



Lock 19

(Keokuk, Iowa)
Mississippi River

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG.

Construction: 1952-1957

General Contractors:

- Stage I: McCarthy Improvement Company, Davenport, Iowa
- Stage II: Jones Construction Company, Charlotte, N.C.
- Stage III: Oil Gear Company, Milwaukee, Wis.
- Stage IV: Evans Electrical Construction Co., Omaha, Neb.

Congressional District: IA-2; IL-18

Description

Lock 19 is 364.2 miles above the confluence of the Mississippi and Ohio rivers.

The lock, located on the Iowa shore, is 110 feet wide and 1,200 feet long, twice the size of the standard 9-Foot Channel Project lock. The upper lock gates consist of 23-foot high vertical lift gates, and the lower gates are miter gates, 53-feet 2-inches high. The lower lock gates are conventional miter gates, while the upper service gate is a submergible lift gate. Upstream from the upper service gate is a submergible vertical-lift guard gate which serves as an emergency gate in case of failure of the service gate. This gate also serves as a bridge in the roadway to the old dry dock, old lock, powerhouse and dam.



The lock's land wall is 2,161 feet long, consisting of an upper 237-foot and lower 605-foot guidewall, and a 1,319-foot main lock wall. The river wall is 1,936 feet, which includes a 532-foot wall downstream of the lower gate pintles.

Maximum lift is 38.2 feet with an average of 36.3 feet, the second highest on the Mississippi River. The highest lift of any lock on the River is at the Upper St. Anthony Falls in the St. Paul District. Filling the lock takes approximately 10 minutes; 9.25 minutes to empty. It takes 12 hours for water to travel from Lock and Dam 18, in Gladstone, Ill., to Lock and Dam 19. Pool 19 is the longest of the nine-foot channel navigation system.

An auxiliary lock, which was the original lock completed on June 12 1913, is 110 feet wide by 358 feet long. This lock is no longer in service. The dry dock, also no longer in use, measures 150 feet wide by 463 feet long. The dam, privately built in 1913, includes 119 rectangular sliding gates. The dam is privately owned and operated by Ameren Missouri. The U.S. Army Corps of Engineers has no oversight or control of the dam's operation.

History/Significance

The lock opened on May 14, 1957. The complex was not built as part of the original 9-foot channel project. After the turn of the 19th century, the Mississippi River Power Company asked Congress for permission to build a dam across the River at Keokuk, Iowa. In 1905 Congress authorized the design and construction of the project. Construction began in 1910 and the completed lock was turned over to the federal government on June 12, 1913. The new lock was 110 feet wide by 400-foot long. The entire facility was constructed without government subsidy.

Due to significant growth of commercial river traffic and long waits by tows, Congress appropriated \$994,000 in 1952 to begin construction of a new lock. In October 1952, the peak number of men employed during Stage I construction was 147 with a peak employment of 415 in 1955 and 1956. Due to abnormally good weather and low

water stages, Stage I work was always ahead of schedule. Some high water stages in fall 1954 caused Stage II construction to fall behind schedule by approximately 30 days. All contracts were completed approximately four months behind schedule, primarily due to excessive amounts of rain occurring in May, June and July 1957. The new Lock 19 was completed at a cost of \$13,500,000. The U.S. Army Corps of Engineers and the Union Electric Company completed the entire complex at a federal cost of \$37,909,000.

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 | 26,725,805 | 2012 | 19,662,995 | 2007 | 25,504,854 | 2002 | 34,914,721 |
| 2016 | 27,691,130 | 2011 | 20,521,750 | 2006 | 26,386,156 | 2001 | 30,109,392 |
| 2015 | 21,273,045 | 2010 | 21,353,305 | 2005 | 24,697,974 | 2000 | 34,097,581 |
| 2014 | 18,497,615 | 2009 | 23,060,379 | 2004 | 24,176,831 | 1999 | 35,803,139 |
| 2013 | 14,944,801 | 2008 | 19,275,225 | 2003 | 29,827,673 | 1998 | 31,335,013 |

Commodity Tonnage (2017)

| | | | |
|---|-----------|-------------------------------------|------------|
| All Units (Ferried Autos, Passengers, Railway Cars) | - | Primary Manufactured Goods | 1,284,346 |
| Coal, Lignite, and Coal Coke | 221,924 | Food and Farm Products | 18,654,755 |
| Petroleum and Petroleum Products | 225,200 | Manufactured Equipment & Machinery | 51,590 |
| Chemicals and Related Products | 4,502,998 | Waste Material | - |
| Crude Materials, Inedible, Except Fuels | 1,776,992 | Unknown or Not Elsewhere Classified | 8,000 |

Vessel & Lockage Data (2017)

| | | | |
|---------------------------------|--------|------------------------------|-------|
| Average Delay - Tows (Hours) | 1.21 | Non-Commercial Vessels | 38 |
| Average Processing Time (Hours) | 1.02 | Non-Commercial Flotillas | 34 |
| Barges Empty | 9,170 | Non-Commercial Lockages/Cuts | 34 |
| Barges Loaded | 16,983 | Percent Vessels Delayed (%) | 93 |
| Commercial Vessels | 2,321 | Recreational Vessels | 440 |
| Commercial Flotillas | 2,292 | Recreational Lockages | 316 |
| Commercial Lockages/Cuts | 2,292 | Total Vessels | 2,799 |
| Non-Vessel Lockages | 2 | Total Lockages/Cuts | 2,644 |

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