

## Estabrook Dam Repair Estimates and Bid History

In 2006 STS Consultants (now part of AECOM) prepared a repair estimate of \$617,820 plus engineering of \$138,000.

In 2014 AECOM prepared a repair estimate of \$1,369,771., and fish passage of \$751,992 plus engineering of \$395,050.

In 2015 AECOM prepared a repair estimate of \$1,931,000., and fish passage of \$703,728 plus engineering of \$412,272.

In June the construction bid came in at \$3,419,681 for both repair and addition of a fish passage.

Here are some of the reasons why the bid came in over budget.

One of the biggest reasons was that the bid date was delayed to the point that there was less than 6 months to complete the substantial portion of work and the ideal low flow season to do the work would have passed. Hence the mobilization and general costs came in over \$475,000 over budget.

Next AECOM budgeted \$20,000 for an aeration system to keep ice from forming on the gates. Shortly before the bid date a boiler system with pipes being cut into the concrete was substituted leaving the contractors on the hook to design and comply with the undetermined whims of the county. Hence instead of a \$20,000 aeration system, the boiler system came in at \$245,000, adding another \$225,000 over the budget.

The bidding requirements were very restrictive by requiring the contractor have done at least 3 similar fish passage projects.

Because of the extremely short time schedule and the restrictive bid requirements only one Wisconsin contractor and one out of state contractor bid the project.

The DNR has granted an extension for another year so the project can be completed in a proper time frame. If this gets rebid so the project can be done during the ideal season more reasonable ice protection and less restrictive qualification requirement this will come in under budget.

Backup documentation follows this page.

Estabrook Park Dam

Repair Option

July 21, 2006

REPAIR  
7/21/2006

Opinion of Probable Project Costs

Client: Milwaukee County DPW  
Address: 2711 West Wells St, Milwaukee, WI

Description	Units	Unit Cost	Quantity	Total Cost	Comments
1.00 General					
1.1 Mobilization / Demobilization	ls	\$25,000.00	1	\$25,000	segmental barge, small crane, incidental equipment
1.2 Erosion Control	ls	\$2,000.00	1	\$2,000	silt fence and turbidity barriers
1.3 Site Restoration	ls	\$2,500.00	1	\$2,500	repair pavements, grading, seeding and mulching
1.4 Diversion of water	ls	\$5,000.00	1	\$5,000	Porta-dam installation during pier repairs
2.00 Gated Spillway - Concrete Repairs					
2.01 Concrete surface repairs - abutments and stairs	sf	\$70.00	600	\$42,000	reconstruct stairs, complete abutment surface reconstruction
2.02 Concrete surface repairs - bridge deck and walls	sf	\$70.00	500	\$35,000	partial depth repair of deck, partial to full depth repair of walls, sawcut closed expansion joints and replace joint material
2.03 Pier reconstruction - below el. 37.75	sf	\$70.00	2800	\$196,000	complete surface reconstruction below el. 37.75', all 11 piers
2.04 Concrete surface repairs - pier above el. 37.75	sf	\$70.00	800	\$56,000	partial depth repair above el. 37.75 as needed, all 11 piers
3.00 Gated Spillway - Gate Repairs					
3.01 Prepare and paint slide gates	ea	\$2,500.00	10	\$25,000	sandblast, prime and paint all 10 slide gates in place
3.02 Misc. repairs to gates, guides and seals	ls	\$3,000.00	1	\$3,000	as needed based upon inspection after cleaning
4.00 Ice Breakers - Concrete Repairs					
4.01 Concrete surface repairs	ea	\$400.00	28	\$11,200	chip, install anchors, polymer modified concrete
5.00 Overflow Spillway					
5.01 New flashboards	ls	\$3,000.00	1	\$3,000	4"x8"x7'4" timber, includes all labor and materials to remove old flashboards and replace with new ones
5.02 Repair / replace bent supports	ls	\$4,000.00	1	\$4,000	assume 6 - 8 to be repaired
5.03 Concrete surface repairs	sf	\$70.00	500	\$35,000	chipping, anchors, and polymer modified concrete repair of crest
6.00 Slope Protection					
6.01 Riprap	cy	\$60.00	400	\$24,000	24" layer of riprap, left and right banks u/s and d/s of gated spillway
6.02 Geotextile	sy	\$2.25	1,400	\$3,150	
7.00 Debris Removal	ls	\$40,000.00	1	\$40,000	upstream of overflow spillway and ice breakers
8.00 Miscellaneous					
8.01 Repair / replace handrails, fences, gates, etc.	ls	\$3,000.00	1	\$3,000	

Construction Sub-Total: \$514,850  
 Construction Contingency: 20% \$102,970  
 Construction Estimate: \$617,820

9.00 Engineering \$60,000  
 9.01 Engineering design \$50,000  
 9.02 Resident engineering and contract administration \$10,000  
 9.03 Prepare EAP and IOM plans  
 Engineering Subtotal: \$120,000  
 Engineering Contingency: 15% \$18,000  
 Engineering Estimate: \$138,000

**Total Project Cost Estimate: \$755,820**

Information presented on this sheet represent our opinion of probable costs in 2006 dollars. Unit and lump-sum prices are based on costs for similar projects, engineering judgment, and/or published cost data. Actual bids and total project costs may vary based on contractor's perceived risk, site access, season, market conditions, etc. No warranties concerning the accuracy of costs presented herein are expressed or implied.

REPAIR 5/9/2014

AECOM Cost Estimate - Estabrook Park Dam  
Structural Repair Option - \$1,660,000 Budget

05/09/2014 Note: This estimate does not include sediment removal, which is covered in a separate, environmental cost estimate

Opinion of Probable Structural Project Costs					
Client: Milwaukee County DPW Address: 2711 West Wells St Milwaukee, WI					
Description	Units	Unit Cost	Quantity	Total Cost	Comments
1.00 General					
1.1 Mobilization / Demobilization	ls	\$37,000.00	1	\$37,000	segmental barge, small crane, incidental equipment
1.2 Erosion Control	ls	\$45.00	1	\$45	silt fence and turbidity barriers
1.3 Site Restoration	ls	\$16,000.00	1	\$16,000	repair pavements, grading, seeding and mulching
1.4 Diversion of water	ls	\$31,500.00	1	\$31,500	Penta dam installation during pier repairs with stoplogs removed on overflow spillway
2.00 Gated Spillway - Concrete Repairs					
2.01 Concrete surface repairs - abutments and stairs	sf	\$90.00	700	\$63,000	reconstruct stairs, complete abutment surface reconstruction
2.02 Concrete surface repairs - bridge deck and walls	sf	\$80.00	500	\$40,000	partial depth repair of deck, partial to full depth repair of walls, sawcut closed expansion joints and replace joint material
2.03 Pier reconstruction - below el. 37.75	sf	\$100.00	2800	\$280,000	complete surface reconstruction below el. 37.75, all 11 piers
2.04 Concrete surface repairs - pier above el. 37.75	sf	\$80.00	800	\$64,000	partial depth repair above el. 37.75 as needed, all 11 piers
2.05 Install grouted tie down anchors in upstream piers, for stability with ice loading at full pool	ls	\$315,000.00	1	\$315,000	includes 11 tie down anchors into bedrock with mobilization
3.00 Gated Spillway - Gate Repairs					
3.01 Prepare and paint slide gates	ea	\$3,700.00	10	\$37,000	sandblast, prime and paint all 10 slide gates in place
3.02 Misc. repairs to gates, guides and seals	ls	\$11,000.00	1	\$11,000	as needed based upon inspection after clearing
4.00 Ice Breakers - Concrete Repairs					
4.01 Concrete surface repairs	ea	\$4,000.00	24	\$96,000	chip, install anchors, polymer modified concrete, incl. replacing 1 and 1/3 ice breakers
5.00 Overflow Spillway					
5.01 New flashboards	ls	\$1,200.00	1	\$1,200	4"x8"x74" timber, recently replaced with new ones - budget for stockpile of new ones
5.02 Repair / replace bent supports	ls	\$2,500.00	1	\$2,500	assume 4 to be repaired
5.03 Concrete surface repairs	sf	\$80.00	500	\$40,000	chipping, anchors, and polymer modified concrete repair of crest
6.00 Slope Protection					
6.01 Riprap	cy	\$50.00	800	\$54,000	24" layer of riprap, left and right banks w/s and d/s of gated spillway
6.02 Geotextile	sy	\$4.00	1,600	\$6,400	
7.00 Debris Removal	ls	\$25,000.00	1	\$25,000	upstream of gated spillway and ice breakers, not incl. environmental cleanup area
8.00 Miscellaneous					
8.01 Repair / replace handrails, fences, gates, etc.	ls	\$6,000.00	1	\$6,000	
8.02 Misc. Site Electrical Work	ls	\$16,000.00	1	\$16,000	Per Milwaukee County recommendation
Construction Sub-Total:				\$1,141,645	
Construction Contingency: 20%				\$228,329	
Construction Estimate:				\$1,369,974	
9.00 Engineering					
9.01 Engineering design				\$136,997	
9.02 Resident engineering and contract administration				\$100,000	
9.03 Prepare EAP and IOM plans				\$15,000	
Engineering Subtotal:				\$251,997	
Engineering Contingency: 15%				\$37,800	
Engineering Estimate:				\$289,797	
<b>Total Project Cost Estimate:</b>				<b>\$1,659,771</b>	

Information presented on this sheet represents our opinion of probable costs in 2014 dollars, based upon previous unit rates and quantities updated from the 2008 STS Consultants' Cost Estimate. Unit and lump-sum prices are based on costs for similar projects, our engineering judgment, and/or published cost data. Actual bids and total project costs may vary based on contractor's perceived risk, site access, season, market conditions, etc. No warranties concerning the accuracy of costs presented herein are expressed or implied.

Note: This rehabilitation estimate is to extend the life of the dam structures for 20 years, with some regular maintenance. This estimate is for repairs of existing structural components only, not including the nearby transformer building. Costs for replacement or remodeling of structures is not included.

FISH PASSAGE 5/9/2014

<b>Planning Level Opinion of Probable Cost</b>		Date:	5/9/2014
<b>Alternate 1 - Fish Passage Only</b>			
Project:	Estabrook Park Dam Rehabilitation	AECOM Project No.:	60181463
Client:	Milwaukee County		
Location:	Milwaukee, Wisconsin	Estimator:	C. Dean
Prepared by:	AECOM	Checked by:	G. Kruger

**Remove Flashboard Section of Serpentine Spillway, New Concrete Walls, New Rock Ramp, New Boulder Weirs, Embankment Rip Rap Protection along Island Shoreline.**

<u>Item</u>	<u>Description</u>	<u>Quantity</u>	<u>Units</u>	<u>Unit Cost</u>	<u>Total</u>
<b>1.0</b>	<b>Site Preparation / Erosion Control</b>				
1.1	Silt Screen	150	lf	\$25.00	\$3,750
1.2	Coffer Dam	1	ls	\$40,000.00	\$40,000
1.3	Removing Spillway	120	cy	\$200.00	\$24,000
1.4	Traffic Control	1	ls	\$2,000.00	\$2,000
1.5	Localized Dewatering	90	days	\$300.00	\$27,000
				<b>Subtotal</b>	<b>\$96,750</b>
<b>2.0</b>	<b>Proposed New Rock Arch Rapids Fishway</b>				
2.1	Concrete Wall	283	cy	\$700.00	\$198,100
2.2	Rock Ramp Field Stone	950	cy	\$125.00	\$118,750
2.3	Rock Ramp Sub-base Stone	542	cy	\$90.00	\$48,780
2.4	Boulder Weirs	267	cy	\$125.00	\$33,375
2.5	Footing Rock Anchors	309	ea	\$100.00	\$30,900
2.6	Low Level Sluice Gate		ls	\$20,000.00	\$0
2.7	Grating and Railings		ls	\$15,000.00	\$0
				<b>Subtotal</b>	<b>\$429,905</b>
<b>3.0</b>	<b>Earthwork</b>				
3.1	Salvaged Rubble Stone Masonry and Stone Fill	68	cy	\$35.00	\$2,380
3.2	Geotextile Fabric	216	sy	\$3.50	\$756
3.3	Rip Rap	410	cy	\$90.00	\$36,900
				<b>Subtotal</b>	<b>\$40,036</b>
<b>4.0</b>	<b>Site Restoration / Landscaping</b>				
4.1	Site Restoration / Landscaping	1	ls	\$3,000.00	\$3,000
				<b>Subtotal</b>	<b>\$3,000</b>
				<b>Subtotals:</b>	<b>\$569,691</b>
				<b>Mobilization (10%):</b>	<b>\$56,969</b>
				<b>Construction Contingency (20%):</b>	<b>\$125,332</b>
				<b>Final Design</b>	<b>\$45,120</b>
				<b>Construction Resident Engineering:</b>	<b>\$60,159</b>
				<b>Total Estimated Cost:</b>	<b>\$857,271</b>

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REPAIR 6/5/2015

**AECOM Cost Estimate - Estabrook Park Dam  
Structural Repair Option - \$2,287,000 Budget**

06/05/2015 Note: This estimate does not include sediment removal, which is covered in a separate, environmental cost estimate

Opinion of Probable Structural Project Costs					
Client: Milwaukee County DPW Address: 2711 West Wells St, Milwaukee, WI					
Description	Units	Unit Cost	Quantity	Total Cost	Comments
<b>1.00 General</b>					
1.1 Mobilization / Demobilization	ls	\$37,000.00	1	\$37,000	segmental barge, small crane, incidental equipment
1.2 Erosion Control	ls	\$100.00	1	\$100	silt fence and turbidity barriers
1.3 Site Restoration	ls	\$16,000.00	1	\$16,000	repair pavements, grading, seeding and mulching
1.4 Diversion of water	ls	\$90,000.00	1	\$90,000	Porta-dam installation during pier repairs, with stoplogs removed on overflow spillway
<b>2.00 Gated Spillway - Concrete Repairs</b>					
2.01 Concrete surface repairs - abutments and stairs	sf	\$95.00	770	\$73,150	reconstruct stairs, complete abutment surface reconstruction
2.02 Concrete surface repairs - bridge deck and walls	sf	\$85.00	600	\$51,000	partial depth repair of deck, partial to full depth repair of walls, sawcut closed expansion joints and replace joint material
2.03 Pier reconstruction - below Elv 618.35'	sf	\$120.00	3400	\$408,000	complete surface reconstruction below Elv 618.35', all 11 piers
2.04 Concrete surface repairs - pier above Elv 618.35'	sf	\$85.00	960	\$81,600	partial depth repair above Elv 618.35 as needed, all 11 piers
2.05 Install grouted tie down anchors in upstream piers, for stability with ice loading at full pool	ls	\$315,000.00	1	\$315,000	includes 11 tie down anchors into bedrock, with mobilization
<b>3.00 Gated Spillway - Gate Repairs</b>					
3.01 Prepare and paint slide gates	ea	\$3,700.00	10	\$37,000	sandblast, prime and paint all 10 slide gates in place
3.02 Misc. repairs to gates, guides and seals	ls	\$12,000.00	1	\$12,000	as needed based upon inspection after cleaning
3.03 Replacement of Motorized Equipment for Gates 6, 7, 8 and 9	ls	\$60,000.00	1	\$60,000	Replacement of motorized equipment to be equivalent to existing motorized equipment for Gates 1 to 5 and 10, except automated assemblies
<b>4.00 Ice Breakers - Concrete Repairs</b>					
4.01 Replace Ice Breakers	ea	\$6,000.00	24	\$144,000	Replace existing ice breakers to match existing
<b>5.00 Overflow Spillway</b>					
5.01 New flashboards	ls	\$1,200.00	1	\$1,200	4"x8"x74" limber, recently replaced with new ones - budget for stockpile of new ones
5.02 Repair / replace bent supports	ls	\$2,500.00	4	\$10,000	assume 4 to be repaired
5.03 Concrete surface repairs	sf	\$80.00	1,500	\$120,000	chipping, anchors, and polymer modified concrete repair of crest
<b>6.00 Slope Protection</b>					
6.01 Riprap	cy	\$90.00	700	\$63,000	24" layer of riprap, left and right banks u/s and d/s of gated spillway & Fixed Crest Spillway
6.02 Geotextile	sy	\$4.00	1,800	\$7,200	
<b>7.00 Debris Removal</b>					
	ls	\$40,000.00	1	\$40,000	upstream of gated spillway and ice breakers, not incl environmental cleanup area
<b>8.00 Miscellaneous</b>					
8.01 Repair / replace handrails, fences, gates, etc	ls	\$6,000.00	1	\$6,000	
8.02 Misc. Site Electrical Work	ls	\$16,000.00	1	\$16,000	Per Milwaukee County recommendation
8.03 Aeration System by Gated Structure	ls	\$20,000.00	1	\$20,000	Estimated 5 aeration units included electrical
Construction Sub-Total:				\$1,808,250	
Construction Contingency: 20%				\$322,000	
Construction Estimate:				\$1,931,000	
<b>9.00 Engineering</b>					
9.01 Engineering design				\$194,000	
9.02 Resident engineering and contract administration				\$100,000	
9.03 Prepare EAP and IOM plans				\$15,000	
Engineering Subtotal:				\$309,000	
Engineering Contingency: 15%				\$47,000	
Engineering Estimate:				\$356,000	
<b>Total Project Cost Estimate:</b>				<b>\$2,287,000</b>	

Information presented on this sheet represents our opinion of probable costs in 2015 dollars, based upon previous unit rates and quantities updated from the AECOM's 2012 Cost Estimate. Unit and lump-sum prices are based on costs for similar projects, our engineering judgment, and/or published cost data. Actual bids and total project costs may vary based on contractor's perceived risk, site access, season, market conditions, etc. No warranties concerning the accuracy of costs presented herein are expressed or implied.

Note: This rehabilitation estimate is to extend the life of the dam structures for 20 years, with some regular maintenance. This estimate is for repairs of existing structural components only, not including the nearby transformer building. Costs for replacement or remodeling of structures is not included.

# FISH PASSAGE 6/5/2015

<b>Planning Level Opinion of Probable Cost</b>		Date:	6/5/2015
<b>Option No. 1 - Fish Passage at Stop Logs</b>			
Project:	Estabrook Park Dam Rehabilitation	AECOM Project No.:	60181463
Client:	Milwaukee County		
Location:	Milwaukee, Wisconsin	Estimator:	J. Hiller
Prepared by:	AECOM	Checked by:	C. Dean

**Option 1 - Construct One Fish Passage Ways at fixed crest spillway - One passage way adjacent to the south shoreline (that will function when stop logs are in). If stop logs at the north end of the spillway are removed, no flow will pass through this fish passage way.**

Item	Description	Quantity	Units	Unit Cost	Total
<b>1.0</b>	<b>Site Preparation / Erosion Control</b>				
1.1	Silt Screen	200	lf	\$25.00	\$5,000
1.2	Coffer Dam	1	ls	\$40,000.00	\$40,000
1.3	Removing Spillway	200	cy	\$200.00	\$40,000
1.4	Traffic Control	1	ls	\$2,000.00	\$2,000
1.5	Localized Dewatering	90	days	\$300.00	\$27,000
				<b>Subtotal</b>	<b>\$114,000</b>
<b>2.0</b>	<b>Proposed New Rock Arch Rapids Fishway</b>				
2.1	Concrete Wall	203	cy	\$700.00	\$142,100
2.2	Rock Ramp Field Stone	1010	cy	\$125.00	\$126,250
2.3	Rock Ramp Sub-base Stone	400	cy	\$90.00	\$36,000
2.4	Boulder Weirs	350	cy	\$125.00	\$43,750
2.5	Footing Rock Anchors	309	ea	\$100.00	\$30,900
2.6	Low Level Sluice Gate		ls	\$20,000.00	\$0
2.7	Grating and Railings		ls	\$15,000.00	\$0
				<b>Subtotal</b>	<b>\$379,000</b>
<b>3.0</b>	<b>Earthwork</b>				
3.1	Salvaged Rubble Stone Masonry and Stone Fill	200	cy	\$35.00	\$7,000
3.2	Geotextile Fabric	250	sy	\$3.50	\$875
3.3	Rip Rap	300	cy	\$90.00	\$27,000
				<b>Subtotal</b>	<b>\$34,875</b>
<b>4.0</b>	<b>Site Restoration / Landscaping</b>				
4.1	Site Restoration / Landscaping	1	ls	\$5,000.00	\$5,000
				<b>Subtotal</b>	<b>\$5,000</b>
				<b>Subtotals:</b>	<b>\$532,875</b>
				<b>Mobilization (10%):</b>	<b>\$53,288</b>
				<b>Construction Contingency (20%):</b>	<b>\$117,233</b>
				<b>Construction Resident Engineering:</b>	<b>\$56,272</b>
				<b>Total Estimated Cost:</b>	<b>\$760,000</b>

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**BASE BID FOR ESTABROOK DAM REHABILITATION**

BASE BID ITEM DESCRIPTION	APPROX. QUANTITY	UNIT	UNIT PRICE	TOTAL AMT BID	UNIT PRICE	TOTAL AMT BID	UNIT PRICE	TOTAL AMT BID
			Terra Engineering		DRAX		J.F. Brennan Co.	
<b>1.0 General</b>								
1.1 Mobilization, demobilization and general requirements of the contract	1	LS	465,000.00	465,000.00	400,000.00	400,000.00	100,000.00	100,000.00
1.2 Erosion Control	1	LS	9,315.00	9,315.00	25,000.00	25,000.00	8,500.00	8,500.00
1.3 Site Restoration – Site restoration, as specified	1	LS	33,930.00	33,930.00	25,000.00	25,000.00	8,500.00	8,500.00
1.4 Excavation and Grading as necessary to achieve required limits and elevations to site improvements to the limits and elevations shown on the Drawings, and as specified.	1	LS	101,050.00	101,050.00	186,969.00	186,969.00	2,500.00	2,500.00
1.5 Removing and Disposing of Excess and Unsuitable Material, as specified.	15	CY	100.00	1,500.00	50.00	750.00	60.00	900.00
1.6 Removing and Disposing of Excess and Unsuitable Rubble Offsite, as specified.	300	CY	75.75	22,725.00	50.00	15,000.00	15.00	4,500.00
1.7 Stockpiling Topsoil, as specified.	1	LS	2,630.00	2,630.00	5,000.00	5,000.00	800.00	800.00
1.8 Construction Stakeout, as specified.	1	LS	11,650.00	11,650.00	10,000.00	10,000.00	3,000.00	3,000.00
1.9 Temporary Cofferdams for Diversion of Water	1	LS	491,600.00	491,600.00	775,000.00	775,000.00	405,661.00	405,661.00
<b>2.0 Gated Spillway</b>								
2.1 Partial Depth replacement of deteriorated concrete Stair Repairs as specified in Section 03930 and on repair drawings. Includes priming exposed reinforcing steel and installation of supplemental steel dowels, as required. For Bidding assume depth of 9-inches time the length of the stair	40	CF	443.00	17,720.00	500.00	20,000.00	400.00	16,000.00

**BASE BID FOR ESTABROOK DAM REHABILITATION**

BASE BID ITEM DESCRIPTION	APPROX. QUANTITY	UNIT	UNIT PRICE	TOTAL AMT BID	UNIT PRICE	TOTAL AMT BID	UNIT PRICE	TOTAL AMT BID	
				Terra Engineering		DRAX		J.F. Brennan Co.	
2.2. Unit Price PR – Partial Depth replacement of deteriorated concrete on piers below Elev. +37.75 (upstream side) and Elev. +34 (downstream side), as specified in Section 03930 and on repair drawings. Includes priming exposed reinforcing steel and installation of supplemental steel dowels, as required. For Bidding assume estimated repair size of 4-foot by 4-foot with an average depth of 6-inches.	1700	SF	354.00	601,800.00	140.00	238,000.00	400.00	680,000.00	
2.3 Unit Price CR – Partial depth replacement of deteriorated concrete on column sections above Elev. +37.75 (upstream side) and Elev. +34 (downstream side), as specified in Section 03930 and on repair drawings. Includes priming exposed reinforcing steel and installation of supplemental steel dowels, as required. For Bidding assume estimated repair size of 2-foot by 2-foot with an average depth of 3-inches.	100	SF	275.00	27,500.00	175.00	17,500.00	325.00	32,500.00	
2.4 Unit Price WR – Partial depth replacement of deteriorated concrete on walls of the operating deck and at piers with expansion joints, as specified in Section 03930 and on repair drawings. Includes priming exposed reinforcing steel and installation of supplemental steel dowels, as required. For Bidding assume estimated repair size of 1-foot by 2-foot with an average depth of 3-inches.	80	SF	275.00	22,000.00	175.00	14,000.00	325.00	26,000.00	
2.5 Unit Price TDR – Partial depth replacement of deteriorated concrete on the topside of the operating deck, as specified in Section 03930 and on repair drawings. Includes priming exposed reinforcing steel and installation of supplemental steel dowels, as required. For Bidding assume estimated repair size of 1-foot by 2-foot with an average depth of 3-inches.	30	SF	275.00	8,250.00	280.00	8,400.00	250.00	7,500.00	
2.6 Unit Price UDR – Partial depth replacement of deteriorated concrete on the underside of the operating deck, as specified in Section 03930 and on repair drawings. Includes priming exposed reinforcing steel and installation of supplemental steel dowels, as required. For Bidding assume estimated repair size of 1-foot by 3-foot with an average depth of 3-inches.	35	SF	275.00	9,625.00	280.00	9,800.00	680.00	23,800.00	



**BASE BID FOR ESTABROOK DAM REHABILITATION**

BASE BID ITEM DESCRIPTION	APPROX. QUANTITY	UNIT	UNIT PRICE	TOTAL AMT BID	UNIT PRICE	TOTAL AMT BID	UNIT PRICE	TOTAL AMT BID
			Terra Engineering		DRAX		J.F. Brennan Co.	
2.7 Unit Price HDR - Partial Depth Replacement of deteriorated concrete of the hoist blocks on the operating deck, as specified in Section 03930 and on repair drawings. Includes priming exposed reinforcing steel and installation of supplemental steel dowels, as required. For Bidding assume estimated repair size of 1-foot by 1-foot with an average depth of 3-inches.	10	SF	275.00	2,750.00	300.00	3,000.00	250.00	2,500.00
2.8 Installation of Rock Anchor on Piers P5 to P11 as specified in Project Specifications and on repair drawings.	7	EA	9,200.00	64,400.00	8,000.00	56,000.00	11,400.00	79,800.00
2.9 Application of protective concrete sealer on the gated structure. This is to include the operating deck slab and walls and piers to 1 foot below water line.	1	LS	32,680.00	32,680.00	16,800.00	16,800.00	20,000.00	20,000.00
2.10 Replacement of existing expansion joints of the gated structure as shown on drawings and per Specification Section	95	LF	61.00	5,795.00	90.00	8,550.00	50.00	4,750.00
<b>3.0 Slide Gates</b>								
3.1 Reconditioning of 6 slide gates. This includes removal of corrosion by abrasive grit or low pressure water blasting and repainting of the slide gates in the field.	6	EA	23,500.00	141,000.00	65,000.00	390,000.00	50,000.00	300,000.00
3.2 Refurbish gates 6 – 9 hoist gear box equipment to match existing gate hoist gear boxes of 1 to 5 and 10. This work includes replacement of gearing and electrical motors by Waterman Industries, plus 4 new guards and supports over exposed gate hoist shafts. Components and materials shall be salvaged from Gate 1 to 4 that are to be removed, as necessary.	4	EA	16,825.00	67,300.00	40,000.00	160,000.00	50,000.00	200,000.00
3.3 Removal of Gates 1 to 4 including placement of concrete repair material, per Specification Section 03930, in voids where steel for the vertical guide slots and sill is removed.	4	EA	14,750.00	59,000.00	5,000.00	20,000.00	15,000.00	60,000.00

**BASE BID FOR ESTABROOK DAM REHABILITATION**

BASE BID ITEM DESCRIPTION	APPROX. QUANTITY	UNIT	UNIT PRICE	TOTAL AMT BID	UNIT PRICE	TOTAL AMT BID	UNIT PRICE	TOTAL AMT BID
				Terra Engineering		DRAX		J.F. Brennan Co.
<b>4.0 Ice Breakers</b>								
4.1 Replacement of 24 Ice Breakers. This work consists of removal of existing ice breakers and installation of new ice breakers in same location and orientation of existing.	24	EA	6,810.00	163,440.00	10,000.00	240,000.00	20,000.00	480,000.00
<b>5.0 Fixed Overflow Spillway</b>								
5.1 "Fixed Crest Spillway Stop Logs - This work shall consist of re-installation of stop log components including repair and/or replacement of damaged or missing components of the stop logs as follows: replacement and/or re-installation of the damaged or missing steel angles and Zees of the existing end brackets at both ends of the stop log section; Replacement of 11 damaged or severely corroded stanchions of the fixed crest spillway; and re-installation of stop logs after the repair work to the stop log components and fixed crest spillway is completed. The Owner will provide the existing steel channel and timber stop logs to be installed." Refer to Sheet S304 and Reference Drawing for additional information. Install two end brackets consisting of steel angles and zees supplied by Owner at each end of stoplog section of fixed crest spillway into sound concrete. Refer to Sheet S304 and Reference Drawing for additional information.	1	LS	5,800.00	5,800.00	5,000.00	5,000.00	100,000.00	100,000.00
5.2 Partial Depth Replacement of deteriorated concrete of top of the overflow spillway, as specified in Section 03930 and on repair drawings. Includes priming exposed reinforcing steel and installation of supplemental steel dowels, as required. For Bidding assume estimated repair size of 562-foot by 2-foot with an average depth of 3-inches.	1124	SF	125.00	140,500.00	115.00	129,260.00	350.00	393,400.00
5.3 Re-grouting joint between the concrete spillway structure and rubble masonry	562	LF	26.50	14,893.00	56.00	31,472.00	18.00	10,116.00
<b>6.0 Slope Protection</b>								
6.1 Placement of riprap, as specified per Project Specifications and civil drawings.	1100	CY	78.50	86,350.00	60.00	66,000.00	67.00	73,700.00
6.2 Placement of geotextile filter fabric underlain riprap, as specified per project specifications and civil drawings.	1450	SY	2.75	3,987.50	7.00	10,150.00	3.00	4,350.00
<b>7.0 Debris Removal</b>								
7.1 Removal and disposal of debris on the upstream side of the gated structure, ice breakers and spillway including the stockpile of debris on the left bank of the river.	1	LS	14,250.00	14,250.00	43,000.00	43,000.00	47,800.00	47,800.00

**BASE BID FOR ESTABROOK DAM REHABILITATION**

BASE BID ITEM DESCRIPTION	APPROX. QUANTITY	UNIT	UNIT PRICE	TOTAL AMT BID	UNIT PRICE	TOTAL AMT BID	UNIT PRICE	TOTAL AMT BID
			Terra Engineering		DRAX		J.F. Brennan Co.	
<b>8.0 Tree Removal on Island</b>								
8.1 Clear trees and shrubs and grub to a depth of 36-inches within 15-feet of abutments of the gated structure, ice breakers and fixed crest spillway as shown on the Drawings and per the Specifications	1	LS	12,625.00	12,625.00	20,000.00	20,000.00	12,500.00	12,500.00
8.2 Clear trees and shrubs and grub as shown on the Drawings and per the Specifications. Includes areas where riprap shoreline protection and fish passage is proposed, and areas where Dam Signage is to be placed.	1	LS	15,960.00	15,960.00	5,000.00	5,000.00	16,000.00	16,000.00
<b>9.0 Miscellaneous Repairs</b>								
9.1 Repair, recondition or replacement of handrails, metal box, fences and gates, meeting current code for railings.	1	LS	6,235.00	6,235.00	10,000.00	10,000.00	1,500.00	1,500.00
<b>10.0 Fish Passage and Miscellaneous Site Work</b>								
10.1 Rock run— furnish and install rock run stone as shown on the Drawings and as specified in the contract documents.	720	CY	84.20	60,624.00	130.00	93,600.00	63.00	45,360.00
10.2 Salvaged On-site Material Rock run – use on-site material and install rock run stone as shown on the Drawings and as specified in the contract documents.	80	CY	47.00	3,760.00	63.00	5,040.00	10.00	800.00
10.3 Boulder stone – furnish and install boulder stone as shown on the Drawings and as specified in the contract documents.	520	TON	150.00	78,000.00	168.00	87,360.00	55.00	28,600.00
10.4 Salvaged On-site Material Boulder stone – use on-site material and install boulder stone as shown on the Drawings and as specified in the contract documents.	25	TON	94.00	2,350.00	105.00	2,625.00	16.00	400.00
10.5 Keyed-in Boulder stone – furnish and install keyed-in boulder stone as shown on the Drawings and as specified in the contract documents.	180	TON	217.00	39,060.00	248.00	44,640.00	75.00	13,500.00
10.6 Training for boulder placement – provide staff responsible for boulder placement, and related equipment for a two-hour training with provided fish passage specialist, as specified.	2	EA	1,200.00	2,400.00	700.00	1,400.00	850.00	1,700.00

**BASE BID FOR ESTABROOK DAM REHABILITATION**

BASE BID ITEM DESCRIPTION	APPROX. QUANTITY	UNIT	UNIT PRICE	TOTAL AMT BID	UNIT PRICE	TOTAL AMT BID	UNIT PRICE	TOTAL AMT BID
			Terra Engineering		DRAX		J.F. Brennan Co.	
10.7 Crushed gravel – furnish and install crushed gravel as shown on the Drawings and as specified in the contract documents.	100	CY	89.25	8,925.00	212.00	21,200.00	42.00	4,200.00
10.8 Salvaged On-site Material Crushed gravel – use on-site material and install crushed gravel as shown on the Drawings and as specified in the contract documents.	10	CY	155.00	1,550.00	30.00	300.00	10.00	100.00
10.9 Gravel fill – furnish and install gravel fill as shown on the Drawings and as specified in the contract documents.	240	CY	90.00	21,600.00	88.00	21,120.00	42.00	10,080.00
10.10 Salvaged On-site Material Gravel fill – use on-site material and install gravel fill as shown on the Drawings and as specified in the contract documents.	60	CY	94.00	5,640.00	63.00	3,780.00	8.00	480.00
10.12 Placement of geotextile filter fabric underlain crushed gravel, as specified per project specifications and civil drawings.	650	SY	2.61	1,696.50	15.00	9,750.00	3.00	1,950.00
10.13 Fishway Sidewall - furnish and install concrete sidewall for fishway as shown on the Drawings and as specified in the contract documents.	1	LS	189,000.00	189,000.00	182,209.00	182,209.00	200,000.00	200,000.00
10.14 Fishway Stepped Weir - furnish and install concrete stepped weir for fishway as shown on the Drawings and as specified in the contract documents.	1	LS	96,815.00	96,815.00	82,825.00	82,825.00	300,000.00	300,000.00
<b>11.0 Gate Heat System</b>								
11.1 Design and installation of a gated heating system for Gates 5 through 10. This shall include the design, fabrication and installation of the electrical, piping and mechanical components of the heating system.	1	LS	0.00	245,000.00	No Bid	#VALUE!	200,000.00	200,000.00
<b>Base Bid Total</b>				<b>3,419,681.00</b>		<b>#VALUE!</b>		<b>3,933,747.00</b>