



Naples Beach Restoration and Water Quality Improvement Project
75% Level Engineer's Opinion of Probable Construction Quantities and Cost
Cost Summary
May 2021

Item No.	Description of Item	Estimate
1	MOBILIZATION/DEMobilIZATION, SITE WORK & GENERAL REQUIREMENTS	\$ 1,411,020
2	PUMP STATION AND GENERATOR	\$ 5,358,620
3	STORMWATER CONSOLIDATION	\$ 1,499,480
4	OUTFALL DIFFUSER SYSTEM	\$ 389,160
5	DEMOLITION OF EXISTING OUTFALLS	\$ 46,430
6	ROADWAY - DRAINAGE SYSTEM	\$ 951,740
7	ROADWAY - PAVING AND GRADING	\$ 1,243,750
8	ROADWAY - PAVEMENT MARKING, STRIPING AND SIGNAGE	\$ 44,110
9	LANDSCAPING AND IRRIGATION	\$ 344,740
10	UTILITY RELOCATIONS AND CONFLICTS	\$ 200,000
11	WATER QUALITY	\$ 549,390
12	3RD STREET DRAINAGE AND STORMWATER CONSOILDATION (50%)	\$ 1,432,560
SUB-TOTAL		\$ 13,471,000
CONTINGENCY (3%)		\$ 404,000
TOTAL		\$ 13,875,000
UV SYSTEM		\$ 877,780
TOTAL WITH UV REACTOR UNIT		\$ 14,752,780



Naples Beach Restoration and Water Quality Improvement Project
75% Level Engineer's Opinion of Probable Construction Quantities and Cost
Mobilization/Demobilization, Site Work and General Requirements Cost Assumptions
May 2021

Item No.	Description of Item	Unit	Estimated Unit Cost	Estimated Quantity	Estimate
1	MOBILIZATION/DEMOBILIZATION, SITE WORK AND GENERAL REQUIREMENTS				
1.1	MOBILIZATION/DEMOBILIZATION	LS	\$ 667,100	1	\$ 667,100
1.2	SURVEY, LAYOUT AND AS-BUILT DRAWINGS	LS	\$ 133,420	1	\$ 133,420
1.3	MAINTENANCE OF TRAFFIC & Phasing	LS	\$ 152,000	1	\$ 152,000
1.4	INLET PROTECTION SYSTEM	LS	\$ 10,800	1	\$ 10,800
1.5	CLEARING AND GRUBBING	AC	\$ 23,000	2.53	\$ 58,210
1.6	SEDIMENT BARRIER	LF	\$ 1.44	10,446	\$ 15,040
1.7	REMOVE & DISPOSE EXISTING CONCRETE & PAVEMENT & STORMWATER BASINS & PIPES				
1.7.1	PAVEMENT	SY	\$ 8	14,349	\$ 114,790
1.7.2	ASPHALT SIDEWALK	SY	\$ 15	2,018	\$ 30,270
1.7.3	CONCRETE CURB AND GUTTER	SY	\$ 15	1,533	\$ 23,000
1.7.4	CATCH BASINS	EA	\$ 300	62	\$ 18,600
1.7.5	REMOVE & DISPOSE 18 Inch RCP	LF	\$ 24	2,530	\$ 59,460
1.7.6	REMOVAL OF ASBESTOS CEMENT WM (BY OTHERS - NAPLES UTILITIES DEPT)	LF	\$ -	4,665	\$ -
1.8	NOISE & SENSORS, VIBRATION & MONITORING EQUIPMENT				
1.8.1	Noise and Settlement/Vibration Monitoring System	LS	\$ 85,439	1	\$ 85,440
1.8.2	Protection of Property on Gulf Shore Boulevard (Sensors, Monitoring Equipment)	LS	\$ 30,250	1	\$ 30,250
1.8.3	Temporary Services	LS	\$ 12,640	1	\$ 12,640
SUB-TOTAL (MOBILIZATION/DEMOBILIZATION)					\$ 1,411,020



Naples Beach Restoration and Water Quality Improvement Project
75% Level Engineer's Opinion of Probable Construction Quantities and Cost
Stantec Pump Station Cost Assumptions
May 2021

Item No.	Description of Item	Estimate
2	PUMP STATION & GENERATOR	
2.1	SITE WORK	\$ 970,200
2.2	PIPING, VALVES, AND FITTINGS	\$ 1,254,400
2.3	SCREENING CHAMBER	\$ 175,300
2.4	GENERATOR SYSTEM	\$ 313,100
2.5	PUMP STATION	\$ 1,380,700
2.6	ELECTRICAL PLATFORM AND STAIRS	\$ 164,900
2.7	ELECTRICAL AND INSTRUMENTATION AND CONTROL WORK	\$ 656,300
2.8	LANDSCAPING AND IRRIGATION WORKS	\$ 46,800
2.9	PIPING FOR ABOVE GRADE UV SYSTEM	\$ 396,920
<i>SUB-TOTAL (PUMP STATION AND GENERATOR)</i>		\$ 5,358,620

Notes

1. Item No. 2.5 - 2.7 include approximately \$300,000 associated with Electrical, Structural, Piping and I&C upgrades to accomodate UV system



Naples Beach Restoration and Water Quality Improvement Project
75% Level Engineer's Opinion of Probable Construction Quantities and Cost
Stormwater Consolidation Cost Assumptions
May 2021

Item No.	Description of Item	Unit	Estimated Unit Cost	Estimated Quantity	Estimate
3	STORMWATER CONSOLIDATION				
3.1	STORMWATER CULVERT				
3.1.1	36" FPVC, DR 32.5	LF	\$ 405	798	\$ 323,190
3.1.2	24" ADS OR RCP	LF	\$ 210	387	\$ 81,270
3.1.3	30" ADS OR RCP	LF	\$ 260	195	\$ 50,700
3.1.4	36" ADS OR RCP	LF	\$ 270	239	\$ 64,530
3.1.5	42" ADS OR RCP	LF	\$ 290	399	\$ 115,710
3.1.6	48" ADS OR RCP	LF	\$ 390	743	\$ 289,770
3.1.7	48" HDPE Pipe	LF	\$ 233	231	\$ 53,820
3.1.8	4'x6' BOX CULVERT (TYPE IV, STEEL REINFORCED, 3" COVER, INCLUDES SUBSURFACE PIPELINE SUPPORT)	LF	\$ 1,100	40	\$ 44,000
3.2	VALVES AND FITTINGS				
3.2.1	PINCH VALVE (REDVALVE 36" SERIES 5200E WITH ACTUATOR, STRUCTURE 6-3A)	EA	\$ 134,800	1	\$ 134,800
3.2.2	36" MJ DUCTILE IRON SOLID SLEEVE	EA	\$ 2,900	2	\$ 5,800
3.2.3	36" MJ DUCTILE IRON 22.5o BEND (OR HOT FUSED)	EA	\$ 3,540	1	\$ 3,540
3.2.4	36" MEGALUG	EA	\$ 2,180	6	\$ 13,080
3.2.5	FPVC RESTRAINED JOINTS	EA	\$ 2,800	2	\$ 5,600
3.3	STRUCTURES				
3.3.1	MODIFY STRUCTURE 6-4A - ADJUSTABLE WEIR TO REGULATE FLOW AND INCREASE WET DETENTION	EA	\$ 5,000	1	\$ 5,000
3.3.2	STRUCTURE 6-4B	EA	\$ 16,375	1	\$ 16,380
3.3.3	STRUCTURE 6-3B	EA	\$ 35,625	1	\$ 35,630
3.3.4	ALUMINUM ACCESS DOOR FOR STRUCTURE 6-3A (WITH PINCH VALVE)	EA	\$ 7,500	1	\$ 7,500
3.3.5	FLOATABLES AND DEBRIS SEPARATOR AT STRUCTURE 6-4A (WEIR)	EA	\$ 18,000	1	\$ 18,000

3.3.6	FDOT TYPE J, 8.5' DEEP, CLASS IV CONCRETE, STRUCTURE V-10	EA	\$ 9,875	1	\$ 9,880
3.3.7	FDOT TYPE J STRUCTURE, 21'x27', 11' DEEP, CLASS IV CONCRETE, STRUCTURE V-1	EA	\$ 85,125	1	\$ 85,130
3.3.8	FDOT TYPE J STRUCTURE, 4'x8', 10' DEEP, CLASS IV CONCRETE, STRUCTURE V-2	EA	\$ 14,100	1	\$ 14,100
3.3.9	FDOT TYPE J STRUCTURE, 4'x8', 8.5' DEEP, CLASS IV CONCRETE, STRUCTURES V-3	EA	\$ 14,100	1	\$ 14,100
3.3.10	FDOT TYPE J STRUCTURE, 4'x8', 9.5' DEEP, CLASS IV CONCRETE, STRUCTURES V-4	EA	\$ 14,100	1	\$ 14,100
3.3.11	FDOT TYPE J STRUCTURE, 4'x8', 7' DEEP, CLASS IV CONCRETE, STRUCTURE V-5	EA	\$ 14,100	1	\$ 14,100
3.3.12	FDOT TYPE J STRUCTURE, 5'x5', 8.5' DEEP, CLASS IV CONCRETE, STRUCTURES V-6	EA	\$ 6,900	1	\$ 6,900
3.3.13	FDOT TYPE J STRUCTURE, 5'x5', 7.5' DEEP, CLASS IV CONCRETE, STRUCTURES V-7	EA	\$ 6,900	1	\$ 6,900
3.3.14	FDOT TYPE J STRUCTURE, 4'x4', 6.5' DEEP, CLASS IV CONCRETE, STRUCTURE V-8	EA	\$ 4,700	1	\$ 4,700
3.3.15	FDOT TYPE J STRUCTURE, 4'x4', 5.5' DEEP, CLASS IV CONCRETE, STRUCTURE V-9	EA	\$ 4,700	1	\$ 4,700
3.3.16	NEMA TYPE 4X ENCLOSURES	EA	\$ 5,230	1	\$ 5,230
3.3.17	ELECTRICAL PLATFORM AND STAIRS	LS	\$ 17,250	1	\$ 17,250
3.3.18	FLAP GATE, 5.5X6, STRUCTURE 6-1	EA	\$ 7,500	1	\$ 7,500
3.3.19	8" TENSAR MARINE MATTRESS (6' x 10')	EA	\$ 1,544	3	\$ 4,630
3.3.20	HELIX ANCHOR PAIRS WITH STRAPPING	EA	\$ 1,490	6	\$ 8,940
3.3.21	WOOD TRAINING WALLS (ALLOWANCE)	LF	\$ 460	20	\$ 9,200
3.4	ELECTRICAL (CONTROL PANEL FOR PINCH VALVE)*				
3.4.1	60 AMP DISCONNECT AT PINCH VALVE	EA	\$ 1,800	1	\$ 1,800
3.4.2	50 AMP DEDICATED BREAKER AT PS PANEL	EA	\$ 1,500	1	\$ 1,500
3.4.3	SURGE PROTECTOR	EA	\$ 500	1	\$ 500
<i>SUB-TOTAL (STORMWATER CONSOLIDATION)</i>					\$ 1,499,480

*CONDUIT, 3 PHASE WIRE, CONTROL WIRE AND PULL BOXES FROM PS INCLUDED IN PUMP STATION/GENERATOR COMPONENT OF ESTIMATE.



Naples Beach Restoration and Water Quality Improvement Project
75% Level Engineer's Opinion of Probable Construction Quantities and Cost
Outfall Diffuser System
May 2021

Item No.	Description of Item	Unit	Estimated Unit Cost	Estimated Quantity	Estimate
4	INSTALLATION				
4.1	OFF-SITE ASSEMBLY AND TRANSPORT OF OUTFALL STRUCTURE	LS	\$ 13,800	1	\$ 13,800
4.2	MARINE SUPPORT FOR OUTFALL DIFFUSER SYSTEM INSTALLATION	LS	\$ 157,500	1	\$ 157,500
4.3	MARINE INSTALLATION OF OUTFALL DIFFUSER STRUCTURE AND HELIX ANCHORS	LS	\$ 21,250	1	\$ 21,250
4.4	PIPE, VALVES AND FITTINGS				
4.4.1	30" FPVC DR-21	LF	\$ 259	120	\$ 31,080
4.4.2	30" MJ DUCTILE IRON SOLID SLEEVE	EA	\$ 2,600	2	\$ 5,200
4.4.3	30" MJ DUCTILE IRON 11.25o BEND	EA	\$ 3,000	2	\$ 6,000
4.4.4	30" MEGALUG	EA	\$ 2,100	8	\$ 16,800
4.4.5	10" SERIES TFW WIDE BILL DIFFUSER WITH CLAMPS	EA	\$ 7,605	16	\$ 121,680
4.4.6	END CAP	EA	\$ 1,725	2	\$ 3,450
4.4.7	HELIX ANCHOR PAIRS WITH STRAPPING	EA	\$ 1,240	10	\$ 12,400
<i>SUB-TOTAL (OUTFALL DIFFUSER SYSTEM)</i>					\$ 389,160



Naples Beach Restoration and Water Quality Improvement Project
75% Level Engineer's Opinion of Probable Construction Quantities and Cost
Outfalls Removal
May 2021

Item No.	Description of Item	Unit	Estimated Unit Cost	Estimated Quantity	Estimate
5	Outfalls Demolition & Disposal				
5.1	Demolition (PVC) & Wood Posts (Outfalls 7-10)	LF	\$ 35	970	\$ 33,950
5.2	Grout - Flowable (Fill Abandoned Pipe 18" - 30")	LF	\$ 26	\$ 480	\$ 12,480
<i>SUB-TOTAL (OUTFALL REMOVAL)</i>					\$ 46,430



Naples Beach Restoration and Water Quality Improvement Project
75% Level Engineer's Opinion of Probable Construction Quantities and Cost
Roadway - Drainage
May 2021

Item No.	Description of Item	Unit	Estimated Unit Cost	Estimated Quantity	Estimate
6	FURNISH, DELIVER AND INSTALL SECONDARY DRAINAGE LINES, STRUCTURES AND VALVES				
6.1	DRAINAGE CULVERTS				
6.1.1	PIPE CULVERT (CLASS IV, STORM SEWER, ROUND) (15") (RCP)	LF	\$ 73	599	\$ 43,730
6.1.2	PIPE CULVERT (CLASS IV, STORM SEWER, ROUND) (18") (RCP)	LF	\$ 73	1,558	\$ 113,730
6.1.3	PIPE CULVERT (CLASS IV, STORM SEWER, ROUND) (24") (RCP)	LF	\$ 91	1,278	\$ 116,300
6.1.4	PIPE CULVERT (CLASS IV, STORM SEWER, ELLIPTICAL) (12" X 18") (ERCP)	LF	\$ 120	630	\$ 75,600
6.1.5	PIPE CULVERT (CLASS IV, STORM SEWER, ELLIPTICAL) (14" X 23") (ERCP)	LF	\$ 83	372	\$ 30,880
6.2	INLETS AND MANHOLES				
6.2.1	INLETS (TYPE 8, J BOTTOM,<10')	EA	\$ 6,480	79	\$ 511,920
6.2.2	TYPE J-7 <10' MANHOLE, WITH RING AND COVER	EA	\$ 3,760	12	\$ 45,120
6.3	CHECKVALVES				
6.3.1	CHECK-VALVE (24" ROUND)	EA	\$ 7,230	2	\$ 14,460
<i>SUB-TOTAL (SECONDARY LINES AND STRUCTURES)</i>					\$ 951,740



Naples Beach Restoration and Water Quality Improvement Project
75% Level Engineer's Opinion of Probable Construction Quantities and Cost
Roadway
May 2021

Item No.	Description of Item	Unit	Estimated Unit Cost	Estimated Quantity	Estimate
7	ROADWAY - PAVING AND GRADING				
7.1	EMBANKMENT (RIGHT OF WAY)	CY	\$ 26	3,006	\$ 78,160
7.2	EMBANKMENT (ROADWAY SUB-BASE)	CY	\$ 40	877	\$ 35,080
7.3	PREPARE EXISTING SUB-BASE (12" MIN, TYPE B, LBR 40)	SY	\$ 4	17,888	\$ 71,550
7.4	BASE GROUP 6, LIMEROCK ONLY (8" LIMEROCK, LBR 100)	SY	\$ 20	17,888	\$ 357,750
7.5	CONCRETE DRIVEWAY - REMOVE & RESTORE	EA	\$ 2,975	1	\$ 2,980
7.6	ASPHALT DRIVEWAY - REMOVE & RESTORE	EA	\$ 2,550	2	\$ 5,100
7.7	PAVER/BRICK DRIVEWAY - REMOVE & RESTORE	EA	\$ 3,500	43	\$ 150,500
7.8	GRAVEL DRIVEWAY - REMOVE & RESTORE/REPLACE	EA	\$ 750	1	\$ 750
7.9	MILLING EXISTING ASPHALT PAVEMENT, 1 1/2" AVG DEPTH	SY	\$ 3	889	\$ 2,670
7.10	SUPERPAVE ASPHALTIC CONCRETE (TRAFFIC B, 1.5-INCHES, SP-9.5)	TN	\$ 91	1,198	\$ 109,020
7.11	ASPHALTIC CONCRETE FRICTION COURSE (TRAFFIC B, 1-INCH, FC-9.5)	TN	\$ 157	799	\$ 125,440
7.12	F-CURB	LF	\$ 23	2,327	\$ 53,520
7.13	D-CURB	LF	\$ 19	349	\$ 6,630
7.14	GUTTER CURB	LF	\$ 21	5,700	\$ 119,700
7.15	DROP CURB	LF	\$ 21	1,183	\$ 24,840
7.16	CONCRETE DRIVEWAYS, 6" THICK (ALLEYS)	SY	\$ 65	363	\$ 23,620
7.17	CONCRETE SIDEWALK, 4" THICK	SY	\$ 34	1,724	\$ 58,620
7.18	REMOVE AND RESTORE PAVER SIDEWALK	SY	\$ 140	66	\$ 9,180
7.19	DETECTABLE WARNINGS	SF	\$ 27	320	\$ 8,640
7.20	EXCAVATION / EMBANKMENT FOR ASBESTOS PIPE REMOVAL (BY OTHERS - CITY UTILITIES) - ASSUMES 4,660 LF OF 2.5' X 3' EXCAVATION / REPLACEMENT	CY	\$ -	1,533	\$ -
SUB-TOTAL (ROADWAY - PAVING AND GRADING)					\$ 1,243,750

8 SIGNAGE AND PAVEMENT MARKING					
8.1	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	AS	\$ 301	20	\$ 6,020
8.2	SINGLE POST SIGN, RELOCATE	AS	\$ 138	35	\$ 4,830
8.3	SINGLE POST SIGN, REMOVE	AS	\$ 39	1	\$ 40
8.4	PAINTED PAVT, STD, WHITE, SOLID, 6" FOR EDGELINE	GM	\$ 996	2	\$ 2,290
8.5	PAINTED PAVT, STD, WHITE, SOLID, 24" FOR STOP BARS SIDE STREETS IMPACTED AND CROSS-WALKS	LF	\$ 1.30	327	\$ 430
8.6	PAINTED PAVT, STD, WHITE, SOLID, 12" TRAVERSE LINES FOR CROSS-WALKS	LF	\$ 4	1,492	\$ 5,970
8.7	PAVEMENT MESSAGES, SHARROW	SY	\$ 100.00	187	\$ 18,670
8.9	PAINTED PAVT, STD, YELLOW, SOLID, 6" DOUBLE YELLOW FOR SIDE STREETS IMPACTED	LF	\$ 1.89	698	\$ 1,320
8.10	PAINTED PAVT, STD, YELLOW, SOLID, 8" FOR IMPACTS TO ISLAND AT 8TH AVE N	LF	\$ 3	36	\$ 110
8.11	PAINTED PAVT, STD, YELLOW, SOLID, 18" FOR IMPACTS TO ISLAND AT 8TH AVE N	LF	\$ 5	18	\$ 90
8.12	PAINTED PAVT, STD, YELLOW, SKIP (10-30'), 6" FOR CENTERLINE	LF	\$ 0.94	4,598	\$ 4,340
<i>SUB-TOTAL (SIGNAGE AND PAVEMENT MARKING)</i>					\$ 44,110
9 LANDSCAPING & IRRIGATION					
9.1	PERFORMANCE TURF, SOD, ZOYSIA	SY	\$ 6.75	3,063	\$ 20,680
9.2	PERFORMANCE TURF, SOD, ST AUGUSTINE	SY	\$ 4.23	9,187	\$ 38,860
9.3	LANDSCAPE TREES, REPLACE IN-KIND	EA	\$ 1,000	161	\$ 161,000
9.4	IRRIGATION SYSTEM (RESTORE EXISTING)	LS	\$ 30,000	1	\$ 30,000
9.5	TREE PROTECTION	EA	\$ 180	35	\$ 6,300
9.6	TREE RELOCATION	EA	\$ 1,000	10	\$ 10,000
9.7 ALLIGATOR LAKE PARK - GRADING & LANDSCAPING					
9.7.1	PLANTINGS	LS	\$16,250	1	\$16,250
9.7.2	HARDSCAPE (BENCH, WATER FOUNTAIN)/IRRIGATION RESTORATION (ALLOWANCE)	LS	\$12,500	1	\$12,500
9.7.3	TOP SOIL	CY	\$25	93	\$2,310
9.7.4	IMPORT FILL	CY	\$40	671	\$26,840
9.7.5	ALLIGATOR LAKE BANK / LITTORAL SHELF GRADING (ALLOWANCE)	LS	\$20,000	1	\$20,000
<i>SUB-TOTAL (LANDSCAPING & IRRIGATION)</i>					\$ 344,740
10 UTILITIES					
10.1	UTILITY RELOCATES AND CONFLICTS (ALLOWANCE)	LS	\$200,000	1	\$200,000
<i>SUB-TOTAL (UTILITIES)</i>					\$ 200,000.00



Naples Beach Restoration and Water Quality Improvement Project
75% Level Engineer's Opinion of Probable Construction Quantities and Cost
Water Quality Component Cost Assumptions
May 2021

Item No.	Description of Item	Unit	Estimated Unit Cost	Estimated Quantity	Estimate
11	RECOMMENDED WATER QUALITY BMP's				
11.1	3-Lake System				
11.1.1	STREET SWEEPING	SEE NOTE 1			
11.1.2	WET DETENTION (ADJUSTABLE WEIR TO INCREASE WET DETENTION WITH FLOATING DEBRIS SCREEN)	SEE NOTES 5&6			
11.1.3	HYDRODYNAMIC SEPARATORS	EA	\$ 109,900	1	\$ 109,900
11.2	SOUTH SYSTEM				
11.2.1	STREET SWEEPING	SEE NOTE 1			
11.2.2	CATCH BASIN FILTER BASKET INSERTS (BETWEEN SGD AND 2ND AVE S - SEE NOTE 2 REGARDING PHASE I WQ PROJECT)	EA	\$ 2,810	79	\$ 221,990
11.2.3	SWALES (1ST, 2ND & 3RD AVE N - BOTH SIDES) - REGRADE TO REESTABLISH PERCOLATION AND SOLIDS/NUTRIENT REMOVAL	LF	\$ 35	4500	\$ 157,500
11.2.4	MEDIA FILTRATION SYSTEM (3 SYSTEMS - 1ST, 2ND & 3RD AVE N)	EA	\$ 20,000	3	\$ 60,000
SUB-TOTAL (RECOMMENDED WATER QUALITY BMP's)					\$ 549,390
11.3	SCREENING CHAMBER (AT SPS)				
11.3.1	SCREENING CHAMBER (AT SPS)	SEE NOTE 7			
11.4	UV (UV UNIT ONLY - SEE NOTES 3 & 4)				
11.4.1	UV UNIT	EA	\$ 877,784	1	\$ 877,780
SUB-TOTAL (WITH UV)					\$ 1,427,170

NOTES:

- 1) COSTS ASSOCIATED WITH INCREASED STREET SWEEPING ARE PART OF THE CITY'S MAINTENANCE BUDGET.
- 2) COST FOR 63 CATCH BASIN FILTER INSERTS WITHIN BASINS 5-10 (THE "PHASE 1 WQ" PROJECT) = \$177,030.
- 3) SPS COSTS INCLUDES \$371,575 IN PIPING, VALVES AND VAULTS NECESSARY TO ACCEPT THE UV UNITS.
- 4) APPROXIMATELY \$300,000 OF THE SPS COSTS INCLUDE ELECTRICAL, CONTROLS (AND ADDITIONAL RAISED PLATFORM SPACE) FOR THE UV SYSTEM
THE COMPONENTS LISTED BELOW ARE NECESSARY FEATURES TO PROTECT THE DRAINAGE LINES AND SPS PUMPS:
- 5) SEE SECTION 3.3.1 FOR COST OF ADJUSTABLE WEIR
- 6) SEE SECTION 3.3.5 FOR COST OF FLOATING DEBRIS SCREEN
- 7) SEE SECTION 2.3 FOR COST OF SCREENING CHAMBER
- 8) DREDGING/REMOVAL OF ORGANICS AT ALLIGATOR LAKE WEIR PLANNED CONCURRENTLY WITH NORTH LAKE

**NAPLES BEACH RESTORATION & WQ IMPROVEMENT PROJECT
COMPARISON OF 75% VS 90% COST ESTIMATE**

Item No.	Description of Item	90% ESTIMATE (Jan 2020)	75% ESTIMATE (May 2021)	NET CHANGE
1	MOB/DEMOB & GENERAL REQUIREMENTS	\$ 1,008,032	\$ 1,411,020	\$ 402,988
2	PUMP STATION	\$ 4,509,931	\$ 5,358,620	\$ 848,690
3	STORMWATER CONSOLIDATION	\$ 1,426,221	\$ 1,499,480	\$ 73,259
4	OFFSHORE DIFFUSER SYSTEM	\$ 336,900	\$ 389,160	\$ 52,260
5	REMOVAL OF EXISTING BEACH OUTFALLS	\$ 40,500	\$ 46,430	\$ 5,930
6	ROADWAY-DRAINAGE	\$ 836,117	\$ 951,740	\$ 115,623
7	ROADWAY - PAVING & GRADING	\$ 1,330,038	\$ 1,243,750	\$ (86,288)
8	ROADWAY - STRIPING AND SIGNAGE	\$ 37,596	\$ 44,110	\$ 6,514
9	ROADWAY - LANDSCAPING	\$ 240,631	\$ 344,740	\$ 104,110
10	ROADWAY - UTILITY RELOCATES & CONFLICTS (ALLOWANCE)	\$ 100,000	\$ 200,000	\$ 100,000
11	RECOMMENDED WATER QUALITY BMP's	\$ -	\$ 549,390	\$ 549,390
12	3RD STREET DRAINAGE AND STORMWATER CONSOILDATION (50%)	\$ -	\$ 1,432,560	\$ 1,432,560
SUB-TOTAL		\$ 9,865,965	\$ 13,471,000	\$ 3,605,035
CONTINGENCY		\$ 493,000	\$ 404,000	\$ 89,000
SUB-TOTAL		\$ 10,358,965	\$ 13,875,000	\$ 3,516,035
UV SYSTEM		\$ -	\$ 877,780	\$ 877,780
TOTAL		\$ 10,358,965	\$ 14,752,780	\$ 4,393,815



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May 18, 2021

Gregg Strakaluse, PE
Director, Streets and Stormwater Department
City of Naples
295 Riverside Circle
Naples, FL 34102

RE: 75% Engineer's Schedule of Quantities, Unit Prices, and Estimate of Probable Construction Cost
Project Title: Naples Beach Restoration & Water Quality Improvement Project
Stormwater and Roadway Improvements

Dear Gregg,

We have completed the Engineer's Estimate of Probable Construction Cost for the Naples Beach Restoration and Water Quality Improvement Project ("Project").

This engineer's opinion of probable construction cost was developed based upon ECE's experience on similar projects as well as consultations with qualified construction contractors, recent bid data for work within the City of Naples, published FDOT bid data, and the acquisition of quotes from various material and service suppliers. Actual construction costs will vary depending on material and contractor availability, economic climate, final permit conditions, seasonal construction and final site conditions encountered at the time of construction.

SCOPE OF WORK

The Project scope generally includes the following:

1. Construction of the South Pump Station with backup generator
2. Installation of approximately 0.7 miles of storm sewer pipe
3. Improvements and drainage for approximately 0.9 miles of roadway
4. Alligator lake overflow system
5. Alligator Lake grading and landscaping
6. 3rd Street Drainage for approximately 0.7 miles, and a storm trunk line
7. Water Quality Components

The horizontal directional drill (HDD) portion of work will be awarded and contracted separately from the remainder of the Project. The estimated cost of the HDD work is described in an update letter to the City dated May 17, 2021. The costs for the stormwater and roadway improvements are described herein.

Development of the Engineer's Estimate of Probable Construction Cost

The project costs can be broken down two main categories as follows:

1. Mobilization/Demobilization of Equipment, Materials and Personnel and General Construction Operations
2. Pump Station and Backup Generator
3. Stormwater Consolidation with Overflow and Water Quality Pre-Treatment
4. Offshore Diffuser System
5. Removal of Existing Beach Outfalls
6. Roadway - Drainage
7. Roadway – Paving and Grading
8. Roadway – Marking, Striping and Signage
9. Landscaping (GSB Restoration and Alligator Lake Grading / Landscaping)
10. Utility Relocations and Conflicts
11. Water Quality Components
12. 3rd Street Drainage Improvements

Table 1 below provides the Engineer's Estimate of Probable Construction Cost for the Project.

Table 1. 75% Engineer’s Estimate of Probable Construction Cost

Item No.	Description of Item	Estimate
1	MOBILIZATION/DEMobilIZATION, SITE WORK & GENERAL REQUIREMENTS	\$ 1,411,020
2	PUMP STATION AND GENERATOR	\$ 5,358,620
3	STORMWATER CONSOLIDATION	\$ 1,499,480
4	OUTFALL DIFFUSER SYSTEM	\$ 389,160
5	DEMOLITION OF EXISTING OUTFALLS	\$ 46,430
6	ROADWAY - DRAINAGE SYSTEM	\$ 951,740
7	ROADWAY - PAVING AND GRADING	\$ 1,243,750
8	ROADWAY - PAVEMENT MARKING, STRIPING AND SIGNAGE	\$ 44,110
9	LANDSCAPING AND IRRIGATION	\$ 344,740
10	UTILITY RELOCATIONS AND CONFLICTS	\$ 200,000
11	WATER QUALITY	\$ 549,390
12	3RD STREET DRAINAGE AND STORMWATER CONSOILDATION (50%)	\$ 1,432,560
SUB-TOTAL		\$ 13,471,000
CONTINGENCY (3%)		\$ 404,000
TOTAL		\$ 13,875,000
UV SYSTEM		\$ 877,780
TOTAL WITH UV REACTOR UNIT		\$ 14,752,780

General Methodology

ECE maintains an up-to-date cost database based on published FDOT cost indices, both statewide and regional, as well as compiled cost information from similar, recent bids in Southwest Florida. In preparation of the cost estimate, recent bids for Projects within the City of Naples and Collier County were reviewed and given higher consideration where comparable to the Project. Professional experience and judgement was also employed when estimating factors that influence cost including but not limited to contractor means and methods, sequencing and project duration. Material and vendor quotes were acquired for significant components of work.

Cost assumptions including unit costs and quantities are provided in the Table 1 (Attachment A – Construction Quantities and Cost Assumptions).

1. Mobilization/Demobilization and General Construction Operations

Bid Item 1.1 Mobilization/Demobilization

The mobilization and demobilization costs consist of work and operations necessary to begin work on a project. This includes cost required to transport the required equipment, materials and personnel to and from the jobsite, establishing temporary offices, safety equipment, establishing site security, and sanitary facilities. This also includes bond and insurance expenses. The Engineer's Estimate of Probable Cost for mobilization and demobilization for the Project are based upon historic project cost data, ECE's experience on similar projects as well as consultations with qualified construction contractors. The mobilization/demobilization cost represents approximately 5% of the cost for total value of work which is typical for this type and magnitude of project.

Bid Item 1.2 Survey, Layout and As-Builts

The construction surveys cost represents the combined costs incurred by the contractor associated with survey control, layout and post-construction (as-built) surveys and drawings. The Engineer's Estimate of Probable Cost for construction surveys for the Project is estimated at approximately 1% of the total value of work which is typical for this type and magnitude of project.

Bid Item 1.3 Maintenance of Traffic and Phasing

The project requires extensive Maintenance of Traffic (MOT) and phasing of work. The Contractor will be permitted utilize one lane traffic MOT for 1-2 continuous blocks at a time during the high tourist season (Dec 15 – April 15). The Contractor may provide full road closure MOT for 1-2 continuous blocks at a time out of season. The unit costs for MOT is expected to vary between \$200-\$800 per day based on historic FDOT cost indices. An average unit cost of \$350/day over 18 months working 6 days per week was utilized for the estimate. MOT is bid as a Lump Sum price and is not adjusted for construction overruns/underruns.

Bid Item 1.4 Inlet Protection Systems

There are fifty-four existing inlets to be protected between South Golf Drive and 2nd Ave South within the Project Area during the execution of work. Based on recent bids for City of Naples Projects and FDOT historic cost indices, the cost for inlet protection systems vary from \$100-\$500 per inlet, and may further vary dependent on economies of scale. For the 75% estimate, a unit

rate of \$200 per inlet was assumed. The protection of new inlets, as shown in the plans, is incidental to the installation of those inlets and is not included in this line item.

Bid Item 1.5 Clearing and Grubbing

Clearing and grubbing consists of the complete removal and disposal of all vegetation (predominately sod), debris, drainage structures, and other obstructions, as well as tree and/or shrub trimming, in all areas where work is to be done. The clearing limits within the Gulf Shore Blvd Right-of-way between South Golf Drive (north end) and 2nd Ave. S (south end) include approximately 2.5 acres required for roadway construction and installation of the new trunk line. The clearing limits within Alligator Lake Park include 0.05 acres, which includes only areas not specifically covered under other tasks (i.e. tree removal). All clearing work will be inside of the City maintained ROW and inside Alligator Lake Park. The unit rate for clearing and grubbing was estimated based on recent City of Naples bids and the FDOT cost indices.

Bid Item 1.6 Sediment Barriers

Sediment Barriers (i.e. Silt Fence) are required to prevent erosion of soils from the work zone within the Gulf Shore Blvd. right-of-way and Alligator Lake Park during construction. Unit cost of \$1.44 per LF is based on FDOT cost indices.

Bid Item 1.7.1 – 1.7.5 Removal of Existing Asphalt and Concrete

This item consists of removing and disposing of existing pavement, concrete sidewalks, and concrete curb and gutter, where required because of construction operations and the work is not included in other operations. Existing storm water catch basins and RCP pipe that will be either removed and disposed or abandoned and grouted are included at unit pricing based on recent City bids. The unit rate for removal of existing concrete was estimated based on recent City of Naples bids and the FDOT cost indices.

Bid Item 1.7.6 Removal of Asbestos Cement Water Main (By Others – City of Naples Utilities Dept.)

The existing asbestos cement water main under the curb on the west side of Gulf Shore Blvd. must be removed to allow installation of the new roadway and drainage system. A new water main, which will be located beneath the sidewalk on the west side of Gulf Shore Blvd. is being designed by others. Removal of the existing asbestos cement water main is to be designed by the Utilities Department and similarly funded.

Bid Item 1.8 Noise Sensors and Vibration Monitoring

The Pump Station and Vault 1 will require vibration monitoring. Costs are based on recent pricing and prior project costs.

2. Pump Station and Generator

Bid Items 2.1 through 2.9 summarize the work, quantities, and costs for all work to construct the pump station, pipes, valves and fitting, screening chamber, pump station, generator system and electrical platform with instrumentation and Control work, and landscaping with assumptions and quantities are described in Bid Item 2, with detailed cost items included in Attachment A as prepared by Stantec. Units and quantities are also provided in the detail specific to each cost item in the PS Cost Assumption Details. Estimated cost for the optional UV reactor unit is not included in these costs and are included in Section 11 Water Quality section (See line item in Table 1). Costs associated with above ground piping and valves necessary to accommodate a UV reactor unit are included in Bid Item 2.9. Electrical, instrumentation and controls, and increased elevated platform area are included in Bid Items 2.5-2.7.

3. Stormwater Consolidation

Bid Item 3.1 Storm Sewer Line

The storm sewer line includes all pipe from Alligator Lake (AL) (at the north) and all pipe from 2nd Avenue South (at the south) to the pump station at 3rd Avenue North, including the box culvert connection to the pump station. This bid item work includes ADS pipe or RCP pipe, trenching and excavation, bedding material, backfill and dewatering, and between Alligator Lake and the pump station the cost of pipe fusing. Unit pricing for the costs for these items are based on recent bids and FDOT rates.

Bid Item 3.2 Valves and Fittings

This work includes the pinch valve, mechanical joints and restrained joints, and the electrical panels, mounting and controls for the pinch valve. Unit pricing is based on materials pricing from manufacturers, and unit costs based on FDOT and recent bids for similar projects.

Bid Item 3.3 Structures

This work includes all concrete box structures and vaults associated with the storm sewer line connections, and the overflow structure (buried) for connection at AL. Also included are the floatables and debris removal separator to retrofit the existing box structure (weir) at AL as well

as the adjustable weir to allow regulation of flows and increased wet detention in Alligator Lake. The costs are based on materials pricing from manufacturers, unit costs based on FDOT and recent bids for similar projects.

3.4 Electrical (Control Panel for Pinch Valve)

This bid item includes components for the electrical control for the pinch valve. Unit pricing is based on manufacturers pricing and ECE's experience on similar projects.

4. Outfall Diffuser System

Bid Item 4.1. Off-Site Assembly and Transport of Outfall Structures

The diffusers, saddle and pipe bands will be fabricated and pre-assembled for the 2 pipe sections on-land. The assembled units will then be transported to a marine loading facility. The cost for this work is estimated based on ECE's experience with similar open water projects.

Bid Item 4.2. Marine Support for Outfall Diffuser System Installation

Marine equipment will include barge(s) of adequate capacity for safe and functional operations and support tug(s). A typical barge for this size and scope of project is on the order of 100-120 ft long by 45 ft wide with a fully loaded draft of approximately 5-8 ft, with 1-2 assist vessels (tugs and similar). Appropriate mariner avoidance floats and buoys will be required for offshore work. A typical daily rate for Marine Support in Southwest Florida is \$10,000-\$20,000. Based on the expected sequence and duration, marine support is estimated at 10 days (5 days per pipe) for the mobilization, inspection, cutting of pipe, installation of mechanical joint, installation of the diffuser section, helical pile installation and testing, final assembly and as-built video, and demobilization. At a rate of \$15,750 per day over 10 days, the marine support estimate is \$157,500.

Bid Item 4.3. Marine Installation of Outfall Diffuser Structures and Helix Anchors

This work includes the installation of the outfall diffuser structures on the directionally drilled pipe, and the installation and testing of the helix anchors as called for in the plans. The cost for this work is estimated based on contractor pricing and ECE's experience with similar project bid prices.

Bid Item 4.4. Valves and Fittings

This item includes the materials for the outfall diffuser structure including the mechanical joints, diffusers, end caps, helix anchors and FPVC pipe. The estimate is based on supplier quotes with estimated delivery costs and Contractor markup (10%) added.

5. Demolition of Existing Beach Outfalls**Bid Item 5.1 and 5.2 Demolition & Disposal of Existing Beach Outfalls**

This item includes the complete removal and disposal of the existing beach outfall pipes and pipe supports seaward of the vegetation line, as well as grouting and capping at the upstream inlet structure as shown in the Plans. Approximately 970 linear ft of beach outfall will be removed at an estimated rate of \$35/ft for the PVC pipe and post and bracing, and approximately 480 linear ft of pipe to remain in place for flowable grout fill at a rate of \$26/ft based on recent City bids and current material pricing.

6. Roadway – Drainage**Bid Item 6.1. Stormwater Drainage Pipe**

The work for this bid item includes all RCP pipe, excavation, fill and bedding material for the storm drainage lines along Gulf Shore Boulevard. RCP pipe sizes and lengths are listed as shown in Table 1 (Details of Costs). Unit prices are based on recent City of Naples bids and FDOT average rates.

Bid Item 6.2 Inlets and Manholes

The work and associated materials include the Type J inlet box structures, and the manholes, access covers, and associated fittings for the roadway's drainage system. Unit prices are based on recent City of Naples bids and FDOT average rates.

Bid Items 6.3 Check Valves

The drainage system includes two 24-inch Tideflex check valves to prevent backflow from the trunkline into the drainage system. Unit prices are based on material costing from the manufacturers.

7. Roadway – Paving and Grading**Bid Items 7.1 to 7.4 Excavation, Sub-Base and Base and 7.9 Milling existing asphalt and full replacement for Roadway Surface**

This work includes excavation, embankment prep and work to prepare the existing Sub-base (LBR 40) and Base (LBR 100) for the roadway for a length of approximately 4,300 ft. Costs for

construction of the new sub-grade assume reuse of approximately 65% of the existing base material, which can be incorporated with embankment fill to construct 12" of sub-grade. The new pavement work provides for a superpave asphaltic pavement (1.5 in) and friction course (1 in). Unit pricing, quantities and costs assumptions are listed in Table 1 (attachment) with pricing based on FDOT statewide rates and recent City of Naples bids and pricing.

Bid Items 7.5 to 7.8 Remove and Restore Driveways

This work includes all driveways including removing and restoring existing and expected new paver/brick driveways, and removing and restoring 1 gravel drive, two asphalt drives, and 1 concrete drive (apron). It is assumed that driveway brick pavers will be stored on property and replaced. Unit prices for brick/paver drive replacement are based on recent bids for similar projects, and estimated at \$3,500 per driveway. Unit prices for gravel, asphalt and concrete drives are based on recent City of Naples bids and pricing and range from \$750 (gravel) to \$2,975 (concrete) per driveway. See Table 1 for complete listing.

Bid Items 7.12 to 7.16 Replace Concrete Curbing and 7.17 Concrete Driveways (Alleys)

This work includes all work to construct curbing along the roadway and includes types F at curb inlets and intersections, D (alleys), drop curb (driveways), and gutter curb at existing edge of pavement and pavement tie-ins.. The unit prices are estimated based on recent City of Naples bids and pricing and FDOT average statewide unit prices.

Bid Items 7.15 Concrete Sidewalk and 7.16 Restore and Replace Paver Brick Sidewalk

The work includes construction of a concrete sidewalk 5 ft (4 in thickness) along the west side of Gulf Shore Boulevard between S Golf Drive at the north and 2nd Avenue South at the south. Unit pricing is based on recent City of Naples bids and Statewide FDOT average prices. Replacing and restoring the existing brick paver sidewalk is based on City of Naples bids.

Bid Item 7.18 Detectable Warnings

Work includes placing ADA compliant warnings at roadway crossings including intersections at beach access entrances at sidewalk and cross marks. Unit pricing is based on recent City of Naples bids.

8. Roadway - Signage and Markings

Bid Items 8.1 through 8.13 Pavement Markings, Messages, Signs and Impacted Side Streets

This work includes all sign replacements, moving existing signs where economical and City's street signs and new signs (bicycle signage and cross walks); and pavement markings, centerline markings and impacted side streets markings and thermoplastic brick pattern cross walks at designated locations along Gulf Shore Boulevard. Unit prices are based on the recent City of Naples bids and FDOT statewide average unit prices.

9. Landscaping and Irrigation

Bid Item 9.1 to 9.4 Sod Replacement and Restore Existing Irrigation

The prices and assumptions for these bid items include all work to replace and restore existing sod (St Augustine or Zoysia (in kind)), and to replace impacted trees and restore existing irrigations lines (allowance). Unit pricing is based on the City of Naples recent bid prices and experience and the FDOT average statewide unit rates.

Bid Item 9.5 and 9.6 Tree Removal, Protection and Replacement

The City will require tree protection barriers be installed around select trees in close proximity to the work. The need and type of tree protection will be evaluated with the selected Contractor based on his/her intended means and methods. The City may elect to require Tree Relocation for select trees, relocation with replacement to the original location would increase to twice the cost of a single relocate cost. It is estimated that relocation of 20 trees may be relocated based on site selected tree, including consideration of type and expected success. The costs to protect and relocate existing trees in the work area are included in this Bid Item. Unit pricing is based on the City of Naples recent bid prices and experience and the FDOT average statewide unit rates.

Bid Item 9.7 Alligator Lake Park Grading and Landscaping

At an average elevation of ~4', Alligator Lake Park is currently the lowest point on the perimeter of the lake. This bid item includes raising the ground elevation in Alligator Lake Park to elevation 6, which will increase resiliency by adding attenuation capacity within the lake. This item also includes replanting the trunkline corridor, littoral shelf plantings, topsoil and sod, and an allowance for restoration of hardscape (replacement of the existing park bench and drinking fountain) and irrigation, as well as littoral shelf grading. Unit costs are based on current pricing (for plantings) and from recent City of Naples bid and average FDOT indices.

10. Utility Relocations and Conflicts

Bid Item 10 provides an allowance for conflict structures anticipated at sites where the sanitary sewer line extends in the alley ROW, where the elevations of the lines may be or shielded or avoided, and for manhole rim adjustments in Gulf Shore Blvd. Conflicts structures at intersection crossings are also anticipated where the stormwater drainage line may not avoid the reuse water lines. This bid item provides an allowance for conflicts structures and relocations where feasible and economical.

11. Water Quality Components

Bid Item 11 includes recommended Water Quality BMP's for removal of TSS, total Nitrogen and total Phosphorous as outlined in the "Naples Beach Restoration and Water Quality Improvement Project, Water Quality Improvements – Phase 1" prepared by ECE (May 2021). Components critical to the protection of drainage system assets (floatable debris screen and adjustable weir at the Alligator Lake Weir, and the Screening Chamber at the SPS) are not included in this bid item, refer to Bid Items 3.3.1, 3.3.5, and 2.3, respectively). Unit costs are based on recent supplier quotes and recent City bids.

12. 3rd Street Trunkline

Bid Item 12 includes pipe, vaults, replacement of existing swale inlets along 3rd Street, and excavation and pavement restoration along the trunkline corridor. Quantities assume the new trunkline will be installed in the center of the northbound lane in 3rd Street (i.e. no impacts to landscaping), and will discharge into South Lake. Quantities are based on 50% design and will be updated to 90% as Bid Items 1-11 are updated from 75% to 90%.

Contingency

A 3% contingency is included in this 75% Engineers Estimate of Probable Construction Costs. Pricing is variable based on material and contractor availability, economic climate and final site conditions encountered at the time of bidding.

Value Engineering

Value Engineering is the process by which project components are evaluated during the design process to identify features that can be modified to reduce cost without a reduction in the quality of the project. The ECE Team considers Value Engineering a continual process throughout the project's design and permitting phase to achieve an optimal balance between cost and quality. Thereby value engineering is conducted through close coordination with industry experts, material and equipment suppliers and contractors and the City.

At the conclusion of construction bidding, project modifications as a result of additional value engineering to reduce cost may be implemented in consultation with the low bidder and City while maintaining the design intent and compliance with the regulatory agencies.

Summary

The 75% Engineer's Estimate of Probable Construction Cost for the Naples Beach Restoration and Water Quality Improvement Project, excluding the HDD portion of the work, is estimated at approximately \$13.47M with a recommended contingency of 3% bringing the estimate to approximately \$13.88M (without a UV Reactor Unit). The total estimate including a UV Reactor Unit is approximately \$14.75M.

Please contact us with any questions.

Sincerely,

ERICKSON CONSULTING ENGINEERS, INC.



Karyn M. Erickson, PE, DCE
President

Jeremy L. Fireline, PE
Senior Project Manager

cc: Andy Holland, Naples
File



Naples Beach Restoration and Water Quality Improvement Project
90% Level Engineer's Opinion of Probable Construction Quantities and Cost
Mobilization/Demobilization & General Conditions Cost Assumptions
May 2021

Item No.	Description of Item	Unit	Estimated Unit Cost	Estimated Quantity	Estimate
1	MOBILIZATION/DEMobilIZATION AND GENERAL CONSTRUCTION OPERATIONS				
1.1	MOBILIZATION/DEMobilIZATION	LS	\$ 300,000	1	\$ 300,000
1.2	SURVEYING, LAYOUT AND AS-BUILT DRAWINGS	LS	\$ 15,000	1	\$ 15,000
1.3	MAINTENANCE OF TRAFFIC	LS	\$ 30,000	1	\$ 30,000
1.4	INLET PROTECTION SYSTEM	EA	\$ 500	4	\$ 2,000
1.5	ENVIRONMENTAL COMPLIANCE, TURBIDITY CONTROL AND TESTING	LS	\$ 37,275	1	\$ 37,280
SUB-TOTAL					\$ 384,280
2	FURNISH, DELIVER, AND INSTALL OFFSHORE PIPELINE				
2.1	MARINE SUPPORT FOR HDD & PIPE INSTALLATION	LS	\$ 480,000	1	\$ 480,000
2.2	OFFSHORE PIPELINE				
2.2.1	PERFORM HORIZONTAL DIRECTIONAL DRILL (44-INCH BORE HOLE)	LF	\$ 850	2,006	\$ 1,705,100
2.2.2	30" FPVC, DR21 (PIPE, FUSING, END CAPS)	LF	\$ 270	2,006	\$ 541,620
2.2.3	HYDROSTATIC TESTING AND LEAKAGE TESTING	LS	\$ 50,000	1	\$ 50,000
SUB-TOTAL					\$2,776,720
3	SITE TURNOVER				
3.1	TEMPORARY SHORING AND FENCING FOR PROTECTION & ACCESS OF LANDWARD END OF PIPE	LS	\$ 51,000	1	\$ 51,000
3.2	SITE RESTORATION	LS	\$ -	1	\$ -
SUB-TOTAL					\$51,000
SUB-TOTAL					\$3,212,000
CONTINGENCY (5%)					\$170,000
TOTAL					\$3,382,000

May 18, 2021

Gregg Strakaluse, PE
Director, Streets and Stormwater Department
City of Naples
295 Riverside Circle
Naples, FL 34102

RE: 90% Engineer's Estimate of Probable Construction Cost
Project Title: Naples Beach Restoration & Water Quality Improvement Project
Horizontal Directional Drill – Phase I

Dear Gregg,

We have completed the Engineer's Estimate of Probable Construction Cost for the Horizontal Directional Drill (HDD) component of the Naples Beach Restoration and Water Quality Improvement Project ("Project") Phase I.

This engineer's opinion of probable construction cost was developed based upon ECE's experience on similar HDD projects as well as consultations with qualified construction contractors, recent bid data for work within the City of Naples, published FDOT bid data, and the acquisition of quotes from various material and service suppliers. Actual construction costs will vary depending on material and contractor availability, economic climate, seasonal construction, and final site conditions encountered at the time of construction.

SCOPE OF WORK

The Project scope generally includes the following:

- 1. Two offshore discharge lines (30" nominal FPVC) to be installed by Horizontal Directional Drill (HDD) approximately 1,000 ft each into the Gulf of Mexico**
2. Construction of a pump station with backup generator
3. Installation of approximately 0.6 miles of storm sewer pipe
4. Improvements (widening and raising) and drainage for approximately 0.9 miles of roadway
5. Alligator Lake overflow system

The horizontal directional drill (HDD) portion of work will be awarded and contracted separately, and is the scope of work for which this cost estimate was prepared. Project bids and subsequent commencement of construction is anticipated in Fall 2021.

Development of the Engineer's Estimate of Probable Construction Cost

The project costs can be broken down two main categories as follows:

1. Mobilization/Demobilization of Equipment, Materials and Personnel and General Construction Operations
2. Furnish, Deliver, and Install by HDD the Offshore Pipeline
3. Site Protection and Turnover

Table 3 below provides the Engineer's Estimate of Probable Construction Cost for the Project.

Table 3. 90% Engineer's Estimate of Probable Construction Cost

Item No.	Description of Item	Unit	Estimated Unit Cost	Estimated Quantity	Estimate
1	MOBILIZATION/DEMOBILIZATION AND GENERAL CONSTRUCTION OPERATIONS				
1.1	MOBILIZATION/DEMOBILIZATION	LS	\$ 300,000	1	\$ 300,000
1.2	SURVEYING, LAYOUT AND AS-BUILT DRAWINGS	LS	\$ 15,000	1	\$ 15,000
1.3	MAINTENANCE OF TRAFFIC	LS	\$ 30,000	1	\$ 30,000
1.4	INLET PROTECTION SYSTEM	EA	\$ 500	4	\$ 2,000
1.5	ENVIRONMENTAL COMPLIANCE, TURBIDITY CONTROL AND TESTING	LS	\$ 37,275	1	\$ 37,280
SUB-TOTAL					\$ 384,280
2	FURNISH, DELIVER, AND INSTALL OFFSHORE PIPELINE				
2.1	MARINE SUPPORT FOR HDD & PIPE INSTALLATION	LS	\$ 480,000	1	\$ 480,000
2.2	OFFSHORE PIPELINE				
2.2.1	PERFORM HORIZONTAL DIRECTIONAL DRILL (44-INCH BORE HOLE)	LF	\$ 850	2,006	\$ 1,705,100
2.2.2	30" FPVC, DR21 (PIPE, FUSING, END CAPS)	LF	\$ 270	2,006	\$ 541,620
2.2.3	HYDROSTATIC TESTING AND LEAKAGE TESTING	LS	\$ 50,000	1	\$ 50,000
SUB-TOTAL					\$2,776,720
3	SITE TURNOVER				
3.1	TEMPORARY SHORING AND FENCING FOR PROTECTION & ACCESS OF LANDWARD END OF PIPE	LS	\$ 51,000	1	\$ 51,000
3.2	SITE RESTORATION	LS	\$ -	1	\$ -
SUB-TOTAL					\$51,000
SUB-TOTAL					\$3,212,000
CONTINGENCY (5%)					\$170,000
TOTAL					\$3,382,000

General Methodology

ECE maintains an up-to-date cost database based on published FDOT cost indices, both statewide and regional, as well as compiled cost information from similar, recent bids in Southwest Florida. In preparation of the cost estimate, recent bids for Projects within the City of Naples and Collier County were given higher consideration. Professional experience and judgement were also employed when estimating factors that influence cost including but not limited to contractor means and methods, sequencing, and project duration. Material and vendor quotes were acquired for significant components of work. A sales tax of 7% is excluded per the City's exemption status.

Mobilization/Demobilization and General Construction Operations

Bid Item 1.1. Mobilization/Demobilization

The mobilization and demobilization costs represent the construction related cost required to transport the required equipment, materials, and personnel to and from the jobsite to complete the work. The Engineer's Estimate of Probable Cost for mobilization and demobilization for the Project are based upon historic project cost data, ECE's experience on similar projects as well as consultations with qualified construction contractors. The mobilization/demobilization cost represents approximately 10% of the cost for total cost estimate which is typical for this type of work.

Bid Item 1.2. Surveying, Layout and As-Built Drawings

The construction surveys cost represents the combined costs incurred by the contractor associated with directional drilling survey control, layout, and post-construction (as-built) surveys and drawings. For an HDD project, this is limited to the site layout and setting out of the tracking system and the preparation as-built drawings and documents. The Engineer's Estimate of Probable Cost for construction surveys for the Project is based upon historic cost data and ECE's experience on similar projects.

Bid Item 1.3. Maintenance of Traffic

The HDD portion of work will require limited Maintenance of Traffic (MOT) which is expected to include a materials and deliveries estimated at 2-3 weeks and a 3-5-day intersection closure at 3rd Ave N and Gulf Shore Blvd for the pipe pull. In addition, the MOT is expected to include one lane closure for two blocks east on 3rd Ave N for pipe staging and fusing for 2-3 weeks. The unit costs for MOT are expected to vary between \$500-\$800 per day based on historic FDOT cost indices. A unit cost of \$600/day over 7 weeks was utilized for the estimate.

Bid Item 1.4. Inlet Protection System

There are four existing inlets to be protected at 3rd Ave N during the HDD work. Based on recent bids for City of Naples Projects and FDOT historic cost indices, the cost for inlet protection systems varies from \$100-\$500 per inlet, and may further vary dependent on economies of scale.

Bid Item 1.5. Environmental Compliance, Turbidity Control and Testing

The environmental compliance and turbidity control cost represents the costs incurred by the contractor associated with installation and maintenance of BMPs for erosion and turbidity control to maintain compliance with State water quality standards and specific environmental permit conditions. In addition, turbidity monitoring during the seaward pipe emergence is required, estimated at one day for each pipeline. The costs associated with environmental compliance are estimated based upon cost data for similar projects.

Furnish, Deliver and Install Offshore Pipeline

The estimated duration for the HDD and pipe installation is as follows:

Task	Duration (Days) Per Pipeline	Duration (Days) Total
Mobilization/Setup Rig/Excavate Drill Pit	5	10
Pilot Hole	4	8
Reaming	7	14
Swab	1	2
Pullback	2	4
Pressure Test	1	2
Demob	3	6
Sub-Total	23	46
Contingency/Weather	12	24
Total	35	70

The duration estimates above will vary dependent on the subsurface conditions within the bore path. Based on the geotechnical core boring at the 3rd Ave N beach end, it is estimated approximately 75% of the drill path will be through rock. In addition, the boring indicates the potential presence of “poor quality” limestone, which could affect the project duration and costs. As shown above, the HDD and pipe installation duration is estimated at 45-70 days.

Bid Item 2.1. Marine Support for HDD & Pipe Installation

Marine equipment will include barge(s) of adequate capacity for safe and functional HDD operations and support tug(s). A typical barge for this size and scope of project is on the order of 120-150 ft long by 45 ft wide with a fully loaded draft of approximately 5-8 ft. When

performing offshore work the barge(s) would typically be staged within 150 ft of the pipe emergence and anchored with a 4-point mooring system. For a typical pull of pipe from offshore to onshore, one barge located at the exit point and 3-4 assist vessels (tubs and similar) will likely be required. An additional barge may be required for an offshore to onshore pull. Appropriate mariner avoidance floats and buoys will be utilized for offshore work. A typical daily rate for Marine Support in Southwest Florida is \$12,000-\$15,000. Based on the expected sequence and duration, marine support is estimated at 25-30 days for the mobilization, reaming and swab, pipe float, pullback, and pressure testing.

Bid Item 2.2 Offshore Pipeline

2.2.1 Perform Horizontal Directional Drill (HDD)

The directional drilling technique involves drilling of a pilot hole, enlarging the pilot hole to a suitable diameter for the pipeline (reaming), and pulling the pipeline through the hole (pullback). A pilot hole is drilled beginning at a prescribed angle from horizontal and continues along a design profile made up of straight tangents and radius arcs. Once the pilot hole is complete, the hole is enlarged to a suitable diameter for the pipeline. This is accomplished by “reaming” the hole to successively larger diameters, typically at least 1.5 times the outside diameter of the pipeline to be installed. During the reaming process, drilling fluid is pumped into the hole to maintain the integrity of the hole and flush out the cuttings. Once the hole is enlarged, the pipeline is pulled through it. The pipeline is pre-fused on the side opposite the drilling rig. The drilling rig then begins the pullback operation, pulling the pipeline back towards the drilling rig. As with the reaming process, the pullback process also uses drilling fluid to maintain the integrity of the hole.

The typical method for construction of this type is to pull the pipe through the hole from offshore to its connection point onshore; however, the method can also be accomplished in reverse. The construction means and methods will be at the discretion of the selected contractor subject to compliance with all contract documents and regulatory permits. Should the contractor elect to pull the pipe from onshore to offshore, it will be first fused at the upland staging area, then moved to the water using a roller system and placed on floats. Appropriate safety fences will be placed temporarily to prevent public entry for approximately 48 hours.

The HDD operations requires approximately 20,000-30,000 gallons of water per day during drilling. The estimate assumes the City will provide water from a nearby fire hydrant.

2.2.2. FPVC Pipeline

The costs associated to furnish, deliver and fuse the 30” FPVC DR21 pipeline is based on quotes from material suppliers. This cost includes end caps needed for pressure testing and protection until the offshore diffuser system and pump stations are in line.

Bid Item 2.2.3. Hydrostatic Testing and Leakage Testing

Hydrostatic testing is required to test the integrity of the pipeline prior to acceptance and commissioning. Hydrostatic testing involves filling the new pipeline segments with water via the use of large high capacity/high pressure pumps drawing water from an approved source. Once filled, the internal pressure is raised and held as in accordance with testing requirements. The testing will require a barge, tugs and related marine support as well as a pump and adequate water source. The cost of testing was based on consultations with local contractors.

Site Turnover

Bid Item 3.1. Temporary Shoring and Fencing for Protection & Access to Landward End of Pipe

The Contractor is required to provide temporary shoring and fencing to protect the landward end of pipe until the site is turned over to the prime contractor performing the balance of the project work (e.g. stormwater and roadway). The estimated duration for this site protection is estimated at 30 days.

Bid Item 3.2. Site Restoration

Beyond cleaning up equipment, temporary facilities and solid waste, the contractor will not be required to restore the site within the 3rd Ave N (i.e. pavement restoration, vegetation, etc.) within the provided staging and work areas prior to turnover of the site to the prime contractor. Any damage outside of the approved work limits must be rectified to the satisfaction of the City prior to site turnover.

Contingency

A typical contingency for a 90% Engineers Estimate of Probable Construction Costs of 5% is included in the cost estimate. The HDD work with a subaqueous exit is highly dependent on weather which contractor's will incorporate into their pricing. Pricing is also variable based on material and contractor availability, economic climate and final site conditions encountered at the time of bidding.

Value Engineering

Value Engineering is the process by which project components are evaluated during the design process to identify features that can be modified to reduce cost without a reduction in the quality of the project. The ECE Team considers Value Engineering a continual process throughout the project's design and permitting phase to achieve an optimal balance between cost and quality. The value engineering is conducted through close coordination with industry experts, material and equipment suppliers and contractors.

At the conclusion of construction bidding, project modifications as a result of additional value engineering to reduce cost may be implemented in consultation with the low bidder and City while maintaining the design intent and compliance with the regulatory agencies.

Comparison of the 2020 90% Estimate to the 2021 90% Estimate

A comparison of the 2020 versus 2021 90% estimate is provided below.

Item No.	2020 90% Estimate	2021 90% Estimate	Net Change
Mob/Demob	\$382,500	\$384,280	\$1,780
Horizontal Directional Drill	\$2,676,420	\$2,776,720	\$100,300
Site Turnover	\$51,000	\$51,000	-
Sub-Total	\$3,109,920	\$3,212,000	\$102,080
Contingency	\$320,000	\$170,000	(\$150,000)
Total	\$3,429,920	\$3,382,000	(\$47,920)

The refinements between the 2020 and 2021 90% estimates generally included:

- Refinement of quantities and unit prices based on the current design and cost indices
- Updated supplier quotes
- Contracting the HDD project separately (i.e site turnover costs)

Summary

The 90% Engineer's Estimate of Probable Construction Cost for the Horizontal Directional Drill portion of the Naples Beach Restoration and Water Quality Improvement Project is estimated at approximately \$3.2M with a recommended contingency of 5% bringing the estimate to approximately \$3.4M.

The anticipated procurement schedule for the HDD portion of work is as follows:

- Advertise RFQ 06/07/2021
- Anticipated advertisement 06/14/2021
- Bids Due Week of 07/14/2021
- Review Committee Meeting
- Award of Contract 08/17/2021
- Notice to Proceed 09/17/2021



Please contact us with any questions.

Sincerely,
ERICKSON CONSULTING ENGINEERS, INC.

A handwritten signature in blue ink, reading 'Karyn Erickson', written in a cursive style.

Karyn M. Erickson, PE, DCE
President

cc: Andy Holland, Naples
File