

Mill Valley to Corte Madera  
Bicycle and Pedestrian Corridor Study

Appendix L:  
Detailed Cost Estimates

Prepared by  
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**Appendix L: Detailed Cost Estimates**

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## Appendix L – Detailed Cost Estimates

*Prepared by Alta/LandPeople, Jacobs Associates, Nolte Associates*

This Appendix provides the detailed planning-level cost estimates prepared for the alternative route improvement concepts, including planning, design, construction, and other anticipated implementation costs.

These cost estimates required numerous assumptions about the methods of construction and associated requirements. The estimate and assumptions reflect the experience of the consultant team with other similar projects.

The individual segment estimates (Table 1) include cost “placeholders” for each stage of project implementation, based on factors of the construction cost, including:

- Survey, technical studies (such as geotechnical or hazardous waste investigations) and design (including preliminary and final plans, cost estimates, and specifications/bid forms) – 15%
- Environmental analysis and documentation and related permits – 10%
- Project administration during planning, design and construction – 10%
- Construction overhead (costs the contract typically includes over and above the individual work items, such as mobilization and general conditions) – 10%

A contingency for the level of accuracy of the estimate is included at 20% of all items.

Specific cost allowances are added to the standard cost factors for tasks or items that are unique to some segments.

If small improvement projects are undertaken separately, the costs may potentially increase significantly from the design, administration and construction cost factors in the estimates. In any case, actual costs for the projects can only be determined following development of more complete and detailed base information and definition of the specific improvements for design, environmental review and permitting, and construction.

Table 2 presents Jacobs Associates estimate for the Alto Tunnel, which is extrapolated from actual costs for the nearby Cal Park Tunnel. This does not include right-of-way research, negotiation and acquisition costs, which were estimated separately in the Right-of-Way Conditions Analysis (Appendix G) and added to the segment costs in Table 1.

Table 3 presents Nolte Associates estimate for drainage improvements associated with the Alto Tunnel portal areas. These were determined in the Drainage Analysis (Appendix C). They have been added to the segment costs in Table 1.

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## Table 1 – Detailed Segment Cost Estimate

<b>Horse Hill Route</b>				
	Length - Segment 4A option (Meadowsweet):	15,570 feet/2.9 miles		With Sunken Path Option
	Length - Segment 4B option (Casa Buena):	15,330 feet/2.9 miles		
	Total estimated cost:	\$4,369,778	Using Segment 4A	\$9,046,321
		\$5,514,939	Using Segment 4B	\$10,191,482
	With E. Blithedale Bike/Ped Crossing Option	\$7,777,778	Using Segment 4A	\$12,454,321
		\$8,922,939	Using Segment 4B	\$13,599,482
<b>Segment 11A</b>	E. Blithedale Avenue crossing improvements from northern end of Mill Valley Sausalito Path at Lomita Avenue.			
	Length:	100 feet/0.02 miles		
	Total Cost:	\$84,067		
<b>Construction Items:</b>				
		Unit	Qty.	Unit Cost
				Extension
	1	EA	1	\$2,500
	2	EA	1	\$2,500
	3	LS		\$2,000
	4a	SF	800	\$1.00
	4b	SF	800	\$3.50
	4c	LF	100	\$200
	4d	SF	400	\$6.00
	5	LS		\$10,000
	6	EA	1	\$400
	7	EA	1	\$250
	8	EA	3	\$350
	9	EA	1	\$150
				Subtotal Construction
				\$44,850
	10			\$4,485
	11			\$9,867
				<b>Total Construction</b>
				<b>\$59,202</b>
<b>Design, Environmental and Administration:</b>				
	11			\$8,880
	12			\$5,920
	13			\$5,920
	14			\$4,144
				<b>Total Design, Env., Admin.</b>
				<b>\$24,865</b>
<b>Optional Bike/Pedestrian Grade Separated Crossing</b>				
	Total Cost:	\$3,408,000		
	1			
				Total Construction
				\$2,400,000
<b>Design, Environmental and Administration:</b>				
	2			\$360,000
	3			\$240,000
	4			\$240,000
	5			\$168,000
				<b>Total Design, Env., Admin.</b>
				<b>\$1,008,000</b>
<b>Segment 1</b>	Functions as part of Alto Tunnel & Horse Hill route. From the northern end of Mill Valley-Sausalito Path to Vasco Court.			
	Length:	3,700 feet/0.7 miles		
	Total Cost:	\$926,325		
<b>Acquisition and Construction Items</b>				
		Unit	Qty.	Unit Cost
				Extension
	1a	SF	37,000	\$1.00
				\$37,000

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1b	Add 6' wide pedestrian path - grading (10' wide)	SF	37,000	\$3.50	\$129,500
1c	Add 6' wide pedestrian path - base and A.C. paving	SF	22,200	\$6.00	\$133,200
2	Bike traffic control/warning signs	EA	3	\$250	\$750
3	Wayfinding signs	EA	7	\$350	\$2,450
4	Milepost signs	EA	2	\$150	\$300
5a	Access ramp at Ashford - easement/site acquisition	Allow			\$100,000
5b	Access ramp at Ashford - site clearing and grading	SF	5,000	\$5.00	\$25,000
5c	Access ramp at Ashford - concrete ramp (5'x200')	SF	1,000	\$12	\$12,000
5d	Access ramp at Ashford - Retaining walls for ramp	LF	200	\$55	\$11,000
5e	Access ramp at Ashford - Handrail	LF	200	\$50	\$10,000
5f	Access ramp at Ashford - Crosswalk and crossing signs	LS			\$1,500
	Subtotal Acquisition and Construction				\$462,700
6	Construction overhead - mobilization, general conditions - 10%				\$46,270
7	Contingency - 20% of above				\$92,540
	<b>Total Construction</b>				<b>\$601,510</b>
<b>Design, Environmental and Administration:</b>					
8	Survey, tech studies, and design - 15%				\$90,227
9	Environmental - 10%				\$60,151
10	Project administration - 10%				\$60,151
11	Construction overhead - mobilization, general conditions - 10%				\$60,151
12	Contingency - 20% of above 4 items				\$54,136
	<b>Total Design, Env. And Admin.</b>				<b>\$324,815</b>
<b>Segment 2A</b> From bike path at Edna Maguire Elementary School along Lomita Road to Greenfield Court.					
	<b>Length: 1,550 feet/0.3 miles</b>				
	<b>Total Cost: \$90,440</b>				
<b>Construction Items</b>					
		Unit	Qty.	Unit Cost	Extension
1a	Class 1 path 8' wide to bypass school parking lot - clearing 10' wide	SF	2,500	\$1.00	\$2,500
1b	Class 1 path 8' wide to bypass school parking lot - grading 10' wide	SF	2,500	\$3.50	\$8,750
1c	Class 1 path 8' wide to bypass parking lot - base and A.C. pavement	SF	2,000	\$6.00	\$12,000
2	Add high-vis. crosswalk for path	EA	1	\$1,000	\$1,000
3a	Extend sidewalk beyond school, clearing	SF	300	\$1.00	\$300
3b	Extend sidewalk beyond school, grading	SF	300	\$3.50	\$1,050
3c	Extend concrete sidewalk, driveway, curb and gutter beyond school (5' wide x 50')	SF	250	\$20.00	\$5,000
4	Add curb ramps at Greenwood Court	EA	4	\$2,000	\$8,000
7	Shoulder striping outside parking	LF	3600	\$2.00	\$7,200
8	Sharrows shared use lane markings	EA	1	\$250	\$250
9	Bike traffic control/warning signs	EA	4	\$250	\$1,000
10	Wayfinding signs	EA	3	\$350	\$1,050
11	Milepost signs	EA	1	\$150	\$150
	Subtotal Construction				\$48,250
12	Construction overhead - mobilization, general conditions - 10%				\$4,825
13	Contingency - 20% of above				\$10,615
	<b>Total construction</b>				<b>\$63,690</b>
<b>Design, Environmental and Administration:</b>					
14	Survey, tech studies, and design - 15%				\$9,554
15	Environmental - 10%				\$6,369
16	Project administration - 10%				\$6,369
17	Contingency - 20% of above 3 items				\$4,458
	<b>Total Design, Env. And Admin.</b>				<b>\$26,750</b>

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<b>Segment 2B</b>	From Greenfield Court along Lomita Road to Horse Hill bike path.			
<b>Length:</b>	<b>1,830 feet/0.35 miles</b>			
<b>Total Cost:</b>	<b>\$486,332</b>			
<b>Construction Items</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Extension</b>
1a Path 5' wide along Lomita to Shell - clearing 8' wide	SF	9,900	\$1.00	\$9,900
1b Path 5' wide along Lomita to Shell - grading 8' wide	SF	9,900	\$3.50	\$34,650
1c Retaining walls - 1' to 2' high reinforced concrete, approx. half this portion	SF	600	\$110	\$66,000
1d Path 5' wide along Lomita to Shell - base and A.C. pavement	SF	6,190	\$6.00	\$37,140
2 Place storm drain in ditch along Lomita - frontage of 4 homes	LF	400	\$30	\$12,000
3 Driveway conform work for 4 homes	EA	4	\$5,000	\$20,000
4 Add high-visibility crosswalks	EA	3	\$1,000	\$3,000
5 Add curb ramps at Shell and Plaza	EA	4	\$2,000	\$8,000
6 New 5' sidewalk along S. side Lomita from Shell to H.H. Path	SF	2,800	\$20	\$56,000
7 Widen pavement 2 - 3' on west side Lomita near H.H. Path	SF	500	\$6.00	\$3,000
8 Shoulder striping outside parking	LF	3,660	\$2.00	\$7,320
9 Sharrow shared use lane markings	EA	1	\$250	\$250
10 Bike traffic control/warning signs	EA	4	\$250	\$1,000
11 Wayfinding signs	EA	3	\$350	\$1,050
12 Milepost signs	EA	1	\$150	\$150
	Subtotal Construction			\$259,460
13 Construction overhead - mobilization, general conditions - 10%				\$25,946
14 Contingency - 20% of above				\$57,081
	<b>Total construction</b>			<b>\$342,487</b>
<b>Design, Environmental and Administration:</b>				
15 Survey, tech studies, and design - 15%				\$51,373
16 Environmental - 10%				\$34,249
17 Project administration - 10%				\$34,249
18 Contingency - 20% of above 3 items				\$23,974
	<b>Total Design, Env. And Admin.</b>			<b>\$143,845</b>
<b>Segment 3</b>	Existing Class I bike path running from end of Lomita Drive parallel to Highway 101 to Meadowsweet Drive.			
<b>Length:</b>	<b>2,040 feet/0.4 miles</b>			
<b>Total Cost:</b>	<b>\$2,301,606</b>			
<b>Construction Items:</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Extension</b>
1 Demolish existing fence, guardrail, pavement (LF x 6)	SF	12,240	\$5.00	\$61,200
2 Sawcut and remove A.C. 12" wide	LF	2,040	\$2.50	\$5,100
3 Grading for pathway widening (20' wide x 2040')	SF	40,800	\$3.50	\$142,800
4 Base and A.C. pavement to widen path (20' wide x 2040)	SF	40,800	\$6.00	\$244,800
5 K-rail barrier with fence and headlight baffles	LF	1,640	\$100	\$164,000
6 Vinyl-coated chain link fence, 6'	LF	2,040	\$20	\$40,800
7 Retaining walls - 3' to 6' high reinforced concrete (4' avg x 1,500 LF)	SF	6,000	\$110	\$660,000
8 Striping removal and replacement (shoulders & centerline)	LF	5,967	\$4.00	\$23,868
9a Meadowsweet to Horse Hill path connector, clearing	SF	480	\$1.00	\$480
9b M. to H.H. path connector, grading	SF	480	\$3.50	\$1,680
9c M. to H.H. path connector, modify guardrail	LS			\$2,000
9d M. to H.H. path connector, Base and A.C. pavement (8' wide x 30')	SF	240	\$6.00	\$1,440
9e M. to H.H. path connector, striping (3 x LF)	LF	720	\$2.00	\$1,440
10 Bike traffic control/warning signs	EA	1	\$250	\$250
11 Wayfinding signs	EA	2	\$350	\$700
12 Milepost signs	EA	1	\$150	\$150
	Subtotal Construction			\$1,350,708
12 Construction overhead - mobilization, general conditions - 10%				\$135,071
13 Caltrans traffic control, general conditions - 10%				\$135,071

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14	Contingency - 20% of above				\$324,170
<b>Total Construction</b>					<b>\$1,620,850</b>
<b>Design, Environmental and Administration:</b>					
14	Survey, tech studies, and design - 15%				\$243,127
15	Environmental - 10%				\$162,085
16	Project administration - 10%				\$162,085
17	Contingency - 20% of above 3 items				\$113,459
<b>Total Design, Env., Admin.</b>					<b>\$680,757</b>
<b>Sunken Path Option</b>					
<b>Total Cost: \$6,978,149</b>					
To total for basic Segment 3 project above add:					
		Unit	Qty.	Unit Cost	Extension
1	Excavation and shoring, 16' wide x avg. 5' deep x 2000', incl. export	CY	5,926	\$75.00	\$444,450
2	Retaining walls, reinforced concrete up to 7' high and 2000' long - assume avg. of 5' high (each side)	SF	20,000	\$110	\$2,200,000
3	Storm drainage system	LF	2,000	\$50	\$100,000
Subtotal Construction					\$2,744,450
4	Construction overhead - mobilization, general conditions - 10%				\$274,445
5	Caltrans traffic control, general conditions - 10%				\$274,445
14	Contingency - 20% of above				\$658,668
<b>Total Construction</b>					<b>\$3,293,340</b>
<b>Design, Environmental and Administration:</b>					
6	Survey, tech studies, and design - 15%				\$494,001
7	Environmental - 10%				\$329,334
8	Project administration - 10%				\$329,334
9	Contingency - 20% of above 3 items				\$230,534
<b>Total Design, Env., Admin.</b>					<b>\$1,383,203</b>
<b>Segment 4A</b>					
<b>South</b>					
From the northern end of the Horse Hill path along Meadowsweet Drive to Conow Street.					
<b>Length: 4,270 feet/0.8 miles</b>					
<b>Total Cost: \$41,116</b>					
<b>Construction Items:</b>					
		Unit	Qty.	Unit Cost	Extension
1	Striping on Meadowsweet corner CLs, shoulders (white, LF x 2.2)	LF	9,394	\$2.00	\$18,788
2	Sharrow shared use lane markings	EA	8	\$250	\$2,000
3	Bike traffic control/warning signs	EA	3	\$250	\$750
4	Wayfinding signs	EA	3	\$350	\$1,050
5	Milepost signs	EA	2	\$150	\$300
Subtotal Construction					\$22,888
6	Construction overhead - mobilization, general conditions - 10%				\$2,289
7	Contingency - 20% of all above				\$5,035
<b>Total Construction</b>					<b>\$30,212</b>
<b>Design, Environmental and Administration:</b>					
8	Survey, tech studies, and design - 15%				\$4,532
9	Environmental - 10%				\$3,021
10	Project administration - 10%				\$2,289
11	Contingency - 20% of above 3 items				\$1,062
<b>Total Design, Env., Admin.</b>					<b>\$10,904</b>
<b>Segment 4A</b>					
<b>North</b>					
Meadowsweet Drive from Conow Street to Sanford Street					
<b>Length: 1,640 feet/0.3 miles</b>					
<b>Total Cost: \$5,692</b>					
<b>Construction Items:</b>					
		Unit	Qty.	Unit Cost	Extension
1	Crosswalk on north side Meadowsweet at Sanford	EA	1	\$1,000	\$1,000
2	Sharrow shared use lane markings	EA	8	\$250	\$2,000
3	Bike traffic control/warning signs	EA	1	\$250	\$250
4	Wayfinding signs	EA	2	\$350	\$700
5	Milepost signs	EA	1	\$150	\$150
Subtotal Construction					\$3,100
6	Construction overhead - mobilization, general conditions - 10%				\$310
7	Contingency - 20% of all above				\$682
<b>Total Construction</b>					<b>\$4,092</b>

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<u>Design, Environmental and Administration:</u>				
8	Survey, tech studies, and design - 15%			\$614
9	Environmental - 10%			\$409
10	Project administration - 10%			\$310
11	Contingency - 20% of above 3 items			\$267
<b>Total Design, Env., Admin.</b>				<b>\$1,600</b>
<b>Segment 4B</b> (Alternative to Segment 4a South above): Casa Buena Drive from northern end of Horse Hill path to Conow Street				
<b>South</b>				
<b>Length: 3,780 feet/0.7 miles</b>				
<b>Total Cost: \$1,160,816</b>				
<u>Construction Items:</u>				
	Unit	Qty.	Unit Cost	Extension
1	EA	2	\$300	\$600
2	EA	1	\$1,000	\$1,000
3	LF	2,000	\$4.00	\$8,000
4	SF	15,120	\$3.50	\$52,920
5	LF	2,000	\$20	\$40,000
6	LF	3,780	\$100	\$378,000
7	SF	15,120	\$6.00	\$90,720
8	LF	11,340	\$4.00	\$45,360
9	EA	6	\$250	\$1,500
10	EA	3	\$350	\$1,050
11	EA	1	\$150	\$150
Subtotal Construction				\$619,300
12	Construction overhead - mobilization, general conditions - 10%			\$61,930
13	Contingency - 20% of all above			\$136,246
<b>Total Construction</b>				<b>\$817,476</b>
<u>Design, Environmental and Administration:</u>				
14	Survey, tech studies, and design - 15%			\$122,621
15	Environmental - 10%			\$81,748
16	Project administration - 10%			\$81,748
17	Contingency - 20% of above 3 items			\$57,223
<b>Total Design, Env., Admin.</b>				<b>\$343,340</b>
<b>Segment 4B</b> (Alternative to Segment 4a North above): Casa Buena Drive from Conow Street to Sanford Street				
<b>North</b>				
<b>Length: 1,890 feet/0.4 miles</b>				
<b>Total Cost: \$31,153</b>				
<u>Construction Items:</u>				
	Unit	Qty.	Unit Cost	Extension
1	LF	7,560	\$2.00	\$15,120
2	EA	4	\$250	\$1,000
3	EA	1	\$350	\$350
4	EA	1	\$150	\$150
Subtotal Construction				\$16,620
5	Construction overhead - mobilization, general conditions - 10%			\$1,662
6	Contingency - 20% of all above			\$3,656
<b>Total Construction</b>				<b>\$21,938</b>
<u>Design, Environmental and Administration:</u>				
7	Survey, tech studies, and design - 15%			\$3,291
8	Environmental - 10%			\$2,194
9	Project administration - 10%			\$2,194
10	Contingency - 20% of above 3 items			\$1,536
<b>Total Design, Env., Admin.</b>				<b>\$9,214</b>
<b>Segment 5</b> Intersection - Sanford Street from Meadowsweet Drive to Tamalpais Drive				
<b>Length: 60 feet/0.1 miles</b>				
<u>Construction Items:</u> <i>scoped and estimated as part of Highway 101 Greenbrae/Twin Cities Corridor Improvements Study by TAM</i>				
<b>Total Cost:</b> <i>included in segment 6 cost</i>				
<b>Segment 6</b> From Tamalpais Drive to Wornum Way along Madera Boulevard and Tamal Vista Boulevard to the study end point.				
<b>Length: 3,630 feet/0.7 miles</b>				
<u>Construction Items:</u> <i>scoped and estimated as part of Highway 101 Greenbrae/Twin Cities Corridor Improvements Study by TAM</i>				
<b>Total Cost: \$434,200</b>				



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<b>Alto Tunnel Route</b>					
		<b>Length:</b> 16,620 feet/3.1 miles			<b>With Optional E. Blithedale Bike/Ped Crossing</b>
		<b>Total estimated cost:</b>	\$48,253,660	Low	\$51,661,660
			\$56,095,893	High	\$59,503,893
<b>Segment 11A</b>	E. Blithedale Avenue crossing improvements from northern end of Mill Valley Sausalito Path at Lomita Avenue.				
	<b>Length:</b> 100 feet/0.02 miles				
	<b>Total Cost:</b> \$84,067				
	<i>See Horse Hill Route for detailed estimate</i>				
<b>Segment 1</b>	Functions as part of Alto Tunnel & Horse Hill route. From the northern end of Mill Valley-Sausalito Path to Vasco Court.				
	<b>Length:</b> 3,700 feet/0.7 miles				
	<b>Total Cost:</b> \$926,325				
	<i>See Horse Hill Route for detailed estimate</i>				
<b>Segment 7</b>	Old railroad bed running from Vasco Court to Alto Tunnel.				
	<b>Length:</b> 1,280 feet/0.2 miles				
	<b>Total Cost:</b> \$1,411,809				
<b>Construction Items:</b>		<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Extension</b>
1	Clearing, trimming and site preparation (LF x 24)	SF	30,816	\$2.00	\$61,632
2	Remove and salvage rails	LF	1,280	\$20	\$25,600
3	Grading for path and turn around (LF x 24)	SF	30,816	\$3.50	\$107,856
4	Retaining walls for turnaround (up to 10' high, avg 5')	SF	250	\$110	\$27,500
5	Base and A.C. pavement for turnaround	SF	1,500	\$6.00	\$9,000
6	Water line extension to turnaround (10" line)	LF	1,280	\$85	\$108,800
7	Fire hydrant	EA	1	\$5,000	\$5,000
8	Bollards to prevent vehicle entry (1 removable)	EA	5	\$800	\$4,000
9	Base and A.C. pavement for paths - 6' ped, 10' bikes, + 2' base rock shoulders (18' wide trail area)	SF	23,112	\$6.50	\$150,228
10	Bollards to prevent vehicle entry (2 removable)	EA	10	\$800	\$8,000
11	Add high-visibility crosswalk at Vasco Court	EA	3	\$1,000	\$3,000
12	Add curb ramps at Vasco Court	EA	2	\$2,000	\$4,000
13	Bike traffic control/warning signs	EA	6	\$250	\$1,500
14	Wayfinding signs	EA	3	\$350	\$1,050
15	Milepost signs	EA	1	\$150	\$150
16	Drainage improvements - <i>see Table 4-3 for detailed estimate from Drainage Analysis</i>	LS			\$240,750
	Subtotal Construction				\$758,066
17	Construction overhead - mobilization, general conditions - 10%				\$75,807
18	Contingency - 20% of all above				\$166,775
	<b>Total Construction</b>				<b>\$1,000,647</b>
<b>Design, Environmental and Administration:</b>					
19	Topo survey in difficult terrain	LS			\$20,000
20	Survey, tech studies, and design - 15%				\$150,097
21	Environmental - 10%				\$100,065
22	Project administration - 10%				\$75,807
23	Contingency - 20% of above 3 items				\$65,194
	<b>Total Design, Env., Admin.</b>				<b>\$411,162</b>

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<b>Segment 8</b>	Alto Tunnel, including portals				
	<b>Length:</b> 2,250 feet/0.4 miles				
	<b>Total Cost:</b>	Low	<b>\$40,626,000</b>	High	<b>\$50,551,000</b>
<b>Construction Items:</b>	<i>See Table 2 for detailed cost estimate from Tunnel Feasibility Study</i>				
1 Tunnel rehabilitation improvements					
2 12' A.C. multi-use path (12' X 2172')					
3 Gates at each end					
4 Bollards					
5 Emergency Call and Fire Alarm Stations					
6 "Leaky Antenna" for radio/cell communication					
7 Sprinkler System					
8 Fire Hydrants					
10 Ventilation system					
11 System Notice to alert user: Maintenance Vehicle in Tunnel					
12 Video surveillance system					
13 Drainage system					
14 Entry gates with rules and closure information					
	<b>Total Construction</b>	Low	<b>\$29,182,000</b>	High	<b>\$35,673,000</b>
18 Design, environmental, administration, and construction management			<b>\$10,944,000</b>		<b>\$13,378,000</b>
17 Right-of-way research, negotiation and acquisition process (allowance)			<b>\$500,000</b>		<b>\$1,500,000</b>
	<b>Total "Soft" Cost</b>	Low	<b>\$11,444,000</b>	High	<b>\$14,878,000</b>
	<b>Total Estimated Project Cost</b>	Low	<b>\$40,626,000</b>	High	<b>\$50,551,000</b>
<b>Segment 9A</b>	From northern end of Alto Tunnel to Montecito Avenue and beginning of existing path near Tamalpais Drive.				
	<b>Length:</b> 2,310 feet/0.4 miles				
	<b>Total Cost:</b> \$2,555,968				
<b>Construction Items:</b>		<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Extension</b>
1 Clearing, trimming and site preparation (LF x 24)		SF	55,440	\$2.00	\$110,880
2 Remove and salvage rails		LF	1,284	\$20	\$25,680
3 Grading for path and turn around (LF x 24)		SF	55,440	\$3.50	\$194,040
4 Retaining walls for turnaround (up to 10' high, avg 5')		SF	250	\$110	\$27,500
5 Base and A.C. pavement for turnaround		SF	1,500	\$6.00	\$9,000
6 Water line extension to turnaround (10" line)		LF	2,310	\$85	\$196,350
7 Fire hydrant		EA	1	\$5,000	\$5,000
8 Bollards to prevent vehicle entry (1 removable)		EA	5	\$800	\$4,000
9 Base and A.C. pavement for paths - 6' ped, 10' bikes, + 2' base rock shoulders (18' wide trail area)		SF	41,580	\$6.50	\$270,270
10 Bike traffic control/warning signs		EA	1	\$250	\$250
11 Wayfinding signs		EA	1	\$350	\$350
12 Milepost signs		EA	1	\$150	\$150
13 Drainage improvements - <i>see Table 4-3 for detailed estimate from Drainage Analysis</i>		LS			\$509,479
	<b>Subtotal Construction</b>				<b>\$1,352,949</b>
14 Construction overhead - mobilization, general conditions - 10%					\$135,295
15 Contingency - 20% of all above					\$297,649
	<b>Total Construction</b>				<b>\$1,785,893</b>
<b>Design, Environmental and Administration:</b>					
16 Topo survey in difficult terrain		LS			\$20,000
17 Survey, tech studies, and design - 15%					\$267,884
18 Environmental - 10%					\$178,589
19 Project administration - 10%					\$178,589
20 Contingency - 20% of above 3 items					\$125,012
	<b>Total Design, Env., Admin.</b>				<b>\$770,075</b>

# Mill Valley to Corte Madera Bicycle and Pedestrian Corridor Study

<b>Segment 9B</b> Along RR row from Montecito Avenue and beginning of existing path near Tamalpais Drive to the south side of Redwood Avenue.					
<b>Length: 352 feet/0.06 miles</b>					
<b>Total Cost: \$215,697</b>					
<b>Proposed improvements:</b>					
	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Extension</b>	
1a	Multi-use path S. of Redwood - demolish 8' path, A.C. parking spaces and adjacent landscaping (14' x 375')	SF	5,250	\$3.00	\$15,750
1b	Grading for path	SF	5,250	\$3.50	\$18,375
1c	Base and decorative concrete pavement for path (12' X 250')	SF	3,000	\$15	\$45,000
2	New concrete curb and gutter	LF	100	\$30	\$3,000
3	Base and A.C. pavement extension	SF	200	\$6.00	\$1,200
4	Restripe revised parking areas	LS			\$1,000
5	New planting and irrigation (8' x 375')	SF	3,000	\$10	\$30,000
6	Bike traffic control/warning signs	EA	1	\$250	\$250
7	Wayfinding signs	EA	1	\$350	\$350
8	Milepost signs	EA	1	\$150	\$150
Subtotal Construction					<b>\$115,075</b>
9 Construction overhead - mobilization, general conditions - 10%					\$11,508
10 Contingency - 20% of all above					\$25,317
<b>Total Construction</b>					<b>\$151,899</b>
<b>Design, Environmental and Administration:</b>					
11 Survey, tech studies, and design - 15%					\$22,785
12 Environmental - 10%					\$15,190
13 Project administration - 10%					\$15,190
14 Contingency - 20% of above 3 items					\$10,633
<b>Total Design, Env., Admin.</b>					<b>\$63,798</b>
<b>Segment 10</b> From Redwood Avenue, along Montecito and existing Sandra Marker Trail north and east to Wornum Way at Tamal Vista Ave.					
<b>Length: 6,638 feet/1.3 miles</b>					
<b>Total Cost: \$164,197</b>					
<b>Construction Items:</b>					
	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Extension</b>	
1	High-visibility crosswalk at Montecito/Redwood intersection	EA	1	\$1,000	\$1,000
2a	Multi-use path N. of Redwood - Demolish existing planter and curb (12' x 250')	SF	3,000	\$5.00	\$15,000
2b	New concrete curbs	LF	275	\$20	\$5,500
2c	New retaining wall, reinforced concrete/footing, 2' high	LF	250	\$55	\$13,750
2d	Base and decorative concrete pavement for path (12' X 250')	SF	3,000	\$12	\$36,000
2e	New planting and irrigation (4' x 250')	SF	1,000	\$10	\$10,000
2f	Restripe parking areas to accommodate new 12' AC path	LS			\$2,500
3	Bike traffic control/warning signs	EA	8	\$250	\$2,000
4	Wayfinding signs	EA	4	\$350	\$1,400
5	Milepost signs	EA	3	\$150	\$450
Subtotal Construction					<b>\$87,600</b>
7 Construction overhead - mobilization, general conditions - 10%					\$8,760
8 Contingency - 20% of all above					\$19,272
<b>Total Construction</b>					<b>\$115,632</b>
<b>Design, Environmental and Administration:</b>					
9 Survey, tech studies, and design - 15%					\$17,345
10 Environmental - 10%					\$11,563
11 Project administration - 10%					\$11,563
12 Contingency - 20% of above 3 items					\$8,094
<b>Total Design, Env., Admin.</b>					<b>\$48,565</b>

# Mill Valley to Corte Madera Bicycle and Pedestrian Corridor Study

<b>Camino Alto/Corte Madera Avenue Route</b>				
	<b>Length:</b>	<b>19,430 feet/3.7 miles</b>		<b>With Optional Sidewalk Extension to Overhill</b>
	<b>Total estimated cost:</b>	<b>\$4,644,473</b>		<b>\$5,465,647</b>
	<b>With Optional E. Blithedale Bike/Ped Crossing</b>	<b>\$8,052,473</b>		<b>\$8,873,647</b>
<b>Segment 11</b>	E. Blithedale crossing improvements and short connection along E. Blithedale Avenue from northern end of Mill Valley Sausalito Path at Lomita Avenue to Camino Alto.			
	<b>Length:</b>	<b>570 feet/0.1 miles</b>		
	<b>Total Cost:</b>	<b>\$84,067</b>		
	<i>See Horse Hill Route for detailed estimate</i>			
<b>Segment 12A</b>	Along Camino Alto from E. Blithedale Avenue to Overhill Road.			
	<b>Length:</b>	<b>3,430 feet/0.7 miles</b>		
	<b>Total Cost:</b>	<b>\$1,393,898</b>		
<b>Construction Items:</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Extension</b>
1 Clearing and grubbing (3,100 LF x 8')	SF	24,800	\$2.00	\$49,600
2 Demolish existing sidewalk	SF	1,500	\$5.00	\$7,500
3 Sawcut and remove A.C. curb and pavement 12" wide	LF	3,100	\$2.50	\$7,750
4 Culvert extensions, assume 24" x 8', typical	EA	4	\$4,000	\$16,000
5 Relocate utility pole and fire hydrant	EA	2	\$200	\$400
6 Grading for widening (3,100 LF x 8')	SF	24,800	\$3.50	\$86,800
7 New A.C. curb	LF	3,100	\$20	\$62,000
8 New sidewalk to replace existing	SF	1,500	\$20	\$30,000
9 Add curb ramps at Overhill Road and Kite Hill Lane	EA	3	\$2,000	\$6,000
10 Base and A.C. pavement for widening (1,100 LF x 5' avg, 2,000 LF x 9' avg)	SF	23,500	\$6.00	\$141,000
11 Retaining walls, avg. 4' high reinforced concrete/footing	LF	2,000	\$110	\$220,000
12 Road and driveway conform work - minor removal, grading and paving	EA	5	\$5,000	\$25,000.00
13 Striping removal and replacement - lanes and shoulders (3 x LF)	LF	22,500	\$4.00	\$90,000
14 Bike traffic control/warning signs	EA	3	\$250	\$750
15 Wayfinding signs	EA	2	\$350	\$700
16 Milepost signs	EA	1	\$150	\$150
	<b>Subtotal Construction</b>			<b>\$743,650</b>
17 Construction overhead - mobilization, general conditions - 10%				<b>\$74,365</b>
18 Contingency - 20% of all above				<b>\$163,603</b>
	<b>Total Construction</b>			<b>\$981,618</b>
<b>Design, Environmental and Administration:</b>				
19 Survey, tech studies, and design - 15%				<b>\$147,243</b>
20 Environmental - 10%				<b>\$98,162</b>
21 Project administration - 10%				<b>\$98,162</b>
22 Contingency - 20% of above 3 items				<b>\$68,713</b>
	<b>Total Design, Env., Admin.</b>			<b>\$412,280</b>
<b>Optional Sidewalk Extension to Overhill Road (add to the above):</b>				
	<b>Total Cost:</b>	<b>\$821,175</b>		
	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Extension</b>
1a Extend sidewalk on west side clearing - 2,760 l.f. x 5'	SF	13,800	\$1.00	\$13,800
1b Extend sidewalk on west side, grading - 2,760 l.f. x 5'	SF	13,800	\$3.50	\$48,300
1c Increase height of retaining walls approximately 2'	LF	2,000	\$50.00	\$100,000
1d Extend 5' concrete sidewalk, curb and gutter to connect relocated existing portions - 2,760 l.f. x 5'	SF	13,800	\$20.00	\$276,000
	<b>Subtotal Construction</b>			<b>\$438,100</b>
2 Construction overhead - mobilization, general conditions - 10%				<b>\$43,810</b>
3 Contingency - 20% of all above				<b>\$96,382</b>
	<b>Total Construction</b>			<b>\$578,292</b>
<b>Design, Environmental and Administration:</b>				
4 Survey, tech studies, and design - 15%				<b>\$86,744</b>
5 Environmental - 10%				<b>\$57,829</b>
6 Project administration - 10%				<b>\$57,829</b>
7 Contingency - 20% of above 3 items				<b>\$40,480</b>
	<b>Total Design, Env., Admin.</b>			<b>\$242,883</b>

# Mill Valley to Corte Madera Bicycle and Pedestrian Corridor Study

<b>Segment 12B</b>	Along Camino Alto Road from Overhill Road to Mill Valley/Corte Madera city limit.			
	<b>Length: 3,850 feet/0.7 miles</b>			
	<b>Total Cost: \$1,365,172</b>			
<b>Construction Items:</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Extension</b>
1 Clearing and grubbing (LF x 10)	SF	40,000	\$2.00	\$80,000
2 Sawcut and remove A.C. 12" wide	LF	3,850	\$2.50	\$9,625
3 Grading for widening (LF x 10')	SF	40,000	\$3.50	\$140,000
4 Culvert extensions, assume 24" x 8', typical	EA	2	\$4,000	\$8,000
5 Retaining walls, avg. 4' high reinforced concrete w/ reinforced footing	LF	1,925	\$110	\$211,750
6 Base and A.C. pavement for climbing/bike lanes (LF x 10)	SF	38,500	\$6.00	\$231,000
7 Striping removal and replacement - lanes and shoulders (3 x LF)	LF	11,550	\$4.00	\$46,200
8 Bike traffic control/warning signs	EA	3	\$250	\$750
9 Wayfinding signs	EA	2	\$350	\$700
10 Milepost signs	EA	2	\$150	\$300
				<b>Subtotal Construction</b>
				\$728,325
11 Construction overhead - mobilization, general conditions - 10%				\$72,833
12 Contingency - 20% of all above				\$160,232
				<b>Total Construction</b>
				<b>\$961,389</b>
<b>Design, Environmental and Administration:</b>				
14 Survey, tech studies, and design - 15%				\$144,208
15 Environmental - 10%				\$96,139
16 Project administration - 10%				\$96,139
17 Contingency - 20% of above 3 items				\$67,297
				<b>Total Design, Env., Admin.</b>
				<b>\$403,783</b>
<b>Segment 13A</b>	From Mill Valley/Corte Madera city limit to Open Space boundary and start of pedestrian path			
	<b>Length: 2,570 feet/0.5 miles</b>			
	<b>Total Cost: \$760,575</b>			
<b>Construction Items:</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Extension</b>
1 Clearing and grubbing (LF x 5)	SF	12,850	\$2.00	\$25,700
2 Sawcut and remove A.C. curb and pavement 12" wide	LF	2,570	\$2.50	\$6,425
3 Culvert extensions, assume 24" x 8', typical	EA	4	\$4,000	\$16,000
4 Grading for widening (LF x 5')	SF	12,850	\$3.50	\$44,975
5 Base and A.C. pavement for widening (LF x 4)	SF	10,280	\$6.00	\$61,680
6 Retaining walls, avg. 4' high reinforced concrete/footing	LF	1,700	\$110	\$187,000
7 Road and driveway conform work - minor removal, grading and paving	EA	6	\$5,000	\$30,000.00
8 Striping removal and replacement - lanes and shoulders (3 x LF)	LF	7,710	\$4.00	\$30,840.00
9 Bike traffic control/warning signs	EA	10	\$250	\$2,500
10 Wayfinding signs	EA	1	\$350	\$350
11 Milepost signs	EA	2	\$150	\$300
				<b>Subtotal Construction</b>
				\$405,770.00
12 Construction overhead - mobilization, general conditions - 10%				\$40,577.00
13 Contingency - 20% of all above				\$89,269.40
				<b>Total Construction</b>
				<b>\$535,616</b>
<b>Design, Environmental and Administration:</b>				
14 Survey, tech studies, and design - 15%				\$80,342.46
15 Environmental - 10%				\$53,561.64
16 Project administration - 10%				\$53,561.64
17 Contingency - 20% of all above				\$37,493.15
				<b>Total Design, Env., Admin.</b>
				<b>\$224,959</b>

# Mill Valley to Corte Madera Bicycle and Pedestrian Corridor Study

<b>Segment 13B</b>	From Open Space boundary and start of pedestrian path to Redwood Avenue, and along Redwood Avenue to Tamalpais Drive				
	<b>Length: 2,710 feet/0.5 miles</b>				
	<b>Total Cost: \$876,563</b>				
<b>Construction Items:</b>		<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Extension</b>
1	Clearing and grubbing (1,700 LF x 5')	SF	8,500	\$2.00	\$17,000
2	Sawcut and remove A.C. curb and pavement 12" wide	LF	1,700	\$2.50	\$4,250
3	Culvert extensions, assume 24" x 8', typical	EA	4	\$4,000	\$16,000
4	Grading for widening (1,700 LF x 5')	SF	8,500	\$3.50	\$29,750
5	Base and A.C. pavement for widening (1,700 LF x 4)	SF	6,800	\$6.00	\$40,800
6	Retaining walls, avg. 4' high reinforced concrete/footing	LF	1,100	\$55.00	\$60,500
7	Road and driveway conform work - minor removal, grading and paving	EA	30	\$5,000.00	\$150,000.00
8	Striping removal and replacement - lanes and shoulders (1700 LF x 3)	LF	5,100	\$4.00	\$20,400.00
9	Reconstruct/improve existing pedestrian path (1,700 LF x 5)	SF	8,500	\$15.00	\$127,500.00
10	Bike traffic control/warning signs	EA	1	\$250	\$250
11	Wayfinding signs	EA	3	\$350	\$1,050
12	Milepost signs	EA	1	\$150	\$150
	Subtotal Construction				\$467,650.00
13	Construction overhead - mobilization, general conditions - 10%				\$46,765.00
14	Contingency - 20% of all above				\$102,883.00
	<b>Total Construction</b>				<b>\$617,298</b>
<b>Design, Environmental and Administration:</b>					
15	Survey, tech studies, and design - 15%				\$92,594.70
16	Environmental - 10%				\$61,729.80
17	Project administration - 10%				\$61,729.80
18	Contingency - 20% of all above				\$43,210.86
	<b>Total Design, Env., Admin.</b>				<b>\$259,265</b>
<b>Segment 10</b>	From Redwood Avenue, along Montecito and existing Sandra Marker Trail north and east to Wornum Way at Tamal Vista Ave.				
	<b>Length: 6,638 feet/1.4 miles</b>				
	<b>Total Cost: \$164,197</b>				
	<i>See Alto Tunnel Route for detailed estimate</i>				

# Mill Valley to Corte Madera Bicycle and Pedestrian Corridor Study

## Table 2 – Alto Tunnel Cost Estimate

Factored Construction Cost Estimate for Alto Tunnel based on Cal Park Hill Tunnel Bids						Comparison	Cal Park Hill Tunnel	Alto Tunnel	
						Width	31 feet	13 feet	
						Length	1,100 feet	2,173 feet	
Cal Park Bid Item No.	Item Description	Cal Park Bids 8/27/08				Alto Tunnel			
		Unit of Measure	Quantity	Average Unit Price	Average Amount	Estimated Quantity or Factor	Base Cost	AACE Class 4 Estimate (Feasibility) Range	
							Lower Range	Upper Range	
1	Mobilization	LS	1		\$941,450	1	\$941,450	\$941,450	\$941,450
2	Traffic Control	LS	1		\$37,829	1	\$37,829	\$37,829	\$37,829
3	Clearing and Grubbing*	LS	1		\$63,952	0	\$0	\$0	\$0
4	Remove Existing Tracks	LS	1		\$88,802	2	\$177,604	\$177,604	\$177,604
5	Site Demolition	LS	1		\$88,326	0	\$0	\$0	\$0
6	Site Excavation	CY	1,000	\$84.67	\$84,667	2,000	\$169,333	\$169,333	\$169,333
7	Soil Nail Assembly	LF	272	\$103.22	\$28,076	0	\$0	\$0	\$0
8	Retaining Wall (Soil Nail)*	SF	620	\$48.88	\$30,303	0	\$0	\$0	\$0
9	Prepare Subgrade	SY	1,580	\$16.76	\$26,477	3,139	\$52,601	\$52,601	\$52,601
10	Aggregate Base	CY	753	\$110.40	\$83,132	523	\$57,740	\$57,740	\$57,740
11	Asphalt Paving	SY	1,465	\$55.00	\$144,959	3,139	\$172,645	\$172,645	\$172,645
12	Storm Drainage, Outside Tunnel (see Note 1)	LS	1		\$42,893	0	\$0	\$0	\$0
13	Underdrain, Tunnel (Rail Side)	LF	1,100	\$108.39	\$119,225	0	\$0	\$0	\$0
14	Trench Drain, Tunnel (Pathway Side)	LF	1,100	\$97.11	\$106,825	2,173	\$211,028	\$211,028	\$211,028
15	Graffiti Protection Coating	SF	24,930	\$3.25	\$81,060	43,460	\$141,310	\$0	\$141,310
16	Domestic and Fire Water System	LS	1		\$252,382	n/a (see Note 2)	\$600,850	\$600,850	\$600,850
17	Power Distribution	LS	1		\$297,187	n/a	\$349,643	\$349,643	\$349,643
18	Lighting, Partial Pathway and Tunnel	LS	1		\$201,932	2	\$403,865	\$403,865	\$548,776
19	Communication and CCTV, Pathway and Tunnel	LS	1		\$496,900	n/a	\$576,900	\$576,900	\$576,900
23	Tunnel Support and Rehabilitation for Type I (see Note 4)	LF	168	\$3,728.00	\$609,671	125	\$375,000	\$375,000	\$375,000
20	Tunnel Support and Rehabilitation for Type II	LF	158	\$5,435.57	\$858,820	1,046	\$5,685,606	\$5,685,606	\$8,740,396
22	Tunnel Support and Rehabilitation for Type III	LF	694	\$1,553.54	\$1,078,155	562	\$873,088	\$873,088	\$683,557
21	Tunnel Support and Rehabilitation for Type IV	LF	80	\$2,480.08	\$198,407	440	\$1,091,237	\$1,091,237	\$0
24	Fan Control Room Excavation and Support	LS	1		\$69,690	1	\$69,690	\$0	\$69,690
25	Excavate, Haul, and Dispose Tunnel Invert	CY	2050	\$68.71	\$140,850	2,093	\$143,771	\$143,771	\$143,771
26	Furnish Steel Sets and Precast Concrete Block Footings	EA	252	\$4,314.17	\$1,087,171	579	\$2,497,906	\$2,497,906	\$3,132,089
27	Furnish Steel Channel Lagging	SF	21,220	\$34.45	\$625,987	0	\$0	\$0	\$0
28	Furnish Additional Steel Channel Lagging	SF	0	\$50.43	\$6	0	\$0	\$0	\$0
29	Furnish Rock Bolts	EA	247	\$134.49	\$33,218	364	\$48,953	\$48,953	\$0
30	Shotcrete Tunnel Walls and Crown	CY	2,400	\$800.22	\$1,920,533	2,432	\$1,946,140	\$1,946,140	\$1,946,140
31	Additional Cellular Concrete Fill	CY	1,100	\$396.29	\$435,917	2,354	\$932,664	\$932,664	\$1,433,770
32	Fill Tunnel Voids and Re-contour Above Tunnel Portal Areas	LS	1		\$230,190	0	\$0	\$0	\$0
33	Modify Existing Tunnel Gates	LS	1		\$18,812	n/a	\$36,000	\$36,000	\$36,000
34	Allowance for Hazardous Material Disposal	LS	1160		\$2,172,640	n/a	\$50,000	\$50,000	\$50,000
35	Fire Alarm System, Tunnel	LS	1		\$71,840	2	\$143,680	\$143,680	\$143,680
36	Tunnel Ventilation	LS	1		\$47,538	2	\$95,076	\$0	\$95,076
(see Note 3)									
A	Structure Protection (not in Cal Park)	EACH		\$20,000.00	\$120,000	6	\$720,000	\$120,000	\$720,000
B	Building Monitoring (not in Cal Park)	LS			\$80,000	1	\$80,000	\$80,000	\$80,000
C	South Portal Reconstruction	EACH			\$75,000	1	\$75,000	\$75,000	\$75,000
Subtotal Construction Cost					\$12,815,820		\$18,756,609	\$17,850,533	\$21,761,878
Escalation 1 yr @ 2% (on base costs only - not contingencies)					\$256,316		\$375,132	\$357,011	\$435,238
Subtotal w/ escalation					\$13,100,000		\$19,131,741	\$18,207,543	\$22,197,116
Construction Cost Contingency							\$6,444,732	\$6,110,563	\$7,529,794
<b>Total Construction Cost w/ contingency</b>							<b>\$25,576,473</b>	<b>\$24,318,107</b>	<b>\$29,726,910</b>
Cost Estimate Accuracy Allowance					20%		\$5,115,294.55	\$4,863,621.39	\$5,945,381.91
<b>Total Construction Cost w/ contingency and accuracy allowance</b>							<b>\$30,691,767</b>	<b>\$29,181,728</b>	<b>\$35,672,291</b>
Survey, Technical Studies, and Engineering Design					15%		\$3,836,471	\$3,647,716	\$4,459,036
Environmental Analysis, documentation, and related permits					10%		\$2,557,647	\$2,431,811	\$2,972,691
Project Administration					10%		\$2,557,647	\$2,431,811	\$2,972,691
Construction Management					10%		\$2,557,647	\$2,431,811	\$2,972,691
Cost to address ROW issues (placeholder allowance by others)					LS		\$500,000	\$500,000	\$1,500,000
<b>Total Non-Construction Project Costs</b>							<b>\$11,509,413</b>	<b>\$11,443,148</b>	<b>\$14,877,109</b>
<b>Total Project Costs</b>								<b>\$ 40,624,877</b>	<b>\$ 50,549,401</b>
<b>Notes:</b>								<b>Lower Range</b>	<b>Higher Range</b>
1. In other estimates by Nolte Engineers.									
2. n/a indicates cost estimated based on selected components of Engineer's Estimate for Cal Park Hill Tunnel.									
3. Lettered bid items were not part of Cal Park Hill Tunnel contract, and were estimated as allowances for Alto Tunnel.									
4. Tunnel Support & Rehab includes disposal of existing timber sets.									
5. Base costs are in 2008 dollars (Cal Park bid date); estimate assumes one year of escalation to 2009 dollars.									
Further cost estimate adjustments will be necessary depending on actual date of construction and economic conditions at that time.									
6. Environmental mitigation in contingency.									
7. See Appendix B, Tunnel Feasibility Study for additional assumptions.									

## Mill Valley to Corte Madera Bicycle and Pedestrian Corridor Study

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**Table 3 – Alto Tunnel Portal Area Drainage Improvement Costs**

Item	Description	Unit	Quantity	Cost/unit	Cost
<b>North Portal</b>					
1	12" CMP down drain	LF	5	\$190	\$950
2	15" CMP down drain	LF	10	\$200	\$2,000
3	30" CMP down drain	LF	30	\$300	\$9,000
4	12" CMP	LF	105	\$175	\$18,375
5	15" CMP	LF	30	\$185	\$5,550
6	48" CMP	LF	555	\$600	\$333,000
7	Outfall (Headwall, Rock Slope Protection, and Filter Fabric)	EA	2	\$12,800	\$25,600
8	Storm Drain Manhole	EA	5	\$6,500	\$32,500
9	Storm Drain Inlet	EA	5	\$3,500	\$17,500
10	Stormwater Quality Elements	LS	1	\$65,000	\$65,000
	<b>Subtotal</b>				<b>\$509,475</b>
<b>South Portal</b>					
1	6" PVC under drain	LF	1,355	\$90	\$121,950
2	24" CMP	LF	200	\$250	\$50,000
3	Outfall (Headwall, Rock Slope Protection, and Filter Fabric)	EA	2	\$6,400	\$12,800
4	Earthwork - Excavation	CY	350	\$60	\$21,000
5	Stormwater Quality Elements	LS	1	\$35,000	\$35,000
	<b>Subtotal</b>				<b>\$240,750</b>
	<b>TOTAL</b>				<b>\$750,225</b>