



THE FLOOD PROTECTION AUTHORITY

IHNC-LAKE BORGNE SURGE BARRIER

The IHNC Surge Barrier is the largest continuous surge barrier in the world. At a cost of \$1.3 billion, it is the largest design-build civil works project in the history of the U.S. Army Corps of Engineers. The concrete barrier wall is located at the confluence of the Mississippi River Gulf Outlet (MRGO) and Gulf Intracoastal Waterway (GIWW) and stretches 1.8 miles across the MRGO and the Golden Triangle Marsh.

The project was undertaken in the aftermath of Hurricane Katrina, which generated a 30-ft. surge from the Gulf of Mexico and devastated the Greater New Orleans region. In 2006, a Congressional directive to improve hurricane protection at the Inner Harbor Navigational Canal (IHNC) resulted in the construction of the Surge Barrier. The IHNC Surge Barrier is a feature of the Hurricane and Storm Damage Risk Reduction System (HSDRRS), which was designed to reduce the risk of a storm that has a one percent chance of occurring in any given year, or a 100-year storm.



STRUCTURE: 10,000 feet long (1.8 miles)
Rising 26-feet above sea level

1,271 CONCRETE CYLINDER PILES:

66-inch diameter spun concrete reinforced piles, 144-ft. in length, filled with concrete 80-ft. from top, and driven to a depth of -130 feet

2,512 CLOSURE PILES:

Closure piles are placed in the gaps between both sides of the cylinder piles and are 18-in x 18-in., 60-ft. in length, and driven to a depth -45 feet

638 STEEL BATTER PILES:

Steel batter piles are spaced every 12 feet and are 3-ft. in diameter, 248-ft. in length, and driven to a depth of -190 feet

15-FT. ROADWAY:

The roadway along top of the barrier structure has a parapet wall and alternates 17-ft. long precast and 6-ft. long cast in place deck sections.

In 2013, the operations and maintenance responsibilities for the Surge Barrier were transferred from the Corps of Engineers to the Flood Protection Authority. The Surge Barrier and its navigational gates are part of a complex system protecting the Greater New Orleans region. The Surge Barrier includes a 150-ft. wide, 42-ft. high Sector Gate located at the GIWW for maritime traffic, and a 150-ft. wide Bypass Barge Gate for navigational use when the Sector Gate is closed for dewatering and maintenance every 15-20 years. The system includes a 56-ft-wide vertical lift gate at Bayou Bienvenue for vessels traveling to and from Lake Borgne. All three navigation gates must be operated in conjunction with the Seabrook Complex Structure, which allows maritime traffic to travel to and from Lake Pontchartrain into the Industrial Canal and onto the Mississippi River.

Closure of the navigational structures in anticipation of a tropical event must also take place in accordance with the Master Water Control Manual for the IHNC Basin and is closely coordinated with the Flood Protection Authority's partnering agencies, including the Corps of Engineers, U.S. Coast Guard, Louisiana Coastal Restoration and Protection Authority and local officials.



History of the Project

Prior to Hurricane Katrina, which struck Louisiana's coast on August 29, 2005, the primary line of flood defense included levees and floodwalls aligning the Mississippi River Gulf Outlet (MRGO), GIWW and IHNC. The loss of 1,900 square miles of Louisiana coastal wetlands to the Gulf of Mexico between 1932 and 2000 significantly reduced this first line of defense. The completion in 1965 of the MRGO, a man-made navigation channel connecting the Gulf of Mexico with the City of New Orleans, exacerbated the loss of wetlands. In 2008, the MRGO was deauthorized and a 950-ft. rock dam was constructed near Bayou LaLoutre.

The Corps of Engineers developed an innovative proposal to construct a 10,000-ft. long surge barrier at the confluence of the MRGO and GIWW, thus relocating the primary line of defense eight miles from the more populated areas and twelve miles from the heart of the City of New Orleans. The Shaw Group of Louisiana was awarded the design-build contract for the IHNC Surge Barrier on April 4, 2008, allowing the design and construction of the project to take place concurrently. The Surge Barrier and navigation gates were in place by June 1, 2011.

To facilitate the aggressive construction schedule, TMW, a subcontractor of Shaw, designed and fabricated a 1,000-ft. trestle system using railroad technology that moved along with the wall construction as a template carrying piles and rigs and providing a level surface on which to work. The last component of the system was the installation of the 650 ton pair of sector gates.



Closing the System

The closure of the system requires close coordination with the U.S. Coast Guard to ensure the evacuation of vessels from the IHNC-GIWW, which has been designated a part of the Regulated Navigation Area (RNA). The RNA is enforced by the Coast Guard 24 hours in advance of the closure notice for the Surge Barrier Sector Gate.



Sector Gate and Barge Gate

The Sector Gate is a floating gate with ballast tanks that takes about twenty minutes to close. The Bayou Bienvenue Vertical Lift Gate also takes about twenty minutes to close. The Barge Gate takes approximately 16 hours to close (eight hours to float the Barge Gate and swing it into place across the bypass channel and eight hours to totally sink the Barge Gate). The Barge Gate can be closed up to 96 hours in advance of an approaching tropical event.

The closure of the Seabrook Complex Sector Gate occurs after the Surge Barrier Sector Gate is closed and lake levels rise to that inside the IHNC.

The operation and maintenance of the Surge Barrier and its navigational structures require a dedicated team of Flood Protection Authority personnel with the professional and technical expertise and skills needed to ensure the system's integrity and operability. Daily, the team buys down risk with training, inspections and exercising structures.

When a storm approaches, all components of the Flood Defense System must work!

Southeast Louisiana Flood Protection Authority-East



Bayou Bienvenue Vertical Lift Gate