



WATERWAYS
COUNCIL, INC.

Locks 27, Mississippi River, IL/MO



Location Mississippi River, on the Chain of Rocks Canal at approximately Mile 185.1 above the mouth of the Ohio River in Granite City, Illinois.

Existing Structures Main lock 110' x 1200' chamber; auxiliary lock 110' x 600' chamber

Annual Tonnage 2006 tonnage at Lock and Dam No. 27 totaled 73.3 million tons of commerce. Major commodities included grain, agricultural chemicals, petroleum, and coal.

Summary of Problems The lock is more than 50 years old and requires significant remedial measures including replacement of main lock miter gate, main lock lift gate downstream leaf, culvert valves for both locks, the downstream bulkhead sill stability anchorages in both locks, culvert valve machinery for both locks, lift gate machinery for both leaves of the main lock and the downstream leaf of the auxiliary lock, lifting beam for lock bulkheads, and lock lighting; restoring lock wall stability; a new upstream protection cell and removal of the old deteriorated cell; modification and addition of river training structures at the canal lower entrance; and constructing a bulkhead lifting beam. The current estimated cost is \$33.8 million.

Corps of Engineers Actions A report was submitted and approved in 2002.

Locks No. 27 is located in Madison County, Illinois, on the Chain of Rocks Canal at approximately Mile 185.1 above the mouth of the Ohio River in Granite City, Illinois. The project was authorized by the River and Harbor Act of 1945 and by the Water Resources Development Acts of 1986 and 1992. Locks No. 27 opens the doors to navigation and commerce on the Mississippi River, Illinois River and the Missouri River. These locks are the first (for upbound tows) and the last (for downbound tows) in a series of 37 locks that define commercial navigation in the Midwest. During the year 2006, Locks 27 had approximately 8,300 lockages resulting in more than 73.3 million tons of products contained in over 68,000 barges. When Locks 27 are closed due to equipment failures, shipping stops or is severely curtailed, adding increased costs to the delivery of the all products in transit.

Locks No. 27 has been operating for more than 50 years. While maintenance has been performed to keep the facility operating, wear and tear on many items is beyond ordinary maintenance. Many items either have demonstrated or are predicted by risk analysis to have a low factor of continued reliable performance. The economic consequences of unsatisfactory performance are costs to the government and costs to navigation. A report completed in 2002 compares these costs to the cost of select and strategic rehabilitation measures to restore reliable performance. Immediate rehabilitation of the items recommended is the most beneficial solution due to the age and condition of the structure.

O&M Funding has been used to construct parts of the major rehabilitation project, i.e., the lock bulkheads and the lift gate machinery for both leafs of the main lock and the downstream leaf of the auxiliary lock.

The remaining features of the major rehabilitation project include replacement of the following: main lock miter gate, main lock lift gate downstream leaf, culvert valves for both locks, downstream bulkhead sill stability anchorages in both locks, culvert valve machinery for both locks, lifting beam for the lock bulkheads, and lock lighting. It also includes restoration of lock wall stability using drilled shafts, a new upstream protection cell and renovation of the old deteriorated cell, and modification and addition of river training structures at the canal lower entrance.

- FY 08 is first year the Major Rehab project received an appropriation.
- Activities in FY 2008 (\$6.83M CG)
 - Award contract option to fabricate main lock lift gate downstream leaf
 - Award contract to fabricate as many as seven culvert valves
- President’s Budget for FY 2009 contains \$2,598,000
 - Award contracts for lock bulkheads lifting beam and lock lighting, construction management and engineering work
- Total Amount that could be used in FY 2009 is \$8 million.
 - Award contract for culvert valves machinery

Total Estimated Project Cost	33,800,000
Appropriation for FY 2008 (CG)	6,837,000
Efficient Funding Level in FY 2009	8,000,000

The benefit to cost ratio is 4 to 1 based on an interest rate of 6 1/8 percent. The average annual navigation benefits for this project exceed \$5.6 million. While it is acknowledged that this lock is a critical link in the inland navigation system, the major rehabilitation had not been funded as a new start construction project until last year. The major rehabilitation report was approved in August 2002. The risk of breakdowns and unscheduled outages increase with every year that rehabilitation is delayed.

Source: U.S. Army Corps of Engineers