relative to a base year of 2018. Caltrans maintains historical cost indices and forecast at:

<http://www.dot.ca.gov/design/pjs/index.html>

Class II Bicycle Lanes (Low Cost - With Buffer)

Assumes a lane width of 6 feet, bike symbol every 200 feet, along with R81(CA) signs with posts every 1000'

Assumes adding a bike lane in **both** directions, on each side of the street, with a 3' painted buffer

Assumes buffered bike lanes are added **as part of an existing re-paving project** - costs shown are for the buffered bike lane component **only**

Unit prices per recent Bid Items on the Alameda CTC Cost Estimating Tool website and Caltrans Contract Cost Data

All costs adjusted to 2018 dollars

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Bike Lane Line (6")	LF	10560	\$2.00	\$21,120	Per recent bid items via Alameda CTC Cost Estimating Tool - Vehicle side line
Thermoplastic Bike Lane Line (4")	LF	10560	\$1.50	\$15,840	Per recent bid items via Alameda CTC Cost Estimating Tool - Bike side line
Channelization Line (8")	LF	1584	\$5.00	\$7,920	Per recent bid items via Alameda CTC Cost Estimating Tool - Hatching
R81(CA) Signs/Posts	EA	10	\$450.00	\$4,500	Per recent bid items via Alameda CTC Cost Estimating Tool
Thermoplastic Bike Symbol	EA	53	\$300.00	\$15,840	Per recent bid items via Alameda CTC Cost Estimating Tool
Construction Cost Subtotal				\$65,220	
20% Construction Cost Contingency				\$13,044.00	
15% Design Costs				\$9,783.00	
Total Cost/Mile				\$88,047.00	
Rounded Cost/Mile				\$90,000.00	

Actual costs may vary based on project scope and current market conditions.

Future project costs should be inflated relative to a base year of 2018. Caltrans maintains historical cost indices and forecast at:

<http://www.dot.ca.gov/design/pjs/index.html>

Class II Bicycle Lanes (High Cost - With Buffer)

Assumes a lane width of 6 feet, bike symbol every 200 feet, along with R81(CA) signs with posts every 1000'

Assumes adding a bike lane in **both** directions, on each side of the street, with a 3' painted buffer

Assumes bike lanes are added **as part of a lane reduction/reallocation project (Road Diet)**

Unit prices per recent Bid Items on the Alameda CTC Cost Estimating Tool website and Caltrans Contract Cost Data

All costs adjusted to 2018 dollars

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Remove Existing Channelization Line (8")	LF	10560	\$ 0.50	\$5,280	Per Caltrans
Remove Existing Channelization Line (8" - Skip)	LF	3168	\$ 0.50	\$1,584	Per Caltrans
Remove Existing Channelization Line (8")	LF	10560	\$ 0.50	\$5,280	Per Caltrans
Thermoplastic Bike Lane Line (6")	LF	21120	\$2.00	\$42,240	Per recent bid items via Alameda CTC Cost Estimating Tool
Thermoplastic Bike Lane Line (4")	LF	10560	\$1.50	\$15,840	Per recent bid items via Alameda CTC Cost Estimating Tool - Bike side line
Channelization Line (8")	LF	1584	\$5.00	\$7,920	Per recent bid items via Alameda CTC Cost Estimating Tool - Hatching
Channelization Line (8")	LF	10560	\$5.00	\$52,800	Per recent bid items via Alameda CTC Cost Estimating Tool
Channelization Line (8" - Skip)	LF	2640	\$5.00	\$13,200	Per recent bid items via Alameda CTC Cost Estimating Tool
R81(CA) Signs/Posts	EA	10	\$450.00	\$4,500	Per recent bid items via Alameda CTC Cost Estimating Tool
Thermoplastic Bike Symbol	EA	53	\$300.00	\$15,840	Per recent bid items via Alameda CTC Cost Estimating Tool
Construction Cost Subtotal				\$164,484	

20% Construction Cost Contingency	\$32,896.80
15% Design Costs	\$24,672.60

Total Cost/Mile	\$222,053.40
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Rounded Cost/Mile	\$230,000.00
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Actual costs may vary based on project scope and current market conditions.

Future project costs should be inflated relative to a base year of 2018. Caltrans maintains historical cost indices and forecast at:

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Class III Bike Boulevards (Shared Lanes)

Assumes adding shared lane marking every 200 feet, along with R4-11 signs with posts every 1000'

Assumes adding shared lanes in **both** directions

Assumes shared lanes can be added without the need for modifications to existing roadway pavement markings

Assumes one intersection per mile with bike lane approaches + lane extensions + RRFB + Bike Push Buttons

Adds 4" and 6" dotted bike lane extensions approaching/through intersections, as shown below (as 4DW and 6DW, respectively)

Adds green thermoplastic conflict markings between dotted lane extension lines, as shown below.

Right of way costs are not included. Specific utility, drainage or environmental costs are included as a percentage for the RRFB, and may vary

Unit prices per recent Bid Items on the Alameda CTC Cost Estimating Tool website and Caltrans Contract Cost Data

All costs adjusted to 2018 dollars

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
R4-11 Signs/Posts	EA	10	\$750.00	\$7,500	Per recent bid items via Alameda CTC Cost Estimating Tool
Thermoplastic Shared Lane Marking	EA	53	\$300.00	\$15,840	Per recent bid items via Alameda CTC Cost Estimating Tool
Thermoplastic Bike Lane Line (6")	LF	26	\$2.00	\$52	Per recent bid items via Alameda CTC Cost Estimating Tool - Vehicle side line
Thermoplastic Bike Lane Line (4")	LF	26	\$1.50	\$39	Per recent bid items via Alameda CTC Cost Estimating Tool - Bike side line
Green Thermoplastic	SF	145	\$30.00	\$4,343	Per recent bid items via Alameda CTC Cost Estimating Tool
RRFB	EA	2	\$25,000.00	\$50,000	Per recent bid items via Alameda CTC Cost Estimating Tool
Construction Cost Subtotal				\$77,774	

20% Construction Cost Contingency	\$15,554.76
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15% Design Costs	\$11,666.07
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5% Environmental Contingency	\$2,500.00	Only applied to RRFB Component
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10% Utility/Drainage Contingency	\$5,000.00	Only applied to RRFB Component
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Total Cost/Mile	\$112,494.63
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Rounded Cost/Mile	\$120,000.00
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Actual costs may vary based on project scope and current market conditions.

Future project costs should be inflated relative to a base year of 2018. Caltrans maintains historical cost indices and forecast at:

<http://www.dot.ca.gov/design/pis/index.html>

Class III Rural Routes (Shared Lanes)

Assumes adding minimal shared lane markings, along with R4-11 signs with posts every 1000'

Assumes adding shared lanes in **both** directions

Assumes shared lanes can be added without the need for modifications to existing roadway pavement markings

Assumes up to 300 feet of spot widening/shoulder work per mile may be required

Assumes adding 5' asphalt pavement, and 6.5' aggregate base, to create a 4' usable widened area for bicycles.

Widening includes excavation, aggregate base and asphalt paving (using asphalt path costs as an analogue for narrow shoulder paving cost)

Right of way costs are not included. Specific utility, drainage or environmental costs are included as a percentage, and may vary

Unit prices per recent Bid Items on the Alameda CTC Cost Estimating Tool website and Caltrans Contract Cost Data

All costs adjusted to 2018 dollars

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
R4-11 Signs/Posts	EA	10	\$450.00	\$4,500	Per recent bid items via Alameda CTC Cost Estimating Tool
Thermoplastic Shared Lane Marking	EA	4	\$300.00	\$1,200	Per recent bid items via Alameda CTC Cost Estimating Tool
Roadway Excavation	CY	178	\$16.42	\$2,920	Per Caltrans
Class 2 Aggregate Subbase	CY	108	\$42.15	\$4,566	Per Caltrans
Asphalt Path	SF	1500	\$9.00	\$13,500	Per recent bid items via Alameda CTC Cost Estimating Tool
Construction Cost Subtotal				\$26,686	

20% Construction Cost Contingency	\$5,337.13
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15% Design Costs	\$4,002.85
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5% Environmental Contingency	\$1,049.28	Only applied to shoulder widening components
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10% Utility/Drainage Contingency	\$2,237.58	Only applied to shoulder widening components
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Total Cost/Mile	\$39,312.46
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Rounded Cost/Mile	\$40,000.00
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Actual costs may vary based on project scope and current market conditions.

Future project costs should be inflated relative to a base year of 2018. Caltrans maintains historical cost indices and forecast at:

<http://www.dot.ca.gov/design/pjs/index.html>

Class IV Separated Bike Lanes - Buffer+Posts

Assumes a lane width of 6 feet, bike symbol every 200 feet, along with R81(CA) signs with posts every 1000'

Assumes adding a bike lane in **both** directions, on each side of the street, with 3' painted buffer and flex posts at 20' spacing

Assumes bike lanes can be added without the need for modifications to existing roadway pavement markings

Unit prices per recent Bid Items on the Alameda CTC Cost Estimating Tool website and Caltrans Contract Cost Data

All costs adjusted to 2018 dollars

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Bike Lane Line (6")	LF	26	\$2.00	\$52	Per recent bid items via Alameda CTC Cost Estimating Tool - Vehicle side line
Thermoplastic Bike Lane Line (4")	LF	26	\$1.50	\$39	Per recent bid items via Alameda CTC Cost Estimating Tool - Bike side line
Channelization Line (8")	LF	1584	\$5.00	\$7,920	Per recent bid items via Alameda CTC Cost Estimating Tool - Hatching
Soft Hit Posts	LF	10560	\$5.00	\$52,800	Per recent bid items via Alameda CTC Cost Estimating Tool
R81(CA) Signs/Posts	EA	10	\$450.00	\$4,500	Per recent bid items via Alameda CTC Cost Estimating Tool
Thermoplastic Bike Symbol	EA	53	\$300.00	\$15,840	Per recent bid items via Alameda CTC Cost Estimating Tool
Construction Cost Subtotal				\$81,151	

20% Construction Cost Contingency	\$16,230.20
15% Design Costs	\$12,172.65

Total Cost/Mile	\$109,553.85
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Rounded Cost/Mile	\$110,000.00
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Actual costs may vary based on project scope and current market conditions.

Future project costs should be inflated relative to a base year of 2018. Caltrans maintains historical cost indices and forecast at:

<http://www.dot.ca.gov/design/pjs/index.html>

Class IV Separated Bike Lanes - Concrete Curb

Assumes a lane width of 6 feet, bike symbol every 200 feet, along with R81(CA) signs with posts every 1000'
 Assumes adding a bike lane in **both** directions, on each side of the street, with 3' buffer with concrete pre-cast curb
 Assumes bike lanes can be added without the need for modifications to existing roadway pavement markings
 Unit prices per recent Bid Items on the Alameda CTC Cost Estimating Tool website and Caltrans Contract Cost Data
 All costs adjusted to 2018 dollars

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Cement Buffer	LF	10560	\$50.00	\$528,000	Per Seattle 2nd Avenue Final Bid Package
R81(CA) Signs/Posts	EA	10	\$450.00	\$4,500	Per recent bid items via Alameda CTC Cost Estimating Tool
Thermoplastic Bike Symbol	EA	53	\$300.00	\$15,840	Per recent bid items via Alameda CTC Cost Estimating Tool
Construction Cost Subtotal				\$548,340	
20% Construction Cost Contingency				\$109,668.00	
15% Design Costs				\$82,251.00	
Total Cost/Mile				\$740,259.00	
Rounded Cost/Mile				\$750,000.00	

Actual costs may vary based on project scope and current market conditions.

Future project costs should be inflated relative to a base year of 2018. Caltrans maintains historical cost indices and forecast at:

<http://www.dot.ca.gov/design/pjs/index.html>