

APPENDIX C

COST APPENDIX FOR DETAILED PROJECT REPORT

for

LITTLE MANISTEE SEA LAMPREY TRAP AND SSP BARRIER

MANISTEE COUNTY, MICHIGAN

Prepared by the

U.S. ARMY CORPS OF ENGINEERS  
DETROIT DISTRICT

## 1. SCOPE OF COST APPENDIX

The scope of this appendix is to present the construction cost of the preferred alternative. This appendix is prepared in accordance with the guidance contained in ER 1110-2-1302, Civil Works Cost Engineering, and ETL 1110-2-573, Construction Cost Estimating Guide for Civil Works. The cost estimate was prepared using MCACES Second Generation MII software and cost estimates are presented in the Civil Works Breakdown Structure (CWBS) to the sub-feature level. This appendix includes a discussion of life cycle cost analysis, Total Project Cost Sheet (TPCS), Abbreviated Cost and Schedule Risk Analysis (ARA), drawings, quantity take offs and construction schedule.

1.2 Background: The Little Manistee River was selected by the United States Fish and Wildlife Service (USFWS) for construction of a new Sea Lamprey SSP Barrier and Trap. The purpose of the barrier and trap is to prevent the upstream migration of sea lamprey during spawning season. Currently, there is an existing fish weir at the site that provides lamprey passage prevention through the use of stop logs. In addition, the river is treated with lampricides. Although testing indicates the lampricides are not detrimental to the ecosystem as a whole, there are some native species which are adversely affected by the chemical treatment. A permanent lamprey barrier and trap would significantly reduce, and possibly eliminate, the need for the costly lampricide treatment. In addition, a permanent trap structure has been proven to be more efficient and effective than temporary trapping methods.

1.3 Location: The proposed trap location is at the site of the current USFWS Little Manistee River Spawning Station in Manistee County, MI (See Figure 1). The barrier is currently owned and maintained by the USFWS.

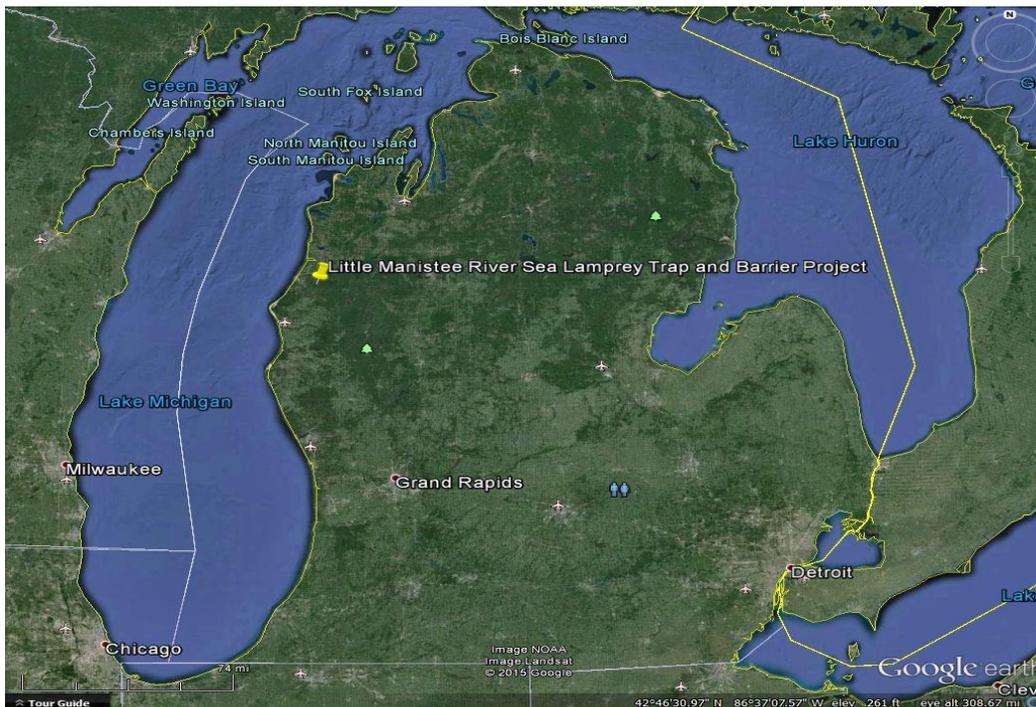


Figure 1: Location Map

1.4 Existing Site Conditions: As-Built survey data of the Little Manistee Little Manistee River Spawning Station was provided to USACE by the USFWS. In addition, a survey was conducted in summer 2014 at the proposed project site. Both the as-built drawings and the summer 2014 survey will act as the base for project design.

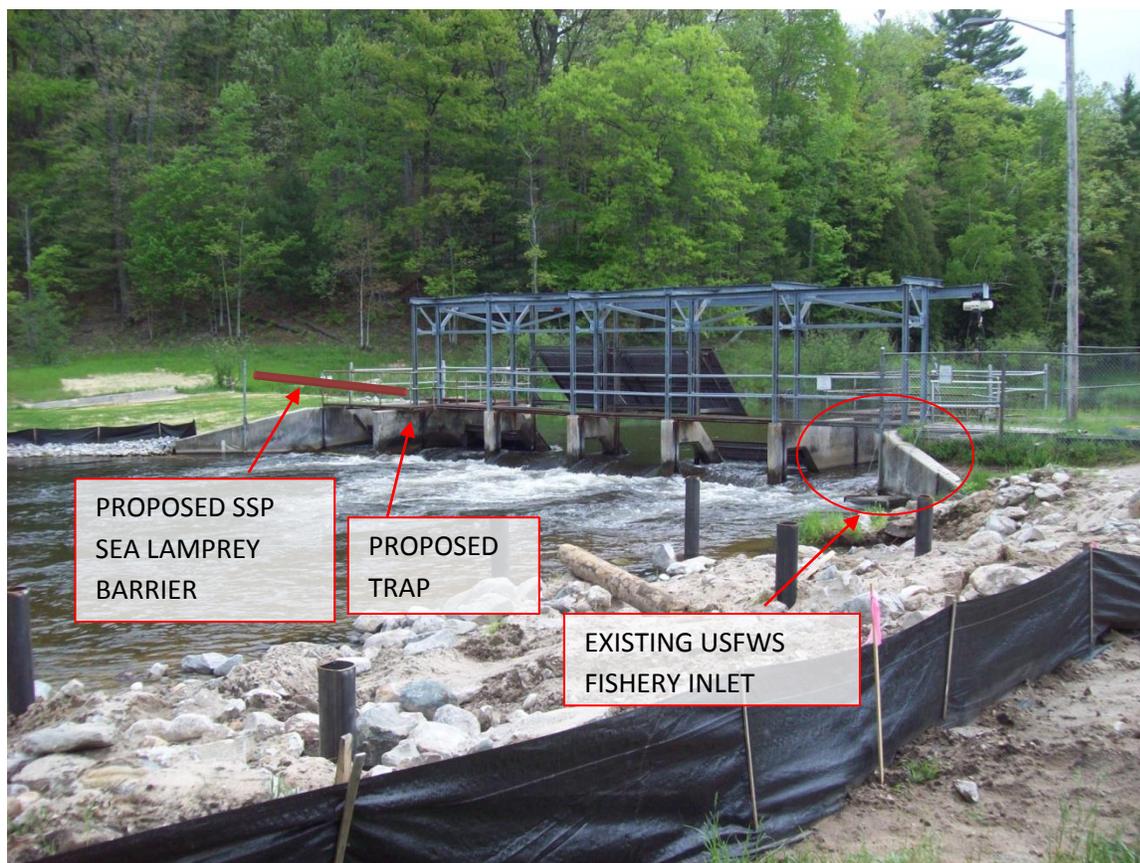


Figure 2: Existing Conditions

## 2. General Requirements

2.1 Lamprey Traps: Per USFWS one lamprey trap is required for Alternatives 2 and 3. The trap will be approximately 4-foot square and 5 feet tall. The trap is constructed with galvanized steel mesh, plates and angles. All requirements pertaining to the lamprey trap were provided by USFWS. A typical photo of an existing lamprey trap has been provided in Figure 3. Detailed design of the trap will be completed during the next phase of the project. For the purpose of estimating costs, the detailed design of a similar trap developed for the Au Sable River Sea Lamprey Trap facility will be used. The trap will be located within one bay of the existing USFWS Little Manistee River Spawning Station Fish Weir.



Figure 3: Lamprey Trap

2.2 Lift System: A lift system is required to raise the trap insert from their installed location. Per the USFWS each trap insert will hold up to 500 pounds of lamprey. In addition, USFWS has indicated that the use of a manual, mechanical hoist is preferred. The lift system for the alternative will consist of a jib crane secured to a pile support. The required rating capacity of the crane will be 1000 lbs to account for the potential for additional loading.

2.3 Lamprey Barrier: To prevent lamprey passage at the location of the dam, the existing weir and required spillway extension needs to act as a sea lamprey barrier. Per USFWS, in order to prevent lamprey passage, a minimum of 18" vertical, hydraulic drop is required. Various combinations of hydraulic events were evaluated to establish crest elevations that will meet the drop requirement. After reviewing the data, the USFWS determined that for design, the existing fish weir shall prevent lamprey passage at the 10 year storm event and the spillway extension shall prevent lamprey passage at the 25 year storm event. In addition, the barrier will need to establish a vertical surface and lip at the crest. Finally, USFWS requires a minimum of 2 feet of adjustment, using stop logs, to the crest of the required spillway extension. The barrier at the existing, or required, fish weir shall be established using stop logs, thus providing complete adjustability. In order to adjust the stop logs on the spillway extension, a new service bridge will be required.

2.4 Fish Guidance Weir: The primary function of the existing facility is fish egg collection. Due to the layout of the facility, there is concern that fish traveling upstream may stack up at the required spillway extension. In order to prevent fish from reaching the spillway extension and to guide fish to the weir inlet, a fish guidance weir is required. The fish guidance weir shall be installed at the confluence of the channel downstream of the spillway extension and the

existing river. The weir shall be constructed using grating and allow for debris removal as required. In order to operate the weir, a new service bridge will be required.

### 3. Alternatives

3.1 Alternative 1 - No Action: The No Action alternative would not change the sea lamprey control operations currently in use by the USFWS. The existing spillway apron and weir does not block sea lamprey during the spring run. Therefore, current control also involves intensive application of a lampricide (TFM - the estimated average annual cost for treatment is approximately \$95,000 in 2013 dollars) to further reduce lamprey populations in the Little Manistee River. The USFWS estimates that the Little Manistee River could have a maximum larval population of approximately 615,000. In order to decrease the population, every three to four years the Little Manistee River system is treated with lampricide. Although targeted to lamprey, TFM causes some harm to invertebrates and other aquatic organisms where it is used.

3.1 Alternative 2 – Demolition of the existing MDNR weir structure and construction of a Permanent Lamprey Barrier and Trap at the weir location - Alternative 2 would consist of demolishing and disposing of the existing MDNR weir structure. The portion of the MDNR egg collection facility such as the holding tanks and raceways, the concrete spillway, the MDNR building where the salmon eggs are taken, and facility pump station would be integrated with the new barrier structure. A new adjustable steel sheet pile barrier and AWT complex would be constructed. The new structure would be constructed to block and trap lamprey during the 25 year (4%) flood event. Stoplog sections would be incorporated on the barrier to allow FWS and MDNR personnel to manipulate outflows and to increase the effectiveness of downstream fish passage and lamprey trapping at the barrier. A walkway would be constructed over the barrier and outfitted with davit lifts to allow FWS lamprey control or MDNR egg collection personnel access to traps and to remove and replace stop logs in the adjustable structure.

### 3.3 Alternative 3 (Preferred) – Modify the Existing Weir Structure:

Alternative 3 consists of removing the existing earthen and concrete spillway apron (1700 CYD) and constructing a low head adjustable stop log spillway that would block lamprey migration up to the 25 year (4%) flood event; raising the existing walkway at the weir facility to an elevation that would accommodate the 100 year (1%) flood event; extend the walkway across the entire structure and create an area to allow FWS personnel to install an attractant water sea lamprey trap. Scour stone will be placed on the upstream and downstream toe of the new spillway. A directional blocking weir would get installed at the confluence of the spillway discharge and the main river to divert fish toward the MDNR egg collection facility. Riprap or field stone will be placed on both banks of the spillway to protect the channel banks from scour; the existing canoe/kayak portage will get reconstructed in-kind.

4. CONSTRUCTION: It was assumed that primary access to the project site would be from the area adjacent to the existing USFWS Little Manistee River Spawning Station, on the south side of the Little Manistee River. Access to the area will be accomplished through the use of the existing road.

## 5. COST AND SCHEDULE RISK ANALYSIS

The cost and schedule risk analysis was performed by the Detroit District with PDT discussions that captured concerns for both cost and schedule risk. Discussions centered on any concerns and potential impacts that could impact current cost and schedule estimates. The concerns and discussions were meant to support the team's decisions related to event likelihood, impact, and the resulting risk levels for each risk event.

The analysis was focused on the cost estimate of alternative 3. Construction contingency was determined to be 19.3%. The informal risk register used for this process is attached to this appendix.

## 6. TOTAL PROJECT COST

Effective price level of the total project cost is 1 October 2018 and the program year is 2019. Fully funded total project cost was escalated to midpoint of construction in quarter 3 of 2019. Total project cost includes all estimated construction, lands and damages, planning, engineering, design and construction management costs.

## 7. LIFE CYCLE COST ANALYSIS

7.1 Life Cycle Cost considers the total of the indirect, recurring, nonrecurring, and other related costs incurred or estimated to be incurred in the design, development, production, operation, maintenance, support, and final disposition of a system over its anticipated useful life span. Where the system anticipates use of existing sites or facilities, restoration, and refurbishment costs are included.

Operation and maintenance for this project is expected to be minor over the estimated life. Maintenance of the project would include periodic inspections of all steel components, monitoring of the SSP for rotation or excess corrosion, and inspections of all stone placed to ensure no excessive displacement occurs. No major material corrosion or damage is expected over the expected 50 year design life of the project. Operation of the project may include the removal of accumulated debris at the spillway, fish guidance weir, and/or lamprey trap. Overall operation and maintenance would be performed by USFWS personnel. Annual operation and maintenance cost for Alternatives 2 and 3 is estimated at 2% of the construction cost over the 50 year life of the project.

**WALLA WALLA COST ENGINEERING  
MANDATORY CENTER OF EXPERTISE**

**COST AGENCY TECHNICAL REVIEW**

**CERTIFICATION STATEMENT**

For Project No. 172233

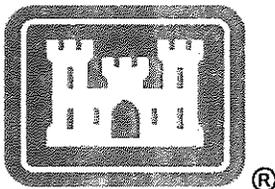
**Manistee River Sea Lamprey Barrier & Trap  
Section 506  
Manistee, Michigan (CAP)**

The Manistique Sea Lamprey Barrier project, as presented by Detroit District, has undergone a cost update and a successful Cost Agency Technical Review (Cost ATR), performed by the Walla Walla District Cost Engineering Mandatory Center of Expertise (Cost MCX) team. The Cost ATR included study of the project scope, report, cost estimates, schedules, escalation, and risk-based contingencies. This certification signifies the products meet the quality standards as prescribed in ER 1110-2-1150 Engineering and Design for Civil Works Projects and ER 1110-2-1302 Civil Works Cost Engineering.

As of November 2, 2017, the Cost MCX certifies the estimated total project cost:

FY 18 Project First Cost:	\$3,182,000 (excluding Feasibility costs)
Fully Funded Amount:	\$3,387,000 (excluding Feasibility costs)
Estimated Feasibility Costs:	\$ 360,000 (Feasibility costs)
Total Estimated Federal Cost:	\$2,406,000

It remains the responsibility of the District to correctly reflect these cost values within the Final Report and to implement effective project management controls and implementation procedures including risk management through the period of Federal participation.



**CALLAN.KIM.C.1231558221  
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**Kim C. Callan, PE, CCE, PM  
Chief, Cost Engineering MCX  
Walla Walla District**

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

PROJECT: Little Manistee Sea Lamprey Trap Alt 3 Preferred  
PROJECT NO: 172233  
LOCATION: Manistee, MI

DISTRICT: LRE DETROIT

PREPARED: 11/1/2017

POC: CHIEF, COST ENGINEERING, WILLIAM D. MERTE

This Estimate reflects the scope and schedule in report; CAP Feasibility Study - GLFER 506

Civil Works Work Breakdown Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)					TOTAL PROJECT COST (FULLY FUNDED)					
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	REMAINING COST (\$K)	Program Year (Budget EC): 2018 Effective Price Level Date: 1-Oct-17		TOTAL FIRST COST (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
										Spent Thru: 1-Oct-18 (\$K)						
06	FISH & WILDLIFE FACILITIES	\$1,897	\$395	21%	\$2,292		\$1,897	\$395	\$2,292			\$2,292	5.7%	\$2,004	\$417	\$2,421
CONSTRUCTION ESTIMATE TOTALS:		\$1,897	\$395		\$2,292		\$1,897	\$395	\$2,292			\$2,292	5.7%	\$2,004	\$417	\$2,421
01	LANDS AND DAMAGES	\$12			\$12		\$12		\$12			\$12	6.0%	\$13		\$13
30	PLANNING, ENGINEERING & DESIGN	\$506	\$67	13%	\$573		\$506	\$67	\$573			\$573	6.9%	\$541	\$72	\$613
31	CONSTRUCTION MANAGEMENT	\$275	\$30	11%	\$305		\$275	\$30	\$305			\$305	11.5%	\$307	\$34	\$340
PROJECT COST TOTALS:		\$2,690	\$492	18%	\$3,182		\$2,690	\$492	\$3,182			\$3,182	6.4%	\$2,865	\$523	\$3,387

- \_\_\_\_ CHIEF, COST ENGINEERING, WILLIAM D. MERTE
- \_\_\_\_ PROJECT MANAGER, AMANDA MEYER
- \_\_\_\_ CHIEF, REAL ESTATE, XXX
- \_\_\_\_ CHIEF, PLANNING, ADAM FOX
- \_\_\_\_ CHIEF, ENGINEERING, PHILLIP C. ROSS
- \_\_\_\_ CHIEF, OPERATIONS, JOSH HACHEY
- \_\_\_\_ CHIEF, CONSTRUCTION, PHILLIP C. ROSS
- \_\_\_\_ CHIEF, CONTRACTING, ROBERT AUSTIN
- \_\_\_\_ CHIEF, PM-PB, xxxx
- \_\_\_\_ CHIEF, DPM, SCOTT THIEME

**ESTIMATED TOTAL PROJECT COST: \$3,387**  
 ESTIMATED FEDERAL COST: 65% \$2,137  
 ESTIMATED NON-FEDERAL COST: 35% \$1,251

**\*\*22 - FEASIBILITY STUDY (CAP studies): \$360**  
 ESTIMATED FEDERAL COST: \$100+65% \$269  
 ESTIMATED NON-FEDERAL COST: 35% \$91

**ESTIMATED FEDERAL COST OF PROJECT \$2,406**

\*\*Feasibility cost currently falls under old rule that Government pays 100%. Since the rules have changed, once a PPA is executed feasibility cost for this project will get split: 1st \$100k is federal then 65/35% after that with 65% being federal.

\*\*\*\* TOTAL PROJECT COST SUMMARY \*\*\*\*

\*\*\*\* CONTRACT COST SUMMARY \*\*\*\*

PROJECT: Little Manistee Sea Lamprey Trap Alt 3 Preferred  
 LOCATION: Manistee, MI  
 This Estimate reflects the scope and schedule in report; CAP Feasibility Study - GLFER 506

DISTRICT: LRE DETROIT  
 POC: CHIEF, COST ENGINEERING, WILLIAM D. MERTE  
 PREPARED: 11/1/2017

WBS Structure		ESTIMATED COST				PROJECT FIRST COST (Constant Dollar Basis)				TOTAL PROJECT COST (FULLY FUNDED)				
		Estimate Prepared: 1-Nov-17		1-Oct-17		Program Year (Budget EC): 2018		Effective Price Level Date: 1-Oct-17						
		RISK BASED												
WBS NUMBER	Civil Works Feature & Sub-Feature Description	COST (\$K)	CNTG (\$K)	CNTG (%)	TOTAL (\$K)	ESC (%)	COST (\$K)	CNTG (\$K)	TOTAL (\$K)	Mid-Point Date	ESC (%)	COST (\$K)	CNTG (\$K)	FULL (\$K)
A	B	C	D	E	F	G	H	I	J	P	L	M	N	O
06	PHASE 1 or CONTRACT 1 FISH & WILDLIFE FACILITIES	\$1,897	\$395	20.8%	\$2,292		\$1,897	\$395	\$2,292	2020Q4	5.7%	\$2,004	\$417	\$2,421
CONSTRUCTION ESTIMATE TOTALS:		\$1,897	\$395	20.8%	\$2,292		\$1,897	\$395	\$2,292			\$2,004	\$417	\$2,421
01	LANDS AND DAMAGES	\$12		Included	\$12		\$12		\$12	2019Q3	6.0%	\$13		\$13
30	PLANNING, ENGINEERING & DESIGN													
2.5%	Project Management	\$47	\$6	13.3%	\$53		\$47	\$6	\$53	2019Q3	6.0%	\$50	\$7	\$56
1.0%	Planning & Environmental Compliance	\$19	\$3	13.3%	\$22		\$19	\$3	\$22	2019Q3	6.0%	\$20	\$3	\$23
15.0%	Engineering & Design	\$285	\$38	13.3%	\$323		\$285	\$38	\$323	2019Q3	6.0%	\$302	\$40	\$342
1.0%	Reviews, ATRs, IEPs, VE	\$19	\$3	13.3%	\$22		\$19	\$3	\$22	2019Q3	6.0%	\$20	\$3	\$23
1.0%	Life Cycle Updates (cost, schedule, risks)	\$19	\$3	13.3%	\$22		\$19	\$3	\$22	2019Q3	6.0%	\$20	\$3	\$23
1.0%	Contracting & Reprographics	\$19	\$3	13.3%	\$22		\$19	\$3	\$22	2020Q4	11.5%	\$21	\$3	\$24
3.0%	Engineering During Construction	\$57	\$8	13.3%	\$65		\$57	\$8	\$65	2020Q4	11.5%	\$64	\$8	\$72
2.0%	Planning During Construction	\$38	\$5	13.3%	\$43		\$38	\$5	\$43	2019Q3	6.0%	\$40	\$5	\$46
2.0%	Post Construction Monitoring	\$3	\$0	13.3%	\$3		\$3	\$0	\$3	2021Q3	14.9%	\$3	\$0	\$4
31	CONSTRUCTION MANAGEMENT													
10.0%	Construction Management	\$190	\$21	11.0%	\$211		\$190	\$21	\$211	2020Q4	11.5%	\$212	\$23	\$235
2.0%	Project Operation:	\$38	\$4	11.0%	\$42		\$38	\$4	\$42	2020Q4	11.5%	\$42	\$5	\$47
2.5%	Project Management	\$47	\$5	11.0%	\$52		\$47	\$5	\$52	2020Q4	11.5%	\$52	\$6	\$58
CONTRACT COST TOTALS:		\$2,690	\$492		\$3,182		\$2,690	\$492	\$3,182			\$2,865	\$523	\$3,387

P2 370206

Estimated by GSB

Designed by GSB

Prepared by Julie Udell

Preparation Date 7/20/2017

Effective Date of Pricing 7/20/2017

Estimated Construction Time 120 Days

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# Contractor Markups Report

[ ] alt 3 preferred little manistee slb

Z:\aa) On Going Projects\Sea Lamprey Barrier - Little Manistee, MI\Cost  
appendix\alt 3 preferred little manistee slb.mlp

## Prime Contractor

Markup	Own Work	Sub Work
JOOH [Running %]	12.00%	12.00%
HOOH [Running %]	10.00%	10.00%
Profit [Running %]	8.00%	8.00%
Bond [Running %]	1.50%	1.50%

## Structural Steel SubK

Markup	Own Work	Sub Work
Sub JOOH [Running %]	12.00%	12.00%
Sub HOOH [Running %]	10.00%	10.00%
Sub Profit [Profit]	8.63%	8.63%

Desc	Value	Weight	Percentage
Risk	0.06	20	1.20%
Difficulty	0.09	15	1.35%
Size	0.119	15	1.79%
Period	0.037	15	0.55%
Invest (Contractor's)	0.07	5	0.35%
Assist (Assistance by)	0.09	5	0.45%
SubContracting	0.118	25	2.95%
<b>Total</b>		100	8.64%

Designed by

GSB

Estimated by

GSB

Prepared by

Julie Udell

Design Document

Document Date 7/20/2017

District Detroit District

Contact Julie Udell

Budget Year 2017

UOM System Original

Direct Costs

LaborCost

EQCost

MatlCost

SubBidCost

Timeline/Currency

Preparation Date 7/20/2017

Escalation Date 7/20/2017

Eff. Pricing Date 7/20/2017

Estimated Duration 120 Day(s)

Currency US dollars

Exchange Rate 1.000000

Costbook CB15EngA: MII English Cost Book 2015 Rev A

Labor : MI-45 dated 2jun2017

Note: <http://www.wdol.gov> is the website for current Davis Bacon & Service Labor Rates. Fringes paid to the laborers are taxable. In a non-union job the whole fringes

Labor Rates

LaborCost1

LaborCost2

LaborCost3

LaborCost4

Equipment EP14R02: MII Equipment 2014 Region 02

02 MIDEAST

Sales Tax 6.00  
Working Hours per Year 1,450  
Labor Adjustment Factor 1.02  
Cost of Money 2.13  
Cost of Money Discount 25.00  
Tire Recap Cost Factor 1.50  
Tire Recap Wear Factor 1.80  
Tire Repair Factor 0.15  
Equipment Cost Factor 1.00  
Standby Depreciation Factor 0.50

Fuel

Electricity 0.095  
Gas 3.760  
Diesel Off-Road 3.490  
Diesel On-Road 4.050

Shipping Rates

Over 0 CWT 10.54  
Over 240 CWT 9.81  
Over 300 CWT 8.84  
Over 400 CWT 7.94  
Over 500 CWT 5.17  
Over 700 CWT 5.17  
Over 800 CWT 8.64

**Direct Cost Markups**  
 Overtime

	<i>Days/Week</i>	<i>Hours/Shift</i>	<i>Shifts/Day</i>	<i>1st Shift</i>	<i>2nd Shift</i>	<i>3rd Shift</i>
<i>Standard</i>	5.00	8.00	1.00	8.00	0.00	0.00
<i>Actual</i>	6.00	8.00	1.00	10.00	0.00	0.00

<i>Day</i>	<i>OT Factor</i>	<i>Working</i>	<i>OT Percent</i>	<i>FCCM Percent</i>
<i>Monday</i>	1.50	Yes	16.67	(33.33)
<i>Tuesday</i>	1.50	Yes		
<i>Wednesday</i>	1.50	Yes		
<i>Thursday</i>	1.50	Yes		
<i>Friday</i>	1.50	Yes		
<i>Saturday</i>	1.50	Yes		
<i>Sunday</i>	2.00	No		

**Sales Tax**  
 MatlCost

TaxAdj

Running % on Selected Costs

**Contractor Markups**

	<b>Category</b>	<b>Method</b>	<b>Value</b>	<b>Weight</b>	<b>Percentage</b>
JOOH	JOOH	Running %			
HOOH	HOOH	Running %			
Profit	Profit	Running %			
Bond	Bond	Running %			
Sub JOOH	Allowance	Running %			
Sub HOOH	Allowance	Running %			
Sub Profit	Profit	Running %			
<i>Guideline</i>		<b>Profit Weighted Guidelines</b>			
<i>Risk</i>			0.060	20	1.20
<i>Difficulty</i>			0.090	15	1.35
<i>Size</i>			0.119	15	1.79
<i>Period</i>			0.037	15	0.56
<i>Invest (Contractor's)</i>			0.070	5	0.35
<i>Assist (Assistance by)</i>			0.090	5	0.45
<i>SubContracting</i>			0.118	25	2.95
<i>Total</i>				100	8.63

**Owner Markups**  
 escalation to present

<i>StartDate</i>	<b>Category</b> Escalation	<i>StartIndex</i>	<i>EndDate</i>	<b>Method</b> Escalation	<i>EndIndex</i>	<i>Escalation</i>
7/1/2015		789.16	7/13/2017		816.86	3.51

Description	UOM	Quantity	Contractor	Duration	DirectLabor	DirectEQ	DirectMatl	DirectCost	ProjectCost
IGE Detail				1,340.3	316,674.98	78,197.88	236,151.50	951,692.35	1,617,067.77
				<i>1,340.30</i>	<i>316,674.98</i>	<i>78,197.88</i>	<i>236,151.50</i>	<i>951,692.35</i>	<i>1,617,067.77</i>
			Prime Contractor						
06 Fish & Wildlife Facilities	EA	1.0	Alt 4	1,340.3	316,674.98	78,197.88	236,151.50	951,692.35	1,617,067.77
				<i>1,340.30</i>	<i>316,674.98</i>	<i>78,197.88</i>	<i>236,151.50</i>	<i>951,692.35</i>	<i>1,617,067.77</i>
			Prime Contractor						
NEW ALTERNATIVE 3 (PREFERRED)	EA	1.0	Alt 4	1,340.3	316,674.98	78,197.88	236,151.50	951,692.35	1,617,067.77
				<i>20.00</i>	<i>3,763.41</i>	<i>2,775.08</i>	<i>0.00</i>	<i>6,538.50</i>	<i>9,140.31</i>
			Prime Contractor						
MOBILIZATION / DEMOBILIZATION	EA	1.0	Alt 4	20.0	3,763.41	2,775.08	0.00	6,538.50	9,140.31
				<i>0.00</i>	<i>0.00</i>	<i>83.76</i>	<i>0.00</i>	<i>83.76</i>	<i>117.09</i>
EP C80GV025 Mob/demob, CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4 (Note: Assume nearest crane is 4 hours away, 1 way)	HR	8.0	Prime Contractor Alt 4	0.0	0.00	670.10	0.00	670.10	936.75
				<i>0.00</i>	<i>82.21</i>	<i>0.00</i>	<i>0.00</i>	<i>82.21</i>	<i>114.92</i>
MIL B-EQOPRCRB Equip. Operators Crane with Boom Pay	HR	8.0	Prime Contractor Alt 4	0.0	657.69	0.00	0.00	657.69	919.39
				<i>0.00</i>	<i>0.00</i>	<i>42.08</i>	<i>0.00</i>	<i>42.08</i>	<i>58.83</i>
MAP T50XX028 Mob and demob of a small excavator, TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS) (Note: assume 4 hour cycle time)	HR	4.0	Prime Contractor Alt 4	0.0	0.00	168.32	0.00	168.32	235.30
				<i>0.00</i>	<i>0.00</i>	<i>6.13</i>	<i>0.00</i>	<i>6.13</i>	<i>8.56</i>
EP T45XX011 TRUCK TRAILER, LOWBOY, 25 TON, 2 AXLE (ADD TOWING TRUCK)	HR	4.0	Prime Contractor Alt 4	0.0	0.00	24.50	0.00	24.50	34.25
				<i>0.00</i>	<i>55.46</i>	<i>0.00</i>	<i>0.00</i>	<i>55.46</i>	<i>77.53</i>
MIL B-TRKDVRHV Truck Drivers, Heavy	HR	4.0	Prime Contractor Alt 4	0.0	221.84	0.00	0.00	221.84	310.11
				<i>2.00</i>	<i>110.92</i>	<i>36.95</i>	<i>0.00</i>	<i>147.87</i>	<i>206.72</i>
RSM 015436501150 Mobilization or demobilization, delivery charge for equipment, on flatbed trailer behind pickup truck (Note: for smaller miscellaneous metal and water control supplies)	EA	10.0	Prime Contractor Alt 4	20.0	1,109.19	369.55	0.00	1,478.74	2,067.16
				<i>0.00</i>	<i>0.00</i>	<i>42.08</i>	<i>0.00</i>	<i>42.08</i>	<i>58.83</i>
MAP T50XX028 Mobilization of larger steel shapes, TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS) (Note: assume 4 full 8 hr days for larger steel delivery, assume it may be coming from multiple locations with different schedules)	HR	32.0	Prime Contractor Alt 4	0.0	0.00	1,346.58	0.00	1,346.58	1,882.42
				<i>0.00</i>	<i>55.46</i>	<i>0.00</i>	<i>0.00</i>	<i>55.46</i>	<i>77.53</i>
MIL B-TRKDVRHV Truck Drivers, Heavy	HR	32.0	Prime Contractor Alt 4	0.0	1,774.70	0.00	0.00	1,774.70	2,480.89

Description	UOM	Quantity	Contractor	Duration	DirectLabor	DirectEQ	DirectMatl	DirectCost	ProjectCost
EP T45XX011 TRUCK TRAILER, LOWBOY, 25 TON, 2 AXLE (ADD TOWING TRUCK)	HR	32.0	Prime Contractor Alt 4	0.0	0.00	196.03	0.00	196.03	274.03
				25.00	2,598.96	351.84	3,052.80	6,003.60	8,392.57
Prime Contractor									
WATER CONTROL	EA	1.0	Alt 4	25.0	2,598.96	351.84	3,052.80	6,003.60	8,392.57
(Note: An inflatable dewatering system will be necessary to place and finish the concrete pad that the lamprey trap will sit on. This may require minor work in the river to place pumps for the dewatering and concrete finishing efforts.)									
USR Inflatable dam	LF	60.0	Prime Contractor Alt 4	0.0	0.00	0.00	3,052.80	3,052.80	4,267.58
(Note: Quote from <a href="http://aquadam.net/">http://aquadam.net/</a> 800-682-9283 out of Scotia, CA; the 4 ft tall dam is \$48/LF. Estimator assumes approximately 60 ft of dam is needed in a U shape configuration around the worksite. aquadam reports that 2, 3" Honda pumps would fill this size in approximately 1 hr. Delivery not included. A similar company was discovered with this material in Fenton, MI but unable to get quote; however, shipping will be assumed from the Fenton location and is included in mob/demob.)									
MIL B-LABORER Laborers, (Semi-Skilled)	HR	4.0	Prime Contractor Alt 4	0.0	173.78	0.00	0.00	173.78	242.93
(Note: assume 2 hours for 2 laborers per aquadam.)									
RSM 312319200900 Dewatering, pumping, 8 hr., attended 8 hours per day, 3" centrifugal pump, includes 20 L.F. of suction hose and 100 L.F. of discharge hose	DAY	4.0	Prime Contractor Alt 4	25.0	2,425.19	351.84	0.00	2,777.03	3,882.06
(Note: If concrete takes 1 week, assume pumping will take place half of this time, 8 hrs/day; assume this includes filling the aquadam.)									
				17.28	2,019.04	23.79	467.20	2,510.03	3,508.82
Prime Contractor									
REINFORCED CONCRETE	EA	1.0	Alt 4	17.3	2,019.04	23.79	467.20	2,510.03	3,508.82
RSM 033113250140 Concrete, hand mix, for small quantities or remote areas, 4000 psi, using gas powered cement mixer, includes local bulk aggregate & sand, bagged Portland cement (Type I) and water, excludes, forms, reinforcing, placing & finishing	CF	46.0	Prime Contractor Alt 4	2.7	118.43	16.62	292.56	427.61	597.76
(Note: 1, 80 lb bag of concrete is ~\$4 ea and produces ~2/3 cf of concrete = ~\$6/cf; add 5% for waste)									
RSM 033113704600 Structural concrete, placing, slab on grade, direct chute, over 6" thick, includes leveling (strike off) & consolidation, excludes material	CF	46.0	Prime Contractor Alt 4	0.4	101.11	3.65	0.00	104.76	146.45
(Note: reduce production by 80% to get down in the river bed)									
RSM 032111600600 Reinforcing steel, in place, slab on grade, #3 to #7, A615, grade 60, incl labor	TON	0.1	Prime Contractor Alt 4	5.6	329.86	0.00	82.26	412.12	576.11

Description	UOM	Quantity	Contractor	Duration	DirectLabor	DirectEQ	DirectMatl	DirectCost	ProjectCost
for accessories, excl material for accessories (Note: add 10% for cut and waste. reduce production by 80% for work down in river bed; quantity is conservative, taken from AuSable River SLT where there was a total of 53 cf of concrete.)									
RSM 031113200550 C.I.P. concrete forms, beams and girders, exterior spandrel, plywood, 12" wide, 2 use, includes shoring, erecting, bracing, stripping and cleaning	SFC	30.0	Prime Contractor Alt 4	4.4	1,283.02	0.00	52.15	1,335.17	1,866.46
(Note: reduce production by 80% for work down in the river bed; quantity is conservative, taken from AuSable River SLT where there was a total of 53 cf of concrete.)									
RSM 321313230700 Concrete paving surface treatment, finishing, small areas, broom finish	SF	56.0	Prime Contractor Alt 4	4.1	180.89	0.00	0.00	180.89	252.87
(Note: reduce production by 80% for work down in the river bed; quantity is conservative, taken from AuSable River SLT where there was a total of 53 cf of concrete.)									
RSM 321123230110 Base course drainage layers, aggregate base course, spread & compacted, 3/4" crushed stone, to 6" deep	SF	56.0	Prime Contractor Alt 4	0.0	3.25	3.34	40.23	46.82	65.45
(Note: quantity is conservative, taken from AuSable River SLT where there was a total of 53 cf of concrete.)									
RSM 312323237040 Compaction, around structures and trenches, 4 passes, 18" wide, 6" lifts, walk behind, vibrating plate	ECY	1.0	Prime Contractor Alt 4	0.1	2.48	0.18	0.00	2.66	3.72
(Note: quantity is conservative, taken from AuSable River SLT where there was a total of 53 cf of concrete.)									
				68.00	8,397.50	8,962.03	16,758.60	34,118.13	47,694.47
				Prime Contractor					
RIP RAP ARMOR	EA	1.0	Alt 4	68.0	8,397.50	8,962.03	16,758.60	34,118.13	47,694.47
RSM 313713100100 Rip-rap and rock lining, random, broken stone, machine placed for slope protection, delivered from quarry	CY	527.0	Prime Contractor Alt 4	68.0	8,397.50	8,962.03	16,758.60	34,118.13	47,694.47
				39.26	18,937.24	9,592.87	95,109.98	123,640.10	172,839.16
				Prime Contractor					
PZ 22 SSP WALL	EA	1.0	Alt 4	39.3	18,937.24	9,592.87	95,109.98	123,640.10	172,839.16
RSM 314116101200 Sheet piling, steel, 22 psf, 15' excavation, per S.F., left in place, excludes wales	SF	4,824.0	Prime Contractor Alt 4	39.3	18,937.24	9,592.87	95,109.98	123,640.10	172,839.16
RSM 314116100020 not used, Sheet piling, steel, 22 psf, 15' excavation, per ton, left in place, excludes wales	LB	0.0	Prime Contractor Alt 4	0.0	0.00	0.00	0.00	0.00	0.00
(Note: left in place to verify rsm means price per lb. as opposed to the item in use which is in units of sf.)									
				0.00	1,390.22	0.00	191.76	141,941.98	198,423.76
				Prime Contractor					
ALUMINUM STOPLOGS	EA	1.0	Alt 4	0.0	1,390.22	0.00	191.76	141,941.98	198,423.76

Description	UOM	Quantity	Contractor	Duration	DirectLabor	DirectEQ	DirectMatl	DirectCost	ProjectCost
USR 051223650051 Aluminum stop logs, shop fabricated,	LS	1.0	Prime Contractor Alt 4	0.0	0.00	0.00	191.76	140,551.76	196,480.35
(Note: Used quote for similar stoplog system for Pt. Mouillee in FY12. Total amount of quote from Waco products was \$18,767 for 29.4 cf of aluminum stoplogs. \$18,767/29.4 cf = \$638 / cf. This project has 220 cf of stoplogs (.5 ft x .5 ft x 10 ft x 88 ea), \$638 x 220 = \$140,360. Also, as a sanity check, obtained pricing from Michigan Extruded Aluminum on 28Oct2014, POC Ben Vincent; the aluminum material would be ~\$4,000/ton; if a separate die had to be purchased that would be an additional \$4,000 lump sum. Add labor to obtain the extruded shape and then it still has to go through the process of having rubber seals added (additional labor and material).)									
MIL B-LABORER Laborers, (Semi-Skilled)	DAY	4.0	Prime Contractor Alt 4	0.0	1,390.22	0.00	0.00	1,390.22	1,943.41
(Note: labor to test for stop log fit; assume 2 each for for 2 days)									
				1,052.73	258,083.74	49,543.04	118,214.41	606,149.20	1,134,025.54
			Structural Steel						
STEEL	EA	1.0	SubK Alt 4	1,052.7	258,083.74	49,543.04	118,214.41	606,149.20	1,134,025.54
				0.01	2.50	0.52	0.84	3.86	7.23
			Structural Steel						
NW WALKWAY STEEL	LB	45,488.0	SubK Alt 4	452.5	113,676.81	23,700.88	38,373.91	175,751.60	328,808.16
(Note: all steel quantities include an additional 5% for cut & waste; calculated in the qto file.)									
HNC 051223758220 W21x55 (girder) Structural steel member, W-shapes, 31 to 65 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	TON	3.5	Structural Steel SubK Alt 4	3.1	1,732.49	325.66	10,851.75	12,909.90	24,152.72
				0.89	495.00	93.04	3,100.50	3,688.54	6,900.78
HNC 051223758290 L7x4x3/8 (Hand Rail Brace) Structural steel member, angles, 11 to 20 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	TON	0.1	Structural Steel SubK Alt 4	0.1	17.60	0.00	310.05	327.65	613.00
				1.33	176.03	0.00	3,100.50	3,276.53	6,129.95
HNC 051223758280 L3x3x3/8 (Lacing Brace) Structural steel member, angles, 0 to 10 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	TON	0.5	Structural Steel SubK Alt 4	1.3	176.03	0.00	1,550.25	1,726.28	3,229.64
				2.67	352.06	0.00	3,100.50	3,452.56	6,459.28
HNC 051223758280 L3x3x3/8 (Cross Brace) Structural steel member, angles, 0 to 10 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	TON	0.5	Structural Steel SubK Alt 4	1.3	176.03	0.00	1,550.25	1,726.28	3,229.64
				2.67	352.06	0.00	3,100.50	3,452.56	6,459.28
RSM 051223650300 7"x8-3/4"x3/8" (Gusset Plate for Lace Bracing) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	SF	32.0	Structural Steel SubK Alt 4	0.0	0.00	0.00	695.36	695.36	1,300.93
				0.00	0.00	0.00	21.73	21.73	40.65
RSM 051223650300 3/8"x3-15/16"x1'-7-3/4"	SF	22.0	Structural Steel SubK	0.0	0.00	0.00	478.06	478.06	894.39
				0.00	0.00	0.00	21.73	21.73	40.65

Description	UOM	Quantity	Contractor	Duration	DirectLabor	DirectEQ	DirectMatl	DirectCost	ProjectCost
(Stiffener Plate) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer			Alt 4						
RSM 051223650300 7"x9-1/4"x3/8" (Gusset Plate for Cross Bracing) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	SF	36.0	Structural Steel SubK Alt 4	0.00 0.0	0.00 0.00	0.00 0.00	21.73 782.28	21.73 782.28	40.65 1,463.54
RSM 051223650300 3/8"x3"x3" (Spacer Plate) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	SF	1.2	Structural Steel SubK Alt 4	0.00 0.0	0.00 0.00	0.00 0.00	21.73 26.08	21.73 26.08	40.65 48.78
RSM 051223650500 8.25"x1'x1" top/bottom bearing plates, Steel plate, structural, for connections & stiffeners, 1" T, shop fabricated, incl shop primer	SF	8.7	Structural Steel SubK Alt 4	0.00 0.0	0.00 0.00	0.00 0.00	57.24 497.99	57.24 497.99	107.09 931.67
RSM 051223650500 8"x6"x1-7/8" elastometric bearing plate, Steel plate, structural, for connections & stiffeners, 1" T, shop fabricated, incl shop primer	SF	4.0	Structural Steel SubK Alt 4	0.00 0.0	0.00 0.00	0.00 0.00	57.24 228.96	57.24 228.96	107.09 428.35
RSM 316216131000 Pile HP 12x84 Steel piles, "H" Sections, 50' long, HP14 X 73, excludes mobilization or demobilization	VLF	296.0	Structural Steel SubK Alt 4	0.01 4.4	7.86 2,327.38	1.84 543.92	37.10 10,981.60	46.80 13,852.91	87.56 25,916.97
RSM 316216130400 Steel piles, "H" Sections, 50' long, HP10 x 42, excludes mobilization or demobilization	VLF	284.0	Structural Steel SubK Alt 4	0.01 3.7	6.96 1,976.78	2.24 636.16	19.45 5,524.08	28.65 8,137.02	53.60 15,223.30
RSM 055213500560 Railing, pipe, steel, galvanized, 2 rails, 3'-6" high, posts @ 5' O.C., 1-1/2" dia, shop fabricated	LF	120.0	Structural Steel SubK Alt 4	0.05 6.0	13.03 1,564.17	0.54 64.32	40.81 4,897.20	54.38 6,525.69	101.74 12,208.70
USR Additional Structural frame installation crew; lift truck w/ man bucket, 2 steel workers, 1 welder, 1 laborer (Note: assume 6000 lbs per week, 45,488 lbs; round up to next week)	WK	8.0	Structural Steel SubK Alt 4	54.05 432.4	13,213.29 105,706.33	2,766.35 22,130.82	0.00 0.00	15,979.64 127,837.15	29,895.81 239,166.52
				0.01	2.34	0.48	1.18	3.99	7.47
<b>NE WALKWAY STEEL</b> (Note: all steel quantities include an additional 5% for cut & waste; calculated in the qto file.)	LB	43,418.0	Structural Steel SubK Alt 4	403.2	101,512.85	20,702.71	51,039.85	173,255.41	324,138.12
				0.89	495.00	93.04	3,100.50	3,688.54	6,900.78

Description	UOM	Quantity	Contractor	Duration	DirectLabor	DirectEQ	DirectMatl	DirectCost	ProjectCost
HNC 051223758220 W21x55 (girder) Structural steel member, W-shapes, 31 to 65 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	TON	5.2	Structural Steel SubK Alt 4	4.6	2,573.98	483.83	16,122.60	19,180.42	35,884.04
HNC 051223758290 L7x4x3/8 (Hand Rail Brace) Structural steel member, angles, 11 to 20 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	TON	0.2	Structural Steel SubK Alt 4	0.3	35.21	0.00	620.10	655.31	1,225.99
HNC 051223758280 L3x3x3/8 (Lacing Brace) Structural steel member, angles, 0 to 10 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	TON	0.9	Structural Steel SubK Alt 4	2.4	316.85	0.00	2,790.45	3,107.30	5,813.35
HNC 051223758280 L3x3x3/8 (Cross Brace) Structural steel member, angles, 0 to 10 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	TON	0.8	Structural Steel SubK Alt 4	2.1	281.65	0.00	2,480.40	2,762.05	5,167.43
RSM 051223650300 7"x8-3/4"x3/8" (Gusset Plate for Lace Bracing) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	SF	52.0	Structural Steel SubK Alt 4	0.0	0.00	0.00	1,129.96	1,129.96	2,114.01
RSM 051223650300 3/8"x3-15/16"x1'-7-3/4" (Stiffener Plate) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	SF	34.0	Structural Steel SubK Alt 4	0.0	0.00	0.00	738.82	738.82	1,382.24
RSM 051223650300 7"x9-1/4"x3/8" (Gusset Plate for Cross Bracing) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	SF	57.0	Structural Steel SubK Alt 4	0.0	0.00	0.00	1,238.61	1,238.61	2,317.28
RSM 051223650300 3/8"x3"x3" (Spacer Plate) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	SF	2.0	Structural Steel SubK Alt 4	0.0	0.00	0.00	43.46	43.46	81.31
RSM 051223650500 8.25"x1'x1" top/bottom bearing plates, Steel plate, structural, for connections & stiffeners, 1" T, shop fabricated, incl shop primer	SF	8.7	Structural Steel SubK Alt 4	0.0	0.00	0.00	497.99	497.99	931.67
RSM 051223650500 8"x6"x1-7/8" Plates Steel	SF	4.0	Structural Steel SubK	0.0	0.00	0.00	228.96	228.96	428.35

Description	UOM	Quantity	Contractor	Duration	DirectLabor	DirectEQ	DirectMatl	DirectCost	ProjectCost
plate, structural, for connections & stiffeners, 1" T, shop fabricated, incl shop primer			Alt 4						
RSM 316216131000 Pile HP 12x84 Steel piles, "H" Sections, 50' long, HP14 X 73, excludes mobilization or demobilization	VLF	296.0	Structural Steel SubK Alt 4	0.01 4.4	7.86 2,327.38	1.84 543.92	37.10 10,981.60	46.80 13,852.91	87.56 25,916.97
HNC 051223758210 W8x21 (Inside Stop Log Guide) Structural steel member, W-shapes, 0 to 30 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	TON	0.1	Structural Steel SubK Alt 4	1.33 0.1	742.50 74.25	139.57 13.96	3,100.50 310.05	3,982.56 398.26	7,450.85 745.09
HNC 051223758390 C8x11.5 (Outside Stop Log Guide) Structural steel member, W shape/channel, 0 to 30 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	TON	0.1	Structural Steel SubK Alt 4	1.33 0.1	742.50 74.25	139.57 13.96	3,100.50 310.05	3,982.56 398.26	7,450.85 745.09
HNC 051223758220 W12x40 (cover plate for stop log) Structural steel member, W-shapes, 31 to 65 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	TON	2.0	Structural Steel SubK Alt 4	0.89 1.8	495.00 989.99	93.04 186.09	3,100.50 6,201.00	3,688.54 7,377.08	6,900.78 13,801.55
RSM 055213500560 Railing, pipe, steel, galvanized, 2 rails, 3'-6" high, posts @ 5' O.C., 1-1/2" dia, shop fabricated	LF	180.0	Structural Steel SubK Alt 4	0.05 9.0	13.03 2,346.25	0.54 96.48	40.81 7,345.80	54.38 9,788.53	101.74 18,313.06
USR Structural frame installation crew; lift truck w/ man bucket, 2 steel workers, 1 welder, 1 laborer (Note: assume 6000 lbs per week, 41,418 lbs; round up to next week)	WK	7.0	Structural Steel SubK Alt 4	54.05 378.4	13,213.29 92,493.04	2,766.35 19,364.47	0.00 0.00	15,979.64 111,857.51	29,895.81 209,270.70
				0.00	0.00	0.00	0.00	178,608.00	334,152.11
			Structural Steel						
MODIFY EXISTING STRUCTURE	EA	1.0	SubK Alt 4	0.0	0.00	0.00	0.00	178,608.00	334,152.11
USR Modify existing structure	LF	61.0	Structural Steel SubK Alt 4	0.00 0.0	0.00 0.00	0.00 0.00	0.00 0.00	2,928.00 178,608.00	5,477.90 334,152.11
(Note: when discussing w/ engineer, modification to this structure would be a safety concern and he said it will likely be a re-build. we used the other new 60 ft structures LF cost to determine the cost of this rebuild.)									
				197.05	42,894.08	5,139.45	28,800.66	78,534.19	146,927.15
			Structural Steel						
MISC STEEL	EA	1.0	SubK Alt 4	197.0	42,894.08	5,139.45	28,800.66	78,534.19	146,927.15
				98.07	24,161.99	4,550.38	27,251.65	55,964.01	104,701.31
GRATING	EA	1.0	Structural Steel	98.1	24,161.99	4,550.38	27,251.65	55,964.01	104,701.31

Description	UOM	Quantity	Contractor SubK Alt 4	Duration	DirectLabor	DirectEQ	DirectMatl	DirectCost	ProjectCost
RSM 055313100136 Floor grating, aluminum, 1-3/4" x 3/16" bearing bars @ 1-3/16" O.C., cross bars @ 4" O.C., up to 300 S.F., field fabricated from panels	SF	724.2	Structural Steel SubK Alt 4	11.6	3,020.72	124.22	27,251.65	30,396.58	56,868.01
USR Structural frame installation crew; lift truck w/ man bucket, 2 steel workers, 1 welder, 1 laborer (Note: assume ~1 day per 100 sf)	DAY	8.0	Structural Steel SubK Alt 4	86.5	21,141.27	4,426.16	0.00	25,567.43	47,833.30
				8.00	899.39	0.00	0.00	2,599.39	4,863.13
JIB CRANE	EA	1.0	Structural Steel SubK Alt 4	8.0	899.39	0.00	0.00	2,599.39	4,863.13
USR Jib crane	EA	1.0	Structural Steel SubK Alt 4	0.0	0.00	0.00	0.00	1,700.00	3,180.48
(Note: pricing found on 7oct2014 at: <a href="http://www.low-cost-cranes.com/JibCranes_351series.html">http://www.low-cost-cranes.com/JibCranes_351series.html</a> )				8.00	899.39	0.00	0.00	899.39	1,682.65
USR jib crane installation, 1 structural steel worker, 1 laborer	DAY	1.0	Structural Steel SubK Alt 4	8.0	899.39	0.00	0.00	899.39	1,682.65
				0.33	65.08	2.15	5.65	72.89	136.36
LAMPREY TRAP	LB	274.0	Structural Steel SubK Alt 4	91.0	17,832.70	589.08	1,549.01	19,970.78	37,362.71
RSM 051423050020 Aluminum, structural shapes, under 1 ton, 1" to 10" members (Note: includes vertical frame members, channel, horizontal frame members, bottom frame members and bottom channel. add 10% for cut & waste)	LB	81.0	Structural Steel SubK Alt 4	0.2	79.79	14.84	330.56	425.20	795.49
USR aluminum plate for lamprey trap	EA	1.0	Structural Steel SubK Alt 4	0.0	0.00	0.00	1,202.04	1,202.04	2,248.86
(Note: includes all aluminum plate listed in qto; quote on 11may2016 from website, includes shipping to project location: <a href="https://www.metalsdepot.com/catalog_cart_view.php">https://www.metalsdepot.com/catalog_cart_view.php</a> )				0.00	0.00	0.00	0.91	0.91	1.71
RSM 323126201300 Wire fencing & gates, wire fencing general, chain link fabric, steel, galvanized, 9 ga., 2" mesh	SF	18.0	Structural Steel SubK Alt 4	0.0	0.00	0.00	16.41	16.41	30.70
USR lamprey trap assembly, includes 2 steel workers, welder (Note: Assume this will take 2 man crew 10 days to complete 2 traps. there is lots of miscellaneous pieces to cut, assemble and weld together.)	DAY	10.0	Structural Steel SubK Alt 4	80.0	15,708.64	0.00	0.00	15,708.64	29,388.80
USR Installation crew to test for fit, crane, operator, 2 laborers	DAY	1.0	Structural Steel SubK Alt 4	10.8	2,044.26	574.23	0.00	2,618.50	4,898.86

Description	UOM	Quantity	Contractor	Duration	DirectLabor	DirectEQ	DirectMatl	DirectCost	ProjectCost
				0.73	122.27	28.33	0.00	150.60	210.53
			Prime Contractor						
CONCRETE DEMO	CY	30.0	Alt 4	22.0	3,668.16	849.94	0.00	4,518.10	6,315.95
RSM 030505100060 spillway, Selective concrete demolition, average reinforcing, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping	CY	30.0	Prime Contractor Alt 4	15.0	3,279.95	367.52	0.00	3,647.47	5,098.87
USR Trucking, disposal of concrete, tractor-trailer rig, ~25 cy (Note: 30 bcy concrete + 30% swell = 40 lcy and truck has approximate 22 cy loaded capacity = 2 truckloads. Little Manistee weir is 64 miles 1 way to Team Elmer's concrete recycling in Traverse City or 128 mi roundtrip, assume a 45 mph avg truck speed on 2 lane state hwy w/ occasional speed zones in populated areas. 128 mi/load / 45 mi/hr = 3 hr/load; add .2 hr for load and unload time = 3.2 hr x 2 loads)	HR	7.0	Prime Contractor Alt 4	7.0	388.22	482.42	0.00	870.64	1,217.08
				96.04	17,816.71	6,099.27	2,356.73	26,272.72	36,727.20
			Prime Contractor						
EARTHWORK	EA	1.0	Alt 4	96.0	17,816.71	6,099.27	2,356.73	26,272.72	36,727.20
				0.06	11.15	3.55	1.57	16.27	22.75
			Prime Contractor						
CUT	CY	1,502.0	Alt 4	86.2	16,749.16	5,336.51	2,356.73	24,442.41	34,168.57
HNC 312316440140 Excavate and load, bank measure, medium material, 2 C.Y. bucket, hydraulic excavator	BCY	1,502.0	Prime Contractor Alt 4	11.6	1,750.62	876.69	0.00	2,627.32	3,672.79
USR Material handling off-road truck & driver	HR	24.0	Prime Contractor Alt 4	24.0	1,955.76	1,523.84	0.00	3,479.60	4,864.21
(Note: Mill's duration for the excavate & load line item above x 2 trucks; this material is getting transported to either a channel fill area or permanent fill area adjacent to the excavation, assume 2 trucks can keep up with excavation.)				1.00	81.49	63.49	0.00	144.98	202.68
USR Dozer Crew; includes equipment operator and a 145 hp dozer (Note: assume dozer runs the duration of the excavator because it's not only grading out the cut areas, it's grading the permanent (non-channel) fill area.)	HR	12.0	Prime Contractor Alt 4	12.0	1,824.28	2,018.04	0.00	3,842.32	5,371.26
RSM 329119131000 permanent fill area, Topsoil placement and grading, loam or topsoil, fine grading and seeding, with equipment (Note: estimated area.)	ACR	1.0	Prime Contractor Alt 4	38.7	11,218.50	917.94	2,356.73	14,493.17	20,260.32
				0.03	2.92	2.08	0.00	5.00	6.99
			Prime Contractor						
FILL	CY	366.0	Alt 4	9.8	1,067.55	762.76	0.00	1,830.31	2,558.62
				0.01	1.17	0.58	0.00	1.75	2.45

Description	UOM	Quantity	Contractor	Duration	DirectLabor	DirectEQ	DirectMatl	DirectCost	ProjectCost
HNC 312316440140 Excavate and load, bank measure, medium material, 2 C.Y. bucket, hydraulic excavator	BCY	366.0	Prime Contractor Alt 4	2.8	426.58	213.63	0.00	640.21	894.97
				<i>1.00</i>	<i>81.49</i>	<i>63.49</i>	<i>0.00</i>	<i>144.98</i>	<i>202.68</i>
USR Material handling off-road truck & driver	HR	6.0	Prime Contractor Alt 4	6.0	488.94	380.96	0.00	869.90	1,216.05
(Note: MII's duration for the excavate & load line item above x 2 trucks; this material is getting transported to a stockpile area approximately 700 ft away, assume 2 trucks can keep up with excavation.)									
USR Dozer Crew; includes equipment operator and a 145 hp dozer	HR	1.0	Prime Contractor Alt 4	1.0	152.02	168.17	0.00	320.19	447.61
(Note: assume dozer runs 1/4 the duration of teh excavator and trucks)									

Description	JOOH_PRM	HOOH_PRM	Profit_PRM	Bond_PRM	SubCMU	OwnerMarkup	ProjectCost
Overhead Detail	138,811.89	129,557.76	114,010.83	23,087.19	205,073.37	54,834.39	1,617,067.77
							<i>1,617,067.77</i>
06 Fish & Wildlife Facilities	138,811.89	129,557.76	114,010.83	23,087.19	205,073.37	54,834.39	1,617,067.77
							<i>1,617,067.77</i>
NEW ALTERNATIVE 3 (PREFERRED)	138,811.89	129,557.76	114,010.83	23,087.19	205,073.37	54,834.39	1,617,067.77
							<i>9,140.31</i>
MOBILIZATION / DEMOBILIZATION	784.62	732.31	644.43	130.50	0.00	309.95	9,140.31
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>117.09</i>
EP C80GV025 Mob/demob, CRANES, HYDRAULIC, TRUCK MTD, 40 TON, 95' BOOM, 6X4 (Note: Assume nearest crane is 4 hours away, 1 way)	80.41	75.05	66.05	13.37	0.00	31.77	936.75
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>114.92</i>
MIL B-EQOPRCRB Equip. Operators Crane with Boom Pay	78.92	73.66	64.82	13.13	0.00	31.18	919.39
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>58.83</i>
MAP T50XX028 Mob and demob of a small excavator, TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS) (Note: assume 4 hour cycle time)	20.20	18.85	16.59	3.36	0.00	7.98	235.30
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>8.56</i>
EP T45XX011 TRUCK TRAILER, LOWBOY, 25 TON, 2 AXLE (ADD TOWING TRUCK)	2.94	2.74	2.42	0.49	0.00	1.16	34.25
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>77.53</i>
MIL B-TRKDVRHV Truck Drivers, Heavy	26.62	24.85	21.86	4.43	0.00	10.52	310.11
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>206.72</i>
RSM 015436501150 Mobilization or demobilization, delivery charge for equipment, on flatbed trailer behind pickup truck (Note: for smaller miscellaneous metal and water control supplies)	177.45	165.62	145.74	29.51	0.00	70.10	2,067.16
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>58.83</i>
MAP T50XX028 Mobilization of larger steel shapes, TRUCK, HIGHWAY, 45,000 LBS GVW, 3 AXLE, 6X4 (CHASSIS ONLY-ADD OPTIONS) (Note: assume 4 full 8 hr days for larger steel delivery, assume it may be coming from multiple locations with different schedules)	161.59	150.82	132.72	26.88	0.00	63.83	1,882.42
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>77.53</i>
MIL B-TRKDVRHV Truck Drivers, Heavy	212.96	198.77	174.91	35.42	0.00	84.13	2,480.89
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>8.56</i>
EP T45XX011 TRUCK TRAILER, LOWBOY, 25 TON, 2 AXLE (ADD TOWING TRUCK)	23.52	21.95	19.32	3.91	0.00	9.29	274.03
							<i>8,392.57</i>
WATER CONTROL	720.43	672.40	591.72	119.82	0.00	284.59	8,392.57
(Note: An inflatable dewatering system will be necessary to place and finish the concrete pad that the lamprey trap will sit on. This may require minor work in the river to place pumps for the dewatering and concrete finishing efforts.)							
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>71.13</i>

Description	JOOH_PRM	HOOH_PRM	Profit_PRM	Bond_PRM	SubCMU	OwnerMarkup	ProjectCost
USR Inflatable dam (Note: Quote from <a href="http://aquadam.net/">http://aquadam.net/</a> 800-682-9283 out of Scotia, CA; the 4 ft tall dam is \$48/LF. Estimator assumes approximately 60 ft of dam is needed in a U shape configuration around the worksite. aquadam reports that 2, 3" Honda pumps would fill this size in approximately 1 hr. Delivery not included. A similar company was discovered with this material in Fenton, MI but unable to get quote; however, shipping will be assumed from the Fenton location and is included in mob/demob.)	366.34	341.91	300.88	60.93	0.00	144.71	4,267.58
	12.00%	11.20%	9.86%	2.00%		3.51	60.73
MIL B-LABORER Laborers, (Semi-Skilled) (Note: assume 2 hours for 2 laborers per aquadam.)	20.85	19.46	17.13	3.47	0.00	8.24	242.93
	12.00%	11.20%	9.86%	2.00%		3.51	970.52
RSM 312319200900 Dewatering, pumping, 8 hr., attended 8 hours per day, 3" centrifugal pump, includes 20 L.F. of suction hose and 100 L.F. of discharge hose (Note: If concrete takes 1 week, assume pumping will take place half of this time, 8 hrs/day; assume this includes filling the aquadam.)	333.24	311.03	273.70	55.42	0.00	131.64	3,882.06
							3,508.82
<b>REINFORCED CONCRETE</b>	<b>301.20</b>	<b>281.12</b>	<b>247.39</b>	<b>50.10</b>	<b>0.00</b>	<b>118.98</b>	<b>3,508.82</b>
	12.00%	11.20%	9.86%	2.00%		3.51	12.99
RSM 033113250140 Concrete, hand mix, for small quantities or remote areas, 4000 psi, using gas powered cement mixer, includes local bulk aggregate & sand, bagged Portland cement (Type I) and water, excludes, forms, reinforcing, placing & finishing (Note: 1, 80 lb bag of concrete is ~\$4 ea and produces ~2/3 cf of concrete = ~\$6/cf; add 5% for waste)	51.31	47.89	42.15	8.53	0.00	20.27	597.76
	12.00%	11.20%	9.86%	2.00%		3.51	3.18
RSM 033113704600 Structural concrete, placing, slab on grade, direct chute, over 6" thick, includes leveling (strike off) & consolidation, excludes material (Note: reduce production by 80% to get down in the river bed)	12.57	11.73	10.33	2.09	0.00	4.97	146.45
	12.00%	11.20%	9.86%	2.00%		3.51	7,201.36
RSM 032111600600 Reinforcing steel, in place, slab on grade, #3 to #7, A615, grade 60, incl labor for accessories, excl material for accessories (Note: add 10% for cut and waste. reduce production by 80% for work down in river bed; quantity is conservative, taken from AuSable River SLT where there was a total of 53 cf of concrete.)	49.45	46.16	40.62	8.23	0.00	19.54	576.11
	12.00%	11.20%	9.86%	2.00%		3.51	62.22
RSM 031113200550 C.I.P. concrete forms, beams and girders, exterior spandrel, plywood, 12" wide, 2 use, includes shoring, erecting, bracing, stripping and cleaning (Note: reduce production by 80% for work down in the river bed; quantity is conservative, taken from AuSable River SLT where there was a total of 53 cf of concrete.)	160.22	149.54	131.59	26.65	0.00	63.29	1,866.46
	12.00%	11.20%	9.86%	2.00%		3.51	4.52
RSM 321313230700 Concrete paving surface treatment, finishing, small areas, broom finish (Note: reduce production by 80% for work down in the river bed; quantity is conservative, taken from AuSable River SLT where there was a total of 53 cf of concrete.)	21.71	20.26	17.83	3.61	0.00	8.57	252.87
	12.00%	11.20%	9.86%	2.00%		3.51	1.17
RSM 321123230110 Base course drainage layers, aggregate base course, spread & compacted, 3/4" crushed stone, to 6" deep (Note: quantity is conservative, taken from AuSable River SLT where there was a total of 53 cf of concrete.)	5.62	5.24	4.61	0.93	0.00	2.22	65.45
	12.00%	11.20%	9.86%	2.00%		3.51	3.72
RSM 312323237040 Compaction, around structures and trenches, 4	0.32	0.30	0.26	0.05	0.00	0.13	3.72

Description	JOOH_PRM	HOOH_PRM	Profit_PRM	Bond_PRM	SubCMU	OwnerMarkup	ProjectCost
passes, 18" wide, 6" lifts, walk behind, vibrating plate (Note: quantity is conservative, taken from AuSable River SLT where there was a total of 53 cf of concrete.)							47,694.47
<b>RIP RAP ARMOR</b>	<b>4,094.18</b>	<b>3,821.23</b>	<b>3,362.68</b>	<b>680.94</b>	<b>0.00</b>	<b>1,617.31</b>	<b>47,694.47</b>
	12.00%	11.20%	9.86%	2.00%		3.51	90.50
RSM 313713100100 Rip-rap and rock lining, random, broken stone, machine placed for slope protection, delivered from quarry	4,094.18	3,821.23	3,362.68	680.94	0.00	1,617.31	47,694.47
<b>PZ 22 SSP WALL</b>	<b>14,836.81</b>	<b>13,847.69</b>	<b>12,185.97</b>	<b>2,467.66</b>	<b>0.00</b>	<b>5,860.94</b>	<b>172,839.16</b>
	12.00%	11.20%	9.86%	2.00%		3.51	35.83
RSM 314116101200 Sheet piling, steel, 22 psf, 15' excavation, per S.F., left in place, excludes wales	14,836.81	13,847.69	12,185.97	2,467.66	0.00	5,860.94	172,839.16
	0.00%	0.00%	0.00%	0.00%		0.00	0.00
RSM 314116100020 not used, Sheet piling, steel, 22 psf, 15' excavation, per ton, left in place, excludes wales (Note: left in place to verify rsm means price per lb. as opposed to the item in use which is in units of sf.)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>ALUMINUM STOPLOGS</b>	<b>17,033.04</b>	<b>15,897.50</b>	<b>13,989.80</b>	<b>2,832.93</b>	<b>0.00</b>	<b>6,728.50</b>	<b>198,423.76</b>
USR 051223650051 Aluminum stop logs, shop fabricated, (Note: Used quote for similar stoplog system for Pt. Mouillee in FY12. Total amount of quote from Waco products was \$18,767 for 29.4 cf of aluminum stoplogs. \$18,767/29.4 cf = \$638 / cf. This project has 220 cf of stoplogs (.5 ft x .5 ft x 10 ft x 88 ea), \$638 x 220 = \$140,360. Also, as a sanity check, obtained pricing from Michigan Extruded Aluminum on 28Oct2014, POC Ben Vincent; the aluminum material would be ~\$4,000/ton; if a separate die had to be purchased that would be an additional \$4,000 lump sum. Add labor to obtain the extruded shape and then it still has to go through the process of having rubber seals added (additional labor and material).)	16,866.21	15,741.80	13,852.78	2,805.19	0.00	6,662.60	196,480.35
	12.00%	11.20%	9.86%	2.00%		3.51	485.85
MIL B-LABORER Laborers, (Semi-Skilled) (Note: labor to test for stop log fit; assume 2 each for for 2 days)	166.83	155.70	137.02	27.75	0.00	65.90	1,943.41
<b>STEEL</b>	<b>97,346.71</b>	<b>90,856.93</b>	<b>79,954.10</b>	<b>16,190.70</b>	<b>205,073.37</b>	<b>38,454.54</b>	<b>1,134,025.54</b>
<b>NW WALKWAY STEEL</b>	<b>28,225.46</b>	<b>26,343.76</b>	<b>23,182.51</b>	<b>4,694.46</b>	<b>59,460.56</b>	<b>11,149.81</b>	<b>328,808.16</b>
(Note: all steel quantities include an additional 5% for cut & waste; calculated in the qto file.)							7.23
	12.00%	11.20%	9.86%	2.00%		3.51	6,900.78
HNC 051223758220 W21x55 (girder) Structural steel member, W-shapes, 31 to 65 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	2,073.31	1,935.09	1,702.88	344.83	4,367.70	819.01	24,152.72
	12.00%	11.20%	9.86%	2.00%		3.51	6,129.95
HNC 051223758290 L7x4x3/8 (Hand Rail Brace) Structural steel member, angles, 11 to 20 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	52.62	49.11	43.22	8.75	110.85	20.79	613.00
	12.00%	11.20%	9.86%	2.00%		3.51	6,459.28
HNC 051223758280 L3x3x3/8 (Lacing Brace) Structural steel member, angles, 0 to 10 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	277.24	258.76	227.70	46.11	584.04	109.52	3,229.64

Description	JOOH_PRM	HOOH_PRM	Profit_PRM	Bond_PRM	SubCMU	OwnerMarkup	ProjectCost
HNC 051223758280 L3x3x3/8 (Cross Brace) Structural steel member, angles, 0 to 10 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	12.00% 277.24	11.20% 258.76	9.86% 227.70	2.00% 46.11	584.04	3.51 109.52	6,459.28 3,229.64
RSM 051223650300 7"x8-3/4"x3/8" (Gusset Plate for Lace Bracing) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	12.00% 111.67	11.20% 104.23	9.86% 91.72	2.00% 18.57	235.26	3.51 44.11	40.65 1,300.93
RSM 051223650300 3/8"x3-15/16"x1'-7-3/4" (Stiffener Plate) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	12.00% 76.78	11.20% 71.66	9.86% 63.06	2.00% 12.77	161.74	3.51 30.33	40.65 894.39
RSM 051223650300 7"x9-1/4"x3/8" (Gusset Plate for Cross Bracing) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	12.00% 125.63	11.20% 117.26	9.86% 103.19	2.00% 20.90	264.66	3.51 49.63	40.65 1,463.54
RSM 051223650300 3/8"x3"x3" (Spacer Plate) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	12.00% 4.19	11.20% 3.91	9.86% 3.44	2.00% 0.70	8.82	3.51 1.65	40.65 48.78
RSM 051223650500 8.25"x1'x1" top/bottom bearing plates, Steel plate, structural, for connections & stiffeners, 1" T, shop fabricated, incl shop primer	12.00% 79.98	11.20% 74.64	9.86% 65.69	2.00% 13.30	168.48	3.51 31.59	107.09 931.67
RSM 051223650500 8"x6"x1-7/8" elastometric bearing plate, Steel plate, structural, for connections & stiffeners, 1" T, shop fabricated, incl shop primer	12.00% 36.77	11.20% 34.32	9.86% 30.20	2.00% 6.12	77.46	3.51 14.53	107.09 428.35
RSM 316216131000 Pile HP 12x84 Steel piles, "H" Sections, 50' long, HP14 X 73, excludes mobilization or demobilization	12.00% 2,224.76	11.20% 2,076.44	9.86% 1,827.27	2.00% 370.02	4,686.74	3.51 878.84	87.56 25,916.97
RSM 316216130400 Steel piles, "H" Sections, 50' long, HP10 x 42, excludes mobilization or demobilization	12.00% 1,306.79	11.20% 1,219.67	9.86% 1,073.31	2.00% 217.35	2,752.93	3.51 516.22	53.60 15,223.30
RSM 055213500560 Railing, pipe, steel, galvanized, 2 rails, 3'-6" high, posts @ 5' O.C., 1-1/2" dia, shop fabricated	12.00% 1,048.02	11.20% 978.15	9.86% 860.77	2.00% 174.31	2,207.78	3.51 413.99	101.74 12,208.70
USR Additional Structural frame installation crew; lift truck w/ man bucket, 2 steel workers, 1 welder, 1 laborer (Note: assume 6000 lbs per week, 45,488 lbs; round up to next week)	12.00% 20,530.47	11.20% 19,161.77	9.86% 16,862.36	2.00% 3,414.63	43,250.07	3.51 8,110.08	29,895.81 239,166.52
<b>NE WALKWAY STEEL</b> (Note: all steel quantities include an additional 5% for cut & waste; calculated in the qto file.)	<b>27,824.57</b>	<b>25,969.60</b>	<b>22,853.25</b>	<b>4,627.78</b>	<b>58,616.05</b>	<b>10,991.45</b>	<b>324,138.12</b> 7.47

Description	JOOH_PRM	HOOH_PRM	Profit_PRM	Bond_PRM	SubCMU	OwnerMarkup	ProjectCost
HNC 051223758220 W21x55 (girder) Structural steel member, W-shapes, 31 to 65 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	12.00% 3,080.35	11.20% 2,874.99	9.86% 2,529.99	2.00% 512.32	6,489.15	3.51 1,216.82	6,900.78 35,884.04
HNC 051223758290 L7x4x3/8 (Hand Rail Brace) Structural steel member, angles, 11 to 20 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	12.00% 105.24	11.20% 98.23	9.86% 86.44	2.00% 17.50	221.70	3.51 41.57	6,129.95 1,225.99
HNC 051223758280 L3x3x3/8 (Lacing Brace) Structural steel member, angles, 0 to 10 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	12.00% 499.03	11.20% 465.76	9.86% 409.87	2.00% 83.00	1,051.27	3.51 197.13	6,459.28 5,813.35
HNC 051223758280 L3x3x3/8 (Cross Brace) Structural steel member, angles, 0 to 10 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	12.00% 443.58	11.20% 414.01	9.86% 364.33	2.00% 73.78	934.46	3.51 175.23	6,459.28 5,167.43
RSM 051223650300 7"x8-3/4"x3/8" (Gusset Plate for Lace Bracing) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	12.00% 181.47	11.20% 169.37	9.86% 149.05	2.00% 30.18	382.29	3.51 71.69	40.65 2,114.01
RSM 051223650300 3/8"x3-15/16"x1'-7-3/4" (Stiffener Plate) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	12.00% 118.65	11.20% 110.74	9.86% 97.45	2.00% 19.73	249.96	3.51 46.87	40.65 1,382.24
RSM 051223650300 7"x9-1/4"x3/8" (Gusset Plate for Cross Bracing) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	12.00% 198.92	11.20% 185.66	9.86% 163.38	2.00% 33.08	419.05	3.51 78.58	40.65 2,317.28
RSM 051223650300 3/8"x3"x3" (Spacer Plate) Steel plate, structural, for connections & stiffeners, 3/8" T, shop fabricated, incl shop primer	12.00% 6.98	11.20% 6.51	9.86% 5.73	2.00% 1.16	14.70	3.51 2.76	40.65 81.31
RSM 051223650500 8.25"x1'x1" top/bottom bearing plates, Steel plate, structural, for connections & stiffeners, 1" T, shop fabricated, incl shop primer	12.00% 79.98	11.20% 74.64	9.86% 65.69	2.00% 13.30	168.48	3.51 31.59	107.09 931.67
RSM 051223650500 8"x6"x1-7/8" Plates Steel plate, structural, for connections & stiffeners, 1" T, shop fabricated, incl shop primer	12.00% 36.77	11.20% 34.32	9.86% 30.20	2.00% 6.12	77.46	3.51 14.53	107.09 428.35
RSM 316216131000 Pile HP 12x84 Steel piles, "H" Sections, 50' long, HP14 X 73, excludes mobilization or demobilization	12.00% 2,224.76	11.20% 2,076.44	9.86% 1,827.27	2.00% 370.02	4,686.74	3.51 878.84	87.56 25,916.97
HNC 051223758210 W8x21 (Inside Stop Log Guide) Structural	12.00% 63.96	11.20% 59.70	9.86% 52.53	2.00% 10.64	134.74	3.51 25.27	7,450.85 745.09

Description	JOOH_PRM	HOOH_PRM	Profit_PRM	Bond_PRM	SubCMU	OwnerMarkup	ProjectCost
steel member, W-shapes, 0 to 30 plf, A992 steel, shop fabricated, incl shop primer, bolted connections							
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>7,450.85</i>
HNC 051223758390 C8x11.5 (Outside Stop Log Guide) Structural steel member, W shape/channel, 0 to 30 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	63.96	59.70	52.53	10.64	134.74	25.27	745.09
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>6,900.78</i>
HNC 051223758220 W12x40 (cover plate for stop log) Structural steel member, W-shapes, 31 to 65 plf, A992 steel, shop fabricated, incl shop primer, bolted connections	1,184.75	1,105.77	973.07	197.05	2,495.83	468.01	13,801.55
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>101.74</i>
RSM 055213500560 Railing, pipe, steel, galvanized, 2 rails, 3'-6" high, posts @ 5' O.C., 1-1/2" dia, shop fabricated	1,572.02	1,467.22	1,291.16	261.46	3,311.67	620.99	18,313.06
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>29,895.81</i>
USR Structural frame installation crew; lift truck w/ man bucket, 2 steel workers, 1 welder, 1 laborer (Note: assume 6000 lbs per week, 41,418 lbs; round up to next week)	17,964.16	16,766.55	14,754.56	2,987.80	37,843.81	7,096.32	209,270.70
							<i>334,152.11</i>
<b>MODIFY EXISTING STRUCTURE</b>	<b>28,684.19</b>	<b>26,771.91</b>	<b>23,559.28</b>	<b>4,770.76</b>	<b>60,426.94</b>	<b>11,331.02</b>	<b>334,152.11</b>
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>5,477.90</i>
USR Modify existing structure (Note: when discussing w/ engineer, modification to this structure would be a safety concern and he said it will likely be a re-build. we used the other new 60 ft structures LF cost to determine the cost of this rebuild.)	28,684.19	26,771.91	23,559.28	4,770.76	60,426.94	11,331.02	334,152.11
							<i>146,927.15</i>
<b>MISC STEEL</b>	<b>12,612.48</b>	<b>11,771.65</b>	<b>10,359.05</b>	<b>2,097.71</b>	<b>26,569.81</b>	<b>4,982.27</b>	<b>146,927.15</b>
							<i>104,701.31</i>
<b>GRATING</b>	<b>8,987.74</b>	<b>8,388.56</b>	<b>7,381.93</b>	<b>1,494.84</b>	<b>18,933.83</b>	<b>3,550.40</b>	<b>104,701.31</b>
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>78.53</i>
RSM 055313100136 Floor grating, aluminum, 1-3/4" x 3/16" bearing bars @ 1-3/16" O.C., cross bars @ 4" O.C., up to 300 S.F., field fabricated from panels	4,881.65	4,556.20	4,009.46	811.92	10,283.82	1,928.38	56,868.01
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>5,979.16</i>
USR Structural frame installation crew; lift truck w/ man bucket, 2 steel workers, 1 welder, 1 laborer (Note: assume ~1 day per 100 sf)	4,106.09	3,832.35	3,372.47	682.93	8,650.01	1,622.02	47,833.30
							<i>4,863.13</i>
<b>JIB CRANE</b>	<b>417.46</b>	<b>389.63</b>	<b>342.87</b>	<b>69.43</b>	<b>879.43</b>	<b>164.91</b>	<b>4,863.13</b>
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>3,180.48</i>
USR Jib crane (Note: pricing found on 7oct2014 at: <a href="http://www.low-cost-cranes.com/JibCranes_351series.html">http://www.low-cost-cranes.com/JibCranes_351series.html</a> )	273.02	254.82	224.24	45.41	575.15	107.85	3,180.48
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>1,682.65</i>
USR jib crane installation, 1 structural steel worker, 1 laborer	144.44	134.81	118.63	24.02	304.28	57.06	1,682.65

Description	JOOH_PRM	HOOH_PRM	Profit_PRM	Bond_PRM	SubCMU	OwnerMarkup	ProjectCost
LAMPREY TRAP	3,207.28	2,993.46	2,634.25	533.43	6,756.55	1,266.96	37,362.71
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>136.36</i>
RSM 051423050020 Aluminum, structural shapes, under 1 ton, 1" to 10" members (Note: includes vertical frame members, channel, horizontal frame members, bottom frame members and bottom channel. add 10% for cut & waste)	68.29	63.73	56.09	11.36	143.85	26.97	795.49
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>9.82</i>
USR aluminum plate for lamprey trap (Note: includes all aluminum plate listed in qto; quote on 11may2016 from website, includes shipping to project location: <a href="https://www.metalsdepot.com/catalog_cart_view.php">https://www.metalsdepot.com/catalog_cart_view.php</a> )	193.05	180.18	158.56	32.11	406.68	76.26	2,248.86
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>2,248.86</i>
RSM 323126201300 Wire fencing & gates, wire fencing general, chain link fabric, steel, galvanized, 9 ga., 2" mesh	2.64	2.46	2.16	0.44	5.55	1.04	30.70
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>1.71</i>
USR lamprey trap assembly, includes 2 steel workers, welder (Note: Assume this will take 2 man crew 10 days to complete 2 traps. there is lots of miscellaneous pieces to cut, assemble and weld together.)	2,522.79	2,354.60	2,072.05	419.59	5,314.57	996.57	29,388.80
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>2,938.88</i>
USR Installation crew to test for fit, crane, operator, 2 laborers	420.53	392.49	345.39	69.94	885.89	166.12	4,898.86
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>4,898.86</i>
CONCRETE DEMO	542.17	506.03	445.30	90.17	0.00	214.17	6,315.95
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>210.53</i>
RSM 030505100060 spillway, Selective concrete demolition, average reinforcing, break up into small pieces, excludes shoring, bracing, saw or torch cutting, loading, hauling, dumping	437.70	408.52	359.49	72.80	0.00	172.90	5,098.87
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>169.96</i>
USR Trucking, disposal of concrete, tractor-trailer rig, ~25 cy (Note: 30 bcy concrete + 30% swell = 40 lcy and truck has approximate 22 cy loaded capacity = 2 truckloads. Little Manistee weir is 64 miles 1 way to Team Elmer's concrete recycling in Traverse City or 128 mi roundtrip, assume a 45 mph avg truck speed on 2 lane state hwy's w/ occasional speed zones in populated areas. 128 mi/load / 45 mi/hr = 3 hr/load; add .2 hr for load and unload time = 3.2 hr x 2 loads)	104.48	97.51	85.81	17.38	0.00	41.27	1,217.08
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>173.87</i>
EARTHWORK	3,152.73	2,942.54	2,589.44	524.36	0.00	1,245.41	36,727.20
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>36,727.20</i>
CUT	2,933.09	2,737.55	2,409.04	487.83	0.00	1,158.65	34,168.57
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>22.75</i>
HNC 312316440140 Excavate and load, bank measure, medium material, 2 C.Y. bucket, hydraulic excavator	315.28	294.26	258.95	52.44	0.00	124.54	3,672.79
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>2.45</i>
USR Material handling off-road truck & driver (Note: MII's duration for the excavate & load line item above x 2 trucks; this material is getting transported to either a channel fill area or permanent fill area adjacent to the excavation, assume 2 trucks can keep up with excavation.)	417.55	389.71	342.95	69.45	0.00	164.94	4,864.21
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>202.68</i>
USR Dozer Crew; includes equipment operator and a 145 hp dozer	461.08	430.34	378.70	76.69	0.00	182.14	5,371.26
	<i>12.00%</i>	<i>11.20%</i>	<i>9.86%</i>	<i>2.00%</i>		<i>3.51</i>	<i>447.61</i>

Description	JOOH_PRM	HOOH_PRM	Profit_PRM	Bond_PRM	SubCMU	OwnerMarkup	ProjectCost
(Note: assume dozer runs the duration of the excavator because it's not only grading out the cut areas, it's grading the permanent (non-channel) fill area.)							
RSM 329119131000 permanent fill area, Topsoil placement and grading, loam or topsoil, fine grading and seeding, with equipment (Note: estimated area.)	12.00% 1,739.18	11.20% 1,623.24	9.86% 1,428.45	2.00% 289.26	0.00	3.51 687.02	20,260.32 20,260.32
FILL	219.64	204.99	180.39	36.53	0.00	86.76	2,558.62
HNC 312316440140 Excavate and load, bank measure, medium material, 2 C.Y. bucket, hydraulic excavator	12.00% 76.83	11.20% 71.70	9.86% 63.10	2.00% 12.78	0.00	3.51 30.35	2.45 894.97
USR Material handling off-road truck & driver (Note: MII's duration for the excavate & load line item above x 2 trucks; this material is getting transported to a stockpile area approximately 700 ft away, assume 2 trucks can keep up with excavation.)	12.00% 104.39	11.20% 97.43	9.86% 85.74	2.00% 17.36	0.00	3.51 41.24	202.68 1,216.05
USR Dozer Crew; includes equipment operator and a 145 hp dozer (Note: assume dozer runs 1/4 the duration of teh excavator and trucks)	12.00% 38.42	11.20% 35.86	9.86% 31.56	2.00% 6.39	0.00	3.51 15.18	447.61 447.61

 <b>US Army Corps of Engineers</b> ® Detroit District	PROJECT TITLE:	COMPUTED BY:	DATE:
	Little Manistee River	Christian Smith	5/25/2017
	COMPUTATION:	CHECKED BY:	DATE:
	Quantity Takeoff	Jacob Carr	6/1/2017

alternative 3 preferred

Northwest Walkway Span 60ft - STEEL	Length (ft)	Width (ft)	Height (ft)	Unit Weight (lb/ft <sup>3</sup> )	Quantity (EA)	Weight (lb/ft)	Total Weight (tons)
W21x55 (Girder)	60.00	-	-	-	2.00	55.00	3.30
L7x4x3/8 (Hand Rail Brace)	0.75	-	-	-	20.00	13.60	0.10
L3x3x3/8 (Lacing Brace)	4.00	-	-	-	36.00	7.20	0.52
L3x3x3/8 (Cross Brace)	3.50	-	-	-	38.00	7.20	0.48
7"x8-3/4"x3/8" (Gusset Plate for Lace Bracing)	0.58	0.73	0.03	490.00	72.00	-	0.23
3/8"x3-15/16"x1'-7-3/4" (Stiffener Plate)	0.03	0.33	1.65	490.00	38.00	-	0.16
7"x9-1/4"x3/8" (Gusset Plate for Cross Bracing)	0.58	0.77	0.03	490.00	76.00	-	0.26
3/8"x3"x3" (Spacer Plate)	0.03	0.25	0.25	490.00	19.00	-	0.01
8"x6"x1-7/8" Plates	0.67	0.50	0.16	490.00	12.00	-	0.15
Req'd Pile HP 12x84	47.00	-	-	-	6.00	84.00	11.84
W8x21 (Inside Stop Log Guide)	2.00	-	-	-	3.00	21.00	0.06
C8x11.5 (Outside Stop Log Guide)	2.00	-	-	-	2.00	11.50	0.02
HP10x42 (Fish Guidance)	45.00	-	-	-	6.00	42.00	5.67
Handrail	60.00	-	-	-	2.00		
						<b>Total</b>	<b>22.81</b>

Northeast Walkway Span 90ft - STEEL	Length (ft)	Width (ft)	Height (ft)	Unit Weight (lb/ft <sup>3</sup> )	Quantity (EA)	Weight (lb/ft)	Total Weight (tons)
W21x55 (Girder)	90.00	-	-	-	2.00	55.00	4.95
L7x4x3/8 (Hand Rail Brace)	0.75	-	-	-	30.00	13.60	0.15
L3x3x3/8 (Lacing Brace)	4.00	-	-	-	58.00	7.20	0.84
L3x3x3/8 (Cross Brace)	3.50	-	-	-	60.00	7.20	0.76
7"x8-3/4"x3/8" (Gusset Plate for Lace Bracing)	0.58	0.73	0.03	490.00	116.00	-	0.38
3/8"x3-15/16"x1'-7-3/4" (Stiffener Plate)	0.03	0.33	1.65	490.00	60.00	-	0.25
7"x9-1/4"x3/8" (Gusset Plate for Cross Bracing)	0.58	0.77	0.03	490.00	120.00	-	0.41
3/8"x3"x3" (Spacer Plate)	0.03	0.25	0.25	490.00	30.00	-	0.01
8"x6"x1-7/8" Plates	0.67	0.50	0.16	490.00	12.00	-	0.15
Req'd Pile HP 12x84	47.00	-	-	-	6.00	84.00	11.84
W8x21 (Inside Stop Log Guide)	2.00	-	-	-	6.00	21.00	0.13
C8x11.5 (Outside Stop Log Guide)	2.00	-	-	-	2.00	11.50	0.02
Handrail	90.00	-	-	-	2.00		
						<b>Total</b>	<b>19.89</b>

<b>Reinforced Concrete</b>	<b>Total (cyd)</b>	<b>cf</b>
Section Along Stoplogs	1.63	46.2
	<b>1.63</b>	<b>46.2</b>

<b>Rip-Rap Armor</b>	<b>Total Weight (cyd)</b>
North Section	390.28
South Section	136.50
	<b>526.78</b>

<b>PZ-22 (SSP Wall)</b>	<b>Total Area Driven</b>
Northeast Weir	1418.80
Northwest Weir Abutment	376.40
Northeast Weir Abutment	376.40
Center Island	2422.00
	<b>4593.60</b>

<b>6"x6"x3/16" Aluminum Stop Logs 10 ft</b>	<b>Total quantity (EA)</b>
Northeast Weir	28.00
South Weir	60.00
	<b>88.00</b>

<b>Required Grating</b>	<b>Total Area (SF)</b>
Northwest Weir (Fish Guidance)	259.20
Northwest Weir (Bridge Deck)	180.00
Northeast Weir (Bridge Deck)	285.00
	<b>724.20</b>

Notes:

\* Design for Sea Lamprey Trap is based on Au Sauble Design and Quantities

 <b>US Army Corps of Engineers</b> ® Detroit District	PROJECT TITLE:	COMPUTED BY:
	<b>Little Manistee River</b>	<b>Brian Korzetz</b>
	COMPUTATION TITLE:	CHECKED BY:
	<b>Quantity Takeoff</b>	<b>Jacob Carr</b>

## Req'd Earthwork

### 597' Spillway Area

Cut	1230.00	CY
Fill	126.00	CY

### Above 597' North Side

Cut	245.00	CY
Fill	85.00	CY

### Island

Cut	27	CY
Fill	155	CY

## Req'd Concrete Removal

Existing Spillway Conc Removal	29.22	CY
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### Notes:

- \* Existing concrete spillway is taken to be 1 ft thick.
- \* All Earthwork material shall be stored within a location on the site.

**Abbreviated Risk Analysis**

Project (less than \$40M): **Little Manistee Sea Lamprey Trap**  
 Project Development Stage/Alternative: **Feasibility (Recommended Plan)**  
 Risk Category: **Moderate Risk: Typical Project Construction Type**

**Alternative: 2 (preferred)**

**Meeting Date: 7/13/2017**

Total Estimated Construction Contract Cost = \$ **1,617,068**

	<u>CWWBS</u>	<u>Feature of Work</u>	<u>Estimated Cost</u>	<u>% Contingency</u>	<u>\$ Contingency</u>	<u>Total</u>	
	01 LANDS AND DAMAGES	Real Estate	\$ -	0.00%	\$ -	\$ -	
1	06 FISH AND WILDLIFE FACILITIES	MOBILIZATION/DEMobilIZATION	\$ 9,140	9.15%	\$ 836	\$ 9,976	
2	06 FISH AND WILDLIFE FACILITIES	WATER CONTROL	\$ 8,393	9.35%	\$ 784	\$ 9,177	
3	06 FISH AND WILDLIFE FACILITIES	REINFORCED CONCRETE	\$ 3,509	5.00%	\$ 175	\$ 3,684	
4		RIP RAP ARMOR	\$ 47,694	7.09%	\$ 3,382	\$ 51,076	
5		PZ22 SSP WALL	\$ 172,839	17.93%	\$ 30,986	\$ 203,825	
6		ALUMINUM STOPLOGS	\$ 198,424	11.71%	\$ 23,240	\$ 221,664	
7		STEEL	\$ 1,134,026	23.15%	\$ 262,573	\$ 1,396,599.12	
8		CONCRETE DEMO	\$ 6,316	5.00%	\$ 316	\$ 6,631.80	
9		EARTHWORK	\$ 36,727	9.07%	\$ 3,330	\$ 40,056.53	
10			\$ -	0.00%	\$ -	\$ -	
11			\$ -	0.00%	\$ -	\$ -	
12	All Other	Remaining Construction Items	\$ -	0.0%	\$ -	\$ -	
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	\$ 428,000	13.34%	\$ 57,098	\$ 485,098	
14	31 CONSTRUCTION MANAGEMENT	Construction Management	\$ 234,000	10.97%	\$ 25,668	\$ 259,668	
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)					\$ -	

<b>Totals</b>						
	Real Estate	\$ -	0.00%	\$ -	\$ -	\$ -
	Total Construction Estimate	\$ 1,617,068	20.14%	\$ 325,622	\$ 1,942,690	
	Total Planning, Engineering & Design	\$ 428,000	13.34%	\$ 57,098	\$ 485,098	
	Total Construction Management	\$ 234,000	10.97%	\$ 25,668	\$ 259,668	
	<b>Total Excluding Real Estate</b>	<b>\$ 2,279,068</b>	<b>18%</b>	<b>\$ 408,388</b>	<b>\$ 2,687,456</b>	
	<b>Confidence Level Range Estimate (\$000's)</b>	<b>Base</b>	<b>50%</b>	<b>80%</b>		
		\$2,279k	\$2,524k	\$2,687k		

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

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

Activity ID	Activity Name	Start	Finish	Original Duration	Milestone - Construction	Milestone - Civil Works	At Completion Total Cost
<b>370206 C-GLFER-Little Manistee River SLB and 1</b>		04-Nov-10 A	12-Aug-19	2200			\$433,700.31
<b>370206.6 GLRI YR7 (FY16/17) - Funding Account</b>		14-Mar-17 A	14-Mar-17 A	0			\$0.00
A1150	GLRI YR7 Resources - Little Manistee River SLE	14-Mar-17 A	14-Mar-17 A	0			\$0.00
<b>370206.5 GLRI YR6 (FY15/16) - Funding Account</b>		01-Oct-14 A	30-Sep-16 A	681			\$33,490.41
A1130	GLRI YR6 Resources - Little Manistee River SLE	01-Oct-14 A	30-Sep-16 A	681			\$33,490.41
<b>370206.4 GLRI YR5 (FY14/15) - Funding Account</b>		01-Oct-14 A	13-Mar-17 A	681			\$34,661.06
A1120	GLRI YR5 Resources - Little Manistee River SLE	01-Oct-14 A	13-Mar-17 A	681			\$34,661.06
<b>370206.25500 Coordination Account</b>		04-Nov-10 A	08-Aug-13 A	692			\$34,716.56
CA.1000	PRP, RP & PMP Preparation (E&W)	04-Nov-10 A	08-Aug-13 A	693			\$34,716.56
<b>370206.23400 PRP &amp; PMP</b>		25-Aug-11 A	31-Mar-14 A	649			\$0.00
PMP1260	Complete Final PMP	01-Mar-13 A	08-Aug-13 A	113			\$0.00
PMP1210	District Review of PRP	01-May-13 A	08-May-13 A	6			\$0.00
PMP1360	GLFER District Review & Approval of Project Initia	25-Aug-11 A	14-Sep-11 A	14			\$0.00
PMP1240	Incorporate District Comments	08-May-13 A	17-May-13 A	8			\$0.00
PMP1370	Load Project into P2	15-Sep-11 A	16-Sep-11 A	2			\$0.00
PMP1300	LRD Approval of Review Plan		27-Dec-13 A	0			\$0.00
PMP1250	LRD Review of PRP	17-May-13 A	08-Aug-13 A	58			\$0.00
PMP1330	LRD Review of Review Plan	22-Oct-13 A	27-Dec-13 A	46			\$0.00
PMP1320	PMP Approved - Post signed PMP to CMI		31-Mar-14 A	0		CW040	\$0.00
A1070	Post Approved Peer Review Plan Milestone		27-Dec-13 A	0		CW035	\$0.00
PMP1270	Prepare Draft PMP	04-Sep-13 A	15-Mar-14 A	131			\$0.00
PMP1200	Prepare Preliminary Restoration Plan	15-Feb-12 A	01-May-13 A	305			\$0.00
PMP1290	Prepare Project Review Plan	09-Aug-13 A	22-Oct-13 A	51			\$0.00
PMP1220	PRP Approved		08-Aug-13 A	0			\$0.00
PMP1310	Recieve Federal Funds for PRP & PMP	16-Sep-11 A		0			\$0.00
PMP1350	Recieved GLFER request from Local Sponsor	25-Aug-11 A		0			\$0.00
PMP1340	Route PMP for Signature (Internal and Custome	01-May-13 A	16-May-13 A	12			\$0.00
PMP1230	Start PMP	09-Aug-13 A		0			\$0.00
PMP1190	Start PRP / Kickoff	15-Feb-12 A		0			\$0.00
<b>370206.23400.1 Preliminary GLRI Milestones</b>				0			\$0.00
<b>370206.2 GLRI YR3 (FY12/13) - Funding Account</b>		01-Mar-12 A	25-Nov-13 A	438			\$9,314.10
A1080	GLRI YR3 Resources - Little Manistee River SLE	01-Mar-12 A	25-Nov-13 A	438			\$9,314.10
A1060	Little Manistee River SLB and Trap - GLRI YR3 -	25-Nov-13 A	25-Nov-13 A	0			\$0.00
A1050	Little Manistee River SLB and Trap - GLRI YR3-	25-Nov-13 A	25-Nov-13 A	0			\$0.00
A1040	Little Manistee River SLB and Trap - GLRI YR3-	01-Oct-12 A	25-Nov-13 A	289			\$0.00
<b>370206.3 GLRI YR4 (FY13/14) - Funding Account</b>		01-Oct-13 A	30-Jun-14 A	186			\$0.00
A1100	GLRI YR4 Resources - Little Manistee River SLE	01-Oct-13 A	30-Jun-14 A	187			\$0.00
<b>370206.1 E&amp;W FY14 - Funding Account</b>		21-Jan-14 A	30-Sep-16 A	929			\$104,418.17
A1110	E&W FY14-16 Resources - Little Manistee River	21-Jan-14 A	30-Sep-16 A	929			\$104,418.17
<b>370206.7 Feasibility</b>		10-Feb-16 A	22-Aug-18	638			\$217,100.01
<b>370206.7.1 Draft Feasibility</b>		10-Feb-16 A	29-Jan-18	424			\$217,100.01
A1290	50% Progress Check Meeting-DDR/EA & Appen		20-Jun-17 A	0			\$0.00
A1670	Appraisal	05-Apr-17 A	15-Jun-17 A	64			\$0.00
A1320	Cost & Schedule Risk Analysis	22-Jun-17 A	25-Aug-17	16			\$0.00
A1660	Draft Feasibility Resources	01-Feb-17 A	29-Jan-18	145			\$217,100.01
A1690	Early Coordination Letters Sent	10-Feb-16 A	14-Mar-16 A	1			\$0.00
A1700	Endangered Species Coordination	10-Feb-16 A	14-Mar-16 A	1			\$0.00
A1780	Finalize Agency Coordination Appendix	28-Jun-17 A	25-Aug-17	12			\$0.00
A1310	Finalize Cost Appendix & CWE	11-Jul-17 A	31-Aug-17	4			\$0.00
A1360	Finalize Draft DPR/EA w/Monitoring Plan & 404(l	30-Aug-17*	06-Sep-17	5			\$0.00
A1770	Finalize Draft FONSI Appendix	28-Jun-17 A	25-Aug-17	12			\$0.00
A1330	Finalize Econ Write Up for DPR	20-Jun-17 A	30-Aug-17	14			\$0.00
A1300	Finalize Engineering Appenidx	28-Jun-17 A	16-Aug-17	8			\$0.00
A1340	Finalize H&H Model & Appendix	20-Jun-17 A	31-Aug-17	18			\$0.00
A1740	Finalize Laws and EO Appendix	28-Jun-17 A	25-Aug-17	12			\$0.00
A1760	Finalize Monitoring Appendix	28-Jun-17 A	25-Aug-17	12			\$0.00
A1350	Finalize Real Estate Appendix	20-Jun-17 A	13-Jul-17 A	18			\$0.00
A1750	Finalize Section 404(b)(1) Appendix	28-Jun-17 A	25-Aug-17	12			\$0.00
A1680	INITIAL QUANTITIES TAKE-OFF	01-Jun-17 A	08-Jun-17 A	6			\$0.00
A1160	Kick off meeting	30-Jan-17 A	30-Jan-17 A	1			\$0.00
A1280	Prepare 50% Draft DPR/EA w/Monitoring Plan &	02-Mar-17 A	01-Jun-17 A	20			\$0.00
A1220	Prepare 50% Engineering Appendix	14-Apr-17 A	01-Jun-17 A	11			\$0.00
A1240	Prepare 50% H&H Appendix	14-Apr-17 A	01-Jun-17 A	18			\$0.00
A1250	Prepare 50% Real Estate Appendix	14-Apr-17 A	01-Jun-17 A	30			\$0.00
A1260	Prepare CWE	09-Jun-17 A	21-Jun-17 A	9			\$0.00
A1180	Prepare Draft Feasibility plan drawings	02-Mar-17 A	14-Apr-17 A	33			\$0.00
A1200	Revise plan drawings	01-Jun-17 A	15-Jun-17 A	19			\$0.00
A1170	Set up funding, schedule	01-Feb-17 A	03-Mar-17 A	22			\$0.00
A1710	SHPO Coordination	05-Jul-17 A	28-Sep-17	42			\$0.00
A1190	Stakeholder & PDT review/input	07-Sep-17	16-Oct-17	27			\$0.00
A1730	Tribal Coordination Complete	22-Mar-16 A	21-Apr-16 A	1			\$0.00
A1720	Tribal Coordination Letters Sent		22-Mar-16 A	0			\$0.00
A1230	Update model	14-Apr-17 A	28-Jul-17 A	10			\$0.00
<b>370206.7.2 LRE/ATR/LRD Review of Draft Feasibility</b>		07-Sep-17	30-Mar-18	140			\$0.00
GLRI3220	AFB Meeting		30-Mar-18	0		CW190	\$0.00
A1430	ATR backcheck	27-Nov-17	11-Dec-17	11			\$0.00

Activity ID	Activity Name	Start	Finish	Original Duration	Milestone - Construction	Milestone - Civil Works	At Completion Total Cost
A1450	ATR certification of draft DPR/EA	19-Dec-17	29-Dec-17	8			\$0.00
A1410	ATR kick-off mtg & review of draft DPR/EA	11-Oct-17	07-Nov-17	20			\$0.00
A1650	Cost Certification	19-Dec-17	19-Jan-18	21			\$0.00
A1390	DCQ reviewer backcheck	21-Sep-17	29-Sep-17	7			\$0.00
A1420	District evaluation/response to ATR comments	08-Nov-17	22-Nov-17	10			\$0.00
A1480	District evaluation/response to LRD comments	21-Feb-18	07-Mar-18	11			\$0.00
A1440	District finalizes ATR documents	12-Dec-17	18-Dec-17	5			\$0.00
A1500	District finalizes documents	23-Mar-18	29-Mar-18	5			\$0.00
A1370	District QC & Stakeholder review of draft DPR/E	07-Sep-17*	31-Oct-17	38			\$0.00
A1490	LRD backcheck	08-Mar-18	22-Mar-18	11			\$0.00
A1470	LRD review draft DPR/EA	23-Jan-18	20-Feb-18	20			\$0.00
A1460	Package & Route Draft report (Legal & Policy Ce	02-Jan-18	22-Jan-18	14			\$0.00
A1380	PDT evaluation/response to draft DPR/EA DQC	07-Sep-17*	20-Sep-17	10			\$0.00
A1400	PDT finalizes draft DPR/EA	02-Oct-17	06-Oct-17	5			\$0.00
<b>370206.7.3 Public Review &amp; Finalize Feasibility Report</b>		<b>02-Apr-18</b>	<b>22-Aug-18</b>	<b>101</b>			<b>\$0.00</b>
A1570	District evaluation/response to LRD comments	16-Jul-18	30-Jul-18	11			\$0.00
GLRI3180	Feasibility Report Approval		22-Aug-18*	0		CW170	\$0.00
A1580	LRD backcheck	31-Jul-18	14-Aug-18	11			\$0.00
A1560	LRD Review final DPR/EA	14-Jun-18	13-Jul-18	21			\$0.00
A1590	LRD routing for signature	15-Aug-18	22-Aug-18	6			\$0.00
A1510	LRE packages for public review & routes Public	02-Apr-18	16-Apr-18	11			\$0.00
A1540	LRE routing of final report and FONSI	25-May-18	08-Jun-18	10			\$0.00
A1550	package Final report for LRD	11-Jun-18	13-Jun-18	3			\$0.00
A1530	PDT address any public review comments	18-May-18	24-May-18	5			\$0.00
A1520	Public Review	17-Apr-18	17-May-18	23			\$0.00
<b>370206.8 Implementation</b>		<b>20-Sep-18</b>	<b>12-Aug-19</b>	<b>223</b>			<b>\$0.00</b>
A1620	95% BCOES Review	20-Mar-19	23-Apr-19	25			\$0.00
GLRI3210	Contract Award		12-Aug-19	0	CC800		\$0.00
A1640	Contracting prepares RTA package	08-May-19	07-Jun-19	22			\$0.00
A1610	Design phase	21-Sep-18	19-Mar-19	121			\$0.00
A1140	LRD review/approval of Design Review Plan	05-Oct-18*	05-Nov-18	21			\$0.00
GLRI3190	PPA Execution		20-Sep-18*	0		CW130	\$0.00
A1600	Prepare Design Review Plan	21-Sep-18	04-Oct-18	10			\$0.00
GLRI3200	Ready to Advertise		07-Jun-19	0		CW400	\$0.00
A1630	Route RTAP&S	24-Apr-19	07-May-19	10			\$0.00