

“ *I work in RTP and live in Cary. If there were connections to trails in Morrisville and Cary, I could walk or ride my bike to work.* **”**

- Community Survey Respondent



APPENDIX C
SUPPLEMENTARY
COST INFORMATION

Triangle Bikeway Study

Project Location: Orange, Durham, & Wake County, NC
Project Description: Paved Multi-Use Path
Client: CAMPO
Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

SEGMENT 1						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 365,660.98	\$ 365,660.98
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 54,000.00	\$ 54,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	20700	SY	\$ 2.25	\$ 46,575.00
520	1121000000-E	AGGREGATE BASE COURSE	8000	TON	\$ 34.75	\$ 278,000.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	2310	TON	\$ 90.00	\$ 207,900.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	140	TON	\$ 509.09	\$ 71,272.60
SP		PAVEMENT MARKINGS	1	LS	\$ 20,000.00	\$ 20,000.00
SP		EROSION CONTROL	13341	LF	\$ 22.00	\$ 293,502.00
SP		TRAFFIC CONTROL	1	LS	\$ 1,200,000.00	\$ 1,200,000.00
SP		LIGHTING	2.69	MI	\$ 250,000.00	\$ 672,500.00
SP		PREFABRICATED PEDESTRIAN BRIDGE	200	LF	\$ 3,500.00	\$ 700,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	1500	LF	\$ 1,250.00	\$ 1,875,000.00
SP		ENTRANCE DRIVEWAY CROSSING	2	EA	\$ 61,000.00	\$ 122,000.00
SP		MINOR ROAD CROSSING (UN-SIGNALIZED)	3	EA	\$ 61,000.00	\$ 183,000.00
SP		MINOR ROAD CROSSING (SIGNALIZED)	1	EA	\$ 170,760.00	\$ 170,760.00
SP		MAJOR ROAD CROSSING (SIGNALIZED)	1	EA	\$ 198,150.00	\$ 198,150.00
SP		EXISTING SIGNALIZED INTERSECTION CROSSING	6	EA	\$ 170,760.00	\$ 1,024,560.00
SP		COMPREHENSIVE GRADING, SEGMENT 1	1	LS	\$ 250,000.00	\$ 250,000.00

PRE-CONSTRUCTION COSTS		CONSTRUCTION COSTS			
	COST RANGE			CONSTRUCTION COST SUBTOTAL: <u>\$7,732,880.58</u>	
	10% of Construction	13% of Construction			SAY: <u>\$7,733,000</u>
SURVEY, DESIGN, BIDDING: \$	774,000	\$1,006,000			
		ESCALATION RATE	BUILD YEAR	BUILD YEAR	
		3%	2025	2030	
		ESCALATED CONSTRUCTION COST:		\$8,704,000	\$10,090,000
		CONSTRUCTION-ENGINEERING AND INSPECTIONS:			
		12% OF ESCALATED CONSTRUCTION COST:		\$1,045,000	\$1,211,000
		CONTINGENCY PERCENTAGE:		20%	20%
		PROJECT CONTINGENCY ON ESCALATED CONSTRUCTION COST:		\$1,741,000	\$2,018,000

SEGMENT 1 CONSTRUCTION COST RANGE: \$11,490,000 TO \$13,319,000
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- Notes:**
- Cost opinion does not include costs for easement or ROW acquisition. ROW costs will be identified in the preliminary design phase for each segment because of the variability in size and value of easements.
 - Construction Engineering and Inspection typically ranges between 9% and 12% of construction cost, 12% was assumed for estimating purposes.
 - Cost opinion does not include cost for private utility relocations.
 - Unit costs used in this cost opinion are representative of typical market costs as best known to the Consultant as of the date of this estimate.
 - Quantities used in this cost opinion are approximations based on feasibility study alignments by McAdams dated December 2021 and are subject to revision prior to bid.
 - The Engineer has no control over the cost of labor, materials, or equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs, as provided here, are made on the basis of the Engineer's experience and qualifications and represent the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from opinions of probable cost prepared for the Owner.

Triangle Bikeway Study

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ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

SEGMENT 2						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 505,697.12	\$ 505,697.12
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 54,000.00	\$ 54,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	17690	SY	\$ 2.25	\$ 39,802.50
520	1121000000-E	AGGREGATE BASE COURSE	6800	TON	\$ 34.75	\$ 236,300.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	1970	TON	\$ 90.00	\$ 177,300.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	120	TON	\$ 509.09	\$ 61,090.80
SP		PAVEMENT MARKINGS	1	LS	\$ 20,000.00	\$ 20,000.00
SP		EROSION CONTROL	13417	LF	\$ 22.00	\$ 295,174.00
SP		TRAFFIC CONTROL	1	LS	\$ 1,200,000.00	\$ 1,200,000.00
SP		LIGHTING	2.54	MI	\$ 250,000.00	\$ 635,000.00
SP		PREFABRICATED PEDESTRIAN BRIDGE	110	LF	\$ 3,500.00	\$ 385,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	2810	LF	\$ 1,250.00	\$ 3,512,500.00
SP		SIGNATURE PEDESTRIAN BRIDGE OVER I-40 (SEGMENT 2)	1	LS	\$ 1,540,000.00	\$ 1,540,000.00
SP		PEDESTRIAN TUNNEL UNDER NC-751 (SEGMENT 2)	1	LS	\$ 1,564,875.00	\$ 1,564,875.00
SP		CONTROL OF ACCESS FENCE	12690	LF	\$ 10.00	\$ 126,900.00
SP		COMPREHENSIVE GRADING, SEGMENT 2	1	LS	\$ 320,000.00	\$ 320,000.00

PRE-CONSTRUCTION COSTS			CONSTRUCTION COSTS			
COST RANGE			CONSTRUCTION COST SUBTOTAL: \$10,673,639.42			
10% of Construction			SAY: \$10,674,000			
SURVEY, DESIGN, BIDDING: \$ 1,068,000						
13% of Construction						
\$ 1,388,000						
			ESCALATION RATE	BUILD YEAR	BUILD YEAR	
			3%	2025	2030	
			ESCALATED CONSTRUCTION COST:			\$12,014,000
			CONSTRUCTION-ENGINEERING AND INSPECTIONS:			
			12% OF ESCALATED CONSTRUCTION COST:			\$1,442,000
			CONTINGENCY PERCENTAGE:			20%
			PROJECT CONTINGENCY ON ESCALATED CONSTRUCTION COST:			\$2,403,000

SEGMENT 2 CONSTRUCTION COST RANGE:
\$15,859,000 TO \$18,386,000

Notes:

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3. Cost opinion does not include cost for private utility relocations.
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ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

SEGMENT 3						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 622,043.85	\$ 622,043.85
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 104,000.00	\$ 104,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	44220	SY	\$ 2.25	\$ 99,495.00
520	1121000000-E	AGGREGATE BASE COURSE	17000	TON	\$ 34.75	\$ 590,750.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	4920	TON	\$ 90.00	\$ 442,800.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	300	TON	\$ 509.09	\$ 152,727.00
SP		PAVEMENT MARKINGS	1	LS	\$ 40,000.00	\$ 40,000.00
SP		EROSION CONTROL	27482	LF	\$ 22.00	\$ 604,604.00
SP		TRAFFIC CONTROL	1	LS	\$ 1,900,000.00	\$ 1,900,000.00
SP		LIGHTING	5.2	MI	\$ 250,000.00	\$ 1,300,000.00
SP		PREFABRICATED PEDESTRIAN BRIDGE	275	LF	\$ 3,500.00	\$ 962,500.00
SP		TIMBER PILE CONCRETE BOARDWALK	965	LF	\$ 1,250.00	\$ 1,206,250.00
SP		PEDESTRIAN BRIDGE OVER CSX RAILROAD (SEGMENT 3)	1	LS	\$ 1,046,500.00	\$ 1,046,500.00
SP		NC-54 BRIDGE OVER TRIANGLE EXPRESSWAY RETROFIT (SEGMENT 3)	1	LS	\$ 176,461.00	\$ 176,461.00
SP		PEDESTRIAN TUNNEL UNDER FAYETTEVILLE RD (SEGMENT 3)	1	LS	\$ 1,363,650.00	\$ 1,363,650.00
SP		CONTROL OF ACCESS FENCE	18550	LF	\$ 10.00	\$ 185,500.00
SP		ENTRANCE DRIVEWAY CROSSING	4	EA	\$ 61,000.00	\$ 244,000.00
SP		MID-BLOCK CROSSING (SIGNALIZED)	3	EA	\$ 170,760.00	\$ 512,280.00
SP		MAJOR ROAD CROSSING (SIGNALIZED)	4	EA	\$ 198,150.00	\$ 792,600.00
SP		COMPREHENSIVE GRADING, SEGMENT 3	1	LS	\$ 650,000.00	\$ 650,000.00

PRE-CONSTRUCTION COSTS			CONSTRUCTION COSTS			
	COST RANGE					
	10% of Construction	13% of Construction				
SURVEY, DESIGN, BIDDING:	\$ 1,317,000	\$ 1,712,000				
			CONSTRUCTION COST SUBTOTAL:		\$13,166,920.85	
			SAY:		\$13,167,000	
			ESCALATION RATE	BUILD YEAR	BUILD YEAR	
			3%	2025	2030	
			ESCALATED CONSTRUCTION COST:	\$14,820,000	\$17,180,000	
			CONSTRUCTION-ENGINEERING AND INSPECTIONS:			
			12% OF ESCALATED CONSTRUCTION COST:	\$1,779,000	\$2,062,000	
			CONTINGENCY PERCENTAGE:	20%	20%	
			PROJECT CONTINGENCY ON ESCALATED CONSTRUCTION COST:	\$2,964,000	\$3,436,000	

SEGMENT 3 CONSTRUCTION COST RANGE:
\$19,563,000 TO \$22,678,000
Notes:

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Triangle Bikeway Study

Project Location: Orange, Durham, & Wake County, NC
 Project Description: Paved Multi-Use Path
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 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

SEGMENT 4A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 439,584.80	\$ 439,584.80
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 73,000.00	\$ 73,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	22560	SY	\$ 2.25	\$ 50,760.00
520	1121000000-E	AGGREGATE BASE COURSE	8700	TON	\$ 34.75	\$ 302,325.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	2510	TON	\$ 90.00	\$ 225,900.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	155	TON	\$ 509.09	\$ 78,908.95
SP		PAVEMENT MARKINGS	1	LS	\$ 20,000.00	\$ 20,000.00
SP		EROSION CONTROL	19277	LF	\$ 22.00	\$ 424,094.00
SP		TRAFFIC CONTROL	1	LS	\$ 400,000.00	\$ 400,000.00
SP		LIGHTING	3.65	MI	\$ 250,000.00	\$ 912,500.00
SP		PREFABRICATED PEDESTRIAN BRIDGE	100	LF	\$ 3,500.00	\$ 350,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	1255	LF	\$ 1,250.00	\$ 1,568,750.00
SP		PEDESTRIAN BRIDGE OVER I-540 (SEGMENT 4)	1	LS	\$ 1,712,500.00	\$ 1,712,500.00
SP		6" CONCRETE	5790	SY	\$ 61.20	\$ 354,348.00
SP		CONTROL OF ACCESS FENCE	7175	LF	\$ 10.00	\$ 71,750.00
SP		ENTRANCE DRIVEWAY CROSSING	5	EA	\$ 61,000.00	\$ 305,000.00
SP		MID-BLOCK CROSSING (SIGNALIZED)	3	EA	\$ 170,760.00	\$ 512,280.00
SP		MINOR ROAD CROSSING (UN-SIGNALIZED)	4	EA	\$ 61,000.00	\$ 244,000.00
SP		MINOR ROAD CROSSING (SIGNALIZED)	1	EA	\$ 170,760.00	\$ 170,760.00
SP		MAJOR ROAD CROSSING (SIGNALIZED)	2	EA	\$ 198,150.00	\$ 396,300.00
SP		EXISTING SIGNALIZED INTERSECTION CROSSING	2	EA	\$ 170,760.00	\$ 341,520.00
SP		COMPREHENSIVE GRADING, SEGMENT 4A	1	LS	\$ 350,000.00	\$ 350,000.00

PRE-CONSTRUCTION COSTS	COST RANGE		CONSTRUCTION COSTS			
	10% of Construction	13% of Construction			CONSTRUCTION COST SUBTOTAL:	\$9,304,280.75
SURVEY, DESIGN, BIDDING:	\$ 931,000	\$ 1,210,000			SAY:	\$9,305,000
			ESCALATION RATE	BUILD YEAR	BUILD YEAR	
			3%	2025	2030	
			ESCALATED CONSTRUCTION COST:		\$10,473,000	\$12,141,000
			CONSTRUCTION-ENGINEERING AND INSPECTIONS:			
			12% OF ESCALATED CONSTRUCTION COST:		\$1,257,000	\$1,457,000
			CONTINGENCY PERCENTAGE:		20%	20%
			PROJECT CONTINGENCY ON ESCALATED CONSTRUCTION COST:		\$2,095,000	\$2,429,000

SEGMENT 4A CONSTRUCTION COST RANGE:
\$13,825,000 TO \$16,027,000

Notes:

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Triangle Bikeway Study

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ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

SEGMENT 4B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 436,941.70	\$ 436,941.70
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 85,000.00	\$ 85,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	28990	SY	\$ 2.25	\$ 65,227.50
520	1121000000-E	AGGREGATE BASE COURSE	11200	TON	\$ 34.75	\$ 389,200.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	3230	TON	\$ 90.00	\$ 290,700.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	195	TON	\$ 509.09	\$ 99,272.55
SP		PAVEMENT MARKINGS	1	LS	\$ 30,000.00	\$ 30,000.00
SP		EROSION CONTROL	22436	LF	\$ 22.00	\$ 493,592.00
SP		TRAFFIC CONTROL	1	LS	\$ 400,000.00	\$ 400,000.00
SP		LIGHTING	4.25	MI	\$ 250,000.00	\$ 1,062,500.00
SP		PREFABRICATED PEDESTRIAN BRIDGE	100	LF	\$ 3,500.00	\$ 350,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	1255	LF	\$ 1,250.00	\$ 1,568,750.00
SP		PEDESTRIAN BRIDGE OVER I-540 (SEGMENT 4)	1	LS	\$ 1,712,500.00	\$ 1,712,500.00
SP		6" CONCRETE	5660	SY	\$ 61.20	\$ 346,392.00
SP		CONTROL OF ACCESS FENCE	7175	LF	\$ 10.00	\$ 71,750.00
SP		ENTRANCE DRIVEWAY CROSSING	5	EA	\$ 61,000.00	\$ 305,000.00
SP		MID-BLOCK CROSSING (SIGNALIZED)	1	EA	\$ 170,760.00	\$ 170,760.00
SP		MINOR ROAD CROSSING (UN-SIGNALIZED)	2	EA	\$ 61,000.00	\$ 122,000.00
SP		MINOR ROAD CROSSING (SIGNALIZED)	2	EA	\$ 170,760.00	\$ 341,520.00
SP		MAJOR ROAD CROSSING (SIGNALIZED)	1	EA	\$ 198,150.00	\$ 198,150.00
SP		EXISTING SIGNALIZED INTERSECTION CROSSING	2	EA	\$ 170,760.00	\$ 341,520.00
SP		COMPREHENSIVE GRADING, SEGMENT 4B	1	LS	\$ 380,000.00	\$ 380,000.00

PRE-CONSTRUCTION COSTS	COST RANGE		CONSTRUCTION COSTS			
	10% of Construction	13% of Construction				
SURVEY, DESIGN, BIDDING:	\$ 927,000	\$ 1,204,000				
			CONSTRUCTION COST SUBTOTAL: <u>\$9,260,775.75</u>			
			SAY: <u>\$9,261,000</u>			
			ESCALATION RATE	BUILD YEAR	BUILD YEAR	
			3%	2025	2030	
			ESCALATED CONSTRUCTION COST:		\$10,424,000	\$12,084,000
			CONSTRUCTION-ENGINEERING AND INSPECTIONS:			
			12% OF ESCALATED CONSTRUCTION COST:		\$1,251,000	\$1,451,000
			CONTINGENCY PERCENTAGE:			
			20%		20%	
			PROJECT CONTINGENCY ON ESCALATED CONSTRUCTION COST:			
			\$2,085,000		\$2,417,000	

SEGMENT 4B CONSTRUCTION COST RANGE:	
\$13,760,000	TO \$15,952,000

Notes:

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SEGMENT 4C						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 437,473.71	\$ 437,473.71
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 82,000.00	\$ 82,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	27840	SY	\$ 2.25	\$ 62,640.00
520	1121000000-E	AGGREGATE BASE COURSE	10700	TON	\$ 34.75	\$ 371,825.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	3100	TON	\$ 90.00	\$ 279,000.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	190	TON	\$ 509.09	\$ 96,727.10
SP		PAVEMENT MARKINGS	1	LS	\$ 30,000.00	\$ 30,000.00
SP		EROSION CONTROL	21770	LF	\$ 22.00	\$ 478,940.00
SP		TRAFFIC CONTROL	1	LS	\$ 400,000.00	\$ 400,000.00
SP		LIGHTING	4.12	MI	\$ 250,000.00	\$ 1,030,000.00
SP		PREFABRICATED PEDESTRIAN BRIDGE	100	LF	\$ 3,500.00	\$ 350,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	1255	LF	\$ 1,250.00	\$ 1,568,750.00
SP		PEDESTRIAN BRIDGE OVER I-540 (SEGMENT 4)	1	LS	\$ 1,712,500.00	\$ 1,712,500.00
SP		6" CONCRETE	5660	SY	\$ 61.20	\$ 346,392.00
SP		CONTROL OF ACCESS FENCE	7175	LF	\$ 10.00	\$ 71,750.00
SP		ENTRANCE DRIVEWAY CROSSING	7	EA	\$ 61,000.00	\$ 427,000.00
SP		MID-BLOCK CROSSING (SIGNALIZED)	1	EA	\$ 170,760.00	\$ 170,760.00
SP		MINOR ROAD CROSSING (UN-SIGNALIZED)	2	EA	\$ 61,000.00	\$ 122,000.00
SP		MINOR ROAD CROSSING (SIGNALIZED)	1	EA	\$ 170,760.00	\$ 170,760.00
SP		MAJOR ROAD CROSSING (SIGNALIZED)	1	EA	\$ 198,150.00	\$ 198,150.00
SP		EXISTING SIGNALIZED INTERSECTION CROSSING	3	EA	\$ 170,760.00	\$ 512,280.00
SP		COMPREHENSIVE GRADING, SEGMENT 4C	1	LS	\$ 350,000.00	\$ 350,000.00

PRE-CONSTRUCTION COSTS	COST RANGE		CONSTRUCTION COSTS			
	10% of Construction	13% of Construction				
SURVEY, DESIGN, BIDDING:	\$ 927,000	\$ 1,205,000				
			CONSTRUCTION COST SUBTOTAL: <u>\$9,268,947.81</u>			
			SAY: <u>\$9,269,000</u>			
			ESCALATION RATE	BUILD YEAR	BUILD YEAR	
			3%	2025	2030	
			ESCALATED CONSTRUCTION COST:	\$10,433,000	\$12,094,000	
			CONSTRUCTION-ENGINEERING AND INSPECTIONS:			
			12% OF ESCALATED CONSTRUCTION COST:	\$1,252,000	\$1,452,000	
			CONTINGENCY PERCENTAGE:	20%	20%	
			PROJECT CONTINGENCY ON ESCALATED CONSTRUCTION COST:	\$2,087,000	\$2,419,000	

SEGMENT 4C CONSTRUCTION COST RANGE:
\$13,772,000 TO \$15,965,000

Notes:

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6. The Engineer has no control over the cost of labor, materials, or equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs, as provided here, are made on the basis of the Engineer's experience and qualifications and represent the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from opinions of probable cost prepared for the Owner.

Triangle Bikeway Study

Project Location: Orange, Durham, & Wake County, NC
 Project Description: Paved Multi-Use Path
 Client: CAMPO
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

SEGMENT 5A						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 521,160.83	\$ 521,160.83
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 51,000.00	\$ 51,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	14910	SY	\$ 2.25	\$ 33,547.50
520	1121000000-E	AGGREGATE BASE COURSE	5800	TON	\$ 34.75	\$ 201,550.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	1660	TON	\$ 90.00	\$ 149,400.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	100	TON	\$ 509.09	\$ 50,909.00
SP		PAVEMENT MARKINGS	1	LS	\$ 20,000.00	\$ 20,000.00
SP		EROSION CONTROL	13480	LF	\$ 22.00	\$ 296,560.00
SP		TRAFFIC CONTROL	1	LS	\$ 850,000.00	\$ 850,000.00
SP		LIGHTING	2.55	MI	\$ 250,000.00	\$ 637,500.00
SP		PREFABRICATED PEDESTRIAN BRIDGE	70	LF	\$ 3,500.00	\$ 245,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	4587	LF	\$ 1,250.00	\$ 5,733,750.00
SP		SIGNATURE PEDESTRIAN BRIDGE OVER I-40 (SEGMENT 2)	1	LS	\$ 1,540,000.00	\$ 1,540,000.00
SP		CONTROL OF ACCESS FENCE	12685	LF	\$ 10.00	\$ 126,850.00
SP		MAJOR ROAD CROSSING (SIGNALIZED)	1	EA	\$ 198,150.00	\$ 198,150.00
SP		COMPREHENSIVE GRADING, SEGMENT 5A	1	LS	\$ 340,000.00	\$ 340,000.00

PRE-CONSTRUCTION COSTS			CONSTRUCTION COSTS			
	COST RANGE				CONSTRUCTION COST SUBTOTAL: \$10,995,377.33	
	10% of Construction	13% of Construction			SAY: \$10,996,000	
SURVEY, DESIGN, BIDDING: \$	1,100,000	\$1,430,000	ESCALATION RATE	3%	BUILD YEAR	BUILD YEAR
					2025	2030
			ESCALATED CONSTRUCTION COST:		\$12,377,000	\$14,348,000
			CONSTRUCTION-ENGINEERING AND INSPECTIONS:			
			12% OF ESCALATED CONSTRUCTION COST:		\$1,486,000	\$1,722,000
			CONTINGENCY PERCENTAGE:		20%	20%
			PROJECT CONTINGENCY ON ESCALATED CONSTRUCTION COST:		\$2,476,000	\$2,870,000

SEGMENT 5A CONSTRUCTION COST RANGE:
\$16,339,000 TO \$18,940,000
Notes:

1. Cost opinion does not include costs for easement or ROW acquisition. ROW costs will be identified in the preliminary design phase for each segment because of the variability in size and value of easements.
2. Construction Engineering and Inspection typically ranges between 9% and 12% of construction cost, 12% was assumed for estimating purposes.
3. Cost opinion does not include cost for private utility relocations.
4. Unit costs used in this cost opinion are representative of typical market costs as best known to the Consultant as of the date of this estimate.
5. Quantities used in this cost opinion are approximations based on feasibility study alignments by McAdams dated December 2021 and are subject to revision prior to bid.
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Triangle Bikeway Study

Project Location: Orange, Durham, & Wake County, NC
 Project Description: Paved Multi-Use Path
 Client: CAMPO
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

SEGMENT 5B						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 359,030.82	\$ 359,030.82
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 52,000.00	\$ 52,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	16840	SY	\$ 2.25	\$ 37,890.00
520	1121000000-E	AGGREGATE BASE COURSE	6500	TON	\$ 34.75	\$ 225,875.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	1880	TON	\$ 90.00	\$ 169,200.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	115	TON	\$ 509.09	\$ 58,545.35
SP		PAVEMENT MARKINGS	1	LS	\$ 20,000.00	\$ 20,000.00
SP		EROSION CONTROL	13748	LF	\$ 22.00	\$ 302,456.00
SP		TRAFFIC CONTROL	1	LS	\$ 300,000.00	\$ 300,000.00
SP		LIGHTING	2.6	MI	\$ 250,000.00	\$ 650,000.00
SP		PREFABRICATED PEDESTRIAN BRIDGE	70	LF	\$ 3,500.00	\$ 245,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	3592	LF	\$ 1,250.00	\$ 4,490,000.00
SP		CONTROL OF ACCESS FENCE	12350	LF	\$ 10.00	\$ 123,500.00
SP		MAJOR ROAD CROSSING (SIGNALIZED)	1	EA	\$ 198,150.00	\$ 198,150.00
SP		COMPREHENSIVE GRADING, SEGMENT 5B	1	LS	\$ 360,000.00	\$ 360,000.00

PRE-CONSTRUCTION COSTS		CONSTRUCTION COSTS			
	COST RANGE				
	10% of Construction	13% of Construction			
SURVEY, DESIGN, BIDDING:	\$ 760,000	\$987,000			
		CONSTRUCTION COST SUBTOTAL: <u>\$7,591,647.17</u>			
		SAY: <u>\$7,592,000</u>			
		ESCALATION RATE	BUILD YEAR	BUILD YEAR	
		3%	2025	2030	
		ESCALATED CONSTRUCTION COST:	\$8,545,000	\$9,906,000	
		CONSTRUCTION-ENGINEERING AND INSPECTIONS:			
		12% OF ESCALATED CONSTRUCTION COST:	\$1,026,000	\$1,189,000	
		CONTINGENCY PERCENTAGE:	20%	20%	
		PROJECT CONTINGENCY ON ESCALATED CONSTRUCTION COST:	\$1,709,000	\$1,982,000	

SEGMENT 5B CONSTRUCTION COST RANGE:	
\$11,280,000	TO \$13,077,000

Notes:

1. Cost opinion does not include costs for easement or ROW acquisition. ROW costs will be identified in the preliminary design phase for each segment because of the variability in size and value of easements.
2. Construction Engineering and Inspection typically ranges between 9% and 12% of construction cost, 12% was assumed for estimating purposes.
3. Cost opinion does not include cost for private utility relocations.
4. Unit costs used in this cost opinion are representative of typical market costs as best known to the Consultant as of the date of this estimate.
5. Quantities used in this cost opinion are approximations based on feasibility study alignments by McAdams dated December 2021 and are subject to revision prior to bid.
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Triangle Bikeway Study

Project Location: Orange, Durham, & Wake County, NC
 Project Description: Paved Multi-Use Path
 Client: CAMPO
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

SEGMENT 6						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 409,230.61	\$ 409,230.61
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 54,000.00	\$ 54,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	19270	SY	\$ 2.25	\$ 43,357.50
520	1121000000-E	AGGREGATE BASE COURSE	7500	TON	\$ 34.75	\$ 260,625.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	2150	TON	\$ 90.00	\$ 193,500.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	130	TON	\$ 509.09	\$ 66,181.70
SP		PAVEMENT MARKINGS	1	LS	\$ 20,000.00	\$ 20,000.00
SP		EROSION CONTROL	14199	LF	\$ 22.00	\$ 312,378.00
SP		TRAFFIC CONTROL	1	LS	\$ 900,000.00	\$ 900,000.00
SP		LIGHTING	2.69	MI	\$ 250,000.00	\$ 672,500.00
SP		PREFABRICATED PEDESTRIAN BRIDGE	210	LF	\$ 3,500.00	\$ 735,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	2979	LF	\$ 1,250.00	\$ 3,723,750.00
SP		CONTROL OF ACCESS FENCE	13765	LF	\$ 10.00	\$ 137,650.00
SP		MID-BLOCK CROSSING (SIGNALIZED)	2	EA	\$ 170,760.00	\$ 341,520.00
SP		MAJOR ROAD CROSSING (SIGNALIZED)	1	EA	\$ 198,150.00	\$ 198,150.00
SP		COMPREHENSIVE GRADING, SEGMENT 6	1	LS	\$ 580,000.00	\$ 580,000.00

PRE-CONSTRUCTION COSTS			CONSTRUCTION COSTS			
	COST RANGE				CONSTRUCTION COST SUBTOTAL: \$8,647,842.81	
	10% of Construction	13% of Construction			SAY: \$8,648,000	
SURVEY, DESIGN, BIDDING: \$	865,000	\$1,125,000	ESCALATION RATE	BUILD YEAR	BUILD YEAR	
			3%	2025	2030	
			ESCALATED CONSTRUCTION COST:	\$9,734,000	\$11,284,000	
			CONSTRUCTION-ENGINEERING AND INSPECTIONS:			
			12% OF ESCALATED CONSTRUCTION COST:	\$1,169,000	\$1,355,000	
			CONTINGENCY PERCENTAGE:	20%	20%	
			PROJECT CONTINGENCY ON ESCALATED CONSTRUCTION COST:	\$1,947,000	\$2,257,000	

SEGMENT 6 CONSTRUCTION COST RANGE:	
\$12,850,000	TO \$14,896,000

Notes:

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3. Cost opinion does not include cost for private utility relocations.
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Triangle Bikeway Study

Project Location: Orange, Durham, & Wake County, NC
 Project Description: Paved Multi-Use Path
 Client: CAMPO
 Client Project No. XXX

ENGINEER'S OPINION OF PROBABLE COST OF CONSTRUCTION - Feasibility Study

SEGMENT 7						
Section	Item Code	Item Description	Quantity	Unit	Unit Price	Cost
800	0000100000-N	MOBILIZATION	1	LS	\$ 465,821.86	\$ 465,821.86
801	0000400000-N	CONSTRUCTION SURVEYING	1	LS	\$ 80,000.00	\$ 80,000.00
SP	1115000000-E	GEOTEXTILE FOR PAVEMENT STABILIZATION	25510	SY	\$ 2.25	\$ 57,397.50
520	1121000000-E	AGGREGATE BASE COURSE	9900	TON	\$ 34.75	\$ 344,025.00
610	1519000000-E	ASPHALT CONC SURFACE COURSE, TYPE S9.5B	2840	TON	\$ 90.00	\$ 255,600.00
620	1575000000-E	ASPHALT BINDER FOR PLANT MIX	175	TON	\$ 509.09	\$ 89,090.75
SP		PAVEMENT MARKINGS	1	LS	\$ 30,000.00	\$ 30,000.00
SP		EROSION CONTROL	20167	LF	\$ 22.00	\$ 443,674.00
SP		TRAFFIC CONTROL	1	LS	\$ 800,000.00	\$ 800,000.00
SP		LIGHTING	3.82	MI	\$ 250,000.00	\$ 955,000.00
SP		TIMBER PILE CONCRETE BOARDWALK	4395	LF	\$ 1,250.00	\$ 5,493,750.00
SP		CONTROL OF ACCESS FENCE	16875	LF	\$ 10.00	\$ 168,750.00
SP		ENTRANCE DRIVEWAY CROSSING	1	EA	\$ 61,000.00	\$ 61,000.00
SP		MAJOR ROAD CROSSING (SIGNALIZED)	1	EA	\$ 198,150.00	\$ 198,150.00
SP		COMPREHENSIVE GRADING, SEGMENT 7	1	LS	\$ 420,000.00	\$ 420,000.00

PRE-CONSTRUCTION COSTS	CONSTRUCTION COSTS		
	CONSTRUCTION COST SUBTOTAL:	\$9,862,259.11	
	SAY:	\$9,863,000	
	ESCALATION RATE	BUILD YEAR	BUILD YEAR
	3%	2025	2030
	ESCALATED CONSTRUCTION COST:	\$11,101,000	\$12,869,000
	CONSTRUCTION-ENGINEERING AND INSPECTIONS:		
	12% OF ESCALATED CONSTRUCTION COST:	\$1,333,000	\$1,545,000
	CONTINGENCY PERCENTAGE:	20%	20%
	PROJECT CONTINGENCY ON ESCALATED CONSTRUCTION COST:	\$2,221,000	\$2,574,000

SEGMENT 7 CONSTRUCTION COST RANGE:
\$14,655,000 TO \$16,988,000

Notes:

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CAMPO TRIANGLE BIKEWAY															
STRUCTURES DECISION MATRIX															
STRUCTURE LOCATION	TYPE	EXISTING OR PROPOSED	PROPOSED BRIDGE TYPE & COST (HIGH END IF APPLICABLE) *	PROPOSED BRIDGE TYPE & COST (LOW END IF APPLICABLE) *	BRIDGE LENGTH (FT)	CLEAR WIDTH (FT)	DECK TYPE	STRUCTURE DEPTH (FT)	VERTICAL CLEARANCE (FT)	DESIGN LOADING	LIGHTING CONSIDERATIONS	RAILING CONSIDERATIONS	MAINTENANCE CONSIDERATIONS	STAKEHOLDER CONSIDERATIONS	OTHER CONSIDERATIONS
over I-40 (near NC 54 exit)	Bridge	Proposed	Tied Arch: \$4,070,000	Prestressed Concrete Box Beam: \$1,540,000	200	16	Concrete	Tied Arch: 2ft-4ft Prestressed Concrete Box Beam: 4ft-5ft	18	H10	Decorative Bridge Lighting	Ornamental Fence and Railing	NBIS Biannual Inspection Required. Fracture Critical Inspection may be applicable for tied arch.		-no center bent improves MOT -constructability over Interstate -consider future widening (similar to ATT)
under NC 751	Tunnel	Proposed	Bored Tunnel: \$4,393,125	Precast Concrete Box (Cut & Cover): \$1,564,875	225	16	n/a	n/a	n/a	HL-93	Tunnel lighting	n/a	n/a		-constructability (tunneling vs. cut & cover) -NFPA-502
under Fayetteville Road	Tunnel	Proposed	Bored Tunnel: \$3,725,000	Precast Concrete Box (Cut & Cover): \$1,363,650	190	16	n/a	n/a	n/a	HL-93	Tunnel lighting	n/a	n/a		-constructability (tunneling vs. cut & cover) -NFPA-502
over CSX RR	Bridge	Proposed	n/a	Proprietary Steel Truss: \$1,046,500	120	16	Concrete	1.5ft-2.5ft	23	H10	n/a	Fence and Railing	NBIS Biannual Inspection Required	Future CSX track, Maintenance road per CSX, Exceed clearance of existing highway bridges	
on NC 54 over Triangle Expressway	Retrofit	Existing	n/a	Retrofit: \$176,461	451	16	Concrete	n/a	17.17	H10	n/a	2 Bar Metal Rail (54" Tall)	NBIS Biannual Inspection Required		
over I-540	Bridge	Proposed	Curved Steel Beam: \$3,445,000	Prestressed Concrete Box Beam: \$1,712,500	Box Beam: 300 Curved Steel Beam: 500	16	Concrete	Curved Steel Beam: 8ft-10ft Prestressed Concrete Box Beam: 4ft-5ft	18	H10	Decorative Bridge Lighting	Ornamental Fence and Railing	NBIS Biannual Inspection Required		
over I-40 (near RDU airport)	Bridge	Proposed	Tied Arch: \$4,070,000	Prestressed Concrete Box Beam: \$1,540,000	200	16	Concrete	Tied Arch: 2ft-4ft Prestressed Concrete Box Beam: 4ft-5ft	18	H10	Decorative Bridge Lighting	Ornamental Fence and Railing	NBIS Biannual Inspection Required. Fracture Critical Inspection Appliance	-FAA height restrictions during construction	-no center bent improves MOT -constructability over Interstate -consider future widening (similar to ATT)

Notes:

* These cost estimates excludes right-of-way acquisition, utility construction and relocation, signage removal and relocation, and any new signage, mobilization, construction traffic control, design and construction management costs.



Made By: A.D'AIUTO

Checked by: JPS

Date: July-2021

Date: July-2021

**194378 Triangle Bikeway Study
PROBABLE OPINION OF COST (LOW END)**

Total Project Cost Calculator

Cost of Bridge 1 over I-40

Bridge Cost ("Low End")	\$	1,540,000.00
Subtotal	\$	1,540,000.00

Cost of Pedestrian Tunnel 1 under NC 751

Bridge Cost ("Low End")	\$	1,564,875.00
Subtotal	\$	1,564,875.00

Cost of Pedestrian Tunnel 2 under Fayetteville Rd

Bridge Cost ("Low End")	\$	1,363,650.00
Subtotal	\$	1,363,650.00

Cost of Bridge 2 over CSX Railroad

Bridge Cost ("Low End")	\$	1,046,500.00
Subtotal	\$	1,046,500.00

Cost of Existing NC 54 Bridge Retrofit

Bridge Cost ("Retrofit")	\$	176,461.27
Subtotal	\$	176,461.27

Cost of Bridge 3 over I-540

Bridge Cost ("Low End")	\$	1,712,500.00
Subtotal	\$	1,712,500.00

Cost of Bridge 4 over I-40

Bridge Cost ("Low End")	\$	1,540,000.00
Subtotal	\$	1,540,000.00

Construction Subtotal \$ 8,943,986.27

Mobilization (5% of Construction Subtotal)	\$	447,199.31
Construction Traffic Control (2.5% of Construction Subtotal)	\$	223,599.66
Contingencies (20% of Construction Subtotal)	\$	1,788,797.25

CONSTRUCTION TOTAL \$ 11,403,582.49

Design and Construction Management

Preliminary Design (3% of Total Construction Cost)	\$	342,107.47
Final Design (5% of Total Construction Cost)	\$	570,179.12
Construction Administration, Inspection, Testing (5% of Total Construction Cost)	\$	570,179.12

TOTAL DESIGN AND CONSTRUCTION ADMINISTRATION COST \$ 1,482,465.72

TOTAL ESTIMATED COST * \$ 12,886,048.21

***2021 Dollars**

Note:

Total cost estimate excludes right-of-way acquisition, utility construction and relocation, signage removal and relocation, and any new signage.

When reviewing and providing comments in regards to the cost estimate, the Client should understand that WSP has no control over costs or the price of labor, equipment or materials, or over the Contractor's method of pricing, and that the estimated costs provided herein are based on our qualifications and expertise. WSP makes no warranty as to the accuracy of these estimated costs as compared to bid or actual costs.

Probable Opinion of Cost



Made By: A.D'AIUTO

Checked by: JPS

Date: July-2021

Date: July-2021

194378 Triangle Bikeway Study
PROBABLE OPINION OF COST (HIGH END)

Total Project Cost Calculator

Cost of Bridge 1 over I-40

Bridge Cost ("High End")	\$	4,070,000.00
Subtotal	\$	4,070,000.00

Cost of Pedestrian Tunnel 1 under NC 751

Bridge Cost ("High End")	\$	4,393,125.00
Subtotal	\$	4,393,125.00

Cost of Pedestrian Tunnel 2 under Fayetteville Rd

Bridge Cost ("High End")	\$	3,725,000.00
Subtotal	\$	3,725,000.00

Cost of Bridge 2 over CSX Railroad

Bridge Cost ("Low End")	\$	1,046,500.00
Subtotal	\$	1,046,500.00

Cost of Existing NC 54 Bridge Retrofit

Bridge Cost ("Retrofit")("Low End")	\$	176,461.27
Subtotal	\$	176,461.27

Cost of Bridge 3 over I-540

Bridge Cost ("High End")	\$	3,445,000.00
Subtotal	\$	3,445,000.00

Cost of Bridge 4 over I-40

Bridge Cost ("High End")	\$	4,070,000.00
Subtotal	\$	4,070,000.00

Construction Subtotal \$ 20,926,086.27

Mobilization (5% of Construction Subtotal)	\$	1,046,304.31
Construction Traffic Control (2.5% of Construction Subtotal)	\$	523,152.16
Contingencies (20% of Construction Subtotal)	\$	4,185,217.25

CONSTRUCTION TOTAL \$ 26,680,759.99

Design and Construction Management

Preliminary Design (3% of Total Construction Cost)	\$	800,422.80
Final Design (5% of Total Construction Cost)	\$	1,334,038.00
Construction Administration, Inspection, Testing (5% of Total Construction Cost)	\$	1,334,038.00

TOTAL DESIGN AND CONSTRUCTION ADMINISTRATION COST \$ 3,468,498.80

TOTAL ESTIMATED COST * \$ 30,149,258.79

*2021 Dollars

Note:

Total cost estimate excludes right-of-way acquisition, utility construction and relocation, signage removal and relocation, and any new signage.

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Probable Opinion of Cost



194378 Triangle Bikeway Study
PED BRIDGE 1 PROBABLE OPINION OF COST

Bridge Data Input

Conventional Construction

Total Length of Span(s)	200	ft
Total Width (out-to-out)(Box Beam)	17	ft
Bridge Type	Concrete Box Girder	

	Estimated Quantity		Estimated Cost per Unit	Estimated Cost
Cost of Concrete Box Beam Bridge				
Two 100' Concrete Box Beam Spans	2	Span	\$175,000.00	\$ 350,000.00
Erection Cost (including Beam Unit Price)	1	LS.	\$0.00	\$ -
C.I.P. Concrete Deck Cost	3,400	Sq.ft	\$25.00	\$ 85,000.00
Substructure & Foundations	3	Ea.	\$125,000.00	\$ 375,000.00
Approach Slabs	2	Ea.	\$15,000.00	\$ 30,000.00
Ornamental Fence & Railing	400	ft	\$200.00	\$ 80,000.00
Substructure & Retaining Walls	3,200	Sq.ft	\$75.00	\$ 240,000.00
Monuments at Approaches	4	Ea.	\$50,000.00	\$ 200,000.00
Bridge Lighting System	1	LS.	\$100,000.00	\$ 100,000.00
Concrete Fascia	400	ft	\$200.00	\$ 80,000.00
Subtotal				\$ 1,540,000.00

Total (Concrete Box Beam Option) \$ 1,540,000.00

Bridge Data Input

Conventional Construction

Total Length of Span(s)	200	ft
Total Width (out-to-out)(Tied Arch)	18	ft
Bridge Type	Tied Arch	

	Estimated Quantity		Estimated Cost per Unit	Estimated Cost
Cost of Tied Arch Bridge Construction				
One 200' Tied Arch	3600	Sq.ft.	\$1,000.00	\$ 3,600,000.00
Approach Slabs	2	Ea.	\$15,000.00	\$ 30,000.00
Substructure & Retaining Walls	3,200	Sq.ft	\$ 75.00	\$ 240,000.00
Monuments at Approaches	4	Ea.	\$50,000.00	\$ 200,000.00
Subtotal				\$ 4,070,000.00

Total (Tied Arch Option) \$ 4,070,000.00

Note:

Total cost estimate excludes right-of-way acquisition, utility construction and relocation, signage removal and relocation, and any new signage.

When reviewing and providing comments in regards to the cost estimate, the Client should understand that WSP USA has no control over costs or the price of labor, equipment or materials, or over the Contractor's method of pricing, and that the estimated costs provided herein are based on our qualifications and expertise. WSP USA makes no warranty as to the accuracy of these estimated costs as compared to bid or actual costs.



194378 Triangle Bikeway Study
PED TUNNEL 1 PROBABLE OPINION OF COST

Bridge Data Input

Conventional Construction

Total Length of Culvert	225	ft
Total Width (out-to-out)	n/a	ft
Bridge Type	Precast Concrete (Cut & Cover)	

	Estimated Quantity	Estimated Cost per Unit	Estimated Cost
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Cost of Cut and Cover Tunnel

Precast Concrete Tunnel	225	ft.	\$3,500.00	\$ 787,500.00
Tunnel Lighting System	1	LS.	\$118,125.00	\$ 118,125.00
Shoring	8100	Sq.ft	\$60.00	\$ 486,000.00
Pavement Removal	2250	Sq.yd.	\$5.00	\$ 11,250.00
Rebuilding Roadway Cost	2250	Sq.yd.	\$72.00	\$ 162,000.00
Subtotal				\$ 1,564,875.00

Total (Cut and Cover Option) \$ 1,564,875.00

Bridge Data Input

Conventional Construction

Total Length of Culvert	225	ft
Total Width (out-to-out)	n/a	ft
Bridge Type	Bored	

	Estimated Quantity	Estimated Cost per Unit	Estimated Cost
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Cost of Boring Tunnel

Tunnel Boring	225	ft.	\$16,000.00	\$ 3,600,000.00
Cast-in-place Concrete Tunnel	225	ft.	\$3,000.00	\$ 675,000.00
Tunnel Lighting System	1	LS.	\$118,125.00	\$ 118,125.00
Subtotal				\$ 4,393,125.00

Total (Boring Option) \$ 4,393,125.00

Note:

Total cost estimate excludes right-of-way acquisition, utility construction and relocation, signage removal and relocation, and any new signage.

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**194378 Triangle Bikeway Study
PED TUNNEL 2 PROBABLE OPINION OF COST**

Bridge Data Input

Conventional Construction

Total Length of Culvert	190	ft
Total Width (out-to-out)	n/a	ft
Bridge Type	Precast Concrete (Cut & Cover)	

	Estimated Quantity		Estimated Cost per Unit	Estimated Cost
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Cost of Cut and Cover Tunnel

Precast Concrete Tunnel	190	ft.	\$3,500.00	\$ 665,000.00
Tunnel Lighting System	1	LS.	\$115,000.00	\$ 115,000.00
Shoring	6840	Sq.ft	\$60.00	\$ 410,400.00
Pavement Removal	2250	Sq.yd.	\$5.00	\$ 11,250.00
Rebuilding Roadway Cost	2250	Sq.yd.	\$72.00	\$ 162,000.00

Subtotal				\$ 1,363,650.00
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Total (Cut and Cover Option) \$ 1,363,650.00

Bridge Data Input

Conventional Construction

Total Length of Span(s)	190	ft
Total Width (out-to-out)	n/a	ft
Bridge Type	Bored	

	Estimated Quantity		Estimated Cost per Unit	Estimated Cost
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Cost of Boring Tunnel

Tunnel Boring	190	ft.	\$16,000.00	\$ 3,040,000.00
Cast-in-place Concrete Tunnel	190	ft.	\$3,000.00	\$ 570,000.00
Tunnel Lighting System	1	LS.	\$115,000.00	\$ 115,000.00

Subtotal				\$ 3,725,000.00
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Total (Boring Option) \$ 3,725,000.00

Note:

Total cost estimate excludes right-of-way acquisition, utility construction and relocation, signage removal and relocation, and any new signage.

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194378 Triangle Bikeway Study
PED BRIDGE 2 PROBABLE OPINION OF COST

Bridge Data Input

Conventional Construction

Total Length of Span(s)	120	ft
Total Width (out-to-out)	18	ft
Bridge Type	Proprietary Steel Truss	

	Estimated Quantity		Estimated Cost per Unit	Estimated Cost
Cost of Conventional Galvanized Steel Gateway Truss with Arched Top Construction				
One Galvanized 120' Steel Truss Spans	1	Span	\$632,500.00	\$ 632,500.00
Erection Cost (including traffic control)	1	LS.	\$250,000.00	\$ 250,000.00
C.I.P. Concrete Deck Cost	2,160	Sq.ft	\$25.00	\$ 54,000.00
Substructure & Foundations	2	Ea.	\$40,000.00	\$ 80,000.00
Approach Slabs	2	Ea.	\$15,000.00	\$ 30,000.00
Ornamental Fence & Railing	Included in Truss Costs			\$ -
Subtotal				\$ 1,046,500.00

Total (Galvanized Steel Option) \$ 1,046,500.00

Note:
Total cost estimate excludes right-of-way acquisition, utility construction and relocation, signage removal and relocation, and any new signage.
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194378 Triangle Bikeway Study
EXISTING BRIDGE RETROFIT PROBABLE OPINION OF COST

Bridge Data Input

Conventional Construction

Total Length of Span(s)	451	ft
Total Width (out-to-out)	-	ft
Bridge Type	n/a	

	Estimated Quantity		Estimated Cost per Unit	Estimated Cost
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Cost of Existing Bridge Retrofit

2 Bar Metal Rail	451	Span	\$200.00	\$ 90,200.00
Concrete Sidewalk Removal	280	Sq.Yd	\$30.00	\$ 8,388.60
Latex Overlay	78	Cu.Yd.	\$1,000.00	\$ 77,873

Subtotal			\$	176,461
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Total (Retrofit Option)			\$	176,461
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Note:
Total cost estimate excludes right-of-way acquisition, utility construction and relocation, signage removal and relocation, and any new signage.
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194378 Triangle Bikeway Study
PED BRIDGE 3 PROBABLE OPINION OF COST

Bridge Data Input

Conventional Construction

Total Length of Span(s)(Box Beam)	300	ft
Total Width (out-to-out)	17	ft
Bridge Type	Concrete Box Girder	

	Estimated Quantity		Estimated Cost per Unit	Estimated Cost
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Cost of Concrete Box Beam Bridge

Three 100' Concrete Box Beam Spans	3	Span	\$175,000.00	\$ 525,000.00
Errrection Cost (including Beam Unit Price)	1	LS.	\$0.00	\$ -
C.I.P. Concrete Deck Cost	5,100	Sq.ft	\$25.00	\$ 127,500.00
Substructure & Foundations	4	Ea.	\$80,000.00	\$ 320,000.00
Approach Slabs	2	Ea.	\$15,000.00	\$ 30,000.00
Ornamental Fence & Railing	600	ft	\$200.00	\$ 120,000.00
Substructure & Retaining Walls	3,200	Sq.ft	\$75.00	\$ 240,000.00
Monuments at Approaches	4	Ea.	\$50,000.00	\$ 200,000.00
Bridge Lighting System	1	LS.	\$150,000.00	\$ 150,000.00
Subtotal				\$ 1,712,500.00

Total (Concrete Box Beam Option) \$ 1,712,500.00

Bridge Data Input

Conventional Construction

Total Length of Span(s)(Box Beam)	500.00	ft
Total Width (out-to-out)	18	ft
Bridge Type	Curved Steel Girder	

	Estimated Quantity		Estimated Cost per Unit	Estimated Cost
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Cost of Steel Plate Girder Bridge

Two 250' Steel Plate Girder Spans	2	Span	\$625,000.00	\$ 1,250,000.00
Errrection Cost (including Beam Unit Price)	1	LS.	\$0.00	\$ -
C.I.P. Concrete Deck Cost	9,000	Sq.ft	\$50.00	\$ 450,000.00
Substructure & Foundations	3	Ea.	\$250,000.00	\$ 750,000.00
Approach Slabs	2	Ea.	\$15,000.00	\$ 30,000.00
Ornamental Fence & Railing	1,000	ft	\$200.00	\$ 200,000.00
Substructure & Retaining Walls	4,200	Sq.ft	\$75.00	\$ 315,000.00
Monuments at Approaches	4	Ea.	\$50,000.00	\$ 200,000.00
Bridge Lighting System	1	LS.	\$250,000.00	\$ 250,000.00
Subtotal				\$ 3,445,000.00

Total (Steel Plate Girder Option) \$ 3,445,000.00

Note:

Total cost estimate excludes right-of-way acquisition, utility construction and relocation, signage removal and relocation, and any new signage.

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**194378 Triangle Bikeway Study
PED BRIDGE 4 PROBABLE OPINION OF COST**

Bridge Data Input

Conventional Construction

Total Length of Span(s)	200	ft
Total Width (out-to-out)(Box Beam)	17	ft
Bridge Type	Concrete Box Girder	

	Estimated Quantity		Estimated Cost per Unit	Estimated Cost
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Cost of Concrete Box Beam Bridge

Two 100' Concrete Box Beam Spans	2	Span	\$175,000.00	\$ 350,000.00
Errrection Cost (including Beam Unit Price)	1	LS.	\$0.00	\$ -
C.I.P. Concrete Deck Cost	3,400	Sq.ft	\$25.00	\$ 85,000.00
Substructure & Foundations	3	Ea.	\$125,000.00	\$ 375,000.00
Approach Slabs	2	Ea.	\$15,000.00	\$ 30,000.00
Ornamental Fence & Railing	400	ft	\$200.00	\$ 80,000.00
Substructure & Retaining Walls	3,200	Sq.ft	\$75.00	\$ 240,000.00
Monuments at Approaches	4	Ea.	\$50,000.00	\$ 200,000.00
Bridge Lighting System	1	LS.	\$100,000.00	\$ 100,000.00
Concrete Fascia	400	ft	\$200.00	\$ 80,000.00
Subtotal				\$ 1,540,000.00

Total (Concrete Box Beam Option) \$ 1,540,000.00

Bridge Data Input

Conventional Construction

Total Length of Span(s)	200	ft
Total Width (out-to-out)(Tied Arch)	18	ft
Bridge Type	Tied Arch	

	Estimated Quantity		Estimated Cost per Unit	Estimated Cost
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Cost of Tied Arch Bridge Construction

One 200' Tied Arch	3600	Sq.ft.	\$1,000.00	\$ 3,600,000.00
Approach Slabs	2	Ea.	\$15,000.00	\$ 30,000.00
Substructure & Retaining Walls	3,200	Sq.ft	\$ 75.00	\$ 240,000.00
Monuments at Approaches	4	Ea.	\$50,000.00	\$ 200,000.00
Subtotal				\$ 4,070,000.00

Total (Tied Arch Option) \$ 4,070,000.00

Note:

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