LOCK & Dam 20 Mississippi River, Canton, Missouri

Construction: 1932-1935 General Contractors:

Lock: Maxon Construction, Dayton, Ohio Dam: S.A. Healy Co., Detroit, Michigan & Davenport, Iowa

Description

Lock and Dam 20 is 343.2 miles above the confluence of the Mississippi and Ohio rivers. The complex stretches across the river at a point where the valley is quite wide, about five-miles wide at the level of the lock and dam. A levee and the Gregory Diversion Ditch separate the complex from the town of Canton.

The lock dimensions are 110 feet wide by 600 feet long with additional provisions for an auxiliary lock. The maximum lift is 10.5 feet with an average lift of 5.3 feet. It takes approximately seven minutes to fill or empty the lock chamber.

The movable dam has three non-submersible roller gates (20 feet high by 60 feet long), 34 non-submersible Tainter gates (20 feet high by 40 feet long), and six submersible Tainter gates (20 feet high by 40 feet long). The submersible Tainter gates submerge three feet. It takes six hours for water to travel from Lock and Dam 19, in Keokuk, Iowa, to Lock and Dam 20.

Lock and Dam 20 Commodity Tonnage (2022)

Food and Farm Products	11,108,630
Chemicals and Related Products	3,438,570
Crude Materials, Inedible, Except Fuels	1,127,900
Primary Manufactured Goods	1,065,700
Petroleum and Petroleum Products	597,060
Coal, Lignite, and Coal Coke	180,900
Manufactured Equipment & Machinery	23,790
Waste Material	
Unknown or Not Elsewhere Classified	4,800
Total Tonnage	17,547,350



Annual Tonnage (10 Year-Historical)



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History/Significance

Lock construction began on Nov. 1, 1932 and was completed in November 1933. Dam construction began on Oct. 31, 1933 and was completed in November 1935. The structure was placed in operation on June 9, 1936.

Dam 20 was the first dam in the Rock Island District to include Tainter gates. The plans originally called for all of the Tainter gates to be operated by hoist cars traveling on the dam's service bridge. However, the District modified two Tainter gates so they were individually operated by line shafts and motors housed in installations above each gate. This operating machinery worked so well that all subsequent Tainter gates in the 9-Foot Channel Project, regardless of which district they were in, used line shafts and motors.

In November 1932, the lock contractor began construction of temporary buildings and assembly of equipment. Low water stages during the construction expedited the contractor's work. The average number of men employed by the contractor on the Lock was approximately 320, with a maximum of approximately 570.

The lock and dam elements of the complex were completed at a federal cost of \$3,363,500. Lock and Dam 20 was the first complex in the Rock Island District on the Upper Mississippi River to undergo major rehabilitation. Major rehabilitation work began in the late 1980s and was completed in 1991.

In 2010, a \$1.2 million flood building was constructed to put all lock equipment up above flood events. A five million major rehabilitation completed in 2018 replaced four miter gates and four Tainter valve gear boxes, all anchor-bars, concrete repairs and electrical duct bank.



Vessel & Lockage Data (2021)

Average Delay - Tows (Hours)	1.2
Barges Empty	5,576
Barges Loaded	12,659
Commercial Vessels	2,288
Commercial Lockages	3,347
Other Vessels	35
Other Lockages	33
Recreational Vessels	230
Recreational Lockages	164
Total Vessels	2,553
Total Lockages	3,544

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 near Cairo, Illinois, and up the Illinois Waterway to the T.J. O'Brien Lock in Chicago.

The system is often compared to a stairway with the "treads" being the pools of water created by each dam, with the locks serving as "risers," carrying boats from one river pool to the next like an elevator. This system of locks and dams provides what the rivers in their natural states couldn't – a dependable nine-foot depth for commercial navigation.

Operating the locks and dams is a continuous job as tows and recreational vessels lock through year-round, if weather conditions permit. The structures have long outlived their life expectancy but continue to operate efficiently thanks to the hard work and dedication of USACE employees who operate and maintain the structures.

The inland waterway navigation system is essential to the economy of the Midwest as well as the nation and world. More than 580 facilities ship and receive commodities within the Nation's Corn Belt Ports Statistical Area. 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). On an annual basis, the 9-foot channel project provides billions of dollars in transportation cost savings to the navigation industry.

