



Lock & Dam 11

(Dubuque, Iowa)
Mississippi River

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

Construction: 1934-1937

General Contractors:

Lock: Warner Construction Company, Chicago, Ill.

Dam: Maxon Construction Company, Inc., Dayton, Ohio

Congressional District: IA-1; WI-3

Description

Lock and Dam 11 borders on the northern edge of Dubuque, Iowa, and is 583 miles above the confluence of the Mississippi and Ohio rivers. A complex of islands and sloughs extends three-quarters of the way across the river from the Wisconsin shore. The Upper Mississippi River Wildlife and Fish Refuge occupies the land adjacent to the Wisconsin shore, both upstream and downstream from the dam.



Lock dimensions are 110 feet wide by 600 feet long with additional provisions for an auxiliary lock. The maximum lift is 11 feet with an average lift of 9.4 feet. It takes approximately seven minutes to fill or empty the lock chamber.

The movable dam has 13 submersible Tainter gates (20-feet high by 60-feet long) and three submersible roller gates (20-feet high by 100-feet long). The roller gates submerge eight feet. The dam system also includes a 3,540-foot long, curved, non-overflow, earth and sand-filled dike. It takes nine hours for water to travel from Lock and Dam 10, in Guttenberg, Iowa, to Lock and Dam 11.

History/Significance

Construction of Lock 11 began in February 1934 and was completed in August 1936. Construction of Dam 11 began in September 1935 and was completed in May 1937. The structure was placed in operation on September 14, 1937. Dams 11 and 18 were designed concurrently, and were the first dams in the Rock Island District to employ submersible, elliptical Tainter gates. They were also the first dams in the District to use submersible roller gates.

Lock and Dam 11 was scheduled to be above Sprech's Ferry, Iowa, but in 1933 was relocated to Dubuque. The acute unemployment in Dubuque led the government to begin construction on this complex before others of its class. During the peak of construction, the complex employed 901 people.

River stages both aided and hindered the contractor in his work. The contractor had difficulty with cofferdam failures. The cofferdams failed three times and, in addition, the inside row of piling in two cells bulged inward, necessitating emergency repairs to the cofferdams. During the spring of 1936, when the snowmelt flood passed through the Dubuque area, the cofferdams were overtopped. During the spring of 1937, work was completed prior to overtopping; thus work was not halted due to flood conditions. The contractor was granted an extension of 37 days for extreme temperatures of -33 degrees during the winter of 1936 and +106 degrees in July 1936.

The lock and dam elements of the complex were completed at a cost of \$7,430,000.

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CLOCK TOWER BUILDING, P.O. BOX 2004, ROCK ISLAND, IL 61204-2004
Corporate Communications Office, (309) 794-5274, www.mvr.usace.army.mil

Annual Tonnage (20-Year Historical)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
1992	20,617,470	1997	18,618,190	2002	20,966,149	2007	16,228,148
1993	13,200,570	1998	20,333,245	2003	18,276,060	2008	12,428,007
1994	16,150,591	1999	22,504,873	2004	15,769,584	2009	14,235,366
1995	19,301,155	2000	20,756,882	2005	16,347,999	2010	14,456,677
1996	19,706,704	2001	17,340,441	2006	17,048,863	2011	13,562,537

Commodity Tonnage & Lockages (2011)

Coal	2,076,284	<u>Subtotals:</u>	Grain	58,124,72
Petroleum	261,300		Steel	42,958
Chemicals	1,986,875	<u>Lockages:</u>	Commercial Boats:	1,262
Crude Materials	2,022,340		Recreation Boats:	3,883
Manufactured Goods	981,774		Light Boats:	176
Farm Products	6,203,214		Other Boats:	42
Manufactured Machinery	13,750		Total Boats:	5,363
Waste Material	0		Total Cuts:	3,576
Containers & Pallets	1,600			
Unknown	15,400			

The 9-Foot Channel Project

Lock and Dam 11 is one of 29 locks and dams on the Upper Mississippi River that provide a water stairway of travel for commercial and recreational traffic from Minneapolis to the Gulf of Mexico.

The existing 9-foot Channel Navigation Project was largely constructed in the 1930s 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 maintenance needs of the aging infrastructure are increasing at a rate much greater than the operations and maintenance funding provided for the system which adversely affects reliability of the system. Long-established programs for preventive 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 malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

Additionally, 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.

There are more than 580 manufacturing facilities, terminals, grain elevators, and docks that ship and receive tonnage in the Upper Mississippi River basin. 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 1,050 large semi-trucks (26,250 cargo tons, 875,000 bushels, or 17,325,000 gallons). Annually, the 9-foot project generates an estimated \$1 billion of transportation cost savings compared with the operation and maintenance costs of approximately \$115 million.

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