

# **Attachment 3**

## **Major Rehabilitation Cost Breakdown**

**28<sup>th</sup> Meeting of the NECC  
January 11-12, 2000**

**Presented by**

**Kevin Landwehr**

**Hydraulic Engineer  
US Army Corps of Engineers – Rock Island  
District**

-----Original Message-----

**From:** Less, Roger A MVR  
**Sent:** Tuesday, January 11, 2000 3:14 PM  
**To:** Landwehr, Kevin J MVR  
**Cc:** Lundberg, Denny A MVR; Tipple, David A MVR  
**Subject:** Nav Study - Major Rehab Costs

Kevin,

The costs to which you were referring are based on our recent Major Rehabilitation projects on the UMR, namely at Locks and Dams 11 and 12. Below is the site totals from the Rehabilitation Evaluation Report (RER) decision documents upon which funding requests and approvals are based. Both of these projects have been approved for construction new starts, Lock and Dam 12 this FY and Lock and Dam 11 in FY01.

Lock and Dam 11: (FY99 \$'s)	Scour, Stage I		\$ 4,489,000
	Lock Rehab, Stage II	\$21,648,000	
	Miter Gate Rehab	<u>\$ 3,287,000</u>	
	<b>Lock Total</b>		<b>\$24,935,000</b>
	Dam		<u>\$14,506,000</u>
	TOTAL		\$43,930,000
Lock and Dam 12: (FY98 \$'s)	Scour, Stage I		\$3,961,000
	Lock Rehab, Stage II	\$19,430,000	
	Miter Gate Rehab	<u>\$ 3,164,000</u>	
	<b>Lock Total</b>		<b>\$22,594,000</b>
	Dam		<u>\$13,352,000</u>
	TOTAL		\$39,907,000

Neither Locks and Dams 11 and 12 major rehabilitation projects included complete resurfacing of the lock chamber, only selected concrete repairs within the chamber and miter gate block monoliths.

The Navigation Study major rehabilitation costs to which you were referring included only the costs associated with a rehabilitation of the lock (the above listed Lock Rehab Stage II Lock + Miter Gate Rehab = Lock Total) and do not include the costs associated with the scour protection or dam rehabilitation. As such the Nav Study FY2000 costs of \$25,000,000 for lock rehab without complete chamber resurfacing and \$30,000,000 for lock rehab with complete chamber resurfacing are indicative of costs that we are spending on currently active projects that involve a major rehabilitation of the lock and miter gates.

Attached are the current Major Rehabilitation costs and schedules that we are using in the formulation process. Worksheets Rehab\$1 and Rehab\$2 itemize the expected Major Rehab costs for lock work. These worksheets also include a factor for unconstrained construction major rehab costs for the existing chamber based on a redundant Location 3 lock being in place. These costs are lower due to not having to constrain the majority of lock rehab work to a 90-day winter closure period.

Please call if you need additional information or discussion.

Upper Mississippi River and Illinois Waterway System Navigation Study				
<b>Major Rehabilitation Costs for Lock Rehabilitation w/o Complete Chamber Resurfacing</b>				
<b>Due to the Construction of a Location 2 Lock Extension</b>				
(Costs Based on Historic Major Rehabilitation Projects RER's and Construction Contract Bid Schedules)				
Feature		Contract	Contingency	Feature Cost
Miter Gates		\$ 2,700,000	\$ 270,000	\$ 2,970,000
Approach Guidewalls		\$ 2,900,000	\$ 290,000	\$ 3,190,000
Lock Chamber Concrete and Metals *		\$ 4,500,000	\$ 450,000	\$ 4,950,000
Lock Gate Anchorage and Operating Machinery		\$ 1,650,000	\$ 165,000	\$ 1,815,000
Culvert Valves and Operating Machinery		\$ 1,275,000	\$ 127,500	\$ 1,402,500
Power and Lighting Systems		\$ 2,000,000	\$ 200,000	\$ 2,200,000
Mob/Demobilization and Preparatory Work		\$ 700,000	\$ 70,000	\$ 770,000
Care and Diversion of Chamber Water		\$ 1,750,000	\$ 175,000	\$ 1,925,000
Electrical		\$ 1,200,000	\$ 120,000	\$ 1,320,000
<b>Construction Sub-total</b>		<b>\$ 18,675,000</b>	<b>\$ 1,867,500</b>	<b>\$ 20,542,500</b>
Planning, Engineering and Design, 10%		\$ 1,867,500	\$ -	\$ 1,867,500
Construction Management, 14%		\$ 2,614,500	\$ -	\$ 2,614,500
<b>Total Lock Rehabilitation Costs</b>		<b>\$ 23,157,000</b>	<b>\$ 1,867,500</b>	<b>\$ 25,024,500</b>
<b>Major Rehabilitation Costs</b>				<b>\$ 25,000,000</b>
Note: These Major Rehabilitation feature costs that would be incurred in a typical lock rehabilitation project would be addressed by the construction work associated with the lock extension improvements for the existing lock chamber. As such, the implementation of a lock extension project near the end of a previous Major Rehabilitation project design life would result in the avoidance of a cycle of Major Rehabilitation and associated costs. The \$25.0 million Major Rehabilitation valve summarized above are included in the first costs of construction for a Location 2 lock extension project.				
Historical Major Rehabilitation costs for UMR Location 2 lock rehabilitation based on constrained construction parameters of wintertime 90-day lock closure period.				
* Estimate includes concrete resurfacing of only key areas of the lock chamber such as gate block monoliths and joints.				
<b>Unconstrained Major Rehabilitation Costs, 70%</b>				<b>\$ 17,500,000</b>
Cost engineering estimates have determined that constrained Major Rehabilitation construction parameters of accomplishing lock chamber rehabilitation work during the 90-day wintertime closure period to avoid impacts to navigation increases costs over an unconstrained non-wintertime construction period that allows for an extended lock closure period. A factor of 30% reduction in historical constrained Major Rehabilitation costs for unconstrained non-winter construction has been determined. A Location 3 new lock on the UMR and a Location 1 new lock on the IWW would allow for unconstrained major rehabilitation construction on either lock chamber, thereby reducing historical rehabilitation lock costs by 70%.				
<b>1200-foot Lock Major Rehabilitation Costs</b>				<b>\$25,000,000</b>
<b>Unconstrained 1200-foot Lock Major Rehabilitation Costs, 70%</b>				<b>\$17,500,000</b>

