



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 Sprecht'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 federal cost of \$7,430,000.

U.S. ARMY CORPS OF ENGINEERS – ROCK ISLAND DISTRICT

CLOCK TOWER BUILDING, P.O. BOX 2004, ROCK ISLAND, IL 61204-2004
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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>
2017	18,829,908	2012	13,863,116	2007	16,228,148	2002	20,943,649
2016	18,903,366	2011	13,562,537	2006	17,048,863	2001	17,316,615
2015	14,746,202	2010	14,456,677	2005	16,347,999	2000	20,756,882
2014	13,154,371	2009	14,226,366	2004	15,769,587	1999	22,495,873
2013	11,609,540	2008	12,413,007	2003	18,276,060	1998	19,800,694

Commodity Tonnage (2017)

All Units (Ferried Autos, Passengers, Railway Cars)	-
Coal, Lignite, and Coal Coke	1,567,824
Petroleum and Petroleum Products	231,700
Chemicals and Related Products	2,882,249
Crude Materials, Inedible, Except Fuels	1,735,800
Primary Manufactured Goods	1,141,296
Food and Farm Products	11,215,894
Manufactured Equipment & Machinery	37,545
Waste Material	14,400
Unknown or Not Elsewhere Classified	3,200

Vessel & Lockage Data (2017)

Average Delay - Tows (Hours)	1.18	Non-Commercial Vessels	23
Average Processing Time (Hours)	0.5	Non-Commercial Flotillas	23
Barges Empty	4,499	Non-Commercial Lockages/Cuts	23
Barges Loaded	11,857	Percent Vessels Delayed (%)	56
Commercial Vessels	1,952	Recreational Vessels	2,745
Commercial Flotillas	1,926	Recreational Lockages	935
Commercial Lockages/Cuts	2,888	Total Vessels	4,720
Non-Vessel Lockages	-	Total Lockages/Cuts	3,846

The 9-foot Channel Navigation Project

The 9-foot Channel Navigation Project includes 37 lock and dam sites (42 locks) on 1,200 river miles in Illinois, Iowa, Minnesota, Missouri and Wisconsin. Constructed largely in the 1930s, it extends from Minneapolis-St. Paul on the Upper Mississippi River to its confluence with the Ohio River and up the Illinois Waterway to the T.J. O'Brien Lock in Chicago.

The maintenance needs of this aging infrastructure have surpassed annual operations and maintenance funding. This limited funding has adversely affected reliability of the system and has primarily resulted in a fix-as-fail strategy, with repairs sometimes requiring days, weeks or months. Depending on the nature of a failure and extent of repairs, shippers, manufacturers, consumers and commodity investors can experience major financial consequences. Additionally, today's 1,200'-long tows must split and lock through in two operations within the Project's 600' chambers. This procedure doubles and triples lockage times, increases costs and wear to lock machinery, and exposes deckhands to higher accident rates.

More than 580 facilities ship and receive commodities within the Project. Grains (corn and soybeans) dominate traffic; cement and concrete products are the second largest group. A modern 15-barge tow transports the equivalent of 1,050 semi-trucks (26,250 tons, 937,387 bushels of corn, or 240 rail cars). In 2016, the 9-foot channel project generated an estimated \$2 billion of transportation cost savings compared to its approximately \$246 million operation and maintenance cost.

UPDATE: August 2018