

Appendix E. Planning Level Cost Assumptions

Planning Level Cost Estimates by Facility Type

Shared Lane Markings				
<i>Includes: shared lane signing & striping</i>				
Item	Unit	Quantity	Unit Cost	Total Cost
Sign for City Inst, 4 Sq Ft < 9 Sq Ft	EA	22	\$35.00	\$770
Sign Post for City Inst, 2" Square	EA	22	\$45.00	\$990
Sharrow (Durable)	EA	42	\$200.00	\$8,400
Subtotal				\$10,160
Lump Sum Items				
Mobilization (10%)	LS	1.00	\$1,016.00	\$1,016
Traffic Control (10%)	LS	1.00	\$1,016.00	\$1,016
Design + Construction Engineering (30%)	LS	1.00	\$3,048.00	\$3,048
			Subtotal	\$15,240
			20% Contingency	\$3,048
			Total Estimated Per-Mile Cost (2018 Estimate)	\$19,000

Assumptions

- | Sign every 500 feet, each side of road
- | Sign every 500 feet, each side of road
- | Symbol every 250 feet each side of road

Bike Lanes				
<i>Includes: bike lane signing & striping; removal of existing striping</i>				
Item	Unit	Quantity	Unit Cost	Total Cost
Removal of Pavement Marking	LF	2,650	\$0.50	\$1,325
Paint Mkg, 4" Poly	LF	10,560	\$1.25	\$13,200
Durable Mkg, Symbol	EA	42	\$250.00	\$10,500
Sign for City Inst, 4 Sq Ft < 9 Sq Ft	EA	22	\$35.00	\$770
Sign Post for City Inst, 2" Square	EA	22	\$45.00	\$990
Subtotal				\$26,785
Lump Sum Items				
Mobilization (10%)	LS	1.00	\$2,679.00	\$2,679
Traffic Control (10%)	LS	1.00	\$2,679.00	\$2,679
Design + Construction Engineering (30%)	LS	1.00	\$8,036.00	\$8,036
			Subtotal	\$40,179
			20% Contingency	\$8,036
			Total Estimated Per-Mile Cost (2018 Estimate)	\$49,000

Assumptions

- Remove 2 4" skip lines
- 2 solid lines entire length
- | Symbol every 250 feet, each side of road
- | Sign every 500 feet, each side of road
- | Sign every 500 feet, each side of road

Bi-Directional Buffered Bike Lanes				
<i>Includes: buffered bike lane signing & striping (2' buffer); restriping for outside drive lane conversion</i>				
Item	Unit	Quantity	Unit Cost	Total Cost
Removal of Pavement Marking	LF	7,930	\$0.50	\$3,965
Paint Mkg, 4" Poly	LF	21,960	\$1.25	\$27,450
Durable Mkg, Symbol	EA	42	\$250.00	\$10,500
Sign for City Inst, 4 Sq Ft < 9 Sq Ft	EA	22	\$35.00	\$770
Sign Post for City Inst, 2" Square	EA	22	\$45.00	\$990
Subtotal				\$43,675
Lump Sum Items				
Mobilization (10%)	LS	1.00	\$4,368.00	\$4,368
Traffic Control (10%)	LS	1.00	\$4,368.00	\$4,368
Design + Construction Engineering (30%)	LS	1.00	\$13,103.00	\$13,103
			Subtotal	\$65,514
			20% Contingency	\$13,103
			Total Estimated Per-Mile Cost (2018 Estimate)	\$79,000

Assumptions

- Remove 2 skip lines
- 4 solid lines entire length, horizontal buffer stripe every 25'
- | symbol every 250 feet each side of road
- | sign every 500 feet, each side of road
- | sign every 500 feet, each side of road

One-way Buffered Bike Lane

Includes: buffered bicycle lane signing & striping in one direction (2' buffer); restriping for outside drive lane conversion

Item	Unit	Quantity	Unit Cost	Total Cost
Removal of Pavement Marking	LF	1,325	\$0.50	\$663
Paint Mkg, 4" Poly	LF	10,990	\$1.25	\$13,738
Durable Mkg, Symbol	EA	22	\$250.00	\$5,500
Sign for City Inst, 4 Sq Ft < 9 Sq Ft	EA	22	\$35.00	\$770
Sign Post for City Inst, 2" Square	EA	11	\$45.00	\$495
Subtotal				\$21,165
Lump Sum Items				
Mobilization (10%)	LS	1.00	\$2,117.00	\$2,117
Traffic Control (10%)	LS	1.00	\$2,117.00	\$2,117
Design + Construction Engineering (30%)	LS	1.00	\$6,350.00	\$6,350
			Subtotal	\$31,749
			20% Contingency	\$6,350
			Total Estimated Per-Mile Cost (2018 Estimate)	\$39,000

Assumptions

- Remove 1 skip line
- 2 solid lines entire length, horizontal buffer stripe every 25'
- 1 symbol every 250
- 1 sign every 500 feet
- 1 sign every 500 feet

Separated Bike Lanes (Curb Stops & Flexposts)

Includes: new 8' street-level separated bike lanes (6' bike lane and 2' curb stops) in both directions with bicycle lane signs, restriping for outside drive lane conversion

Item	Unit	Quantity	Unit Cost	Total Cost
Removal of Pavement Marking	LF	2,640	\$0.50	\$1,320
Paint Mkg, 4" Poly	LF	23,785	\$1.25	\$29,731
Durable Mkg, Symbol	EA	40	\$250.00	\$10,000
Sign for Contractor Inst, 4 Sq Ft < 9 Sq Ft	EA	22	\$110.00	\$2,420
Sign Post for Contractor Inst, 2" Square	EA	22	\$100.00	\$2,200
2x10 Precast Concrete Curb	EA	700	\$1,085.00	\$759,500
Stainless Steel Anchor Rod	EA	140	\$95.00	\$13,300
Flexpost	EA	110	\$240.00	\$26,400
Conflict Zone Marking	SF	1280	\$12.00	\$15,360
Subtotal				\$860,231
Lump Sum Items				
Mobilization (10%)	LS	1.00	\$86,023.00	\$86,023
Landscaping (5%)	LS	1.00	\$43,012.00	\$43,012
Drainage (20%)	LS	1.00	\$172,046.00	\$172,046
Design + Construction Engineering (30%)	LS	1.00	\$258,069.00	\$258,069
Surveying (2%)	LS	1.00	\$17,205.00	\$17,205
Traffic Control (10%)	LS	1.00	\$86,023.00	\$86,023
			Subtotal	\$1,522,609
			20% Contingency	\$304,522
			Total Estimated Per-Mile Cost (2018 Estimate)	\$1,900,000

Assumptions

- Removes 2 skip lines
- 4 solid lines and 2 skip lines
- 1 symbol every 250 feet
- 1 sign every 500 feet, each side of road
- 1 sign every 500 feet, each side of road
- Curbs spaced 5 feet apart
- 5 rods per curb
- 1 post every 100 feet, each side of road
- 8x20 green pavement area every 1/4 mile, each side of road

Separated Bike Lanes (Curb Stops & Flexposts with Widening)				
<i>Includes: widen road 6 feet on both sides, new 8 foot separated bike lane in both directions</i>				
Item	Unit	Quantity	Unit Cost	Total Cost
Removal of Pavement Marking	LF	2,640	\$0.50	\$1,320
Removal of Curb & Gutter	LF	10,560	\$10.00	\$105,600
Removal of Pavement	SY	2,347	\$9.00	\$21,123
Excavation	CY	6,258	\$7.00	\$43,806
Aggregate Base Course	CY	3,129	\$75.00	\$234,675
HMA	TON	4,235	\$88.00	\$372,680
Paint Mkg, 4" Poly	LF	23,785	\$1.25	\$29,731
Durable Mkg, Symbol	EA	40	\$250.00	\$10,000
Sign for Contractor Inst, 4 Sq Ft < 9 Sq Ft	EA	22	\$110.00	\$2,420
Sign Post for Contractor Inst, 2" Square	EA	22	\$100.00	\$2,200
2x10 Precast Concrete Curb	EA	700	\$1,085.00	\$759,500
Stainless Steel Anchor Rod	EA	140	\$95.00	\$13,300
Flexpost	EA	110	\$240.00	\$26,400
Curb & Gutter	LF	10560	\$35.00	\$369,600
Conflict Zone Marking	SF	1280	\$12.00	\$15,360
Subtotal				\$2,007,715
Lump Sum Items				
Mobilization (10%)	LS	1.00	\$200,772.00	\$200,772
Landscaping (5%)	LS	1.00	\$100,386.00	\$100,386
Drainage (20%)	LS	1.00	\$401,543.00	\$401,543
Design + Construction Engineering (30%)	LS	1.00	\$602,315.00	\$602,315
Surveying (2%)	LS	1.00	\$40,154.00	\$40,154
Traffic Control (10%)	LS	1.00	\$200,772.00	\$200,772
			Subtotal	\$3,553,657
			20% Contingency	\$710,731
			Total Estimated Per-Mile Cost (2018 Estimate)	\$4,300,000

Assumptions

- Remove 2 skip lines
- 2 foot sawcut on both sides of road
- 8 foot width and 2 foot depth on both sides of road
- 4 solid lines and 2 skip lines
- 1 symbol every 250 feet
- 1 sign every 500 feet, each side of road
- 1 sign every 500 feet, each side of road
- Curbs spaced 5 feet apart
- 5 rods per curb
- 1 post every 100 feet, each side of road
- 8x20 green pavement area every 1/4 mile, each side of road

Sidewalk Level Separated Bike Lanes				
<i>Includes: replacement of existing 5 foot concrete sidewalk with new 6 foot separated bike lane, 6 foot sidewalk, and 3 foot landscaped buffer alongside roadway; may require some retaining walls</i>				
Item	Unit	Quantity	Unit Cost	Total Cost
Removal of Sidewalk	SF	52,803	\$4.00	\$211,212
Excavation	CY	9,387	\$7.00	\$65,709
Aggregate Base Course	CY	4,693	\$75.00	\$351,975
Concrete Sidewalk (6")	SF	126,720	\$9.20	\$1,165,824
Paint Mkg, 4" Poly	LF	23,785	\$1.25	\$29,731
Durable Mkg, Symbol	EA	40	\$250.00	\$10,000
Sign for Contractor Inst, 4 Sq Ft < 9 Sq Ft	EA	11	\$110.00	\$1,210
Sign Post for Contractor Inst, 2" Square	EA	11	\$100.00	\$1,100
Conflict Zone Marking	SF	1280	\$12.00	\$15,360
Clearing & Grubbing	LS	1	\$2,000.00	\$2,000
Subtotal				\$1,854,121
Lump Sum Items				
Mobilization (10%)	LS	1.00	\$185,412.00	\$185,412
Landscaping (5%)	LS	1.00	\$92,706.00	\$92,706
Drainage (20%)	LS	1.00	\$370,824.00	\$370,824
Design + Construction Engineering (30%)	LS	1.00	\$556,236.00	\$556,236
Surveying (2%)	LS	1.00	\$37,082.00	\$37,082
Traffic Control (10%)	LS	1.00	\$185,412.00	\$185,412
			Subtotal	\$3,281,793
			20% Contingency	\$656,359
			Total Estimated Per-Mile Cost (2018 Estimate)	\$4,000,000

Assumptions

- 5 foot sidewalk on both sides of road
- 12 foot disturbance on one sides of road, 2 foot depth
- 12 feet wide, 1 foot deep on both sides of road
- 6 foot separated bike lane and 6 foot sidewalk on both sides of road
- 1 solid line on both sides of road
- 1 symbol every 250 feet (cycle track)
- 1 sign every 1000 feet, each side of road
- 1 post per two signs
- 8x20 green pavement area every 1/4 mile, each side of road

Sidepath (one side, replacing existing sidewalk)				
<i>Includes: replace existing concrete sidewalk with new 10 foot sidepath along one side of the road</i>				
Item	Unit	Quantity	Unit Cost	Total Cost
Removal of Sidewalk	SF	26,400	\$4.00	\$105,600
Excavation	CY	9,311	\$7.00	\$65,177
Aggregate Base Course	CY	1,956	\$75.00	\$146,700
Concrete Sidewalk (6")	SF	52,800	\$9.20	\$485,760
Conflict Zone Marking	SF	800	\$12.00	\$9,600
Clearing & Grubbing	LS	1	\$2,000.00	\$2,000
Subtotal				\$814,837
Lump Sum Items				
Mobilization (10%)	LS	1.00	\$81,484.00	\$81,484
Landscaping (5%)	LS	1.00	\$40,742.00	\$40,742
Drainage (20%)	LS	1.00	\$162,967.00	\$162,967
Design + Construction Engineering (30%)	LS	1.00	\$244,451.00	\$244,451
Surveying (2%)	LS	1.00	\$16,297.00	\$16,297
Traffic Control (10%)	LS	1.00	\$81,484.00	\$81,484
			Subtotal	\$1,442,262
			20% Contingency	\$288,452
			Total Estimated Per-Mile Cost (2018 Estimate)	\$1,800,000

Assumptions

- 5 foot width on one side of road
- 10x2 foot disturbance on one side of road
- 10 foot width, 1 foot depth on one side of road
- 10 foot width on one side of road
- 10x20 green pavement area every 1/4 mile, one side of road

Sidepath (one side, new)				
<i>Includes: new 10 foot sidepath along one side of the road</i>				
Item	Unit	Quantity	Unit Cost	Total Cost
Excavation	CY	3,911	\$7.00	\$27,377
Aggregate Base Course	CY	1,956	\$75.00	\$146,700
Concrete Sidewalk (6")	SF	52,800	\$9.20	\$485,760
Conflict Zone Marking	SF	800	\$12.00	\$9,600
Clearing & Grubbing	LS	1	\$2,000.00	\$2,000
Subtotal				\$671,437
Lump Sum Items				
Mobilization (10%)	LS	1.00	\$67,144.00	\$67,144
Landscaping (5%)	LS	1.00	\$33,572.00	\$33,572
Drainage (20%)	LS	1.00	\$134,287.00	\$134,287
Design + Construction Engineering (30%)	LS	1.00	\$201,431.00	\$201,431
Surveying (2%)	LS	1.00	\$13,429.00	\$13,429
Traffic Control (10%)	LS	1.00	\$67,144.00	\$67,144
			Subtotal	\$1,188,444
			20% Contingency	\$237,689
			Total Estimated Per-Mile Cost (2018 Estimate)	\$1,430,000

Assumptions

- 10x2 foot disturbance on one side of road
- 10 foot width, 1 foot depth on one side of road
- 10 foot width on one side of road
- 10x20 green pavement area every 1/4 mile, one side of road

Bicycle Boulevard				
<i>Includes: shared lane signing & striping, traffic calming features</i>				
Item	Unit	Quantity	Unit Cost	Total Cost
Removal of Pavement (Curb Extension)	SY	311	\$9.00	\$2,799
Excavation (Curb Extension)	CY	207	\$7.00	\$1,449
Aggregate Base Course (Curb Extension)	CY	104	\$75.00	\$7,800
Sign for City Inst, 4 Sq Ft < 9 Sq Ft	EA	22	\$35.00	\$770
Sign Post for City Inst, 2" Square	EA	22	\$45.00	\$990
Sharrow (Durable)	EA	42	\$200.00	\$8,400
Mini Roundabout	EA	2	\$300,000.00	\$600,000
Concrete Sidewalk (Curb Extension)	EA	8	\$2,500.00	\$20,000
Pedestrian Hybrid Signal	EA	2	\$175,000.00	\$350,000
Clearing & Grubbing	LS	1	\$2,000.00	\$2,000
Subtotal				\$994,208
Lump Sum Items				
Mobilization (10%)	LS	1.00	\$99,421.00	\$99,421
Landscaping (5%)	LS	1.00	\$49,710.00	\$49,710
Drainage (20%)	LS	1.00	\$198,842.00	\$198,842
Design + Construction Engineering (30%)	LS	1.00	\$298,262.00	\$298,262
Surveying (2%)	LS	1.00	\$19,884.00	\$19,884
Traffic Control (10%)	LS	1.00	\$99,421.00	\$99,421
			Subtotal	\$1,759,748
			20% Contingency	\$351,950
			Total Estimated Per-Mile Cost (2018 Estimate)	\$2,120,000

Assumptions

10x2 foot disturbance on one side of road
 10 foot width, 1 foot depth on one side of road
 1 Sign every 500 feet, each side of road
 1 Sign every 500 feet, each side of road
 1 Symbol every 250 feet each side of road
 2 curb extensions every 1/4 mile

Rectangular Rapid Flashing Beacon (RRFB)				
Item	Unit	Quantity	Unit Cost	Total Cost
RRFB	EA	1	\$25,000.00	\$25,000
			Total Estimated Cost (2018 Estimate)	\$25,000

Assumptions

Median Refuge				
Item	Unit	Quantity	Unit Cost	Total Cost
Removal of Pavement	SY	7	\$9.00	\$63
Excavation	CY	5	\$7.00	\$35
Aggregate Base Course	CY	2	\$75.00	\$150
Concrete Sidewalk	SF	18	\$7.00	\$126
Curb & Gutter	LF	32	\$35.00	\$1,120
Concrete Curb Ramp	SY	5	\$150.00	\$750
Detectable Warning	SF	12	\$100.00	\$1,200
Subtotal				\$3,444
Lump Sum Items				
Mobilization (10%)	LS	1.00	\$344.00	\$344
Drainage (20%)	LS	1.00	\$689.00	\$689
Design + Construction Engineering (30%)	LS	1.00	\$1,033.00	\$1,033
Surveying (2%)	LS	1.00	\$69.00	\$69
Traffic Control (10%)	LS	1.00	\$344.00	\$344
			Subtotal	\$5,923
			20% Contingency	\$1,185
			Total Estimated Cost (2018 Estimate)	\$7,200

Assumptions

8 x 8 area
 8 x 8 area, 2 foot depth

Bike Signal Head				
Item	Unit	Quantity	Unit Cost	Total Cost
Bike Signal Head	EA	1	\$1,000.00	\$1,000
Total Estimated Cost (2018 Estimate)				\$1,000

Assumptions

Bike Crossing				
Item	Unit	Quantity	Unit Cost	Total Cost
Bike Crossing Markings	SF	175	\$20.00	\$3,500
Total Estimated Cost (2018 Estimate)				\$3,500