Lock & Dam 18

(Gladstone, Illinois)
Mississippi River

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**

Construction: 1934-1937
General Contractors:
Lock: Maxon Construction Company, Dayton, Ohio
Dam: S.A. Healy Company, Chicago, Ill.

Congressional District: IA-2; IL-17

Description

Lock and Dam 18 is 410.5 miles above the confluence of the Mississippi and Ohio rivers. The bottom lands on both shores are flat and punctuated by sloughs, marshes, and reefs. The river is dotted with low islands of various sizes. The Oquawka State Wildlife Refuge is adjacent to the lock and dam complex on the Illinois shore. The installation's esplanade interrupts a levee and functions as part of the Henderson River diversion that converted Turkey Island into an extension of the Illinois shore.

Lock dimensions are 110 feet wide by 600 feet long with additional provisions for an auxiliary lock. Maximum lift is 9.8 feet with an average lift of 6.9 feet. It takes approximately 10 minutes to fill or empty the lock.

The dam is composed of 14 submersible Tainter gates (20 feet high by 60 feet long) and three submersible roller gates (20 feet high by 100 feet long). All gates submerge to a depth of eight feet. The dam includes a submersible earth and sand-filled dike, a non-overflow earth and sand-filled dike, and two transition dikes. It takes eight hours for water to travel from Lock and Dam 17, in New Boston, Illinois, to Lock and Dam 18.

History/Significance

Construction on Lock 18 began on Jan. 26, 1934, and was completed in April 1935. Construction on Dam 18 began in September 1935 and was completed in May 1937. The structure was placed in operation on September 8, 1937.

Dams 11 and 18 were the first 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. Four sites were considered for Dam 18: just below the foot of Otter Island at mile 406.5, immediately above the old mouth of the Henderson River at mile 412.0, near Oquawka and at the current site. The selected site called for diversion of the Henderson River to a point below the dam. The final site was partially selected because the Iowa River Flint Creek Levee and Drainage District No. 16 drainage pumps discharged into the lower pool and were unaffected by raising of the water level for the upper pool.

Due to heavy ice conditions, the contractor for lock construction was delayed at the offset of the project by two months. The following winter of 1934-1935 was also so severe that little work was accomplished during January and February. The draft of the barges engaged in the construction activities was limited during the summer of 1934 due to the low river stages. During the peak of construction in September 1934, the project employed 960 men as laborers and 74 men as supervisors. Average employment was 478 laborers and 44 supervisors.

The contractor completed lock construction almost one month before the contract time limit. Construction of the Henderson River cut-off channel was included in the dam and associated appurtenances construction contract.

The lock and dam elements of the complex were completed at a federal cost of $4,122,400.

Annual Tonnage (20-Year Historical)

Year	Tons	Year	Tons	Year	Tons	Year	Tons
2017	26,167,552	2012	19,486,067	2007	24,193,022	2002	32,951,597
2016	27,192,132	2011	19,850,238	2006	25,262,995	2001	28,546,243
2015	21,606,967	2010	20,471,068	2005	23,602,042	2000	32,864,097
2014	18,583,677	2009	21,812,990	2004	23,015,891	1999	35,707,505
2013	15,258,710	2008	18,661,036	2003	28,366,984	1998	31,060,799

Commodity Tonnage (2017)

All Units (Ferried Autos, Passengers, Railway Cars)	-
Coal, Lignite, and Coal Coke	1,744,624
Petroleum and Petroleum Products	220,000
Chemicals and Related Products	4,285,252
Crude Materials, Inedible, Except Fuels	1,793,442
Primary Manufactured Goods	1,273,246
Food and Farm Products	16,797,998
Manufactured Equipment & Machinery	44,900
Waste Material	-
Unknown or Not Elsewhere Classified	8,000

Vessel & Lockage Data (2017)

Average Delay - Tows (Hours)	1.78	Non-Commercial Vessels	47
Average Processing Time (Hours)	0.68	Non-Commercial Flotillas	47
Barges Empty	7,493	Non-Commercial Lockages/Cuts	47
Barges Loaded	16,650	Percent Vessels Delayed (%)	88
Commercial Vessels	2,640	Recreational Vessels	516
Commercial Flotillas	2,525	Recreational Lockages	267
Commercial Lockages/Cuts	4,004	Total Vessels	3,203
Non-Vessel Lockages	-	Total Lockages/Cuts	4,318

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.

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