Pomeroy OH - Section 14 Project

Pomeroy, OH

Study Report
Engineering Technical Appendix

TAB VII – Baseline Cost Estimate

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1 Project Scope

The Village of Pomeroy (Village) is located along the right descending bank of the Ohio River in Meigs County, Ohio. Ohio State Route (SR) 833, also referred to as East Main Street, provides the main transportation route through the Village which is located adjacent to a reach of the streambank in need of immediate protection due to flood stage erosion and recessional bank and retaining wall failures. Approximately 8,000 linear feet (LF) of streambank is located within the project area, of which approximately 3,300 LF requires immediate protection. Since 2013, the streambank erosion and retaining wall collapse have resulted in the displacement of the northbound lane of SR 833. The paved lanes and shoulders, together with curb, drop inlets, cross drains, and utilities are misaligned as a result of these recent erosion and failure conditions. Without treatment, the streambank would continue to undergo flood related erosion and failure, leading to the undercutting and collapse of SR 833. Failure to protect this road would result in loss of access and endangerment to adjacent utilities and town infrastructure. As a result, the primary purpose of the study is to identity the sections of the streambank that are in immediate need of treatment and to develop a viable treatment solution for the protection of SR 833.

2 Cost Methodology

2.1 General

The feasibility cost estimate for the preferred plan has been prepared to an equivalent price level of 1 April 2018 using MCACES 2nd Generation MII Version 4.3. The preparation of the cost estimate is in accordance with guidelines and policies included in: "ER 1110-1-1300 - Cost Engineering Policy and General Requirements, (26 March 1993)"; "ER 1110-2-1302 - Civil Works Cost Engineering, (15 Sept 2008)"; "EI 01D010, Construction Cost Estimates (1 Sept 1997)"; "EM 1110-1-8, Construction Equipment Ownership and Operating Expense Schedule, Region II, (July 2007)"; and "EM 1110-2-1304, Civil Works Construction Cost Index System (CWCCIS), (31 March 2012)"; "ETL 1110-2-573, Construction Cost Estimating Guide for Civil Works, (30 Sept 2008)." The estimate was completed using the latest guidance from OCE concerning implementation of the Civil Works Breakdown Structure (CWBS) and Chart of Accounts. MII estimate software was used to apply unique crews to detailed work items and obtaining material and supply quotes from prospective vendors/contractors where possible for significant cost items.

2.2 Direct Costs

Direct costs are based on anticipated equipment, labor and materials necessary to construct this project. Direct costs have been calculated independent of the contractor assigned to perform the tasks. Following formulation of the direct cost, a determination is made as to whether the work would be performed by the prime contractor or a subcontractor.

2.2.1 Quantities

The estimate is based on detailed quantity take-offs prepared from the drawings and augmented by spot checks performed by re-taking-off the original drawings.

2.2.2 IDIQ Rates for Labor and Equipment

The estimate assumes project will be implemented as a task order with one of Huntington District's current IDIQ contracts. These IDIQ labor and equipment rates are pre-negotiated to include all appropriate contractor markups (PTI, WCI, overhead, and profit).

2.2.3 Vendor Quotes

Vendor quotes have been acquired and documented for the key material prices associated with significant features of work. The key material item in this estimate is stone riprap.

2.2.4 Crews

Project specific crews have been developed for use in estimating the direct costs for items not estimated using job quotes or historical cost information. Crew members consist of selected components of labor classifications and equipment pieces assembled to perform specific tasks. Productivity has been assigned to each crew reflective of the expected output per unit of measure for the specific activities listed in the cost estimate. Foremen have also been considered in the crews.

2.2.1 Work Schedules/Overtime

The estimate assumes a 5 day/week 8 hr/day work schedule to optimize production of mobilized equipment.

2.2.2 Productivty

A crew show-up time and general productivity loss factor has been applied in the MII estimate on labor hours assuming a loss of 60 minutes per 10 hour shift (9 HRS / 10 HRS = 90% productive).

2.2.3 Sales Tax

Sales tax for the State of Ohio, Meigs County is 7.25% and is applied to bare material costs in the MII estimate.

2.3 **Indirect Costs**

2.3.1 IDIQ Prime Contractor

The construction contract is planned to be let as a task order with one of Huntington District's current IDIQ contractors. IDIQ labor and equipment rates are fully burdened with all appropriate indirect markups. Markups of 11.00% for overhead, 9.01% for profit (from profit weighted guidelines), and escalation (from CWCCIS) are applied to remaining material and sub-quotes.

2.3.1 Business and Occupation Tax

Business and occupation tax for the contract work within the State of Ohio is $800 for $1 million in gross receipts plus 0.26% of gross receipts in excess of $1 million. This tax has been calculated as an average percentage based on the estimated contract cost and applied as a contractor markup in the MII estimate.

2.3.2 *Bond*

Bond is added as a contractor markup using the bond table.

2.3.3 *Subcontractors* – No subcontractors assumed for this project.

2.4 Project Feature Accounts

The baseline cost estimate was prepared and organized according to the Civil Works Breakdown Structure (CWBS). As such, the estimate includes the following feature accounts:

2.4.1 *(16) Bank Stabilization*

This feature account includes the cost for the construction contract. Key items of work include: environmental protection, light clearing and grubbing of brush and small trees along the river bank, marine-based placement of stone riprap at the river bank. Other items of work include extending drainage culverts with head walls, final site grading/fill, and seeding.

2.4.1 *(18) Cultural Resource Mitigation*

This feature account includes the mitigation cost for the removal of existing sandstone wall along the river bank that are of cultural historical importance. Mitigation measures include the design and installation of interpretative signage along the wall.

2.4.2 *(30) Planning, Engineering, and Design*

The work covered under this account includes project management, project planning, preliminary design, final design, preparation of plans, preparation of specifications, and engineering during construction, advertisement, opening of bids, and contract award. The cost for this account is estimated as 24% of the construction contract value.

2.4.3 *(31) Supervision and Administration*

The work covered under this account includes contract supervision, contract administration, construction administration, technical management activities, and District office supervision and administration costs. The cost for this account is estimated as 7.5% of the construction contract value

2.5 Risk-Based Contingency Development

An Abbreviated Cost and Schedule Risk Analysis (CSRA) was performed on this project to identify the 80% confidence level project cost and schedule duration. The results of the analysis for construction are 7.1% and 7.1% for E&D and S&A, respectively.

2.6 ESTIMATED COST

The Total Project First Cost at PL 1 Oct 2017 is $1,921,000. For more information see the Total Project Cost Summary Sheet (TPCS).

2.7 FULLY FUNDED COST ESTIMATE

The fully funded cost estimate including inflation to the mid-point of construction is $1,924,000. The fully funded table distributes the base level cost estimate across the appropriate years according to the schedule. Each feature account is inflated to the mid-point of expenditure activity using CWCCIS factors. These inflated feature account totals are summed to yield a total fully funded project cost. For more information see the Total Project Cost Summary Sheet (TPCS).

3 PROJECT IMPLEMENTATION SCHEDULE

The total project schedule was developed from the current project implementation schedule developed by the PDT and managed by the Project Manager and expanding the construction schedule based on the significant construction activities and durations from the MII cost estimate. The construction schedule calendars include major holidays and non-work weather days.

Activity ID	Activity Name	Original Duration	Remaining Duration	Physical % Complete	Start	Finish	BL Start	BL Finish	Variance - Start Date	Variance - Finish Date	Total Float
449640 Pomeroy, OH - Sec 14		996.0d	868.0d		02-Apr-15 A	19-Feb-19	2-Apr-15	18-Jan-19	0.0d	-20.0d	0.0d
449640.1 Pomeroy, OH. Feasibility		570.0d	426.0d		02-Apr-15 A	12-May-17	2-Apr-15	13-Apr-17	0.0d	-21.0d	442.0d
449640.1.2200C1 CAP Feasibility - Federal Interest Determination (Pre-FCSA Federal		134.2d	12.0d		02-Apr-15 A	17-Sep-15	2-Apr-15	16-Sep-15	0.0d	-1.0d	856.0d
FEA1515	Federal Interest Determination	88.0d	0.0d	100%	02-Apr-15 A	03-Aug-15 A	2-Apr-15	3-Aug-15	0.0d	0.2d	
FEA1540M	MSC Concur Federal Interest Determination Pomeroy, OH.	0.0d	0.0d	100%		07-Aug-15 A		7-Aug-15	1.0d	1.0d	
FEA1570MSC	Review and Approval by MSC - FID	32.0d	0.0d	100%	13-Jul-15 A	07-Aug-15 A	13-Jul-15	7-Aug-15	0.0d	1.0d	
FEA1515HQM	Federal Interest Determination Approval	0.0d	0.0d	100%		07-Aug-15 A					
FEA1545	Develop Review Plan and Submit to MSC	5.0d	0.0d	100%	10-Aug-15 A	24-Aug-15 A	10-Aug-15	14-Aug-15	0.0d	-5.0d	
FEA1555	Review Plan Approval Process Begins	0.0d	0.0d	100%	25-Aug-15 A						
FEA1547MSC	MSC Review & Approval of Review Plan	22.0d	11.0d	0%	25-Aug-15 A	16-Sep-15	17-Aug-15	16-Sep-15	-6.0d	0.0d	856.0d
FEA1550LRDM	Post Approved Review Plan	0.0d	0.0d	0%		17-Sep-15		17-Aug-15	-23.0d	-23.0d	856.0d
449640.1.00500 Project Management Plan (PMP) (required)		129.0d	22.0d		02-Apr-15 A	1-Oct-15	2-Apr-15	1-Oct-15	0.0d	0.0d	846.0d
PMP0010	Conduct Program and Project Management	10.0d	1.0d	0%	02-Apr-15 A	1-Sep-15	2-Apr-15	27-Aug-15	0.0d	-3.0d	867.0d
PMP0040	Review e-PMP	22.0d	1.0d	0%	27-Jul-15 A	1-Sep-15	27-Jul-15	27-Aug-15	0.0d	-3.0d	867.0d
PMP0050	Approve PMP	0.0d	0.0d	0%		1-Sep-15		27-Aug-15	-3.0d	-3.0d	867.0d
PMP0030	OWI Complete Draft PMP [with steps]	20.0d	22.0d	0%	02-Apr-15 A	1-Oct-15	2-Apr-15	1-Oct-15	0.0d	0.0d	846.0d
449640.1.2200C CAP Feasibility - Detailed Project Report (DPR)		458.0d	426.0d		10-Aug-15 A	12-May-17	10-Aug-15	13-Apr-17	0.0d	-21.0d	442.0d
FEA4010	CAP Draft EA/DPR - Start	0.0d	0.0d	100%	10-Aug-15 A		10-Aug-15		0.0d	0.0d	
FEA4150	CAP/Feas HTRW Studies	147.0d	131.0d	0%	10-Aug-15 A	11-Mar-16	10-Aug-15	11-Mar-16	0.0d	0.0d	737.0d
FEA4140	CAP/Feas Real Estate	147.0d	131.0d	0%	10-Aug-15 A	11-Mar-16	10-Aug-15	11-Mar-16	0.0d	0.0d	737.0d
FEA4160	CAP/Feas Engineering Appendix	164.0d	148.0d	0%	10-Aug-15 A	5-Apr-16	10-Aug-15	5-Apr-16	0.0d	0.0d	720.0d
FEA4170	Prepare Draft EA/DPR	173.0d	157.0d	0%	10-Aug-15 A	18-Apr-16	10-Aug-15	18-Apr-16	0.0d	0.0d	-3.0d
FEA4180	Conduct DQC of Draft EA/DPR	5.0d	5.0d	0%	19-Apr-16	25-Apr-16	19-Apr-16	25-Apr-16	0.0d	0.0d	-3.0d
FEA4310	ATR of Draft EA/DPR	22.0d	22.0d	0%	26-Apr-16	25-May-16	26-Apr-16	25-May-16	0.0d	0.0d	-3.0d
FEA4355	Prepare AFB Package	5.0d	5.0d	0%	26-May-16	2-Jun-16	26-May-16	2-Jun-16	0.0d	0.0d	-3.0d
FEA4185MSC	CAP/Feas AFB (MSC Review)	92.0d	92.0d	0%	3-Jun-16	13-Oct-16	3-Jun-16	13-Sep-16	0.0d	-21.0d	-3.0d
FEA4190HQM	CAP/Feas AFB approval memo Pomeroy, OH.	0.0d	0.0d	0%		14-Oct-16		14-Sep-16	-21.0d	-21.0d	-3.0d
FEA4200	Start Public Review	0.0d	0.0d	0%	31-Oct-16		29-Sep-16		-21.0d	-21.0d	-3.0d
FEA4205	Public Review Period	22.0d	22.0d	0%	31-Oct-16	1-Dec-16	29-Sep-16	31-Oct-16	-21.0d	-21.0d	-3.0d
FEA4210	Prepare Final EA/DPR	20.0d	20.0d	0%	2-Dec-16	30-Dec-16	1-Nov-16	30-Nov-16	-21.0d	-21.0d	-3.0d
FEA4225	Execute FONSI	0.0d	0.0d	0%		30-Dec-16		30-Nov-16	-21.0d	-21.0d	534.0d
FEA4220	Submit Final EA/DPR to MSC	0.0d	0.0d	0%	3-Jan-17		1-Dec-16		-21.0d	-21.0d	462.0d
FEA4235MSC	MSC Review & Approval of EA/DPR	71.0d	71.0d	0%	3-Jan-17	13-Apr-17	1-Dec-16	15-Mar-17	-21.0d	-21.0d	462.0d
FEA4230HQM	MSC EA/DPR Approval - Pomeroy, OH.	0.0d	0.0d	0%		14-Apr-17		16-Mar-17	-21.0d	-21.0d	462.0d
FEA4030	(OWI - Development of Decision Document) - Plan Formulation	422.0d	406.0d	0%	10-Aug-15 A	14-Apr-17	10-Aug-15	16-Mar-17	0.0d	-21.0d	462.0d
FEA4020	Prog & Proj Mgmt	442.0d	426.0d	0%	10-Aug-15 A	12-May-17	10-Aug-15	13-Apr-17	0.0d	-21.0d	-3.0d
449640.22V00 CAP Project Partnership Agreement (PPA) [move to DI phase if funded		132.0d	132.0d		2-Nov-16	12-May-17	3-Oct-16	13-Apr-17	-21.0d	-21.0d	-3.0d
PPA3500M	Start PPA Development	0.0d	0.0d	0%	2-Nov-16		3-Oct-16		-21.0d	-21.0d	-3.0d
PPA3510	Draft PPA	40.0d	40.0d	0%	2-Nov-16	30-Dec-16	3-Oct-16	30-Nov-16	-21.0d	-21.0d	-3.0d
PPA3520LRDM	Submit Draft PPA Package to MSC / HQ	0.0d	0.0d	0%	3-Jan-17		1-Dec-16		-21.0d	-21.0d	47.0d
PPA3520MSC	MSC/HQ Reviews PPA Package	71.0d	71.0d	0%	3-Jan-17	13-Apr-17	1-Dec-16	15-Mar-17	-21.0d	-21.0d	-3.0d

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Activity ID	Activity Name	Original Duration	Remaining Duration	Physical % Complete	Start	Finish	BL Start	BL Finish	Variance - Start Date	Variance - Finish Date	Total Float
PPA3530HQM	MSC/HQ Approves PPA	0.0d	0.0d	0%		14-Apr-17		16-Mar-17	-21.0d	-21.0d	-3.0d
PPA3540HQM	District Executes PPA Pomeroy, OH.	0.0d	0.0d	0%		12-May-17		13-Apr-17	-21.0d	-21.0d	-3.0d
449640.30000	Pomeroy, OH. - Design & Implementation Phase	442.0d	442.0d		15-May-17	19-Feb-19	14-Apr-17	18-Jan-19	-21.0d	-20.0d	0.0d
449640.30000.30DAC	CAP Plans & Specifications	180.0d	180.0d		15-May-17	1-Feb-18	14-Apr-17	2-Jan-18	-21.0d	-21.0d	-3.0d
A3260	Start CAP Plans & Specifications Development	0.0d	0.0d	0%	15-May-17		14-Apr-17		-21.0d	-21.0d	-3.0d
A3270	Prepare CAP Plans and Specifications (P&S) - FED	120.0d	120.0d	0%	15-May-17	2-Nov-17	14-Apr-17	3-Oct-17	-21.0d	-21.0d	-3.0d
A3310M	Draft CAP Plans & Specs Complete	0.0d	0.0d	0%		2-Nov-17		3-Oct-17	-21.0d	-21.0d	-3.0d
A3272	Prepare CAP Plans and Specifications (P&S) - NonFED	120.0d	120.0d	0%	15-May-17	2-Nov-17	14-Apr-17	3-Oct-17	-21.0d	-21.0d	-3.0d
A3330	Conduct ATR/IEPR/BCOE Review	45.0d	45.0d	0%	3-Nov-17	10-Jan-18	4-Oct-17	8-Dec-17	-21.0d	-21.0d	-3.0d
A3340M	Certify Reviews	0.0d	0.0d	0%		10-Jan-18		8-Dec-17	-21.0d	-21.0d	-3.0d
A3345M	Approve P&S Pomeroy, OH.	0.0d	0.0d	0%		1-Feb-18		2-Jan-18	-21.0d	-21.0d	-3.0d
449640.30000.30D00	Construction E&D	413.0d	413.0d		15-May-17	7-Jan-19	14-Apr-17	7-Dec-18	-21.0d	-19.0d	29.0d
449640.30000.30D00.30DV0	E&D During Construction	216.0d	216.0d		21-Apr-18	22-Nov-18	23-Mar-18	24-Oct-18	-29.0d	-29.0d	89.0d
END6330	E&D During Construction	216.0d	216.0d	0%	21-Apr-18	22-Nov-18	23-Mar-18	24-Oct-18	-29.0d	-29.0d	89.0d
449640.30000.30D00.30DS0	Construction - Contract A (Enter Contract Number)	413.0d	413.0d		15-May-17	7-Jan-19	14-Apr-17	7-Dec-18	-21.0d	-19.0d	29.0d
CON490	Budgeted Construction Contingency	0.0d	0.0d	0%	15-May-17	15-May-17	14-Apr-17	14-Apr-17	-21.0d	-21.0d	442.0d
CON495M	Receive Sponsor Construction Funds	0.0d	0.0d	0%		17-Jul-17		15-Jun-17	-21.0d	-21.0d	133.0d
CON500LRDM	Contract RTA Pomeroy, OH.	0.0d	0.0d	0%		1-Feb-18		2-Jan-18	-21.0d	-21.0d	-3.0d
CON530	Davis Bacon Wage Rates	5.0d	5.0d	0%	2-Feb-18	8-Feb-18	3-Jan-18	9-Jan-18	-21.0d	-21.0d	257.0d
CON510	FBO Pre-solicition	10.0d	10.0d	0%	2-Feb-18	15-Feb-18	3-Jan-18	17-Jan-18	-21.0d	-21.0d	-3.0d
CON520M	Contract Adv/RFP Issued	0.0d	0.0d	0%		15-Feb-18		17-Jan-18	-21.0d	-21.0d	-3.0d
CON540	Gov't Estimate (IGE)	15.0d	15.0d	0%	2-Feb-18	23-Feb-18	3-Jan-18	24-Jan-18	-21.0d	-21.0d	247.0d
CON550M	Open Bids	0.0d	0.0d	0%		30-Mar-18		1-Mar-18	-21.0d	-21.0d	-3.0d
CON560	Abs of Bids/Rec of Nego	10.0d	10.0d	0%	2-Apr-18	13-Apr-18	2-Mar-18	15-Mar-18	-21.0d	-21.0d	-3.0d
CON570	Cert Low Bid/Prep Contract Docs	5.0d	5.0d	0%	16-Apr-18	20-Apr-18	16-Mar-18	22-Mar-18	-21.0d	-21.0d	-3.0d
CON590HQM	Contract Award - Pomeroy, OH.	0.0d	0.0d	0%		20-Apr-18		22-Mar-18	-21.0d	-21.0d	-3.0d
CON610M	Issue NTP	0.0d	0.0d	0%		11-May-18		12-Apr-18	-21.0d	-21.0d	192.0d
CON620	Construction NTP Acknowledged	0.0d	0.0d	0%	14-May-18		13-Apr-18		-21.0d	-21.0d	192.0d
CON640M	Construction Completion(substantial) - Pomeroy, OH.	0.0d	0.0d	0%		9-Oct-18		10-Sep-18	-20.0d	-20.0d	0.0d
CON660M	Physical Completion	0.0d	0.0d	0%		20-Nov-18		22-Oct-18	-20.0d	-20.0d	0.0d
CON630	Contract - Federal Funding Pomeroy, OH.	216.0d	216.0d	0%	21-Apr-18	22-Nov-18	23-Mar-18	24-Oct-18	-29.0d	-29.0d	-3.0d
CON632	Contract - NonFederal Funding Pomeroy, OH.	216.0d	216.0d	0%	21-Apr-18	22-Nov-18	23-Mar-18	24-Oct-18	-29.0d	-29.0d	-3.0d
CON650M	Contract Required Completion - Pomeroy, OH.	0.0d	0.0d	0%		23-Nov-18		24-Oct-18	-19.0d	-19.0d	29.0d
CON685	Eval Constr Contractor	5.0d	5.0d	0%	21-Nov-18	28-Nov-18	23-Oct-18	29-Oct-18	-20.0d	-20.0d	55.0d
CON690M	Contractor Evaluation Date - Pomeroy, OH.	0.0d	0.0d	0%		28-Nov-18		29-Oct-18	-20.0d	-20.0d	55.0d
CON700M	Contract Fiscal Completion - Pomeroy, OH.	0.0d	0.0d	0%		7-Jan-19		7-Dec-18	-19.0d	-19.0d	29.0d
CON710M	Contract Transfer Document Date - Pomeroy, OH.	0.0d	0.0d	0%		7-Jan-19		7-Dec-18	-19.0d	-19.0d	29.0d
449640.30000.31000	Supervision & Admin (S&A) [use appropriate office(s)]	216.0d	216.0d		6-Jun-18	7-Jan-19	6-May-18	7-Dec-18	-31.0d	-31.0d	43.0d
SNA6560	Area Office S&A	216.0d	216.0d	0%	6-Jun-18	7-Jan-19	6-May-18	7-Dec-18	-31.0d	-31.0d	43.0d
449640.30000.30F00	Project Closeout - [simplified]	90.0d	90.0d		9-Oct-18	19-Feb-19	10-Sep-18	18-Jan-19	-20.0d	-20.0d	0.0d
END6410HQM	Project Physically Complete	0.0d	0.0d	0%		5-Feb-19		7-Jan-19	-20.0d	-20.0d	10.0d

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Activity ID	Activity Name	Original Duration	Remaining Duration	Physical % Complete	Start	Finish	BL Start	BL Finish	Variance - Start Date	Variance - Finish Date	Total Float
END6480M	Project Fiscally Complete	0.0d	0.0d	0%		5-Feb-19		7-Jan-19	-20.0d	-20.0d	10.0d
END6490	Balance Cost Sharing	0.0d	0.0d	0%	5-Feb-19	5-Feb-19	7-Jan-19	7-Jan-19	-20.0d	-20.0d	10.0d
END6360	Prog & and Project Mgmt	60.0d	60.0d	0%	21-Nov-18	19-Feb-19	23-Oct-18	18-Jan-19	-20.0d	-20.0d	0.0d
END6500	OMRR&R Manual	90.0d	90.0d	0%	9-Oct-18	19-Feb-19	10-Sep-18	18-Jan-19	-20.0d	-20.0d	0.0d
END6650HQM	Notice of Project Compl/Assumption of OMRR&R	0.0d	0.0d	0%		19-Feb-19		18-Jan-19	-20.0d	-20.0d	0.0d

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4 RISK ANALYSIS DEVELOPMENT

4.1 Cost and Schedule Risk Analyis Development

A Cost and Schedule Risk Analysis (CSRA) was performed on this project to more accurately identify risk and potential impacts to the project. This analysis required participation by entire PDT to identify the 80% confidence level project cost and contingencies.

4.2 Risk Results

The results of the cost and schedule risk analysis are shown below. Key risks contributing to the overall project contingency are presented below.

Abbreviated Risk Analysis

Project (less than $40M): **Pomeroy, OH - Section 14** — **Alternative:** Recommended Plan
Project Development Stage/Alternative: **Feasibility (Recommended Plan)**
Risk Category: **Low Risk: Typical Construction, Simple** — **Meeting Date:** 3/9/2016

Total Estimated Construction Contract Cost = $ 1,153,206

	CWWBS	Feature of Work	Contract Cost		% Contingency	$ Contingency	Total
	01 LANDS AND DAMAGES	Real Estate	$ 21,700		5.00%	$ 1,085	$ 22,785
1	16 BANK STABILIZATION	General Conditions	$ 108,274		17.93%	$ 19,409	$ 127,683
2	16 BANK STABILIZATION	Riprap	$ 918,023		30.27%	$ 277,858	$ 1,195,881
3	16 BANK STABILIZATION	Excavation, Culverts, Erosion Control	$ 93,754		17.93%	$ 16,807	$ 110,561
4	18 CULTURAL RESOURCE PRESERVATION	Mitigation for Historic Sandstone Wall	$ 33,154		6.97%	$ 2,312	$ 35,466
5			$ -		0.00%	$ -	$ -
6			$ -		0.00%	$ -	$ -
7			$ -		0.00%	$ -	$ -
8			$ -		0.00%	$ -	$ -
9			$ -		0.00%	$ -	$ -
10			$ -		0.00%	$ -	$ -
11			$ -		0.00%	$ -	$ -
12	All Other	Remaining Construction Items	$ 0	0.0%	0.00%	$ -	$ 0
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	$ 172,981		7.09%	$ 12,267	$ 185,247
14	31 CONSTRUCTION MANAGEMENT	Construction Management	$ 86,490		7.09%	$ 6,133	$ 92,624
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)					$ -	

Totals					
Real Estate	$ 21,700	5.00%	$ 1,085	$ 22,785.00	
Total Construction Estimate	$ 1,153,206	27.44%	$ 316,386	$ 1,469,592	
Total Planning, Engineering & Design	$ 172,981	7.09%	$ 12,267	$ 185,247	
Total Construction Management	$ 86,490	7.09%	$ 6,133	$ 92,624	
Total	$ 1,434,377	23%	$ 335,871	$ 1,770,248	
		Base	50%	80%	
	Range Estimate ($000's)	$1,434k	$1,636k	$1,770k	

* 50% based on base is at 5% CL.

Fixed Dollar Risk Add: (Allows for additional risk to be added to the risk analsyis. Must include justification. Does not allocate to Real Estate.	