



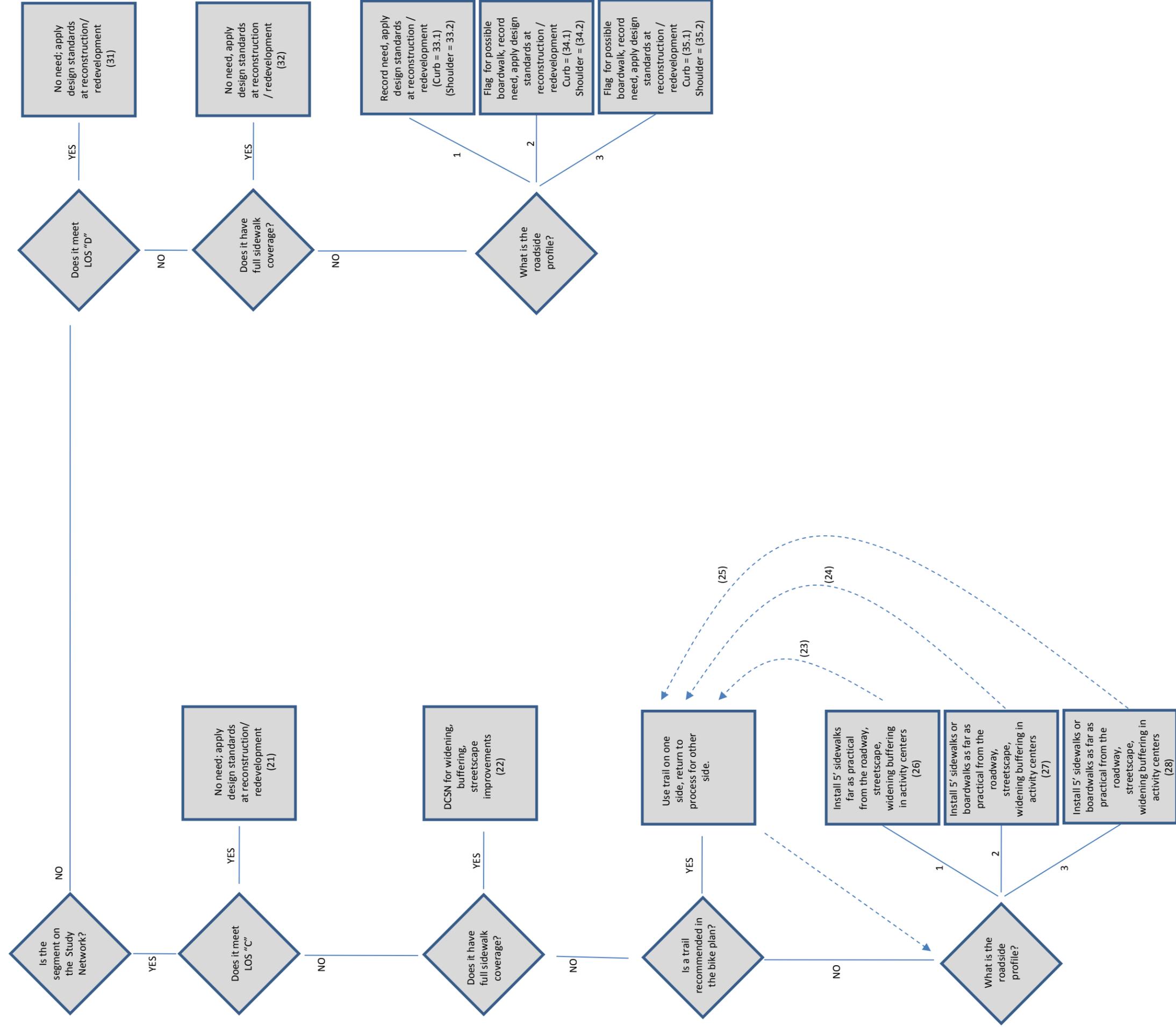
Appendix E: Facility Recommendation Processes and Cost Estimates

*FIGURE E.1: FLOW CHARTS FOR BICYCLE FACILITY
RECOMMENDATIONS*

*FIGURE E.2: FLOW CHARTS FOR PEDESTRIAN FACILITY
RECOMMENDATIONS*

*TABLE E.1: APPLICATION OF COST ESTIMATES TO FACILITY
RECOMMENDATIONS TYPES*

TABLES E.2-E.16 FACILITY COST ESTIMATES



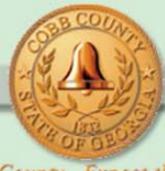
Cobb County Bicycle and Pedestrian Improvement Plan
 Figure E.2
 Flow Chart for Pedestrian Facility Recommendations

Table E.1: Application of Cost Estimates to Facility Recommendation Types			
Recommendation	Cost/Mile/Side	Sides Needed	Cost/mile Total
1	\$0	2	\$0
2	\$21,500	2	\$43,000
3	\$21,500	2	\$43,000
4	\$1,966,000	1	\$1,966,000
5.2	\$2,269,000	1	\$2,269,000
5.3	\$2,759,000	1	\$2,759,000
6	\$694,000	2	\$1,388,000
7	\$849,000	2	\$1,698,000
11	\$0		\$0
12	\$0		\$0
13	\$21,500	2	\$43,000
14	\$1,966,000	1	\$1,966,000
15	\$2,269,000	1	\$2,269,000
16	\$849,000	2	\$1,698,000
17	\$2,759,000	1	\$2,759,000
21	\$0		\$0
22	\$300,000	2	\$600,000
23.1	\$205,000	1	\$205,000
23.2	\$610,000	1	\$610,000
24.1	\$311,000	1	\$311,000
24.2	\$754,000	1	\$754,000
25.1	\$654,000	1	\$654,000
25.2	\$1,175,000	1	\$1,175,000
26.1	\$205,000	2	\$410,000
26.2	\$610,000	2	\$1,220,000
27.1	\$311,000	2	\$622,000
27.2	\$754,000	2	\$1,508,000
28.1	\$654,000	2	\$1,308,000
28.2	\$1,175,000	2	\$2,350,000
31	\$0	2	\$0
32	\$0	2	\$0
33.1	\$205,000	2	\$410,000
33.2	\$610,000	2	\$1,220,000
34.1	\$311,000	2	\$622,000
34.2	\$754,000	2	\$1,508,000
35.1	\$654,000	2	\$1,308,000
35.2	\$1,175,000	2	\$2,350,000
5.2 (Boardwalk)	\$2,978,000	1	\$2,978,000
5.3 (Boardwalk)	\$2,978,000	1	\$2,978,000
24 (Boardwalk)	\$1,577,000	1	\$1,577,000
25 (Boardwalk)	\$1,577,000	1	\$1,577,000
27 (Boardwalk)	\$3,154,000	1	\$3,154,000
28 (Boardwalk)	\$3,154,000	1	\$3,154,000
99 trail	\$3,118,736	1	\$3,118,736



Cobb County Bicycle and Pedestrian Improvement Plan

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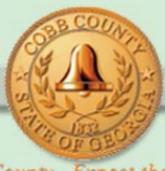
Project Type: Restriping - Blast off and Reapply Thermoplastic Stripe

Table with 6 columns: Item Description, Item Number, Unit Cost, Unit, Quantity, Cost/Mile. Includes sections for Construction, Right of Way, and Preliminary Engineering.

Notes/Assumptions:

- 1. Item descriptions and unit costs based on current (2008) Georgia DOT pay item index.
2. Catch basins placed every 350 feet, on applicable projects. Storm drain pipe is assumed for one third of project length.
3. Guardrail placed for half of project length, on applicable projects.
4. For applicable projects (Type 3), retaining walls assumed for one fifth of project length, at a height of 4 feet.
5. Traffic control for restriping is assumed to require 2 flaggers, 2 changeable message signs, and 8 hours of work to remove existing striping. Flagger costs adapted from North Carolina DOT.
6. Erosion control and grading complete/earthwork costs estimated from similar Cobb DOT projects.
7. Right of way requirements calculated based on similar project experience. Temporary easements assumed at 60% of right of way cost for areas required outside of roadway clear zone.
8. N/A = Not applicable.

Table E.2: Estimated cost for restriping



Project Type: Add 4 ft. Shoulder

Type 1 - Roadside is Basically Flat and Requires Minimal Regrading

Table with 6 columns: Item Description, Item Number, Unit Cost, Unit, Quantity, Cost/Mile. Includes sections for Construction, Right of Way, and Preliminary Engineering.

Notes/Assumptions:

- 1. Item descriptions and unit costs based on current (2008) Georgia DOT pay item index.
2. Catch basins placed every 350 feet, on applicable projects. Storm drain pipe is assumed for one third of project length.
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6. Erosion control and grading complete/earthwork costs estimated from similar Cobb DOT projects.
7. Right of way requirements calculated based on similar project experience. Temporary easements assumed at 60% of right of way cost for areas required outside of roadway clear zone.
8. N/A = Not applicable.

Table E.3: Estimated cost for adding paved shoulder (roadside profile 1)



Project Type: Add Shoulder

Type 2 - Roadside Requires Minor Regrading

Table with 6 columns: Item Description, Item Number, Unit Cost, Unit, Quantity, Cost/Mile. Includes sections for Construction, Right of Way, and Preliminary Engineering.

Notes/Assumptions:

- 1. Item descriptions and unit costs based on current (2008) Georgia DOT pay item index.
2. Catch basins placed every 350 feet, on applicable projects. Storm drain pipe is assumed for one third of project length.
3. Guardrail placed for half of project length, on applicable projects.
4. For applicable projects (Type 3), retaining walls assumed for one fifth of project length, at a height of 4 feet.
5. Traffic control for restriping is assumed to require 2 flaggers, 2 changeable message signs, and 8 hours of work to remove existing striping. Flagger costs adapted from North Carolina DOT. For other applicable project types, traffic control costs estimated from similar Cobb DOT projects.
6. Erosion control and grading complete/earthwork costs estimated from similar Cobb DOT projects.
7. Right of way requirements calculated based on similar project experience. Temporary easements assumed at 60% of right of way cost for areas required outside of roadway clear zone. Right of way cost taken from Georgia Rapid Transit Authority (GRTA) Costing Tool. Right of way is assumed 60% commercial 40% residential.
8. N/A = Not applicable.

Table E.4: Estimated cost for adding paved shoulder (roadside profile 2)



Project Type: Add Shoulder

Type 3 - Roadside Requires Major Cut and Fill, Possible Retaining Walls

Table with 6 columns: Item Description, Item Number, Unit Cost, Unit, Quantity, Cost/Mile. Includes sections for Construction, Right of Way, and Preliminary Engineering.

Notes/Assumptions:

- 1. Item descriptions and unit costs based on current (2008) Georgia DOT pay item index.
2. Catch basins placed every 350 feet, on applicable projects. Storm drain pipe is assumed for one third of project length.
3. Guardrail placed for half of project length, on applicable projects.
4. For applicable projects (Type 3), retaining walls assumed for one fifth of project length, at a height of 4 feet.
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6. Erosion control and grading complete/earthwork costs estimated from similar Cobb DOT projects.
7. Right of way requirements calculated based on similar project experience. Temporary easements assumed at 60% of right of way cost for areas required outside of roadway clear zone. Right of way cost taken from Georgia Rapid Transit Authority (GRTA) Costing Tool. Right of way is assumed 60% commercial 40% residential.
8. N/A = Not applicable.

Table E.5: Estimated cost for adding paved shoulder (roadside profile 3)



Project Type: Construct 5-foot Sidewalk
Type 1 - Roadside is Basically Flat and Requires Minimal Regrading

Table with 6 columns: Item Description, Item Number, Unit Cost, Unit, Quantity, Cost/Mile. Includes sections for Construction, Right of Way, and Preliminary Engineering.

- Notes/Assumptions: 1. Item descriptions and unit costs based on current (2008) Georgia DOT pay item index. 2. Catch basins placed every 350 feet, on applicable projects. 3. Guardrail placed for half of project length, on applicable projects. 4. For applicable projects (Type 3), retaining walls assumed for one fifth of project length, at a height of 4 feet. 5. Traffic control for restriping is assumed to require 2 flaggers, 2 changeable message signs, and 8 hours of work to remove existing striping. 6. Erosion control and grading complete/earthwork costs estimated from similar Cobb DOT projects. 7. Right of way requirements calculated based on similar project experience. 8. Right of way cost taken from Georgia Rapid Transit Authority (GRTA) Costing Tool.

Table E.6: Estimated cost for adding sidewalk and curb and gutter (roadside profile 1)

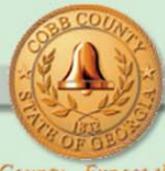


Project Type: Construct 5-foot Sidewalk, Use Existing Curb and Gutter
Type 1 - Roadside is Basically Flat and Requires Minimal Regrading

Table with 6 columns: Item Description, Item Number, Unit Cost, Unit, Quantity, Cost/Mile. Includes sections for Construction, Right of Way, and Preliminary Engineering.

- Notes/Assumptions: 1. Item descriptions and unit costs based on current (2008) Georgia DOT pay item index. 2. Catch basins placed every 350 feet, on applicable projects. 3. Guardrail placed for half of project length, on applicable projects. 4. For applicable projects (Type 3), retaining walls assumed for one fifth of project length, at a height of 4 feet. 5. Traffic control for restriping is assumed to require 2 flaggers, 2 changeable message signs, and 8 hours of work to remove existing striping. 6. Erosion control and grading complete/earthwork costs estimated from similar Cobb DOT projects. 7. Right of way requirements calculated based on similar project experience. 8. Right of way cost taken from Georgia Rapid Transit Authority (GRTA) Costing Tool.

Table E.7: Estimated cost for adding sidewalk only (roadside profile 1)

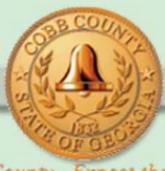


Project Type: Construct 5-foot Sidewalk
Type 2 - Roadside Requires Minor Regrading

Table with 6 columns: Item Description, Item Number, Unit Cost, Unit, Quantity, Cost/Mile. Includes sections for Construction, Right of Way, and Preliminary Engineering.

- Notes/Assumptions: 1. Item descriptions and unit costs based on current (2008) Georgia DOT pay item index. 2. Catch basins placed every 350 feet, on applicable projects. 3. Guardrail placed for half of project length, on applicable projects. 4. For applicable projects (Type 3), retaining walls assumed for one fifth of project length, at a height of 4 feet. 5. Traffic control for restriping is assumed to require 2 flaggers, 2 changeable message signs, and 8 hours of work to remove existing striping. 6. Erosion control and grading complete/earthwork costs estimated from similar Cobb DOT projects. 7. Right of way requirements calculated based on similar project experience. 8. N/A = Not applicable.

Table E.8: Estimated cost for adding sidewalk and curb and gutter (roadside profile 2)

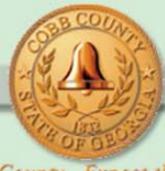


Project Type: Construct 5-foot Sidewalk, Use Existing Curb and Gutter
Type 2 - Roadside Requires Minor Regrading

Table with 6 columns: Item Description, Item Number, Unit Cost, Unit, Quantity, Cost/Mile. Includes sections for Construction, Right of Way, and Preliminary Engineering.

- Notes/Assumptions: 1. Item descriptions and unit costs based on current (2008) Georgia DOT pay item index. 2. Catch basins placed every 350 feet, on applicable projects. 3. Guardrail placed for half of project length, on applicable projects. 4. For applicable projects (Type 3), retaining walls assumed for one fifth of project length, at a height of 4 feet. 5. Traffic control for restriping is assumed to require 2 flaggers, 2 changeable message signs, and 8 hours of work to remove existing striping. 6. Erosion control and grading complete/earthwork costs estimated from similar Cobb DOT projects. 7. Right of way requirements calculated based on similar project experience. 8. N/A = Not applicable.

Table E.9: Estimated cost for adding sidewalk only (roadside profile 2)

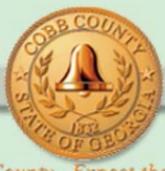


Project Type: Construct 5-foot Sidewalk
Type 3 - Roadside Requires Major Cut and Fill, Possible Retaining Walls

Table with 6 columns: Item Description, Item Number, Unit Cost, Unit, Quantity, Cost/Mile. Includes sections for Construction, Right of Way, and Preliminary Engineering.

- Notes/Assumptions: 1. Item descriptions and unit costs based on current (2008) Georgia DOT pay item index. 2. Catch basins placed every 350 feet, on applicable projects. 3. Guardrail placed for half of project length, on applicable projects.

Table E.10: Estimated cost for adding sidewalk and curb and gutter (roadside profile 3)

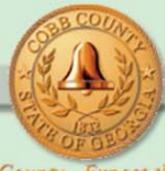


Project Type: Construct 5-foot Sidewalk, Use Existing Curb and Gutter
Type 3 - Roadside Requires Major Cut and Fill, Possible Retaining Walls

Table with 6 columns: Item Description, Item Number, Unit Cost, Unit, Quantity, Cost/Mile. Includes sections for Construction, Right of Way, and Preliminary Engineering.

- Notes/Assumptions: 1. Item descriptions and unit costs based on current (2008) Georgia DOT pay item index. 2. Catch basins placed every 350 feet, on applicable projects. 3. Guardrail placed for half of project length, on applicable projects.

Table E.11: Estimated cost for adding sidewalk only (roadside profile 3)



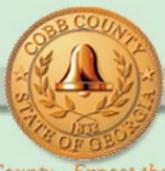
Project Type: Construct 10-foot Trail Behind 5-foot Separation, 2-foot Return to Grade
Type 1 - Roadside is Basically Flat and Requires Minimal Regrading

Table with 6 columns: Item Description, Item Number, Unit Cost, Unit, Quantity, Cost/Mile. Includes sections for Construction, Right of Way, and Preliminary Engineering.

Notes/Assumptions:

- 1. Item descriptions and unit costs based on current (2008) Georgia DOT pay item index.
2. Catch basins placed every 350 feet, on applicable projects. Storm drain pipe is assumed for one third of project length.
3. Guardrail placed for half of project length, on applicable projects.
4. For applicable projects (Type 3), retaining walls assumed for one fifth of project length, at a height of 4 feet.
5. Traffic control for restriping is assumed to require 2 flaggers, 2 changeable message signs, and 8 hours of work to remove existing striping. Flagger costs adapted from North Carolina DOT.
6. Erosion control and grading complete/earthwork costs estimated from similar Cobb DOT projects.
7. Right of way requirements calculated based on similar project experience. Temporary easements assumed at 60% of right of way cost for areas required outside of roadway clear zone.
8. N/A = Not applicable.

Table E.12: Estimated cost for constructing sidepath (roadside profile 1)



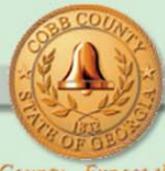
Project Type: Construct 10-foot Trail Behind 5-foot Separation, 2-foot Return to Grade
Type 2 - Roadside Requires Minor Regrading

Table with 6 columns: Item Description, Item Number, Unit Cost, Unit, Quantity, Cost/Mile. Includes sections for Construction, Right of Way, and Preliminary Engineering.

Notes/Assumptions:

- 1. Item descriptions and unit costs based on current (2008) Georgia DOT pay item index.
2. Catch basins placed every 350 feet, on applicable projects. Storm drain pipe is assumed for one third of project length.
3. Guardrail placed for half of project length, on applicable projects.
4. For applicable projects (Type 3), retaining walls assumed for one fifth of project length, at a height of 4 feet.
5. Traffic control for restriping is assumed to require 2 flaggers, 2 changeable message signs, and 8 hours of work to remove existing striping. Flagger costs adapted from North Carolina DOT.
6. Erosion control and grading complete/earthwork costs estimated from similar Cobb DOT projects.
7. Right of way requirements calculated based on similar project experience. Temporary easements assumed at 60% of right of way cost for areas required outside of roadway clear zone.
8. N/A = Not applicable.

Table E.13: Estimated cost for constructing sidepath (roadside profile 2)



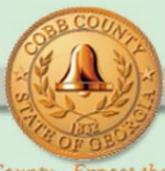
Project Type: Construct 10-foot Trail Behind 5-foot Separation, 2-foot Return to Grade
Type 3 - Roadside Requires Major Cut and Fill, Possible Retaining Wall

Table with 6 columns: Item Description, Item Number, Unit Cost, Unit, Quantity, Cost/Mile. Includes sections for Construction, Right of Way, and Preliminary Engineering.

Notes/Assumptions:

- 1. Item descriptions and unit costs based on current (2008) Georgia DOT pay item index.
2. Catch basins placed every 350 feet, on applicable projects. Storm drain pipe is assumed for one third of project length.
3. Guardrail placed for half of project length, on applicable projects.
4. For applicable projects (Type 3), retaining walls assumed for one fifth of project length, at a height of 4 feet.
5. Traffic control for restriping is assumed to require 2 flaggers, 2 changeable message signs, and 8 hours of work to remove existing striping.
6. Erosion control and grading complete/earthwork costs estimated from similar Cobb DOT projects.
7. Right of way requirements calculated based on similar project experience. Temporary easements assumed at 60% of right of way cost for areas required outside of roadway clear zone.
8. N/A = Not applicable.

Table E.14: Estimated cost for constructing sidepath (roadside profile 3)



Project Type: 6 foot Boardwalk to Serve as Sidewalk in Lieu of Regrading

Table with 6 columns: Item Description, Item Number, Unit Cost, Unit, Quantity, Cost/Mile. Includes sections for Construction, Right of Way, and Preliminary Engineering.

Notes/Assumptions:

- 1. Item descriptions and unit costs based on current (2008) Georgia DOT pay item index.
2. Catch basins placed every 350 feet, on applicable projects. Storm drain pipe is assumed for one third of project length.
3. Guardrail placed for half of project length, on applicable projects.
4. For applicable projects (Type 3), retaining walls assumed for one fifth of project length, at a height of 4 feet.
5. Traffic control for restriping is assumed to require 2 flaggers, 2 changeable message signs, and 8 hours of work to remove existing striping.
6. Erosion control and grading complete/earthwork costs estimated from similar Cobb DOT projects.
7. Right of way requirements calculated based on similar project experience. Temporary easements assumed at 60% of right of way cost for areas required outside of roadway clear zone.
8. N/A = Not applicable.

Table E.15: Estimated cost for constructing 6 foot boardwalk in lieu of regrading



Cobb County Bicycle and Pedestrian Improvement Plan

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Project Type: 12-foot Boardwalk for Sidewalk in Lieu of Regrading

Item Description	Item Number	Unit Cost	Unit	Quantity	Cost/Mile
1. Construction:					
Base and Paving					
Aggregate Base:					
10" GAB	310-5100	\$16.00	Square Yards	-	-
4" GAB	310-5040	\$10.00	Square Yards	-	-
Asphalt Paving:					
Surface Course (12.5 mm)	402-3113	\$80.50	Square Yards	-	-
Binder (19 mm)	402-3190	\$64.17	Square Yards	-	-
Base (25 mm)	402-3121	\$59.60	Square Yards	-	-
Drainage					
Curb and Gutter (6"x24")	441-6012	\$38.58	Linear Feet	-	-
Storm Drain Pipe (18")	550-1180	\$36.80	Linear Feet	-	-
Catch Basin	668-1100	\$2,453.15	Each	-	-
Other Items					
Boardwalk, 12' width	N/A	\$340.00	Linear Feet	5280	\$1,795,200.00
Sidewalk, 4 in. (5 ft. width)	441-0104	\$34.31	Square Yards	-	-
Pavement Markings:					
Thermoplastic Solid Traffic Stripe, 5 in. White	653-1501	\$0.38	Linear Feet	-	-
Remove Exist Traf. Markings	656-5000	\$1.50	Linear Feet	-	-
Guardrail	641-1200	\$15.58	Linear Feet	-	-
Class A Concrete, Retaining Wall	500-3107	\$120.00	Linear Feet	-	-
Traffic Control:					
Traffic Control, lump sum	150-1000	-	Lump Sum	-	\$15,000.00
Changeable Message Sign, Portable, Type 3	632-0003	\$5,158.22	Each	-	-
Flagger	-	\$20.00	Hour	-	-
Lump Items					
Erosion Control	-	-	Lump Sum	N/A	\$70,000.00
Grading Complete/Earthwork	210-0100	-	Lump Sum	N/A	\$35,000.00
	<i>Construction Subtotal</i>				<i>\$1,915,200.00</i>
	<i>20% Contingency</i>				<i>\$383,040.00</i>
	TOTAL Construction				\$2,298,240.00
2. Right of Way:					
Right of Way - Suburban, commercial (10 ft)	N/A	\$10.86	Square Feet	31680	\$344,044.80
Right of Way - Suburban, residential (10 ft)	N/A	\$2.65	Square Feet	21120	\$55,968.00
Temporary Easement - Suburban, commercial (4 ft)	N/A	\$6.52	Square Feet	12672	\$82,570.75
Temporary Easement - Suburban, residential (4 ft)	N/A	\$1.59	Square Feet	8448	\$13,432.32
	TOTAL Right of Way				\$496,015.87
3. Preliminary Engineering:					
8% of Construction Cost					\$183,859.20
	TOTAL Preliminary Engineering				\$183,859.20
TOTAL PROJECT COST (PER MILE)					\$2,978,115.07

Notes/Assumptions:

- Item descriptions and unit costs based on current (2008) Georgia DOT pay item index.
- Catch basins placed every 350 feet, on applicable projects. Storm drain pipe is assumed for one third of project length.
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- Erosion control and grading complete/earthwork costs estimated from similar Cobb DOT projects.
- Right of way requirements calculated based on similar project experience. Temporary easements assumed at 60% of right of way cost for areas required outside of roadway clear zone. Right of way cost taken from Georgia Rapid Transit Authority (GRTA) Costing Tool. Right of way is assumed 60% commercial 40% residential.
- N/A = Not applicable.

Table E.16: Estimated cost for constructing 12 foot boardwalk in lieu of regrading