



Lock & Dam 21

(Quincy, Illinois)
Mississippi River

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

Construction: 1933-1938

General Contractors:

Lock: Joseph Meltzer, Inc., New York, N.Y.

Dam: McCarthy Improvement Co., Davenport, Iowa

Congressional District: MO-6; IL-18

Description

Lock and Dam 21 is 324.9 miles above the confluence of the Mississippi and Ohio Rivers. The complex stretches across the river at a point where the valley is wide with flat bottom land on either side of the river. The city of Quincy, Illinois, lies on the low bluffs along the river just upstream from the complex.

Lock dimensions are 110-feet wide by 600-feet long with provisions for an auxiliary lock. The maximum lift is 10.5 feet with an average lift of 6.55 feet. It takes approximately seven minutes to fill or empty the lock chamber.

The movable dam has 10 submersible, elliptical Tainter gates (20 feet high by 64 feet long) and three submersible roller gates (20 feet high by 100 feet long). The dam system also includes two earth and sand-filled transitional dikes, and a submersible earth dike. It takes five hours for water to travel from Lock and Dam 20, in Canton, Missouri, to Lock and Dam 21.

History/Significance

Lock 21 construction began December 11, 1933, with completion in August 1935. Construction on the dam began in August 1936 with completion in February 1938. The structure was placed in operation on July 23, 1938.

Because Lock and Dam 21 was located adjacent to Quincy, which had acute unemployment, the complex was built before some of the other, higher priority locks and dams. The lock, central control station, and esplanade were completed by August 1935. At that point, however, no money was available to begin the dam. As a result, representatives from Quincy vigorously, and successfully, lobbied for federal money to construct the dam as a work relief project.

A cofferdam failure on April 24, 1934, caused a one month delay in work on the lock. River conditions were favorable for construction from December 1933 to January 1935. However, the presence of ice in January and February 1935, and high river stages during spring 1935 delayed the cofferdam removal. Temperatures were unusually high between June 15 and Aug. 15, 1934, and rainfall was heavy during the latter part of May and first part of June 1935. A total of 1,000,078 man hours were expended on the project. The contractor employed an average of approximately 520 men, with a peak employment of more than 1,000 at the end of October 1934. The lowest river stage during construction occurred in 1934 at an elevation of 454.9 feet mean sea level.

The lock and dam elements of the complex were completed at a federal cost of \$4,155,000.



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

CLOCK TOWER BUILDING, P.O. BOX 2004, ROCK ISLAND, IL 61204-2004

Corporate Communications Office, (309) 794-5729, 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>
2016	30,759,812	2011	22,220,636	2006	29,497,577	2001	32,874,457
2015	24,236,266	2010	23,431,362	2005	27,123,388	2000	36,449,116
2014	20,924,543	2009	25,623,076	2004	26,556,326	1999	37,863,139
2013	16,883,089	2008	21,939,658	2003	32,011,667	1998	33,734,539
2012	21,508,998	2007	28,546,672	2002	37,208,243	1997	31,980,194

Commodity Tonnage (2016)

All Units (Ferried Autos, Passengers, Railway Cars)	-	Primary Manufactured Goods	1,546,064
Coal, Lignite, and Coal Coke	308,249	Food and Farm Products	21,762,759
Petroleum and Petroleum Products	253,657	Manufactured Equipment & Machinery	152,570
Chemicals and Related Products	4,768,216	Waste Material	-
Crude Materials, Inedible, Except Fuels	1,965,097	Unknown or Not Elsewhere Classified	3,200

Vessel & Lockage Data (2016)

Average Delay - Tows (Hours)	1.98	Non-Commercial Vessels	38
Average Processing Time (Hours)	0.87	Non-Commercial Flotillas	35
Barges Empty	10,798	Non-Commercial Lockages/Cuts	35
Barges Loaded	19,480	Percent Vessels Delayed (%)	74
Commercial Vessels	2,879	Recreational Vessels	284
Commercial Flotillas	2,829	Recreational Lockages	208
Commercial Lockages/Cuts	4,736	Total Vessels	3,201
Non-Vessel Lockages	-	Total Lockages/Cuts	4,979

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). Annually, the 9-foot project generates an estimated \$1 billion of transportation cost savings compared to its approximately \$115 million operation and maintenance cost.

UPDATE: April 2017