

APPENDIX G6. COST ESTIMATE OF FINAL PLAN

TOTAL PROJECT COST SUMMARIES

ALL CONTRACTS

THIS ESTIMATE IS BASED ON THE FEASIBILITY STUDY, DATED OCT 2008

PROJECT: HUNTINGTON FLOOD DAMAGE REDUCTION FEASIBILITY

PREPARED BY : CENAB-EN-DT LUAN NGO

LOCATION : MARYLAND

P.O.C.: DANIEL DURSKI, CHIEF, ESTIMATING & SPECIFICATIONS SECTION

ACCOUNT NUMBER	ITEM DESCRIPTION	CURRENT MII ESTIMATE 04 NOV 08 EFFECTIVE PRICING LEVEL 1 OCT 08				AUTHORIZ./BUDGET YEAR FY 09 EFFECTIVE PRICING LEVEL: 1 OCT 08			FULLY FUNDED ESTIMATE		
		COST (\$K)	CNTG (\$K)	CNTG %	TOTAL (\$K)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	COST (\$K)	CNTG (\$K)	FULL (\$K)
02	RELOCATIONS	396	89	22%	485	396	89	485	443	99	542
09	LEVEES AND FLOODWALLS	11,492	2,971	26%	14,463	11,492	2,971	14,463	12,837	3,319	16,156
	TOTAL CONSTRUCTION COST	11,889	3,060	26%	14,948	11,889	3,060	14,948	13,280	3,418	16,697
01	LAND AND DAMAGES	57	11	20%	68	57	11	68	63	13	76
30	PLANNING, ENGINEERING AND DESIGN	1,200	120	10%	1,320	1,200	120	1,320	1,343	134	1,477
31	CONSTRUCTION MANAGEMENT	1,495	149	10%	1,644	1,495	149	1,644	1,804	180	1,985
	TOTAL PROJECT COSTS	14,640	3,341	23%	17,981	14,640	3,341	17,981	16,490	3,745	20,235

DISTRICT APPROVED:

DIVISION APPROVED:

_____ ACTING CHIEF, ESTIMATING AND SPECIFICATIONS SECTION

_____ CHIEF, COST ENGINEERING

_____ CHIEF, PLANNING DIVISION

_____ CHIEF, PROGRAMS MANAGEMENT

_____ CHIEF, ENGINEERING DIVISION

_____ DIRECTOR OF PPM

_____ CHIEF, CONSTRUCTION DIVISION

_____ CHIEF, OPERATIONS DIVISION

_____ CHIEF, PROGRAMS MANAGEMENT BRANCH

_____ PROJECT MANAGER

APPROVED DATE: _____

_____ DDE (PM)

TOTAL PROJECT COST SUMMARIES

Levee Structure

THIS ESTIMATE IS BASED ON THE FEASIBILITY STUDY, DATED OCT 2008

PROJECT: HUNTINGTON FLOOD DAMAGE REDUCTION FEASIBILITY

PREPARED BY : CENAB-EN-DT LUAN NGO

LOCATION : MARYLAND

P.O.C.: DANIEL DURSKI, CHIEF, ESTIMATING & SPECIFICATIONS SECTION

ACCOUNT NUMBER	ITEM DESCRIPTION	CURRENT MII ESTIMATE 04 NOV 08				AUTHORIZ./BUDGET YEAR FY 09			FULLY FUNDED ESTIMATE		
		EFFECTIVE PRICING LEVEL 1OCT 08				EFFECTIVE PRICING LEVEL: 1 OCT 08			COST (\$K)	CNTG (\$K)	FULL (\$K)
		COST (\$K)	CNTG (\$K)	CNTG %	TOTAL (\$K)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)			
02	RELOCATIONS	303	61	20%	364	303	61	364	339	68	406
09	LEVEES AND FLOODWALLS	4,765	953	20%	5,719	4,765	953	5,719	5,323	1,065	6,388
	TOTAL CONSTRUCTION COST	5,069	1,014	20%	6,082	5,069	1,014	6,082	5,662	1,132	6,794
01	LAND AND DAMAGES	57	11	20%	68	57	11	68	63	13	76
30	PLANNING, ENGINEERING AND DESIGN	1,200	120	10%	1,320	1,200	120	1,320	1,343	134	1,477
31	CONSTRUCTION MANAGEMENT	1,495	149	10%	1,644	1,495	149	1,644	1,804	180	1,985
	TOTAL PROJECT COSTS	7,820	1,295	17%	9,115	7,820	1,295	9,115	8,872	1,460	10,332

TOTAL PROJECT COST SUMMARIES

Pump Station

THIS ESTIMATE IS BASED ON THE FEASIBILITY STUDY, DATED OCT 2008

PROJECT: HUNTINGTON FLOOD DAMAGE REDUCTION FEASIBILITY

PREPARED BY : CENAB-EN-DT LUAN NGO

LOCATION : MARYLAND

P.O.C.: DANIEL DURSKI, CHIEF, ESTIMATING & SPECIFICATIONS SECTION

ACCOUNT NUMBER	ITEM DESCRIPTION	CURRENT MII ESTIMATE 04 NOV 08 EFFECTIVE PRICING LEVEL 1OCT 07				AUTHORIZ./BUDGET YEAR FY 09 EFFECTIVE PRICING LEVEL: 1 OCT 08			FULLY FUNDED ESTIMATE		
		COST (\$K)	CNTG (\$K)	CNTG %	TOTAL (\$K)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	COST (\$K)	CNTG (\$K)	FULL (\$K)
		02	RELOCATIONS	93	28	30%	406	93	28	121	104
09	LEVEES AND FLOODWALLS	6,727	2,018	30%	8,745	6,727	2,018	8,745	7,514	2,254	9,768
	TOTAL CONSTRUCTION COST	6,727	2,018	30%	8,745	6,727	2,018	8,745	7,618	2,285	9,903
	TOTAL PROJECT COSTS	6,820	2,046	30%	9,151	6,820	2,046	8,866	7,618	2,285	9,903

Cost Engineering

1. General. The following methodology was used in the preparation of Draft Feasibility Study Cost Estimate for Huntington Flood Damage Reduction, Huntington, VA.

- a. The estimate is in accordance with the guidance contained in ER 1110-2-1302, Civil Works Cost Engineering.
- b. The estimate is presented in the standard Work Breakdown Structure.
- c. The price level for the estimate is 1 October 2008.
- d. Construction costs developed by Cost Engineering Branch are based on input/quantities and assumptions from Civil Works Branch, Planning Division. Unit costs were developed using the M-II estimating software and were updated with latest costs from RS Means. A copy of the MII estimate is included.
- e. Real Estate Division provided costs for Land and Damages and contingency for the real estate cost impacts.
- f. Planning Division provided costs for Construction Management.
- g. Planning Division provided costs for the Planning, Engineering and Design.
- h. PPMD provided the escalation factors.

2. Estimate Scope. The estimate reflects the cost for the levee and pump station for the Huntington Flood Damage Reduction Project. The levee, a 2865 feet long earthen structure, including drainage structures, is designed by Baltimore District, COE. The pump station is still in preliminary design and included in a separate estimate because local sponsors plan to design it themselves.

3. Contingency. Contingency amounts were developed by Estimating and Specifications Section, Engineering Division, for the construction cost items. The contingencies are based on uncertainties within individual project elements. Based on these uncertainties, contingencies were assigned to groups of related cost items to protect against the risk of potential cost increases. The following is a list by element of the uncertainties that were identified and the corresponding contingency percentage that was assigned.

- a. 02 Relocations - 25%. The uncertainty for the utility and road relocations associated with the levee are relatively moderate. The designs are based on field identification and local sponsor verifications. However, significant changes could occur based on the final detailed designs. The uncertainty associated with quantities for the relocations as a result of the levee structure is relatively moderate since they were based on 65% level of design but may have a chance to change significantly. For now, a contingency of 25 percent for the levee structure is considered reasonable.
- b. Levees and Floodwalls - 25%. The uncertainty associated with the levee design is moderately above average. The plans are at a feasibility study level of design. However, changes could occur based on the final detailed designs. For now, a contingency of 25 percent is considered reasonable.

Estimated by CENAB-EN-DT

Designed by Baltimore District, COE

Prepared by Luan Ngo

Preparation Date 10/27/2008

Effective Date of Pricing 10/27/2008

Estimated Construction Time 420 Days

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Date Author Note

5/23/2007 Luan Ngo Estimate Qualifications

This estimate is based on the quantities of the Feasibility Study design (65%) for the Huntington Flood Reduction Project. The levee is 2865 feet long including drainage structures. The pump station is still in preliminary design and not included in this estimate because the local sponsor plans to design it themselves.

Contingencies:

a. 02 Relocations - 25%. The uncertainty for the utility and road relocations associated with the levee are relatively moderate. The designs are based on field identification and local sponsor verifications. However, significant changes could occur based on the final detailed designs. The uncertainty associated with quantities for the relocations as a result of the levee structure is relatively moderate since they were based on 65% level of design but may have a chance to change significantly. For now, a contingency of 25 percent for the levee structure is considered reasonable.

b. Levees and Floodwalls - 25%. The uncertainty associated with the levee design is moderately above average. The plans are at a feasibility study level of design. However, changes could occur based on the final detailed designs. For now, a contingency of 25 percent is considered reasonable.

Escalation:

Assume Planning, Engineering, and Design occurs in FY10. Assume midpoint of construction is in FY12. Start of construction is assumed to be in FY11. Estimated construction duration is 14 months.

5/23/2007 Luan Ngo

The Direct Cost includes sales tax on materials and labor burden

The Cost To Prime includes the Direct Cost and sub-contractor mark-ups.

The Contract Cost includes the Cost To Prime and the Prime Contractor mark-ups.

The Project Cost includes the Contract Cost, Contingency and Escalation to the mid-point of construction.

Baseline Cost Estimate

Description	Quantity	UOM	ContractCost	Contingency	Escalation	ProjectCost
Project Cost			7,820,106	1,294,551	1,217,166	10,331,824
01 Lands and Damages	1	EA	56,671	11,334	8,093	76,098
02 Relocations	1	EA	303,264	60,653	42,578	406,495
0201 Roads, Construction Activities (Access Ramp)	1	EA	303,264	60,653	42,578	406,495
020139 Road Surfacing	1	EA	67,981	13,596	9,545	91,122
02013902 Site Work	1	EA	67,981	13,596	9,545	91,122
Access Road	1	EA	67,981	13,596	9,545	91,122
020199 Associated General Items	1	EA	235,283	47,057	33,034	315,373
02019902 Site Work	1	EA	235,283	47,057	33,034	315,373
0201990201 Demolition	1	EA	62,241	12,448	8,739	83,428
48" Sanitary Sewer Pipe Relocation	1	EA	173,041	34,608	24,295	231,945
11 Levees and Floodwalls	1	EA	4,765,471	953,094	669,072	6,387,638
1101 Levees	1	EA	4,765,471	953,094	669,072	6,387,638
110101 Mob, Demob & Preparatory Work	1	EA	141,010	28,202	19,798	189,010
Sediment and Erosion Control	1	EA	42,732	8,546	6,000	57,277
Staging Areas	1	EA	32,446	6,489	4,555	43,491
Equipment	1	EA	32,446	6,489	4,555	43,491
Temporary Seeding	1	EA	33,387	6,677	4,687	44,752
110102 Drainage	1	EA	1,810,197	362,039	254,152	2,426,388
11010202 Site Work	1	EA	686,399	137,280	96,370	920,050
11010202 01 Toe Drains	1	EA	686,399	137,280	96,370	920,050
Structure 1	1	EA	374,898	74,980	52,636	502,513
Gates	1	EA	188,459	37,692	26,460	252,611
Excavation	1	EA	30,386	6,077	4,266	40,730
Drainage Fill	1	EA	4,436	887	623	5,945
Control Manhole	1	EA	21,155	4,231	2,970	28,356
Care and diversion of water	1	EA	18,224	3,645	2,559	24,428
Riprap	1	EA	6,454	1,291	906	8,650
6'x8' Box Culvert	1	EA	105,784	21,157	14,852	141,793
Structure 2	1	EA	260,572	52,114	36,584	349,271
Gates	1	EA	93,198	18,640	13,085	124,922
Excavation	1	EA	41,838	8,368	5,874	56,080
Control Manhole	1	EA	11,265	2,253	1,582	15,099
Care and diversion of water	1	EA	43,169	8,634	6,061	57,864
Riprap	1	EA	6,454	1,291	906	8,650
5'x6' Box Culvert	1	EA	61,345	12,269	8,613	82,227
Drainage Fill	1	EA	3,304	661	464	4,429
Storm Drains Parallel to Levee	1	EA	360,193	72,039	50,571	482,802
Manholes	1	EA	50,254	10,051	7,056	67,361
RCP	1	EA	309,938	61,988	43,515	415,441
16" Sanitary Sewer	1	EA	128,135	25,627	17,990	171,752
110199 Associated General Items	1	EA	2,814,264	562,853	395,123	3,772,239
11019902 Site Work	1	EA	2,814,264	562,853	395,123	3,772,239
Pave top of Levee	1	EA	84,622	16,924	11,881	113,428
22,920.0000 Pave Ramps	2,300	SF	63,813	12,763	8,959	85,534
11019902 05 Topsoil	1	EA	79,051	15,810	11,099	105,959
11019902 06 Seeding	1	EA	39,432	7,886	5,536	52,854
11019902 09 Clearing	1	EA	45,363	9,073	6,369	60,805
11019902 10 Excavation and Embankment:	1	EA	2,489,662	497,932	349,548	3,337,142
Random Rock Fill	1	EA	12,322	2,464	1,730	16,516

	Description	Quantity	UOM	ContractCost	Contingency	Escalation	ProjectCost
30 Planning, Engineering and Design		1	EA	1,200,000	120,000	157,080	1,477,080
31 Construction Management		1	EA	1,494,700	149,470	340,343	1,984,513

Baseline Cost Estimate

Description	Quantity	UOM	DirectCost	JOOH	HOOH	Profit	Bond	ContractCost
Cost To Owner			6,255,681	222,435	180,076	409,103	55,693	7,820,106
01 Lands and Damages	1	EA	56,671	0	0	0	0	56,671
02 Relocations	1	EA	191,093	5,313	9,210	22,505	1,330	303,264
0201 Roads, Construction Activities (Access Ramp)	1	EA	191,093	5,313	9,210	22,505	1,330	303,264
020139 Road Surfacing	1	EA	40,164	0	1,831	4,762	0	67,981
02013902 Site Work	1	EA	40,164	0	1,831	4,762	0	67,981
Access Road	1	EA	40,164	0	1,831	4,762	0	67,981
020199 Associated General Items	1	EA	150,929	5,313	7,378	17,743	1,330	235,283
02019902 Site Work	1	EA	150,929	5,313	7,378	17,743	1,330	235,283
0201990201 Demolition	1	EA	47,836	4,821	2,631	5,534	1,207	62,241
48" Sanitary Sewer Pipe Relocation	1	EA	103,094	492	4,747	12,209	123	173,041
11 Levees and Floodwalls	1	EA	3,313,217	217,122	170,867	386,598	54,363	4,765,471
1101 Levees	1	EA	3,313,217	217,122	170,867	386,598	54,363	4,765,471
110101 Mob, Demob & Preparatory Work	1	EA	108,650	11,043	5,985	12,568	2,765	141,010
Sediment and Erosion Control	1	EA	32,925	3,346	1,814	3,809	838	42,732
Staging Areas	1	EA	25,000	2,541	1,377	2,892	636	32,446
Equipment	1	EA	25,000	2,541	1,377	2,892	636	32,446
Temporary Seeding	1	EA	25,725	2,615	1,417	2,976	655	33,387
110102 Drainage	1	EA	1,068,586	0	48,728	126,692	0	1,810,197
11010202 Site Work	1	EA	405,532	0	18,492	48,080	0	686,399
11010202 01 Toe Drains	1	EA	405,532	0	18,492	48,080	0	686,399
Structure 1	1	EA	220,877	0	10,072	26,187	0	374,898
Gates	1	EA	111,344	0	5,077	13,201	0	188,459
Excavation	1	EA	17,953	0	819	2,128	0	30,386
Drainage Fill	1	EA	2,621	0	119	311	0	4,436
Control Manhole	1	EA	11,882	0	542	1,409	0	21,155
Care and diversion of water	1	EA	10,767	0	491	1,277	0	18,224
Riprap	1	EA	3,813	0	174	452	0	6,454
6'x8' Box Culvert	1	EA	62,498	0	2,850	7,410	0	105,784
Structure 2	1	EA	153,667	0	7,007	18,219	0	260,572
Gates	1	EA	55,062	0	2,511	6,528	0	93,198
Excavation	1	EA	24,718	0	1,127	2,931	0	41,838
Control Manhole	1	EA	6,374	0	291	756	0	11,265
Care and diversion of water	1	EA	25,505	0	1,163	3,024	0	43,169
Riprap	1	EA	3,813	0	174	452	0	6,454
5'x6' Box Culvert	1	EA	36,244	0	1,653	4,297	0	61,345
Drainage Fill	1	EA	1,952	0	89	231	0	3,304
Storm Drains Parallel to Levee	1	EA	212,806	0	9,704	25,230	0	360,193
Manholes	1	EA	29,691	0	1,354	3,520	0	50,254
RCP	1	EA	183,115	0	8,350	21,710	0	309,938
16" Sanitary Sewer	1	EA	75,704	0	3,452	8,975	0	128,135
110199 Associated General Items	1	EA	2,135,981	206,079	116,155	247,339	51,598	2,814,264
11019902 Site Work	1	EA	2,135,981	206,079	116,155	247,339	51,598	2,814,264
Pave top of Levee	1	EA	49,996	0	2,280	5,928	0	84,622
22,920.0000 Pave Ramps	2,300	SF	37,701	0	1,719	4,470	0	63,813
11019902 05 Topsoil	1	EA	60,909	6,191	3,355	7,046	1,550	79,051
11019902 06 Seeding	1	EA	24,613	400	688	2,860	100	39,432
11019902 09 Clearing	1	EA	34,953	3,552	1,925	4,043	889	45,363
11019902 10 Excavation and Embankment:	1	EA	1,918,315	194,971	105,664	221,895	48,817	2,489,662
Random Rock Fill	1	EA	9,494	965	523	1,098	242	12,322

Description	Quantity	UOM	DirectCost	JOOH	HOOH	Profit	Bond	ContractCost
30 Planning, Engineering and Design	1	EA	1,200,000	0	0	0	0	1,200,000
31 Construction Management	1	EA	1,494,700	0	0	0	0	1,494,700

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
Direct Costs			1,065,295.24	717,882.34	1,683,462.20	2,789,041.00	6,255,680.78
01 Lands and Damages	1	EA	0.00	0.00	0.00	56,671.00	56,671.00
USR RE Acquisition Costs	1	EA	0.00	0.00	0.00	21,371.00	21,371.00
USR RE Appraisal Costs	1	EA	0.00	0.00	0.00	4,600.00	4,600.00
USR Temporary Permits/Licenses/right of way	1	EA	0.00	0.00	0.00	600.00	600.00
USR RE Payments	1	EA	0.00	0.00	0.00	30,100.00	30,100.00
02 Relocations	1	EA	70,384.72	31,388.25	76,650.29	12,670.00	191,093.26
0201 Roads, Construction Activities (Access Ramp)	1	EA	70,384.72	31,388.25	76,650.29	12,670.00	191,093.26
020139 Road Surfacing	1	EA	4,578.49	2,584.91	33,000.74	0.00	40,164.13
02013902 Site Work	1	EA	4,578.49	2,584.91	33,000.74	0.00	40,164.13
Access Road	1	EA	4,578.49	2,584.91	33,000.74	0.00	40,164.13
MIL 027856003190 Pavement overlay, polypropylene, prime coat, bituminous, 0.28 gallons/S.Y.	115	CSF	36.15	15.88	483.86	0.00	535.89
MIL 027856003260 Tack coat, emulsion, 0.1 gallons per S.Y., 1000 S.Y.	115	CSF	108.45	47.64	198.88	0.00	354.96
HNC 023154904200 Hauling, rock, 12 C.Y. truck, 5 mile haul, includes loading	124	LCY	288.74	370.26	0.00	0.00	659.00
MIL 023101000020 Fine grade, for roadway, base or leveling course	1	MSY	679.13	320.77	0.00	0.00	999.90
RSM 023153105000 Compaction, riding, vibrating roller, 2 passes, 6" lifts	124	ECY	22.77	14.14	0.00	0.00	36.90
MIL 023153109000 Water for compaction, 3000 gallon truck, 3 mile haul	124	ECY	49.55	32.30	26.15	0.00	108.00
MIL 027202007000 Aggregate subbase, prepare and roll sub-base, small areas to 2500 S.Y.	1,278	SY	938.58	626.06	0.00	0.00	1,564.64
RSM 027202000100 Aggregate base course, for roadways and large paved areas, stone base, compacted, 3/4" stone base, to 6" deep	1,278	SY	476.89	560.48	13,409.13	0.00	14,446.51
RSM 027403100380 Asphaltic concrete pavement, for highways and large paved areas, wearing course, 2" thick, for paving projects 300 tons or less add for trucking	1,278	SY	831.64	286.86	9,366.17	0.00	10,484.67
RSM 027403100120 Asphaltic concrete pavement, for highways and large paved areas, binder course, 2" thick, for paving projects 300 tons or less add for trucking	1,278	SY	752.85	257.25	8,288.05	0.00	9,298.16
RSM 026305302240 Reinforced concrete pipe (RCP), with gaskets, 24" diameter, 8' lengths, class 3, excludes excavation or backfill	15	LF	132.93	14.00	490.34	0.00	637.28
HNC 026305302910 Reinforced concrete pipe (RCP), precast end section, 24" diameter pipe, excludes excavation or backfill	2	EA	209.08	15.20	738.15	0.00	962.43
USR 022202401770 Minor site demolition, pavement, bituminous, 6" thick, remove with air equipment, excludes hauling	17	SY	26.94	16.46	0.00	0.00	43.39
(Note: Assume 11' wide and 600' long)							
USR 022203503080 Pavement and base, loading & trucking, machine loading truck, includes 2 mile haul, cost to be added to demolition cost.	2	CY	24.77	7.62	0.00	0.00	32.40
(Note: Assume 1.2 swell factor)							
020199 Associated General Items	1	EA	65,806.24	28,803.34	43,649.55	12,670.00	150,929.13
02019902 Site Work	1	EA	65,806.24	28,803.34	43,649.55	12,670.00	150,929.13
0201990201 Demolition	1	EA	28,210.27	7,268.56	246.75	12,110.00	47,835.58
Demo Concrete Ditches	1	EA	10,294.70	1,589.31	0.00	10,920.00	22,804.01
HNC 022202402115 Minor site demolition, concrete, reinforced, 7" to 24" thick, remove with backhoe, excludes hauling	77	CY	10,072.06	1,393.16	0.00	0.00	11,465.23
AF 023154900555 Hauling, excavated or borrow material, loose cubic yards, 12 mile round trip @ base wide rate, 12 C.Y. truck, highway haulers, excludes loading	100	LCY	222.63	196.14	0.00	0.00	418.78
(Note: Assume 30% swell factor)							
RSM 022203300100 Dump charges, typical urban city, building construction materials, includes tipping fees only	156	TON	0.00	0.00	0.00	10,920.00	10,920.00
Demo Storm Drain Pipes	1	EA	4,750.69	1,710.05	0.00	980.00	7,440.74
RSM 022203810100 Demo pipe, concrete, 42"-48", diameter, excludes excavation	50	LF	1,206.73	433.24	0.00	0.00	1,639.97
USR 022203810100 Demo pipe, concrete, 24"-36", diameter, excludes excavation	207	LF	2,997.53	1,076.16	0.00	0.00	4,073.68
MIL 023154260120 Excavate and load, bank measure, medium material, 1-1/2 C.Y. bucket, hydraulic excavator	120	BCY	111.76	69.70	0.00	0.00	181.46

Baseline Cost Estimate

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
NAV 023153107040 Compaction, around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate	120	ECY	267.84	22.34	0.00	0.00	290.18
USR 023154260120 Backfill trench with existing material, 1-1/2 C.Y. bucket, hydraulic excavator	120	BCY	149.02	92.93	0.00	0.00	241.95
RSM 022203300100 Dump charges, typical urban city, building construction materials, includes tipping fees only	14	TON	0.00	0.00	0.00	980.00	980.00
AF 023154900555 Hauling, excavated or borrow material, loose cubic yards, 12 mile round trip @ base wide rate, 12 C.Y. truck, highway haulers, excludes loading (Note: Assume 30% swell factor)	8	LCY	17.81	15.69	0.00	0.00	33.50
Demo old pump station	1	EA	13,081.94	3,897.56	0.00	210.00	17,189.50
HNC 022201100610 Building demolition, small buildings or single buildings, concrete, reinforced, includes 20 mile haul, excludes foundation demolition, dump fees	3,600	CF	12,456.99	3,897.56	0.00	0.00	16,354.55
RSM 022201302100 Footings and foundations demolition, remove concrete walls, block, 12" thick, excludes disposal costs and dump fees	300	SF	624.95	0.00	0.00	0.00	624.95
RSM 022203300100 Dump charges, typical urban city, building construction materials, includes tipping fees only	3	TON	0.00	0.00	0.00	210.00	210.00
Abandon Inlet and Pipe	1	EA	82.94	71.64	246.75	0.00	401.34
USR 026301101582 Remove inlet top	1	EA	71.15	71.26	0.00	0.00	142.41
RSM 033102200300 Structural concrete, ready mix, normal weight, 4000 PSI, includes material only	2	CY	0.00	0.00	246.75	0.00	246.75
RSM 033107002900 Structural concrete, placing, foundation mat, direct chute, over 20 C.Y., includes vibrating, excludes material	2	CY	11.80	0.38	0.00	0.00	12.18
48" Sanitary Sewer Pipe Relocation	1	EA	37,595.97	21,534.78	43,402.80	560.00	103,093.54
Levee Sewage Structure	1	EA	34,442.34	20,404.59	43,402.80	0.00	98,249.73
RCP	1	EA	2,867.38	974.78	7,987.84	0.00	11,830.00
USR 026305302290 Reinforced concrete pipe (RCP), with gaskets, 48" diameter, 8' lengths, class 3, excludes excavation or backfill	75	LF	2,867.38	974.78	7,987.84	0.00	11,830.00
Gates	1	EA	3,448.83	1,019.26	12,021.30	0.00	16,489.38
RSM 112857000150 Sluice gates, hydraulic structures, cast iron, heavy duty, self contained w/crank oper. gate, 48" x 48", AWWA C501	1	EA	3,448.83	1,019.26	12,021.30	0.00	16,489.38
Excavation	1	EA	8,915.01	953.88	3,116.05	0.00	12,984.93
(Note: assume 10' deep)							
MIL 023154260120 Excavate and load, bank measure, medium material, 1-1/2 C.Y. bucket, hydraulic excavator	293	BCY	287.69	170.18	0.00	0.00	457.86
RSM 022504004000 Sheet piling, wood, solid sheeting, 50 S.F./hour in & 150 S.F./hour out, 10' deep excavation, drive, extract and salvage, includes wales, braces and spacers	1,500	SF	8,627.32	783.70	3,116.05	0.00	12,527.07
Control Manhole	1	EA	1,887.74	92.22	4,446.51	0.00	6,426.47
RSM 032106000500 Reinforcing steel, in place, footings, #4 to #7, A615, grade 60	0	TON	73.41	0.00	68.33	0.00	141.75
MIL 032106000700 Reinforcing steel, in place, walls, #3 to #7, A615, grade 60	1	TON	321.80	0.00	427.07	0.00	748.87
MIL 033102200300 Structural concrete, ready mix, normal weight, 4000 PSI, includes material only	11	CY	0.00	0.00	1,357.14	0.00	1,357.14
MIL 033107002450 Structural concrete, placing, spread footing, pumped, under 1 C.Y., includes vibrating, excludes material	1	CY	41.65	14.79	0.00	0.00	56.44
MIL 033107005350 Structural concrete, placing, walls, pumped, 15" thick, includes vibrating, excludes material	9	CY	203.05	72.09	0.00	0.00	275.14
AF 033107001600 Structural concrete, placing, elevated slab, pumped, over 10" thick, includes vibrating, excludes material	1	CY	15.04	5.34	0.00	0.00	20.38
MIL 026304003910 Manhole steps, heavyweight cast iron, 9" x 10"	15	EA	146.89	0.00	289.46	0.00	436.35
CIV 031104558100 C.I.P. concrete forms, walls, modular prefabricated plywood, over 16' high, 1 use per month, includes erecting, bracing, stripping and cleaning	240	SFC	751.14	0.00	759.24	0.00	1,510.38
CIV 031104201050 C.I.P. concrete forms, elevated slab, flat plate, plywood, to 15' high, 2 use, includes shoring, erecting, bracing, stripping and cleaning	32	SF	137.71	0.00	79.97	0.00	217.68
CIV 031104453550 C.I.P. concrete forms, slab on grade, depressed, edge, wood, 12" to 24" high, 4	16	LF	133.90	0.00	15.35	0.00	149.26

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
use, includes erecting, bracing, stripping and cleaning							
MIL 026304004648 Manhole frame and cover, aluminum, heavy duty, 24" x 24"	1	EA	42.31	0.00	1,449.94	0.00	1,492.25
MIL 033503000200 Concrete finishing, floors, monolithic, screed, float and hand trowel finish	32	SF	20.83	0.00	0.00	0.00	20.83
Care and diversion of water	1	EA	9,296.47	16,156.64	51.57	0.00	25,504.68
(Note: Includes sump well in the excavation and by-passing water in the existing 54" pipe. Assume that the manhole will take 28 days to construct.)							
MIL 022405001700 Dewatering, sump hole construction, pit with gravel collar, corrugated, 12" gravel collar, 12" corr. pipe, 16 ga, includes excavation and gravel pit	3	LF	49.79	6.51	51.57	0.00	107.87
MIL B-LABORER Laborers, (Semi-Skilled)	224	HR	9,246.68	0.00	0.00	0.00	9,246.68
(Note: Assume 8 hr/day and 28 days for the two pumps.)							
GEN P60Z5405 PUMP, WATER, CENTRIFUGAL, DEWATERING, WHEEL, ENGINE DRIVE, 4" (102MM) DIA, 570 GPM (2158LPM) @ 40' (12.2M) HEAD (ADD HOSES)	1,344	HR	0.00	16,150.13	0.00	0.00	16,150.13
(Note: Assume 28 days and two pumps. One for the excavation pit and one to by-pass water in the 54" line.)							
Drainage Fill	1	EA	273.10	30.83	2,298.81	0.00	2,602.74
NAV 023153107040 Compaction, around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate	40	ECY	94.35	7.45	0.00	0.00	101.80
MIL 026203000300 Drainage coarse material, gravel fill 3/4"	40	CY	178.74	23.38	2,298.81	0.00	2,500.94
Backfill	1	EA	1,199.74	291.32	0.00	0.00	1,491.07
NAV 023153107040 Compaction, around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate	346	ECY	816.16	64.42	0.00	0.00	880.58
USR 023154260120 Backfill with existing material, 1-1/2 C.Y. bucket, hydraulic excavator	293	BCY	383.58	226.90	0.00	0.00	610.48
4' dia Manhole	1	EA	1,906.74	277.74	4,517.48	0.00	6,701.96
RSM 026304001120 Manholes, concrete, precast, 4' I.D., 6' deep, excludes base, excavation, backfill, frame and cover	4	EA	1,743.31	253.93	4,175.82	0.00	6,173.06
RSM 026304001140 Manholes, concrete, precast, 4' I.D., excludes base, excavation, backfill, frame and cover, add for depths over 8'	2	VLF	163.44	23.81	341.66	0.00	528.90
7' dia mahole	1	EA	4,647.33	607.93	8,963.25	0.00	14,218.50
RSM 026304001210 Manholes, concrete, precast, 7' I.D., 8' deep, excludes base, excavation, backfill, frame and cover	4	EA	4,647.33	607.93	8,963.25	0.00	14,218.50
Demo 48" Sanitary Sewer Pipe	1	EA	3,153.63	1,130.19	0.00	560.00	4,843.82
RSM 022203810100 Demo pipe, concrete, 42"-48", diameter, excludes excavation	100	LF	2,413.47	866.47	0.00	0.00	3,279.94
MIL 023154260120 Excavate and load, bank measure, medium material, 1-1/2 C.Y. bucket, hydraulic excavator	166	BCY	154.61	96.41	0.00	0.00	251.02
NAV 023153107040 Compaction, around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate	166	ECY	370.51	30.91	0.00	0.00	401.42
USR 023154260120 Backfill trench with existing material, 1-1/2 C.Y. bucket, hydraulic excavator	166	BCY	206.14	128.55	0.00	0.00	334.69
AF 023154900555 Hauling, excavated or borrow material, loose cubic yards, 12 mile round trip @ base wide rate, 12 C.Y. truck, highway haulers, excludes loading	4	LCY	8.91	7.85	0.00	0.00	16.75
(Note: Assume 30% swell factor)							
RSM 022203300100 Dump charges, typical urban city, building construction materials, includes tipping fees only	8	TON	0.00	0.00	0.00	560.00	560.00
11 Levees and Floodwalls	1	EA	994,910.52	686,494.09	1,606,811.92	25,000.00	3,313,216.52
1101 Levees	1	EA	994,910.52	686,494.09	1,606,811.92	25,000.00	3,313,216.52
110101 Mob, Demob & Preparatory Work	1	EA	39,398.62	26,527.36	17,724.14	25,000.00	108,650.12
Sediment and Erosion Control	1	EA	22,993.57	936.46	8,995.22	0.00	32,925.25
MIL 023154260100 Excavate and load, bank measure, medium material, 3/4 C.Y. bucket, hydraulic excavator	100	BCY	232.84	94.45	0.00	0.00	327.29
AF 023154900570 Hauling, excavated or borrow material, loose cubic yards, 24 mile round trip @ base wide rate, 12 C.Y. truck, highway haulers, excludes loading	100	LCY	742.11	653.81	0.00	0.00	1,395.92
USR 023403001650 Drainage geotextiles, non-woven polypropylene, 120 mils thick	448	SY	355.78	92.29	633.04	0.00	1,081.10
USR 0237070011 Curb inlet protection	1	EA	33.71	13.70	26.36	0.00	73.77

Baseline Cost Estimate

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
USR 0237070011 Swale inlet protection	1	EA	67.42	27.40	52.73	0.00	147.54
MIL 023707001120 Erosion control, silt fence, polypropylene, 3' high, includes 7.5' posts	6,000	LF	10,713.44	0.00	4,998.33	0.00	15,711.77
USR 023707001120 Remove erosion control, silt fence, polypropylene, 3' high, includes 7.5' posts	6,000	LF	10,713.44	0.00	0.00	0.00	10,713.44
USR 027202001610 Aggregate base course, for rock construction entrance	100	CY	134.83	54.80	3,284.77	0.00	3,474.40
Staging Areas	1	EA	0.00	0.00	0.00	25,000.00	25,000.00
USR Staging Area	1	LS	0.00	0.00	0.00	25,000.00	25,000.00
Equipment	1	EA	0.00	25,000.00	0.00	0.00	25,000.00
USR Equipment M&D	1	EA	0.00	25,000.00	0.00	0.00	25,000.00
Temporary Seeding	1	EA	16,405.05	590.90	8,728.91	0.00	25,724.86
RSM 029203200800 Seeding, bluegrass, common, 4 lb. per M.S.F., push spreader	392	MSF	15,312.74	0.00	6,242.39	0.00	21,555.13
HNC 029203207010 Seeding, apply fertilizer, 35 lb. per M.S.F.	392	MSF	619.18	228.67	913.62	0.00	1,761.47
PA 029105000700 Mulch, oat straw, 1" deep, power mulcher, large	9	ACR	473.12	362.24	1,572.91	0.00	2,408.27
110102 Drainage	1	EA	272,265.81	73,615.95	722,703.98	0.00	1,068,585.74
11010202 Site Work	1	EA	54,921.54	9,365.89	341,244.95	0.00	405,532.38
11010202 01 Toe Drains	1	EA	54,921.54	9,365.89	341,244.95	0.00	405,532.38
Coarse Gravel	1	EA	20,915.82	3,136.47	258,041.42	0.00	282,093.71
MIL 026203000300 Drainage coarse material, gravel fill 3/4"	4,490	CY	20,063.95	2,624.60	258,041.42	0.00	280,729.97
RSM 023153105000 Compaction, riding, vibrating roller, 2 passes, 6" lifts	4,490	ECY	851.87	511.87	0.00	0.00	1,363.74
Geotextile	1	EA	7,197.83	1,770.56	12,144.99	0.00	21,113.38
USR 023403001650 Drainage geotextiles, non-woven polypropylene, 120 mils thick	8,595	SY	7,197.83	1,770.56	12,144.99	0.00	21,113.38
Fine Drainage Fill	1	EA	5,926.72	2,991.45	63,883.72	0.00	72,801.89
MIL 023151102460 Backfill, 1-1/2 C.Y., sand bedding trenches, front-end loader	3,512	LCY	5,260.40	2,591.08	63,883.72	0.00	71,735.20
RSM 023153105000 Compaction, riding, vibrating roller, 2 passes, 6" lifts	3,512	ECY	666.32	400.37	0.00	0.00	1,066.69
8" Perforated PVC pipe at Toe Drain	1	EA	20,881.18	1,467.41	7,174.82	0.00	29,523.40
RSM 026206302120 Plastic, perforated PVC, pipe, 8" diameter, excludes excavation and backfill	2,800	LF	20,881.18	1,467.41	7,174.82	0.00	29,523.40
Structure 1	1	EA	61,936.68	14,858.35	144,081.59	0.00	220,876.61
Gates	1	EA	22,074.19	8,088.84	81,180.68	0.00	111,343.71
RSM 112857000230 Sluice gates, hydraulic structures, cast iron, heavy duty, self contained w/crank oper. gate, 96" x 96", AWWA C501	1	EA	11,263.04	3,099.84	42,285.45	0.00	56,648.33
USR 112851900190 Flap gates, hydraulic structures, aluminum, 96" dia	1	EA	10,811.14	4,989.00	38,895.23	0.00	54,695.38
Excavation	1	EA	12,163.62	2,497.28	3,291.73	0.00	17,952.63
(Note: assume 10' deep)							
MIL 023154260120 Excavate and load, bank measure, medium material, 1-1/2 C.Y. bucket, hydraulic excavator	545	BCY	535.12	316.54	0.00	0.00	851.65
AF 023154900555 Hauling, excavated or borrow material, loose cubic yards, 12 mile round trip @ base wide rate, 12 C.Y. truck, highway haulers, excludes loading	643	LCY	1,505.78	1,261.20	0.00	0.00	2,766.99
(Note: Assume 15% swell factor)							
RSM 022504004500 Sheet piling, wood, solid sheeting, 35 S.F./hour in & 105 S.F./hour out, 20' deep excavation, drive, extract and salvage, includes wales, braces and spacers	672	SF	5,521.48	501.57	1,629.84	0.00	7,652.89
RSM 022504004000 Sheet piling, wood, solid sheeting, 50 S.F./hour in & 150 S.F./hour out, 10' deep excavation, drive, extract and salvage, includes wales, braces and spacers	800	SF	4,601.24	417.97	1,661.89	0.00	6,681.10
Drainage Fill	1	EA	289.61	32.13	2,298.81	0.00	2,620.55
NAV 023153107040 Compaction, around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate	47	ECY	110.87	8.75	0.00	0.00	119.62
MIL 026203000300 Drainage coarse material, gravel fill 3/4"	40	CY	178.74	23.38	2,298.81	0.00	2,500.94
Control Manhole	1	EA	4,066.55	196.76	7,618.21	0.00	11,881.53
RSM 032106000500 Reinforcing steel, in place, footings, #4 to #7, A615, grade 60	0	TON	275.30	0.00	256.24	0.00	531.55
MIL 032106000700 Reinforcing steel, in place, walls, #3 to #7, A615, grade 60	1	TON	643.60	0.00	854.15	0.00	1,497.74
MIL 033102200300 Structural concrete, ready mix, normal weight, 4000 PSI, includes material only	24	CY	0.00	0.00	2,899.35	0.00	2,899.35
MIL 033107002450 Structural concrete, placing, spread footing, pumped, under 1 C.Y., includes	2	CY	99.96	35.49	0.00	0.00	135.46

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
vibrating, excludes material							
MIL 033107005350 Structural concrete, placing, walls, pumped, 15" thick, includes vibrating, excludes material	18	CY	406.11	144.18	0.00	0.00	550.29
AF 033107001600 Structural concrete, placing, elevated slab, pumped, over 10" thick, includes vibrating, excludes material	3	CY	48.13	17.09	0.00	0.00	65.22
MIL 026304003910 Manhole steps, heavyweight cast iron, 9" x 10"	15	EA	146.89	0.00	289.46	0.00	436.35
CIV 031104558100 C.I.P. concrete forms, walls, modular prefabricated plywood, over 16' high, 1 use per month, includes erecting, bracing, stripping and cleaning	480	SFC	1,502.29	0.00	1,518.48	0.00	3,020.77
CIV 031104201050 C.I.P. concrete forms, elevated slab, flat plate, plywood, to 15' high, 2 use, includes shoring, erecting, bracing, stripping and cleaning	128	SF	550.84	0.00	319.89	0.00	870.73
CIV 031104453550 C.I.P. concrete forms, slab on grade, depressed, edge, wood, 12" to 24" high, 4 use, includes erecting, bracing, stripping and cleaning	32	LF	267.81	0.00	30.71	0.00	298.51
MIL 026304004648 Manhole frame and cover, aluminum, heavy duty, 24" x 24"	1	EA	42.31	0.00	1,449.94	0.00	1,492.25
MIL 033503000200 Concrete finishing, floors, monolithic, screed, float and hand trowel finish	128	SF	83.32	0.00	0.00	0.00	83.32
Care and diversion of water	1	EA	8,305.76	2,409.81	51.57	0.00	10,767.13
(Note: Includes sump well in the excavation and by-passing water in the existing 54" pipe. Assume that the manhole will take 28 days to construct.)							
MIL 022405001700 Dewatering, sump hole construction, pit with gravel collar, corrugated, 12" gravel collar, 12" corr. pipe, 16 ga, includes excavation and gravel pit	3	LF	49.79	6.51	51.57	0.00	107.87
MIL B-LABORER Laborers, (Semi-Skilled) (Note: Assume 8 hr/day and 28 days for the two pumps.)	200	HR	8,255.96	0.00	0.00	0.00	8,255.96
GEN P60Z5405 PUMP, WATER, CENTRIFUGAL, DEWATERING, WHEEL, ENGINE DRIVE, 4" (102MM) DIA, 570 GPM (2158LPM) @ 40' (12..2M) HEAD (ADD HOSES) (Note: Assume 28 days and two pumps. One for the excavation pit and one to by-pass water in the 54" line.)	200	HR	0.00	2,403.29	0.00	0.00	2,403.29
Riprap	1	EA	1,374.81	777.20	1,660.84	0.00	3,812.85
RSM 023704500100 Rip-rap, random, placement cost, broken stone, machine placed for slope protection	75	LCY	950.19	562.07	0.00	0.00	1,512.26
MIL 023704500240 Rip-rap, random pieces, material cost dumped from truck, 25 - 500 pound pieces	75	LCY	424.62	215.13	1,660.84	0.00	2,300.59
6'x8' Box Culvert	1	EA	13,662.14	856.33	47,979.75	0.00	62,498.22
RSM 026305300150 Piping, drainage and sewage, concrete, box culvert, precast, base price, 8' long, 6' x 8', excludes excavation or backfill	80	LF	1,354.62	682.99	43,867.20	0.00	45,904.81
RSM 026101000160 Headwall, concrete, cast in place, 30 degree skewed wingwall, 60" diameter pipe	2	EA	12,307.52	173.33	4,112.55	0.00	16,593.40
Structure 2 (Note: (located at the pump station))	1	EA	61,762.36	25,817.82	66,087.10	0.00	153,667.28
Gates	1	EA	13,036.57	3,852.79	38,172.90	0.00	55,062.26
RSM 112857000190 Sluice gates, hydraulic structures, cast iron, heavy duty, self contained w/crank oper. gate, 72" x 72", AWWA C501	1	EA	8,691.04	2,568.53	24,675.30	0.00	35,934.87
RSM 112851900190 Flap gates, hydraulic structures, aluminum, 72" dia	1	EA	4,345.52	1,284.26	13,497.60	0.00	19,127.39
Excavation (Note: assume 10' deep)	1	EA	16,102.60	4,836.16	3,779.54	0.00	24,718.30
MIL 023154260120 Excavate and load, bank measure, medium material, 1-1/2 C.Y. bucket, hydraulic excavator	1,320	BCY	1,296.06	766.66	0.00	0.00	2,062.72
RSM 022504004000 Sheet piling, wood, solid sheeting, 50 S.F./hour in & 150 S.F./hour out, 10' deep excavation, drive, extract and salvage, includes wales, braces and spacers	1,280	SF	7,361.98	668.76	2,659.03	0.00	10,689.76
RSM 022504004500 Sheet piling, wood, solid sheeting, 35 S.F./hour in & 105 S.F./hour out, 20' deep excavation, drive, extract and salvage, includes wales, braces and spacers	462	SF	3,796.02	344.83	1,120.51	0.00	5,261.36
AF 023154900555 Hauling, excavated or borrow material, loose cubic yards, 12 mile round trip @ base wide rate, 12 C.Y. truck, highway haulers, excludes loading (Note: Assume 15% swell factor)	1,558	LCY	3,648.54	3,055.92	0.00	0.00	6,704.46
Control Manhole	1	EA	1,886.43	85.23	4,401.90	0.00	6,373.57

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
RSM 032106000500 Reinforcing steel, in place, footings, #4 to #7, A615, grade 60	0	TON	91.77	0.00	85.41	0.00	177.18
MIL 032106000700 Reinforcing steel, in place, walls, #3 to #7, A615, grade 60	1	TON	321.80	0.00	427.07	0.00	748.87
MIL 033102200300 Structural concrete, ready mix, normal weight, 4000 PSI, includes material only	11	CY	0.00	0.00	1,295.45	0.00	1,295.45
MIL 033107002450 Structural concrete, placing, spread footing, pumped, under 1 C.Y., includes vibrating, excludes material	1	CY	24.99	8.87	0.00	0.00	33.86
MIL 033107005350 Structural concrete, placing, walls, pumped, 15" thick, includes vibrating, excludes material	9	CY	203.05	72.09	0.00	0.00	275.14
AF 033107001600 Structural concrete, placing, elevated slab, pumped, over 10" thick, includes vibrating, excludes material	1	CY	12.03	4.27	0.00	0.00	16.30
MIL 026304003910 Manhole steps, heavyweight cast iron, 9" x 10"	15	EA	146.89	0.00	289.46	0.00	436.35
CIV 031104558100 C.I.P. concrete forms, walls, modular prefabricated plywood, over 16' high, 1 use per month, includes erecting, bracing, stripping and cleaning	240	SFC	751.14	0.00	759.24	0.00	1,510.38
CIV 031104201050 C.I.P. concrete forms, elevated slab, flat plate, plywood, to 15' high, 2 use, includes shoring, erecting, bracing, stripping and cleaning	32	SF	137.71	0.00	79.97	0.00	217.68
CIV 031104453550 C.I.P. concrete forms, slab on grade, depressed, edge, wood, 12" to 24" high, 4 use, includes erecting, bracing, stripping and cleaning	16	LF	133.90	0.00	15.35	0.00	149.26
MIL 026304004648 Manhole frame and cover, aluminum, heavy duty, 24" x 24"	1	EA	42.31	0.00	1,449.94	0.00	1,492.25
MIL 033503000200 Concrete finishing, floors, monolithic, screed, float and hand trowel finish	32	SF	20.83	0.00	0.00	0.00	20.83
Care and diversion of water	1	EA	9,296.47	16,156.64	51.57	0.00	25,504.68
(Note: Includes sump well in the excavation and by-passing water in the existing 54" pipe. Assume that the manhole will take 28 days to construct.)							
MIL 022405001700 Dewatering, sump hole construction, pit with gravel collar, corrugated, 12" gravel collar, 12" corr. pipe, 16 ga, includes excavation and gravel pit	3	LF	49.79	6.51	51.57	0.00	107.87
MIL B-LABORER Laborers, (Semi-Skilled)	224	HR	9,246.68	0.00	0.00	0.00	9,246.68
(Note: Assume 8 hr/day and 28 days for the two pumps.)							
GEN P60Z5405 PUMP, WATER, CENTRIFUGAL, DEWATERING, WHEEL, ENGINE DRIVE, 4" (102MM) DIA, 570 GPM (2158LPM) @ 40' (12.2M) HEAD (ADD HOSES)	1,344	HR	0.00	16,150.13	0.00	0.00	16,150.13
(Note: Assume 28 days and two pumps. One for the excavation pit and one to by-pass water in the 54" line.)							
Riprap	1	EA	1,374.81	777.20	1,660.84	0.00	3,812.85
RSM 023704500100 Rip-rap, random, placement cost, broken stone, machine placed for slope protection	75	LCY	950.19	562.07	0.00	0.00	1,512.26
MIL 023704500240 Rip-rap, random pieces, material cost dumped from truck, 25 - 500 pound pieces	75	LCY	424.62	215.13	1,660.84	0.00	2,300.59
5'x6' Box Culvert	1	EA	19,860.66	86.67	16,296.24	0.00	36,243.57
RSM 026101000160 Headwall, concrete, cast in place, 30 degree skewed wingwall, 60" diameter pipe	1	EA	6,153.76	86.67	2,056.28	0.00	8,296.70
RSM 026305300050 Piping, drainage and sewage, concrete, box culvert, cast in place, 5' x 6', excludes excavation or backfill	64	LF	13,706.90	0.00	14,239.97	0.00	27,946.87
Drainage Fill	1	EA	204.82	23.12	1,724.11	0.00	1,952.05
NAV 023153107040 Compaction, around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate	30	ECY	70.77	5.59	0.00	0.00	76.35
MIL 026203000300 Drainage coarse material, gravel fill 3/4"	30	CY	134.06	17.54	1,724.11	0.00	1,875.70
Storm Drains Parallel to Levee	1	EA	66,350.07	17,435.02	129,020.71	0.00	212,805.80
Manholes	1	EA	11,358.71	790.56	17,541.61	0.00	29,690.88
RSM 026304000800 Manholes, concrete, cast in place, 4' x 4', 8" thick, 4' deep, excludes base, excavation, backfill, frame and cover	3	EA	3,544.57	49.92	1,882.28	0.00	5,476.77
HNC 026304004648 Manhole frame and cover, aluminum, heavy duty, 24" x 24"	1	EA	43.64	0.00	1,449.94	0.00	1,493.57
RSM 026304001200 Manholes, concrete, precast, 6' I.D., 6' deep, excludes base, excavation, backfill, frame and cover	7	EA	5,407.46	707.36	12,917.63	0.00	19,032.45
RSM 026304001000 Manholes, concrete, cast in place, 6'x6', 8" thick, 8' deep, excludes base, excavation, backfill, frame and cover	1	EA	2,363.04	33.28	1,291.76	0.00	3,688.09
RCP	1	EA	54,991.36	16,644.46	111,479.10	0.00	183,114.92

Baseline Cost Estimate

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
USR 026305302290 Reinforced concrete pipe (RCP), with gaskets, 48" diameter, 8' lengths, class 3, excludes excavation or backfill	676	LF	25,844.65	8,786.01	71,997.04	0.00	106,627.71
USR 026305302270 Reinforced concrete pipe (RCP), with gaskets, 36" diameter, 8' lengths, class 3, excludes excavation or backfill	326	LF	11,078.71	2,196.95	21,313.55	0.00	34,589.21
RSM 026305302070 Reinforced concrete pipe (RCP), 42" diameter, 8' lengths, class 3, excludes excavation or backfill, gaskets	145	LF	4,927.65	1,675.18	11,544.14	0.00	18,146.96
RSM 026305302240 Reinforced concrete pipe (RCP), with gaskets, 24" diameter, 8' lengths, class 3, excludes excavation or backfill	17	LF	150.66	15.87	555.72	0.00	722.25
RSM 026305302230 Reinforced concrete pipe (RCP), with gaskets, 18" diameter, 6' lengths, class 3, excludes excavation or backfill	190	LF	1,506.59	158.71	4,107.28	0.00	5,772.58
MIL 023154260120 Excavate and load, bank measure, medium material, 1-1/2 C.Y. bucket, hydraulic excavator	2,338	BCY	2,295.60	1,357.92	0.00	0.00	3,653.52
NAV 023153107040 Compaction, around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate	2,338	ECY	5,514.98	435.33	0.00	0.00	5,950.31
USR 023154260120 Backfill with existing material, 1-1/2 C.Y. bucket, hydraulic excavator	2,338	BCY	3,060.80	1,810.55	0.00	0.00	4,871.36
HNC 026305304800 Reinforced concrete pipe (RCP), precast end section, 48" diameter pipe, excludes excavation or backfill	2	EA	611.71	207.95	1,961.37	0.00	2,781.03
16" Sanitary Sewer	1	EA	27,295.16	6,138.88	42,269.63	0.00	75,703.67
RSM 025107302140 Ductile iron pipe, cement lined, mechanical joint, no fittings, 18' lengths, 16" diameter, class 50 water piping, excludes excavation or backfill	460	LF	12,307.81	2,957.80	24,738.57	0.00	40,004.18
MIL 023154260120 Excavate and load, bank measure, medium material, 1-1/2 C.Y. bucket, hydraulic excavator	1,308	BCY	1,284.28	759.69	0.00	0.00	2,043.97
NAV 023153107040 Compaction, around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate	1,308	ECY	3,085.37	243.54	0.00	0.00	3,328.92
USR 023154260120 Backfill with existing material, 1-1/2 C.Y. bucket, hydraulic excavator	1,308	BCY	1,712.37	1,012.92	0.00	0.00	2,725.29
RSM 026304001210 Manholes, concrete, precast, 6' I.D., 8' deep, excludes base, excavation, backfill, frame and cover	7	EA	8,132.82	1,063.87	15,685.69	0.00	24,882.38
RSM 026304001200 Manholes, concrete, precast, 6' I.D., 6' deep, excludes base, excavation, backfill, frame and cover	1	EA	772.49	101.05	1,845.38	0.00	2,718.92
110199 Associated General Items	1	EA	683,246.09	586,350.77	866,383.80	0.00	2,135,980.66
11019902 Site Work	1	EA	683,246.09	586,350.77	866,383.80	0.00	2,135,980.66
Pave top of Levee	1	EA	8,421.72	5,858.81	35,715.32	0.00	49,995.85
02013902 04 Asphaltic Concrete Pavement	6,000	SF	3,498.05	1,931.45	17,929.92	0.00	23,359.42
MIL 027856003190 Pavement overlay, polypropylene, prime coat, bituminous, 0.28 gallons/S.Y.	229	CSF	71.99	31.62	963.51	0.00	1,067.11
MIL 027856003260 Tack coat, emulsion, 0.1 gallons per S.Y., 1000 S.Y.	229	CSF	215.96	94.86	396.03	0.00	706.84
RSM 027403150300 Paving, asphaltic concrete, parking lots & driveways, binder course, 1-1/2" thick	22,920	SF	1,355.11	702.39	8,217.51	0.00	10,275.00
HNC 023154904200 Hauling, rock, 12 C.Y. truck, 5 mile haul, includes loading	212	LCY	493.66	633.02	0.00	0.00	1,126.68
RSM 027403100340 Asphaltic concrete pavement, for highways and large paved areas, wearing course, 1-1/2" thick, for paving projects 300 tons or less add for trucking	2,547	SY	1,361.34	469.57	8,352.87	0.00	10,183.78
02013902 01 Fine Grade Subgrade	6,000	SF	4,923.67	3,927.35	17,785.41	0.00	26,636.43
MIL 023101000020 Fine grade, for roadway, base or leveling course	3	MSY	1,306.02	616.87	0.00	0.00	1,922.89
RSM 023153105000 Compaction, riding, vibrating roller, 2 passes, 6" lifts	280	ECY	51.41	31.92	0.00	0.00	83.33
MIL 023153109000 Water for compaction, 3000 gallon truck, 3 mile haul	280	ECY	111.89	72.93	59.05	0.00	243.87
MIL 027202007000 Aggregate subbase, prepare and roll sub-base, small areas to 2500 S.Y.	2,547	SY	1,870.56	1,247.70	0.00	0.00	3,118.26
HNC 027202000080 Aggregate base course, for roadways and large paved areas, stone base, compacted, 3/4" stone base, to 4" deep	2,547	SY	931.79	1,121.86	17,726.36	0.00	19,780.01
HNC 023154904200 Hauling, rock, 12 C.Y. truck, 5 mile haul, includes loading	280	LCY	652.00	836.06	0.00	0.00	1,488.06
22,920.0000 Pave Ramps	2,300	SF	4,504.52	3,072.15	30,124.56	0.00	37,701.23
02013902 04 Asphaltic Concrete Pavement	2,300	SF	1,948.18	972.92	17,375.81	0.00	20,296.91
MIL 027856003190 Pavement overlay, polypropylene, prime coat, bituminous, 0.28 gallons/S.Y.	109	CSF	34.26	15.05	458.61	0.00	507.93

Baseline Cost Estimate

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
MIL 027856003260 Tack coat, emulsion, 0.1 gallons per S.Y., 1000 S.Y.	109	CSF	102.79	45.15	188.50	0.00	336.44
HNC 023154904200 Hauling, rock, 12 C.Y. truck, 5 mile haul, includes loading	133	LCY	309.70	397.13	0.00	0.00	706.83
RSM 027403100380 Asphaltic concrete pavement, for highways and large paved areas, wearing course, 2" thick, for paving projects 300 tons or less add for trucking	1,211	SY	788.04	271.82	8,875.15	0.00	9,935.01
RSM 027403100120 Asphaltic concrete pavement, for highways and large paved areas, binder course, 2" thick, for paving projects 300 tons or less add for trucking	1,211	SY	713.39	243.76	7,853.55	0.00	8,810.70
02013902 01 Fine Grade Subgrade	2,300	SF	2,556.34	2,099.24	12,748.75	0.00	17,404.32
MIL 023101000020 Fine grade, for roadway, base or leveling course	1	MSY	626.89	296.10	0.00	0.00	922.99
RSM 023153105000 Compaction, riding, vibrating roller, 2 passes, 6" lifts	202	ECY	37.09	23.03	0.00	0.00	60.12
MIL 023153109000 Water for compaction, 3000 gallon truck, 3 mile haul	202	ECY	80.72	52.61	42.60	0.00	175.93
MIL 027202007000 Aggregate subbase, prepare and roll sub-base, small areas to 2500 S.Y.	1,211	SY	889.38	593.24	0.00	0.00	1,482.61
HNC 023154904200 Hauling, rock, 12 C.Y. truck, 5 mile haul, includes loading	202	LCY	470.37	603.16	0.00	0.00	1,073.53
RSM 027202000100 Aggregate base course, for roadways and large paved areas, stone base, compacted, 3/4" stone base, to 6" deep	1,211	SY	451.89	531.10	12,706.15	0.00	13,689.14
11019902 05 Topsoil	1	EA	9,205.73	3,843.67	47,860.06	0.00	60,909.47
HNC 029108100705 Loam or topsoil, imported topsoil, 4" deep, furnish and place	2,111	LCY	8,757.91	3,559.69	47,860.06	0.00	60,177.66
RSM 023153105000 Compaction, riding, vibrating roller,	2,491	ECY	447.82	283.98	0.00	0.00	731.80
11019902 06 Seeding	1	EA	15,810.59	558.07	8,243.97	0.00	24,612.64
RSM 029203200800 Seeding, bluegrass, common, 4 lb. per M.S.F., push spreader	370	MSF	14,778.97	0.00	5,895.59	0.00	20,674.56
HNC 029203207010 Seeding, apply fertilizer, 35 lb. per M.S.F.	370	MSF	584.78	215.96	862.86	0.00	1,663.61
PA 029105000700 Mulch, oat straw, 1" deep, power mulcher, large	9	ACR	446.84	342.11	1,485.52	0.00	2,274.47
11019902 09 Clearing	1	EA	22,941.34	12,011.47	0.00	0.00	34,952.80
MIL 022301000152 Clear and grub, cut and chip, medium trees, to 10" diameter	6	ACR	17,920.20	7,082.71	0.00	0.00	25,002.92
MIL 022301000156 Clear and grub, medium stumps, to 10" diameter, includes loading on site	6	ACR	5,021.13	4,928.76	0.00	0.00	9,949.89
11019902 10 Excavation and Embankment:	1	EA	616,519.44	557,355.26	744,439.88	0.00	1,918,314.58
Stripping	1	EA	27,622.30	28,759.62	0.00	0.00	56,381.92
AF 023154900555 Hauling, excavated or borrow material, loose cubic yards, 12 mile round trip @ base wide rate, 12 C.Y. truck, highway haulers, excludes loading (Note: Assume 18% swell factor)	9,530	LCY	21,216.95	18,692.48	0.00	0.00	39,909.43
USR 029108100260 Loam or topsoil, remove and stockpile on site, 200 H.P. dozer, 12" deep, 200' haul	8,076	ECY	6,405.35	10,067.14	0.00	0.00	16,472.49
Excavation for Levee	1	EA	25,678.47	20,165.78	0.00	0.00	45,844.26
MIL 023154260120 Excavate and load, bank measure, medium material, 1-1/2 C.Y. bucket, hydraulic excavator	10,250	BCY	9,546.47	5,953.22	0.00	0.00	15,499.69
AF 023154900555 Hauling, excavated or borrow material, loose cubic yards, 12 mile round trip @ base wide rate, 12 C.Y. truck, highway haulers, excludes loading (Note: Assume 18% swell factor of 6141 cy)	7,246	LCY	16,132.01	14,212.56	0.00	0.00	30,344.57
Select Earth Fill	1	EA	539,165.15	493,165.33	744,439.88	0.00	1,776,770.36
RSM 023153105000 Compaction, riding, vibrating roller, 2 passes, 6" lifts	66,911	ECY	12,029.06	7,627.95	0.00	0.00	19,657.01
AF 023154900570 Hauling, excavated or borrow material, loose cubic yards, 24 mile round trip @ base wide rate, 12 C.Y. truck, highway haulers, excludes loading (Note: use 18% bulk factor)	66,911	LCY	496,553.85	437,472.00	0.00	0.00	934,025.85
AF 023155100030 Select Earth Fill, borrow, spread, by dozer (Note: use 18% bulk factor)	56,704	LCY	30,582.23	48,065.38	744,439.88	0.00	823,087.50
Grading	1	EA	24,053.52	15,264.53	0.00	0.00	39,318.04
RSM 023101001050 Fine grade, fine grade for small irregular areas, to 15,000 S.Y.	22,950	SY	24,053.52	15,264.53	0.00	0.00	39,318.04
Random Rock Fill	1	EA	5,842.75	3,651.34	0.00	0.00	9,494.09
(Note: use 18% bulk factor)							
RSM 023153105000 Compaction, riding, vibrating roller, 2 passes, 6" lifts	4,110	ECY	738.88	468.55	0.00	0.00	1,207.43
USR 023154260120 Backfill trench with existing material, 1-1/2 C.Y. bucket, hydraulic excavator	4,110	BCY	5,103.87	3,182.80	0.00	0.00	8,286.66

Baseline Cost Estimate

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
30 Planning, Engineering and Design	1	EA	0.00	0.00	0.00	1,200,000.00	1,200,000.00
USR PED Cost	1	EA	0.00	0.00	0.00	1,200,000.00	1,200,000.00
(Note: This cost is provided by PM to also include pump station effort)							
31 Construction Management	1	EA	0.00	0.00	0.00	1,494,700.00	1,494,700.00
USR Construction Management	1	EA	0.00	0.00	0.00	1,494,700.00	1,494,700.00
(Note: Use 10% of total construction cost including pump station effort per PM's direction)							

Cost Engineering

1. General. The following methodology was used in the preparation of Draft Feasibility Study Cost Estimate for Huntington Flood Damage Reduction, Huntington, VA.

- a. The estimate is in accordance with the guidance contained in ER 1110-2-1302, Civil Works Cost Engineering.
- b. The estimate is presented in the standard Work Breakdown Structure.
- c. The price level for the estimate is 1 October 2008.
- d. Construction costs developed by Cost Engineering Branch are based on input/quantities and assumptions from Civil Works Branch, Planning Division. Unit costs were developed using the M-II estimating software and were updated with latest costs from RS Means. A copy of the MII estimate is included.
- e. Real Estate Division provided costs for Land and Damages and contingency for the real estate cost impacts.
- f. Planning Division provided costs for Construction Management.
- g. Planning Division provided costs for the Planning, Engineering and Design.
- h. PPMD provided the escalation factors.

2. Estimate Scope. The estimate reflects the cost for the levee and pump station for the Huntington Flood Damage Reduction Project. The levee, a 2865 feet long earthen structure, including drainage structures, is designed by Baltimore District, COE. The pump station is still in preliminary design and included in a separate estimate because local sponsors plan to design it themselves.

3. Contingency. Contingency amounts were developed by Estimating and Specifications Section, Engineering Division, for the construction cost items. The contingencies are based on uncertainties within individual project elements. Based on these uncertainties, contingencies were assigned to groups of related cost items to protect against the risk of potential cost increases. The following is a list by element of the uncertainties that were identified and the corresponding contingency percentage that was assigned.

- a. 02 Relocations - 30%. The uncertainty for the utility and road relocations associated with the pump station is relatively high. The designs are based on limited field identification and local sponsor verifications. The estimate is based on a conceptual design and may have a great chance to change significantly. For now, a contingency of 30 percent for the relocations associated with the pump station structure is considered reasonable.
- b. Levees and Floodwalls - 30%. The uncertainty associated with the pump station design is relatively high. The uncertainty associated with quantities are relatively high since it was based on conceptual scope and are likely to change significantly. Changes could occur based on the final detailed designs. For now, a contingency of 30 percent is considered reasonable.

Estimated by CENAB-EN-DT

Designed by Baltimore District, COE

Prepared by Luan Ngo

Preparation Date 10/27/2008

Effective Date of Pricing 10/27/2008

Estimated Construction Time Days

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Date Author Note

5/23/2007 Luan Ngo Estimate Qualifications

This estimate for the pump station is based on the quantities of a preliminary design for the Huntington Flood Damage Reduction Project. The pump station is still in concept design because the local sponsor plans to design it themselves. This estimate serves as a reference for the customers when they further design the pump station and develop more detailed estimate for it.

Contingencies:

a. 02 Relocations - 30%. The uncertainty for the utility and road relocations associated with the pump station is relatively high. The designs are based on limited field identification and local sponsor verifications. The estimate is based on a conceptual design and may have a great chance to change significantly. For now, a contingency of 30 percent for the relocations associated with the pump station structure is considered reasonable.

b. Levees and Floodwalls - 30%. The uncertainty associated with the pump station design is relatively high. The uncertainty associated with quantities are relatively high since it was based on conceptual scope and are likely to change significantly. Changes could occur based on the final detailed designs. For now, a contingency of 30 percent is considered reasonable.

Escalation:

Assume Planning, Engineering, and Design occurs in FY10. Assume midpoint of construction is in FY12. Start of construction is assumed to be in FY11. Estimated construction duration for the pump station is 12 months.

5/23/2007 Luan Ngo

The Direct Cost includes sales tax on materials and labor burden

The Cost To Prime includes the Direct Cost and sub-contractor mark-ups.

The Contract Cost includes the Cost To Prime and the Prime Contractor mark-ups.

The Project Cost includes the Contract Cost, Contingency and Escalation to the mid-point of construction.

Description	Quantity	UOM	ContractCost	Contingency	Escalation	ProjectCost
Project Cost			6,819,909	2,045,973	1,037,308	9,903,190
02 Relocations	1	EA	93,141	27,942	14,167	135,250
0201 Roads, Construction Activities (Access Ramp)	1	EA	82,786	24,836	12,592	120,214
020139 Road Surfacing	1	EA	77,042	23,113	11,718	111,873
02013902 Site Work	1	EA	77,042	23,113	11,718	111,873
Raise Fenwick Drive	1	EA	77,042	23,113	11,718	111,873
020199 Associated General Items	1	EA	5,744	1,723	874	8,341
02019902 Site Work	1	EA	5,744	1,723	874	8,341
0201990201 Demolition	1	EA	5,744	1,723	874	8,341
0203 Cemetery, Utilities, & Structure	1	EA	10,355	3,107	1,575	15,037
020318 Utilities	1	EA	10,355	3,107	1,575	15,037
02031802 Site Work	1	EA	10,355	3,107	1,575	15,037
Adjust Utility Covers	1	EA	9,490	2,847	1,443	13,780
Abandon Inlet and Pipe	1	EA	865	260	132	1,256
11 Levees and Floodwalls	1	EA	6,726,768	2,018,030	1,023,141	9,767,940
1101 Levees	1	EA	6,726,768	2,018,030	1,023,141	9,767,940
110101 Mob, Demob & Preparatory Work	1	EA	31,241	9,372	4,752	45,365
Equipment	1	EA	31,241	9,372	4,752	45,365
110102 Drainage	1	EA	6,537,411	1,961,223	994,340	9,492,975
Pump Station	1	EA	4,899,724	1,469,917	745,248	7,114,889
Vertical Mixed Flow Pumps	1	EA	3,029,476	908,843	460,783	4,399,102
Pump Housing Structure	1	EA	908,775	272,633	138,225	1,319,632
Electrical Requirement	1	EA	910,132	273,040	138,431	1,321,603
Mechanical Equipment	1	EA	51,340	15,402	7,809	74,551
Hi Flow Diversion Pipes	1	EA	1,614,985	484,495	245,639	2,345,119
Backfill for Box Culvert	1	EA	50,639	15,192	7,702	73,533
Care and diversion of water	1	EA	41,566	12,470	6,322	60,358
Box Culverts	1	EA	1,464,272	439,282	222,716	2,126,270
Trench Excavation	1	EA	58,508	17,552	8,899	84,959
Waterproof Existing Manholes	1	EA	13,257	3,977	2,016	19,250
Storm Drain at Fenwick Drive	1	EA	9,447	2,834	1,437	13,717
Excavation	1	EA	1,525	458	232	2,215
RCP	1	EA	1,188	357	181	1,726
Inlet	1	EA	1,538	461	234	2,233
Manhole	1	EA	5,082	1,525	773	7,379
Backfill	1	EA	113	34	17	164
110199 Associated General Items	1	EA	158,116	47,435	24,049	229,600
11019902 Site Work	1	EA	158,116	47,435	24,049	229,600
Dispose Excess Material	1	EA	121,180	36,354	18,431	175,966
Seed and Mulch	1	EA	19,645	5,894	2,988	28,527
Ponding Excavation	13,510	ECY	17,290	5,187	2,630	25,107

Description	Quantity	UOM	DirectCost	JOOH	HOOH	Profit	Bond	ContractCost
Cost To Owner			4,137,420	3,262	189,066	490,147	1,316	6,819,909
02 Relocations	1	EA	57,151	0	2,606	6,776	0	93,141
0201 Roads, Construction Activities (Access Ramp)	1	EA	50,797	0	2,316	6,023	0	82,786
020139 Road Surfacing	1	EA	47,273	0	2,156	5,605	0	77,042
02013902 Site Work	1	EA	47,273	0	2,156	5,605	0	77,042
Raise Fenwick Drive	1	EA	47,273	0	2,156	5,605	0	77,042
020199 Associated General Items	1	EA	3,524	0	161	418	0	5,744
02019902 Site Work	1	EA	3,524	0	161	418	0	5,744
0201990201 Demolition	1	EA	3,524	0	161	418	0	5,744
0203 Cemetery, Utilities, & Structure	1	EA	6,354	0	290	753	0	10,355
020318 Utilities	1	EA	6,354	0	290	753	0	10,355
02031802 Site Work	1	EA	6,354	0	290	753	0	10,355
Adjust Utility Covers	1	EA	5,823	0	266	690	0	9,490
Abandon Inlet and Pipe	1	EA	531	0	24	63	0	865
11 Levees and Floodwalls	1	EA	4,080,268	3,262	186,460	483,371	1,316	6,726,768
1101 Levees	1	EA	4,080,268	3,262	186,460	483,371	1,316	6,726,768
110101 Mob, Demob & Preparatory Work	1	EA	25,000	1,518	1,326	2,784	613	31,241
Equipment	1	EA	25,000	1,518	1,326	2,784	613	31,241
110102 Drainage	1	EA	3,954,583	789	180,426	468,762	319	6,537,411
Pump Station	1	EA	2,949,704	789	134,603	349,623	319	4,899,724
Vertical Mixed Flow Pumps	1	EA	1,858,875	0	84,765	220,388	0	3,029,476
Pump Housing Structure	1	EA	497,841	0	22,702	59,024	0	908,775
Electrical Requirement	1	EA	561,486	789	25,700	66,476	319	910,132
Mechanical Equipment	1	EA	31,502	0	1,437	3,735	0	51,340
Hi Flow Diversion Pipes	1	EA	990,949	0	45,187	117,487	0	1,614,985
Backfill for Box Culvert	1	EA	31,072	0	1,417	3,684	0	50,639
Care and diversion of water	1	EA	25,505	0	1,163	3,024	0	41,566
Box Culverts	1	EA	898,472	0	40,970	106,523	0	1,464,272
Trench Excavation	1	EA	35,900	0	1,637	4,256	0	58,508
Waterproof Existing Manholes	1	EA	8,134	0	371	964	0	13,257
Storm Drain at Fenwick Drive	1	EA	5,796	0	264	687	0	9,447
Excavation	1	EA	936	0	43	111	0	1,525
RCP	1	EA	729	0	33	86	0	1,188
Inlet	1	EA	944	0	43	112	0	1,538
Manhole	1	EA	3,118	0	142	370	0	5,082
Backfill	1	EA	69	0	3	8	0	113
110199 Associated General Items	1	EA	100,686	955	4,708	11,824	385	158,116
11019902 Site Work	1	EA	100,686	955	4,708	11,824	385	158,116
Dispose Excess Material	1	EA	74,356	0	3,391	8,816	0	121,180
Seed and Mulch	1	EA	15,721	955	834	1,751	385	19,645
Ponding Excavation	13,510	ECY	10,609	0	484	1,258	0	17,290

Baseline Cost Estimate

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
Direct Costs			401,074.34	142,929.04	3,371,916.14	221,500.00	4,137,419.53
02 Relocations	1	EA	14,786.91	3,293.47	39,070.69	0.00	57,151.07
0201 Roads, Construction Activities (Access Ramp)	1	EA	12,347.55	3,207.91	35,241.80	0.00	50,797.25
020139 Road Surfacing	1	EA	9,898.58	2,132.49	35,241.80	0.00	47,272.87
02013902 Site Work	1	EA	9,898.58	2,132.49	35,241.80	0.00	47,272.87
Raise Fenwick Drive	1	EA	9,898.58	2,132.49	35,241.80	0.00	47,272.87
(Note: assume 6" bituminous pavement on 6" gravel)							
02013902 04 Asphaltic Concrete Pavement	6,000	SF	1,787.45	1,023.77	14,599.41	0.00	17,410.64
MIL 027856003190 Pavement overlay, polypropylene, prime coat, bituminous, 0.28 gallons/S.Y.	62	CSF	19.55	8.59	261.70	0.00	289.84
MIL 027856003260 Tack coat, emulsion, 0.1 gallons per S.Y., 1000 S.Y.	62	CSF	58.66	25.76	107.57	0.00	191.99
HNC 023154904200 Hauling, rock, 12 C.Y. truck, 5 mile haul, includes loading	115	LCY	267.79	343.38	0.00	0.00	611.17
RSM 027403150500 Paving, asphaltic concrete, parking lots & driveways, binder course, 3" thick	6,222	SF	858.35	444.91	6,823.54	0.00	8,126.80
RSM 027403100460 Asphaltic concrete pavement, for highways and large paved areas, wearing course, 3" thick, for paving projects 300 tons or less add for trucking	692	SY	583.10	201.13	7,406.60	0.00	8,190.83
02013902 01 Fine Grade Subgrade	6,000	SF	1,199.19	858.27	7,284.91	0.00	9,342.37
MIL 023101000020 Fine grade, for roadway, base or leveling course	1	MSY	365.68	172.72	0.00	0.00	538.41
RSM 023153105000 Compaction, riding, vibrating roller, 2 passes, 6" lifts	115	ECY	21.11	13.11	0.00	0.00	34.22
MIL 023153109000 Water for compaction, 3000 gallon truck, 3 mile haul	115	ECY	45.95	29.95	24.25	0.00	100.16
MIL 027202007000 Aggregate subbase, prepare and roll sub-base, small areas to 2500 S.Y.	692	SY	508.22	338.99	0.00	0.00	847.21
RSM 027202000100 Aggregate base course, for roadways and large paved areas, stone base, compacted, 3/4" stone base, to 6" deep	692	SY	258.22	303.49	7,260.65	0.00	7,822.36
4" Concrete Sidewalk	1	EA	1,924.33	48.49	2,585.42	0.00	4,558.24
RSM 027752750310 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 4" thick, excludes base	1,035	SF	1,883.06	0.00	1,986.36	0.00	3,869.43
RSM 027202000050 Aggregate base course, for roadways and large paved areas, compacted, 3" deep, crushed 3/4" stone base	115	SY	41.26	48.49	599.06	0.00	688.82
6" Concrete Driveways	1	EA	1,526.30	32.89	2,495.28	0.00	4,054.48
RSM 027752750400 Sidewalk, concrete, cast-in-place with 6 x 6 - W1.4 x W1.4 mesh, broomed finish, 3000 psi, 6" thick, excludes base	700	SF	1,498.32	0.00	2,088.96	0.00	3,587.28
RSM 027202000050 Aggregate base course, for roadways and large paved areas, compacted, 3" deep, crushed 3/4" stone base	78	SY	27.99	32.89	406.32	0.00	467.20
Curbs and Gutters	1	EA	2,815.74	0.00	8,276.77	0.00	11,092.51
RSM 027703000430 Concrete curb and gutter, straight, wood forms, 0.055 C.Y. per L.F., 6" high curb, 6" thick gutter, 24" wide, cast-in-place	470	LF	2,815.74	0.00	8,276.77	0.00	11,092.51
Backfill	1	EA	645.57	169.07	0.00	0.00	814.63
NAV 023153107040 Compaction, around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate	176	ECY	415.16	32.77	0.00	0.00	447.93
USR 023154260120 Backfill with existing material, 1-1/2 C.Y. bucket, hydraulic excavator	176	BCY	230.41	136.29	0.00	0.00	366.71
020199 Associated General Items	1	EA	2,448.96	1,075.42	0.00	0.00	3,524.38
02019902 Site Work	1	EA	2,448.96	1,075.42	0.00	0.00	3,524.38
0201990201 Demolition	1	EA	2,448.96	1,075.42	0.00	0.00	3,524.38
Demo Existing Roadway (Fenwick Dr.)	670	SY	2,448.96	1,075.42	0.00	0.00	3,524.38
USR 022202401770 Minor site demolition, pavement, bituminous, 6" thick, remove with air equipment, excludes hauling	670	SY	1,061.68	648.56	0.00	0.00	1,710.24
(Note: Assume 11' wide and 600' long)							
USR 022203503080 Pavement and base, loading & trucking, machine loading truck, includes 2 mile haul, cost to be added to demolition cost.	112	CY	1,387.28	426.85	0.00	0.00	1,814.14
(Note: Assume 1.2 swell factor)							
0203 Cemetery, Utilities, & Structure	1	EA	2,439.37	85.56	3,828.89	0.00	6,353.82
020318 Utilities	1	EA	2,439.37	85.56	3,828.89	0.00	6,353.82

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
02031802 Site Work	1	EA	2,439.37	85.56	3,828.89	0.00	6,353.82
Adjust Utility Covers	1	EA	2,350.52	13.73	3,458.76	0.00	5,823.01
RSM 020804000400 Utility vaults, hand hole, precast concrete, light duty, 1-1/2" thick, 1'-0" x 2'-0" x 1'-9" I.D., excludes excavation and backfill	6	EA	1,501.29	0.00	2,246.09	0.00	3,747.38
AF 023154900555 Hauling, excavated or borrow material, loose cubic yards, 12 mile round trip @ base wide rate, 12 C.Y. truck, highway haulers, excludes loading (Note: Assume 15% swell factor)	7	LCY	16.39	13.73	0.00	0.00	30.12
RSM 023151100300 Backfill, 6" layers, compaction in layers, hand tamp	7	ECY	112.22	0.00	0.00	0.00	112.22
HNC 023151100040 Backfill, common earth, by hand, no compaction	7	LCY	135.98	0.00	0.00	0.00	135.98
RSM 023154620200 Excavating, structural, bank measure, normal soil, to 2' deep, hand pits	7	BCY	484.56	0.00	0.00	0.00	484.56
RSM 020801002520 Fire hydrants, lower barrel extensions with stems, 4'-0", includes mechanical joints, excludes excavation and backfill	1	EA	100.09	0.00	1,212.68	0.00	1,312.76
Abandon Inlet and Pipe	1	EA	88.84	71.83	370.13	0.00	530.80
USR 026301101582 Remove inlet top	1	EA	71.15	71.26	0.00	0.00	142.41
RSM 033102200300 Structural concrete, ready mix, normal weight, 4000 PSI, includes material only	3	CY	0.00	0.00	370.13	0.00	370.13
RSM 033107002900 Structural concrete, placing, foundation mat, direct chute, over 20 C.Y., includes vibrating, excludes material	3	CY	17.70	0.57	0.00	0.00	18.27
11 Levees and Floodwalls	1	EA	386,287.42	139,635.58	3,332,845.46	221,500.00	4,080,268.46
1101 Levees	1	EA	386,287.42	139,635.58	3,332,845.46	221,500.00	4,080,268.46
110101 Mob, Demob & Preparatory Work	1	EA	0.00	25,000.00	0.00	0.00	25,000.00
Equipment	1	EA	0.00	25,000.00	0.00	0.00	25,000.00
USR Equipment M&D	1	EA	0.00	25,000.00	0.00	0.00	25,000.00
110102 Drainage	1	EA	332,226.24	73,345.49	3,327,511.09	221,500.00	3,954,582.82
Pump Station	1	EA	208,965.51	5,828.15	2,513,409.99	221,500.00	2,949,703.64
Vertical Mixed Flow Pumps	1	EA	6,000.00	0.00	1,845,375.00	7,500.00	1,858,875.00
USR Mixed Flow Vertical Pumps, 20,000 GPM, 36" discharge, 200 HP at 22' (Note: price based on a quote from Sulzer pump company (Mike Attrill 215-997-5990), Peerless Pump Company (Bill Burda 804-271-7200), Patterson Pump Company (Charles Pooles 706-297-2948). Assume 22' head required. Installation cost is based on a compatible cost from Means 2007. \$2500 is freight charge.)	1	EA	2,000.00	0.00	421,800.00	2,500.00	426,300.00
USR Mixed Flow Vertical Pumps, 40,000 GPM, 42" discharge, 400 HP at 22' (Note: price based on a quote from Sulzer pump company (Mike Attrill 215-997-5990), Peerless Pump Company (Bill Burda 804-271-7200), Patterson Pump Company (Charles Pooles 706-297-2948). Assume 22' head required. Installation cost is based on a compatible cost from Means 2007. \$2500 is freight charge.)	2	EA	4,000.00	0.00	1,423,575.00	5,000.00	1,432,575.00
Pump Housing Structure	1	EA	132,288.25	2,591.46	166,960.88	196,000.00	497,840.59
(Note: Assume concrete 40' x 70' structure. Excavation and Fill for the culverts are included in Drainage Structure 2.)							
Foundation	1	EA	5,304.52	32.52	25,120.09	0.00	30,457.12
RSM 033107002900 Structural concrete, placing, foundation mat, direct chute, over 20 C.Y., includes vibrating, excludes material	171	CY	975.63	32.52	0.00	0.00	1,008.15
RSM 033102200300 Structural concrete, ready mix, normal weight, 4000 PSI, includes material only	171	CY	0.00	0.00	21,097.38	0.00	21,097.38
RSM 033902000300 Curing, sprayed membrane compound	16	CSF	107.56	0.00	93.64	0.00	201.20
RSM 032106000500 Reinforcing steel, in place, footings, #4 to #7, A615, grade 60, incl access. Labor	5	TON	4,221.32	0.00	3,929.07	0.00	8,150.39
Concrete Wall	1	EA	103,620.04	214.45	84,859.20	0.00	188,693.69
Rebar	1	EA	18,664.36	0.00	24,770.21	0.00	43,434.57
RSM 032106000700 Reinforcing steel, in place, walls, #3 to #7, A615, grade 60, incl access. Labor (Note: assume 120 lbs rebar/cy concrete)	29	TON	18,664.36	0.00	24,770.21	0.00	43,434.57
Concrete	1	EA	84,955.68	214.45	60,089.00	0.00	145,259.12
RSM 033102200300 Structural concrete, ready mix, normal weight, 4000 PSI, includes material only	332	CY	0.00	0.00	40,961.00	0.00	40,961.00
RSM 033107005300 Structural concrete, placing, walls, direct chute, 15" thick, includes vibrating, excludes material	206	CY	3,917.74	130.58	0.00	0.00	4,048.33
RSM 033107005050 Structural concrete, placing, walls, direct chute, 12" thick, includes vibrating, excludes material	126	CY	2,516.10	83.87	0.00	0.00	2,599.97
RSM 031104552100 C.I.P. concrete forms, wall, job built, plywood, below grade, to 8' high, 3 use,	4,734	SFC	24,926.28	0.00	5,690.88	0.00	30,617.17

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
includes erecting, bracing, stripping and cleaning							
HNC 031104552052 C.I.P. concrete forms, wall, job built, plywood, interior, to 8' high, 2 use, includes erecting, bracing, stripping and cleaning	8,816	SFC	45,352.43	0.00	12,643.20	0.00	57,995.63
RSM 033902000300 Curing, sprayed membrane compound	88	CSF	591.59	0.00	515.02	0.00	1,106.61
RSM 033503500050 Concrete finishing, walls, burlap rub with grout, includes breaking ties and patching voids	8,816	SF	7,651.53	0.00	278.89	0.00	7,930.42
1' Thick Slab	1	EA	5,558.64	233.80	9,419.00	0.00	15,211.45
Concrete	1	EA	1,955.15	233.80	5,746.18	0.00	7,935.14
RSM 033102200300 Structural concrete, ready mix, normal weight, 4000 PSI, includes material only	45	CY	0.00	0.00	5,551.94	0.00	5,551.94
RSM 033107004650 Structural concrete, placing, slab on grade, pumped, over 6" thick, includes vibrating, excludes material	45	CY	658.55	233.80	0.00	0.00	892.36
RSM 031104453060 C.I.P. concrete forms, slab on grade, edge, wood, over 12", 4 use, includes erecting, bracing, stripping and cleaning	140	SFC	585.83	0.00	124.01	0.00	709.83
RSM 033902000300 Curing, sprayed membrane compound	12	CSF	80.67	0.00	70.23	0.00	150.90
HNC 033503000050 Concrete finishing, floors, monolithic, darby finish	1,210	SF	630.11	0.00	0.00	0.00	630.11
Rebar	1	EA	3,603.48	0.00	3,672.82	0.00	7,276.31
RSM 032106000600 Reinforcing steel, in place, slab on grade, #3 to #7, A615, grade 60, incl access. Labor	4	TON	3,603.48	0.00	3,672.82	0.00	7,276.31
(Note: assume 120 lbs rebar/cy concrete)							
Roof Construction	1	EA	1,927.90	164.93	9,588.57	126,000.00	137,681.39
USR Flat roof system with roof deck and EPDM roofing	2,800	SF	0.00	0.00	0.00	126,000.00	126,000.00
(Note: 40x70. SF cost is based on a similar project.)							
RSM 051206401900 Structural steel member, 100-ton project, 1 to 2 story building, W14x26, A992 steel, shop fabricated, incl shop primer, bolted connections	153	LF	511.52	164.93	5,969.52	0.00	6,645.97
HNC 099107800400 Paints & Coatings, misc. painting, structural steel, joists & roof deck	1,200	SF	336.25	0.00	189.81	0.00	526.06
RSM 035102000100 Roof deck plank, T & G, 1-1/2" thick, wood fiber, lightweight cement system	1,200	SF	1,080.13	0.00	3,429.23	0.00	4,509.37
Interior Finishes	1	EA	0.00	0.00	0.00	70,000.00	70,000.00
USR Interior Finishes	5,600	SF	0.00	0.00	0.00	70,000.00	70,000.00
(Note: Based on a similar project SF cost)							
Doors	1	EA	2,415.81	38.55	5,260.90	0.00	7,715.26
RSM 081102000100 Doors, commercial, steel, flush, full panel, hollow core, 1-3/8" thick, 20 ga., 3'-0" x 7'-0"	3	EA	134.73	0.00	762.40	0.00	897.14
HNC 081108202940 Frames, steel, knock down, single, 14 ga., 4-3/4" deep, 7'-0" h x 3'-0" w	3	EA	152.70	0.00	370.13	0.00	522.83
RSM 083605502650 Doors, overhead, commercial, stock, steel, heavy duty, sectional, manual, 24 gauge, 10' x 10' high	3	EA	1,272.49	0.00	2,325.17	0.00	3,597.66
RSM 081102500400 Door frames, steel channels with anchors and bar stops, 10" channel@ 15.3 lb/LF, 10' x 10' door, weighs 500 lb	3	EA	855.89	38.55	1,803.20	0.00	2,697.63
Ladders	1	EA	616.24	27.75	1,290.71	0.00	1,934.70
RSM 055145000020 Ladder, shop fabricated, steel, 20" W, bolted to concrete, incl cage	18	VLf	616.24	27.75	1,290.71	0.00	1,934.70
Catwalk	1	EA	0.00	0.00	1,352.29	0.00	1,352.29
RSM 015407552000 Scaffolding Specialties, catwalk, buy, 20" wide x 10' span, excl. guardrails	6	EA	0.00	0.00	1,170.50	0.00	1,170.50
RSM 015407501600 Scaffolding, steel tubular, regular, accessory, guardrail section, buy, 7' L	4	EA	0.00	0.00	35.43	0.00	35.43
RSM 015407501550 Scaffolding, steel tubular, regular, accessory, guardrail post, buy	8	EA	0.00	0.00	146.36	0.00	146.36
Overhead Crane	1	EA	1,796.42	116.91	27,522.45	0.00	29,435.78
RSM 146307000250 Overhead Bridge Cranes, under hung hoist, electric operating, 1 girder, 5 ton, 30' span	1	EA	1,796.42	116.91	27,522.45	0.00	29,435.78
Backfill and Compact	1	EA	6,387.40	1,729.08	0.00	0.00	8,116.48
(Note: 80' w x (70' + 15') x (10' h/2) /27 + 80' w x (30' + 5') x (10'h/2)/27 = 1778 say 1800 cy)							
NAV 023153107040 Compaction, around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate	1,800	ECY	4,105.59	335.15	0.00	0.00	4,440.74

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
USR 023154260120 Backfill trench with existing material, 1-1/2 C.Y. bucket, hydraulic excavator	1,800	BCY	2,281.82	1,393.93	0.00	0.00	3,675.74
Trash Rack	1	EA	4,661.29	33.47	2,547.67	0.00	7,242.43
HNC 151076000570 Pipe, steel, 3/4" diameter, schedule 40, excludes couplings and hangers	800	LF	2,887.74	0.00	1,661.89	0.00	4,549.63
RSM 151076605573 weld, 3000 lb., sched. 40, 3/4" pipe size, includes 1 weld per joint and weld machine	40	EA	1,773.55	33.47	885.78	0.00	2,692.80
Electrical Requirement	1	EA	61,785.84	2,659.06	479,040.85	18,000.00	561,485.75
(Note: assumptions: - power from medium voltage overhead line will run underground to a pad mounted xfmr. - about 410 kva of power is required for pumps, lighting, receptacles, control equipment, and misc. equipment - assume overhead line voltage is 12470/7200, 4 wire, wye system)							
Exterior Electric	1	EA	15,873.47	1,638.16	62,979.49	5,000.00	85,491.12
Power	1	EA	13,796.56	1,638.16	59,593.49	0.00	75,028.21
1x2 Ductbank	1	EA	3,195.05	873.03	4,245.42	0.00	8,313.49
USR 025804205400 Underground concrete duct banks, PVC, type EB, minimum of 7.5" between conduits center to center, 2 @ 4" diameter, excludes excavation, backfill	200	LF	1,119.90	0.00	2,284.05	0.00	3,403.95
HNC 023156204520 Excavating, utility trench, common earth, 24" wide, 4' deep, cable/wire burial, with sand bedding, includes backfill	200	LF	850.24	725.93	126.54	0.00	1,702.71
HNC 161207006310 Shielded cable, copper, XLP shielding, 15 kV, 1/0, pulled in duct, excl splicing & terminations	1	MLF	1,224.90	147.10	1,834.83	0.00	3,206.83
Transformer	1	EA	6,196.56	765.13	40,993.69	0.00	47,955.38
HNC 163307401060 Lightning Arrester, intermediate 1 phase, metal top, 15 kV, for outdoor mounting	3	EA	861.51	103.46	4,191.64	0.00	5,156.61
RSM 163608008250 Fuses, 13 to 26 kV	3	EA	479.99	114.41	5,694.30	0.00	6,288.70
RSM 162706000600 Oil filled transformer pad mounted, 15 kV with taps, 480 V secondary 3 phase, 1500 kVA	1	EA	4,855.06	547.26	31,107.75	0.00	36,510.07
Secondary Conductor	1	EA	4,404.95	0.00	14,354.38	0.00	18,759.33
RSM 161322401000 Rigid galvanized steel conduit, 4" diameter, in trench, includes terminations and fittings	75	LF	671.94	0.00	1,937.64	0.00	2,609.59
RSM 160608003850 Insulated ground wire, copper, stranded, 350 kcmil	15	CLF	3,733.01	0.00	12,416.74	0.00	16,149.75
Lightning Protection	1	EA	0.00	0.00	0.00	5,000.00	5,000.00
USR Lightning protection allowance	1	EA	0.00	0.00	0.00	5,000.00	5,000.00
Lights	1	EA	2,076.91	0.00	3,386.00	0.00	5,462.91
RSM 165203002400 Floodlights, exterior, high pressure sodium, 400 Watt, incl ballast and lamp, excl pole	6	EA	1,221.71	0.00	2,309.36	0.00	3,531.07
RSM 165802000450 Photoelectric control, S.P.D.T., 208 V/277 V	6	EA	447.96	0.00	999.67	0.00	1,447.63
RSM 161209001200 Wire, copper, stranded, 600 volt, #12, type THWN-THHN, in raceway	10	CLF	407.24	0.00	76.98	0.00	484.22
(Note: assume 1000 feet of wire is needed)							
Interior Electric	1	EA	45,912.37	1,020.90	416,061.37	8,000.00	470,994.64
Power	1	EA	21,785.81	1,020.90	335,243.96	6,000.00	364,050.67
RSM 162304503270 Generator set, diesel, 3 phase 4 wire, 277/480 V, 1000 kW, incl battery, charger, muffler & automatic transfer switch, excl conduit, wiring, & concrete	1	EA	8,412.68	763.47	225,663.00	0.00	234,839.15
RSM 155504400180 Vent chimney, prefabricated metal, gas, double wall, galvanized steel, 8" diameter, U.L. listed	30	VLF	457.39	0.00	346.40	0.00	803.79
HNC 163607504020 Switchgear, w/ air circuit breaker, manual, 277/480 V, 2000 amp, for secondary distribution section	1	EA	1,743.10	257.43	6,986.06	0.00	8,986.59
RSM 164408602050 Switchboards, current/potential transformer metering compartment, w/watt meter, 1600 - 2000 amp	1	EA	223.98	0.00	9,279.60	0.00	9,503.58
RSM 161397004330 Receptacle devices, resi, decorator style, GFI, EMT & wire, 15 amp, incl box & cover plate	20	EA	1,901.36	0.00	1,159.95	0.00	3,061.31
RSM 164406601230 Motor starter, combination, with motor circuit protectors, size 1, 10 HP, NEMA 7	1	EA	447.96	0.00	2,451.71	0.00	2,899.67
RSM 164406601220 Motor starter, combination, with motor circuit protectors, size 0, 5 HP, NEMA 7	1	EA	343.53	0.00	2,398.99	0.00	2,742.52
RSM 162702004900 Dry type transformer, 3 phase 480 V primary 120/208 V secondary, 15 kVA, K-13 rated	1	EA	811.52	0.00	2,293.54	0.00	3,105.06

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
USR Heaters required in motors and switchgears for moisture control (Note: allowance)	1	EA	0.00	0.00	0.00	5,000.00	5,000.00
USR 480 V lightning surge arrestors on incoming service (Note: allowance)	1	EA	0.00	0.00	0.00	1,000.00	1,000.00
RSM 164408600460 Switchboards, main circuit breaker, 3 pole, 3 wire, to 600 volt, 2000 amp	1	EA	1,119.90	0.00	15,395.70	0.00	16,515.60
RSM 164408601500 Switchboards, main ground fault protector, 1200 - 2000 amp	1	EA	165.91	0.00	5,167.05	0.00	5,332.96
USR 164406601270 Motor starter, combination, with motor circuit protectors, size 5, 300 HP, NEMA 7	1	EA	3,172.07	0.00	26,220.88	0.00	29,392.95
USR 164406400600 Motor control center, starters, class 1, type B, comb. MCP, FVNR, with control XFMR, size 6, 500 HP, 72" high, incl starters & structures	2	EA	2,986.41	0.00	37,881.08	0.00	40,867.49
Wiring	1	EA	23,118.64	0.00	76,831.40	2,000.00	101,950.04
RSM 160608003870 Insulated ground wire, copper, stranded, 500 kcmil	40	CLF	11,199.03	0.00	46,398.00	0.00	57,597.03
RSM 161322401000 Rigid galvanized steel conduit, 4" diameter, in trench, includes terminations and fittings	100	LF	895.92	0.00	2,583.53	0.00	3,479.45
RSM 161322055180 Electric metallic tubing (EMT), 4" diameter, to 15' high, incl 2 terminations, 2 elbows & 11 beam clamps per 100 LF	100	LF	1,119.90	0.00	1,739.93	0.00	2,859.83
RSM 160608003870 Insulated ground wire, copper, stranded, 500 kcmil	15	CLF	4,199.64	0.00	17,399.25	0.00	21,598.89
RSM 161322055180 Electric metallic tubing (EMT), 4" diameter, to 15' high, incl 2 terminations, 2 elbows & 11 beam clamps per 100 LF	75	LF	839.93	0.00	1,304.94	0.00	2,144.87
RSM 161322055160 Electric metallic tubing (EMT), 3-1/2" diameter, to 15' high, incl 2 terminations, 2 elbows & 11 beam clamps per 100 LF	100	LF	995.47	0.00	1,576.48	0.00	2,571.95
USR Allowance for receptacles, controls, heat wires, etc..	1	EA	0.00	0.00	0.00	2,000.00	2,000.00
RSM 160608003870 Insulated wire, copper, stranded, 500 kcmil	8	CLF	2,239.81	0.00	4,091.46	0.00	6,331.27
RSM 160608003820 Insulated ground wire, copper, stranded, 4/0	8	CLF	1,628.95	0.00	1,737.82	0.00	3,366.77
Lights	1	EA	1,007.91	0.00	3,986.01	0.00	4,993.92
RSM 165104404320 Metal halide fixture, interior,surface mounted, low bay, aluminum reflector, 250 W, incl lamps, mounting hardware and connections (Note: estimated 4 ea)	4	EA	559.95	0.00	1,539.57	0.00	2,099.52
RSM 165303200700 Emergency light units, nickel cadmium battery operated, twin sealed beam light, 25 W, 6 V each	4	EA	447.96	0.00	2,446.44	0.00	2,894.40
Communication	1	EA	0.00	0.00	0.00	5,000.00	5,000.00
USR Internal and external standard telephone and remote monitoring	1	EA	0.00	0.00	0.00	5,000.00	5,000.00
Mechanical Equipment	1	EA	8,891.42	577.63	22,033.25	0.00	31,502.30
(Note: Since no design is available, assumption is made to cover some piping cost.)							
Equipment	1	EA	440.85	0.00	4,119.93	0.00	4,560.78
RSM 158301004660 Fans, corrosive fume resistant, plastic roof ventilator, centrifugal, V belt drive, motor, 1/4" S.P., 1630 CFM, 1/2 H.P.	1	EA	254.20	0.00	3,506.21	0.00	3,760.41
RSM 157602505750 Electric heating, unit heater, heavy duty, single phase, 208-240-277 volt, 5 kW, includes fan & mounting bracket	1	EA	186.65	0.00	400.71	0.00	587.36
RSM 114545002550 Dehumidifier, residential appliances, portable, automatic, 40 pint	1	EA	0.00	0.00	213.01	0.00	213.01
Piping	1	EA	6,534.63	92.69	5,219.78	0.00	11,847.10
RSM 151076202260 Pipe, steel, black, welded, 36" diameter, schedule 40, Spec. A-53, includes yoke & roll hangers, sized for covering, 10' OC	15	LF	4,428.54	52.95	5,219.78	0.00	9,701.26
USR 151076209420 Pipe, steel, Welding labor per joint, 36" pipe size, schedule 40, welding	3	EA	2,106.09	39.74	0.00	0.00	2,145.84
Wall Louvers	1	EA	325.85	0.00	777.69	0.00	1,103.55
RSM 158506002020 Louver, aluminum, extruded, with screen, mill finish, cooling tower and mechanical equipment, screens, standard weight	25	SF	325.85	0.00	777.69	0.00	1,103.55
Gates	1	EA	1,590.09	484.94	11,915.85	0.00	13,990.87
RSM 112851900150 Flap gates, hydraulic structures, aluminum, 48" dia	1	EA	988.51	301.47	7,434.23	0.00	8,724.20
RSM 112851900130 Flap gates, hydraulic structures, aluminum, 36" dia	1	EA	601.58	183.47	4,481.63	0.00	5,266.67
Hi Flow Diversion Pipes	1	EA	116,455.26	67,169.31	807,324.04	0.00	990,948.61

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
Backfill for Box Culvert	1	EA	24,623.29	6,448.50	0.00	0.00	31,071.79
NAV 023153107040 Compaction, around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate	6,713	ECY	15,834.94	1,249.93	0.00	0.00	17,084.87
USR 023154260120 Backfill trench with existing material, 1-1/2 C.Y. bucket, hydraulic excavator	6,713	BCY	8,788.36	5,198.57	0.00	0.00	13,986.92
Care and diversion of water	1	EA	9,296.47	16,156.64	51.57	0.00	25,504.68
(Note: Includes sump well in the excavation and by-passing water in the existing 54" pipe. Assume that the manhole will take 28 days to construct.)							
MIL 022405001700 Dewatering, sump hole construction, pit with gravel collar, corrugated, 12" gravel collar, 12" corr. pipe, 16 ga, includes excavation and gravel pit	3	LF	49.79	6.51	51.57	0.00	107.87
MIL B-LABORER Laborers, (Semi-Skilled)	224	HR	9,246.68	0.00	0.00	0.00	9,246.68
(Note: Assume 8 hr/day and 28 days for the two pumps.)							
GEN P60Z5405 PUMP, WATER, CENTRIFUGAL, DEWATERING, WHEEL, ENGINE DRIVE, 4" (102MM) DIA, 570 GPM (2158LPM) @ 40' (12..2M) HEAD (ADD HOSES)	1,344	HR	0.00	16,150.13	0.00	0.00	16,150.13
(Note: Assume 28 days and two pumps. One for the excavation pit and one to by-pass water in the 54" line.)							
Box Culverts	1	EA	61,663.40	30,379.78	806,428.88	0.00	898,472.05
USR 026406005070 Box culvert, precast concrete, 4' - 0" x 6' - 0" I.D., excludes excavation and backfill	2,185	LF	61,663.40	30,379.78	806,428.88	0.00	898,472.05
Trench Excavation	1	EA	20,872.10	14,184.38	843.60	0.00	35,900.08
MIL 023154260120 Excavate and load, bank measure, medium material, 1-1/2 C.Y. bucket, hydraulic excavator	4,724	BCY	4,638.34	2,743.71	0.00	0.00	7,382.05
AF 023154900555 Hauling, excavated or borrow material, loose cubic yards, 12 mile round trip @ base wide rate, 12 C.Y. truck, highway haulers, excludes loading	5,665	LCY	13,266.35	11,111.53	0.00	0.00	24,377.88
(Note: Assume 15% swell factor. Assume 35% is stripping.)							
HNC 023156100250 Excavating, trench, medium soil, 7 to 10' deep, 1-1/4 C.Y. bucket, gradall, excludes sheeting or dewatering	70	BCY	91.64	67.91	0.00	0.00	159.55
RSM 022504004300 Sheet piling, wood, solid sheeting, 40 S.F./hour in & 120 S.F./hour out, 16' deep excavation, drive, extract and salvage, includes wales, braces and spacers	400	SF	2,875.77	261.23	843.60	0.00	3,980.61
Waterproof Existing Manholes	1	EA	3,583.38	175.70	4,375.12	0.00	8,134.21
RSM 029552300300 Lining pipe, with cement, urban, less than 10,000 L.F., 48" to 72", includes bypass and cleaning	54	LF	2,242.81	0.34	1,964.53	0.00	4,207.68
(Note: assume 6'/manhole)							
HNC 026304004639 Manhole frame and cover, cast iron, city type, square, 24" x 24" x 330 lb.	9	EA	1,340.58	175.36	2,410.59	0.00	3,926.53
Storm Drain at Fenwick Drive	1	EA	3,222.09	172.33	2,401.94	0.00	5,796.36
Excavation	1	EA	632.04	96.26	207.74	0.00	936.04
(Note: assume 10' deep)							
MIL 023154260120 Excavate and load, bank measure, medium material, 1-1/2 C.Y. bucket, hydraulic excavator	15	BCY	14.73	8.71	0.00	0.00	23.44
RSM 022504004000 Sheet piling, wood, solid sheeting, 50 S.F./hour in & 150 S.F./hour out, 10' deep excavation, drive, extract and salvage, includes wales, braces and spacers	100	SF	575.15	52.25	207.74	0.00	835.14
AF 023154900555 Hauling, excavated or borrow material, loose cubic yards, 12 mile round trip @ base wide rate, 12 C.Y. truck, highway haulers, excludes loading	18	LCY	42.15	35.31	0.00	0.00	77.46
(Note: Assume 15% swell factor)							
RCP	1	EA	190.31	20.05	518.81	0.00	729.17
RSM 026305302230 Reinforced concrete pipe (RCP), with gaskets, 18" diameter, 6' lengths, class 3, excludes excavation or backfill	24	LF	190.31	20.05	518.81	0.00	729.17
Inlet	1	EA	563.90	0.00	379.62	0.00	943.52
RSM 026301101582 Catch basins, curb inlet frame, grate, and curb box, large, heavy duty, 24" x 36", excludes footing, excavation, and backfill	1	EA	563.90	0.00	379.62	0.00	943.52
Manhole	1	EA	1,780.83	41.61	1,295.77	0.00	3,118.21
HNC 026304004639 Manhole frame and cover, cast iron, city type, square, 24" x 24" x 330 lb.	1	EA	148.95	19.48	267.84	0.00	436.28
MIL 026304003910 Manhole steps, heavyweight cast iron, 9" x 10"	6	EA	60.70	0.00	115.78	0.00	176.48
RSM 026304000900 Manholes, concrete, cast in place, 4' x 4', 8" thick, 6' deep, excludes base,	1	EA	1,571.17	22.13	912.14	0.00	2,505.44

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	DirectSubBid	DirectCost
excavation, backfill, frame and cover							
Backfill	1	EA	55.02	14.41	0.00	0.00	69.43
NAV 023153107040 Compaction, around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate	15	ECY	35.38	2.79	0.00	0.00	38.18
USR 023154260120 Backfill with existing material, 1-1/2 C.Y. bucket, hydraulic excavator	15	BCY	19.64	11.62	0.00	0.00	31.25
110199 Associated General Items	1	EA	54,061.18	41,290.09	5,334.37	0.00	100,685.64
11019902 Site Work	1	EA	54,061.18	41,290.09	5,334.37	0.00	100,685.64
Dispose Excess Material	1	EA	40,831.80	33,523.83	0.00	0.00	74,355.63
AF 023154900555 Hauling, excavated or borrow material, loose cubic yards, 12 mile round trip @ base wide rate, 12 C.Y. truck, highway haulers, excludes loading (Note: Assume 18% swell factor.)	14,686	LCY	34,391.81	28,805.64	0.00	0.00	63,197.45
HNC 023154260245 Excavate and load, bank measure, medium material, 3 C.Y. bucket, wheeled loader	12,446	BCY	6,439.99	4,718.19	0.00	0.00	11,158.18
Seed and Mulch	1	EA	10,025.38	361.11	5,334.37	0.00	15,720.86
RSM 029203200800 Seeding, bluegrass, common, 4 lb. per M.S.F., push spreader	240	MSF	9,357.86	0.00	3,814.82	0.00	13,172.68
HNC 029203207010 Seeding, apply fertilizer, 35 lb. per M.S.F.	240	MSF	378.39	139.74	558.33	0.00	1,076.46
PA 029105000700 Mulch, oat straw, 1" deep, power mulcher, large	6	ACR	289.13	221.37	961.22	0.00	1,471.72
Ponding Excavation	13,510	ECY	3,204.00	7,405.15	0.00	0.00	10,609.15
HNC 023103303020 Rough grading, open site, large area, 300 H.P., dozer	13,510	BCY	3,204.00	7,405.15	0.00	0.00	10,609.15