



**US Army Corps  
of Engineers®**  
Rock Island District

# LOCKS & DAM 15 (ROCK ISLAND, ILLINOIS) MISSISSIPPI RIVER

**General Contractors:**

Lock: Merritt-Chapman & Whitney Corporation, Duluth, Minnesota

Dam: D.A. Healy Company, Detroit, Michigan

**Construction:** 1931-1934

**Congressional Districts:** IA-1; IL-17

## DESCRIPTION

In the heart of the Quad Cities, Locks and Dam 15 is 483 miles above the confluence of the Mississippi and Ohio rivers. The complex stretches across the Upper Mississippi River at one of its narrowest points, a point which is also at the foot of the Rock Island Rapids. The complex extends from the northwest tip of the U.S. Army's Arsenal Island on the Illinois side, to a small area of flat-bottom land on the Iowa side. A highway and railroad bridge, joining Davenport and Rock Island, spans the site.

The movable dam has 11 non-submersible roller gates (each 100-foot long). Nine of the gates have 19-foot, 4-inch diameters; two of the gates have 16-foot, 2-inch diameters.

The lock dimensions are 110-feet wide by 600-feet long; the auxiliary lock is 110 by 360 feet. Normal upper pool elevation is 561.0. Both lock's maximum lift is 16 feet with an average lift of 13 feet. It takes approximately 7 minutes to fill or empty the lock chambers. It takes 3 hours for water to travel from Lock and Dam 14, in Pleasant Valley, Iowa, to Lock and Dam 15.

## HISTORY/SIGNIFICANCE

The lock complex opened in 1934. Locks and Dam 15 was the first 9-Foot Channel Project complex, and served as a prototype for the whole system. Still, Dam 15 is unusual among the Project as it is composed entirely of roller gates, employs only non-submersible roller gates, has roller gates of differing sizes, contains non-standard length roller gates, is not at a right angle to the river, includes no earthen embankment dike section, incorporates a power plant that generates electricity to operate its gates and valves, and uses an open-truss service bridge with a bulkhead-lifting crane on its lower chord. The complex is also unusual because the intermediate locks' wall encases a bridge swing span. The lock and dam elements of the complex were completed at a cost of \$2,524,700.

## ANNUAL TONNAGE (10-YEAR HISTORICAL)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
1998	27,440,301	2003	24,923,417
1999	31,209,760	2004	20,948,490
2000	28,753,278	2005	20,991,007
2001	24,707,186	2006	21,942,068
2002	28,829,063	2007	20,880,043

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## COMMODITY TONNAGE & LOCKAGES (2007)

Coal	3,952,506	<u>Subtotals:</u>	
Petroleum	415,604		
Chemicals	2,540,775	Grain	9,709,330
Crude Materials	2,309,798	Steel	213,775
Manufactured Goods	864,378		
Farm Products	10,772,518	<u>Lockages:</u>	
Manufactured Machinery	20,140		
Waste Material	1,200	Boats:	5,120
Containers & Pallets	1,624	Cuts:	4,873
Unknown	1,500		

## CURRENT MAINTENANCE ISSUES – LOCKS & DAM 15

### Item (Critical Rank Order)

Systemic Bulkhead Slots	Dam Rehabilitation Evaluation Report
Dam Gate Rehabilitation - Exterior	Rehabilitate Concrete on River Wall, Erosion Repairs to Lower Guidewall
Rehabilitation of Bulkhead Hoist	Bridge Crane Repairs to Lattice Boom & Crane Undercarriage
Systemic Miter Gate Replacement	Tainter Valve Limit Switch Replacement and Relocation
Repair Roller End Shields & Seals - Dam	Hydropower Turbine Rehabilitation
Systemic Structural Repairs Service Bridge Dam	Scour Repair
Replace/Rehabilitate Motors and Brakes for Roller Gates	Davenport Seawall Interior Inspection
Structural Repairs - Tainter and Roller Gates - Interior	Rehabilitate Boat Dock
Systemic Repair Auxiliary Lock Gates, Including New Bulkhead Slots	Construct Central Control Station /Visitor Center Addition
Systemic Tainter Valve Replacement	
Lock Checkpost Replacement	

**TOTAL ESTIMATED COST: \$35,500,000**

The existing 9-foot Channel Navigation Project was largely constructed in the 1930's and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

More than 580 manufacturing facilities, terminals, and docks ship and receive tonnage in the Upper Mississippi River basin. In 2005, the system moved more than 160 million tons of commercial cargo worth roughly \$28.5 billion. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 870 large semi-trucks (22,500 cargo tons, 787,500 bushels, or 6,804,000 gallons). Annually, the project generates an estimated \$1 billion of transportation cost savings compared with the operation and maintenance costs of approximately \$115 million.

In constant dollar terms, operations and maintenance funding for the system has been largely flat or declining for decades, while maintenance needs of the aging infrastructure increase. This is adversely affecting reliability of the system. Long-established programs for preventative maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the nature of a lock malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

## POINT OF CONTACT

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