



Lock & Dam 24

(Clarksville, Missouri)
Mississippi River

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG.

Construction: 1936-1940

General Contractor:

Lock and Dam: Central Engineering Company, Davenport, Iowa

Congressional District: MO-9; IL-17

Description

Lock and Dam 24 is located at Mississippi River mile 273.4, 93.5 miles upstream of St. Louis. Its 13,000-acre pool is 27.8 miles long.

Lock dimensions are the standard 110 by 600 feet, with the upper gate bay section of an auxiliary lock. Average lift is 15 feet. Unlike Locks 25 and Old Locks 26, which are pile-founded structures built atop sand and gravel, Lock 24 is founded on durable shale. Because of the presence of a firm foundation material, the lock chamber is not floored and no lateral struts were provided to stabilize the intermediate and river walls.



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The 1,340-foot long movable dam has 15 fully submersible Tainter gates, 25 feet high by 80 feet long, which pivot vertically to control water flow. The gates are raised and lowered by individual electric motors, connected by line shafting to link-chain hoists, located beneath the dam service bridge. The piers provide support for the Tainter gates and the steel deck girder service bridge that extends the length of the dam. The dam includes a 2,720-foot submersible dike.

A major rehab of Lock and Dam 24 was completed in 2005. This work consisted of replacing a large portion of the concrete in the lock chamber walls, walkways and work areas. Also, new gate and valve machinery was installed elevating the electrical components above the 1993 flood levels.

History/Significance

The lock was put into operation on May 12, 1940. This was the first dam on the 9-Foot Channel Project constructed without roller gates. The submersible, elliptical Tainter gates of Dam 24 represent the apex of gate design achieved during the project. At the time of their construction, the Corps believed these gates to be the largest Tainter gates ever constructed. Because of the large size of the Tainter gates, and the relatively ice-free conditions of this stretch of river, roller gates were eliminated entirely from the dam design. These Tainter gates were innovative that they rendered roller gate technology, the principle engineering feature in dam construction at the time, obsolete.

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>
2015	25,111,442	2010	24,127,530	2005	28,932,976	2000	38,697,993
2014	21,785,226	2009	26,682,701	2004	27,883,604	1999	39,296,994
2013	17,295,846	2008	23,133,551	2003	33,761,938	1998	35,289,630
2012	22,426,843	2007	30,145,700	2002	38,862,614	1997	33,759,914
2011	22,927,332	2006	31,026,288	2001	34,785,352	1996	36,362,802

U.S. ARMY CORPS OF ENGINEERS – ST. LOUIS DISTRICT

1222 SPRUCE STREET, ST. LOUIS, MO 63103-2833

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Commodity Tonnage (2015)

All Units (Ferried Autos, Passengers, Railway Cars)	-
Coal, Lignite, and Coal Coke	430,500
Petroleum and Petroleum Products	309,300
Chemicals and Related Products	4,367,985
Crude Materials, Inedible, Except Fuels	2,343,050
Primary Manufactured Goods	1,511,862
Food and Farm Products	16,084,395
Manufactured Equipment & Machinery	57,950
Waste Material	4,800
Unknown or Not Elsewhere Classified	1,600

Vessel & Lockage Data (2015)

Average Delay - Tows (Hours)	1.88
Average Processing Time (Hours)	0.96
Barges Empty	7,031
Barges Loaded	16,135
Commercial Vessels	2,123
Commercial Flotillas	2,115
Commercial Lockages/Cuts	3,575
Non-Vessel Lockages	1
Non-Commercial Vessels	30
Non-Commercial Flotillas	30
Non-Commercial Lockages/Cuts	30
Percent Vessels Delayed (%)	54
Recreational Vessels	344
Recreational Lockages	239
Total Vessels	2,497
Total Lockages/Cuts	3,845

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.

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