Lock & Dam 5

(Minnesota City, Minnesota)
Mississippi River

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

Construction: 1933-1939
General Contractors:
Lock: Edward E. Gillen Co., Milwaukee, Wisc.
Dam: Merritt-Chapman & Whitney Corp., Cleveland, Ohio

Congressional District: MN-1; WI-3

Description

Lock and Dam 5 is located at Mississippi River Mile 738.1 in Minnesota City, Minnesota, 5.5 miles upstream of Fountain City, Wisconsin.

The main lock is located along the right descending bank and consists of a single lock chamber 110 feet wide by 600 feet long with an upper pool elevation of 660.0 feet, a tailwater elevation of 651.0 feet, and a vertical lift of 9.0 feet. There are miter gates at each end of the lock chamber and a partial auxiliary lock consisting of an upstream set of miter gates and short concrete riverwall section. The foundation consists of piles in sand and gravel.

The movable dam has six roller gates (20 feet high by 60 feet long), 24 non-submersible Tainter gates (15 feet high by 35 feet long), and four submersible Tainter gates (15 feet high by 35 feet long). The dam consists of a concrete structure 1,619 feet long and an earthen embankment approximately 18,500 feet long, located between the movable dam and high ground on the Wisconsin side of the river. The dam foundation is set on piles in sand.

The site has a public observation platform and restrooms open from dawn to dusk from April to November.

History/Significance

The lock was put into operation in May 1935. Lock and Dam 5 was a group "A" priority, and the second installation completed in the St. Paul District. Typical of other 9-foot channel installations, the roller gates on Dam 5 were located in the main channel, where they could handle the greatest flooding and heavy ice flow conditions. One fatal accident, involving a private craft, occurred during the construction of the dam. In 1934, the site hosted a presidential visit by Franklin Roosevelt.

Annual Tonnage (20-Year Historical)

Year	Tons	Year	Tons	Year	Tons	Year	Tons
1992	9,381,500	1997	10,975,439	2002	11,791,323	2007	8,490,491
1993	8,293,425	1998	11,699,800	2003	10,085,159	2008	5,741,647
1994	10,583,820	1999	12,771,200	2004	9,066,765	2009	8,019,206
1995	10,676,855	2000	12,048,853	2005	8,496,606	2010	7,974,264
1996	11,699,872	2001	9,487,157	2006	8,864,957	2011	7,543,650

Commodity Tonnage & Lockages (2011)

Coal	348,386
Petroleum	290,306
Chemicals	1,299,951
Crude Materials	1,599,375
Manufactured Goods	708,323
Farm Products	3,258,570
Manufactured Machinery	23,535
Waste Material	0
Unknown	15,204

Subtotals:	Grain	3,025,628
	Steel	30,150
Lockages:	Commercial Boats:	719
	Recreation Boats:	3,086
	Light Boats:	57
	Other Boats:	66
	Total Boats:	3,928
	Total Cuts:	2,881

The 9-Foot Channel Project

Lock and Dam 5 is one of 29 locks and dams on the Upper Mississippi River that provide a water stairway of travel for commercial and recreational traffic from Minneapolis to the Gulf of Mexico.

The existing 9-foot Channel Navigation Project was largely constructed in the 1930s and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri and Wisconsin.

The maintenance needs of the aging infrastructure are increasing at a rate much greater than the operations and maintenance funding provided for the system which adversely affects reliability of the system. Long-established programs for preventive maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

Additionally, the system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

There are more than 580 manufacturing facilities, terminals, grain elevators, and docks that ship and receive tonnage in the Upper Mississippi River basin. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 1,050 large semi-trucks (26,250 cargo tons, 875,000 bushels, or 17,325,000 gallons). Annually, the 9-foot project generates an estimated $1 billion of transportation cost savings compared with the operation and maintenance costs of approximately $115 million.