LAKE PONCHARTAIN CAUSEWAY
AND SOUTHERN TOLL PLAZA
Causeway Boulevard
Metairie
Jefferson Parish
Louisiana

PHOTOGRAPHS
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WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
100 Alabama Street, SW
Atlanta, Georgia 30303
Location: The Lake Pontchartrain Causeway spans Lake Pontchartrain from Causeway Boulevard in Metairie, Jefferson Parish to Highway 190, Mandeville, St. Tammany Parish, Louisiana. The southern Toll Plaza was located at the Jefferson Parish terminus of the Lake Pontchartrain Causeway.

The Northern Terminus of the Lake Pontchartrain Causeway is located at 30.365 and -90.094167. The Southern Terminus is located at 30.02 and -90.153889. This information was acquired using Google Earth imagery. There are no restrictions on the release of this information to the public.

USGS Quadrangle maps (7.5 minute series): (north to south) Mandeville, Spanish Fort NE, West of Spanish Fort NE, Indian Beach

There are no restrictions on this information.

Owner: Greater New Orleans Expressway Commission

Present Use: Vehicle Bridge

Significance: When completed in 1956, the Lake Pontchartrain Causeway was the world’s longest bridge. This record was broken by completion of the parallel span in 1969. At 23.87 miles long, the Causeway is the world’s longest continuous span over water. The prestressed, pre-cast concrete structural system displays mid-twentieth century technology that typifies modern bridge construction techniques. In addition, the Causeway is significant in the development of the Jefferson and St. Tammany Parish communities and the spread of the greater New Orleans area.


Project Information: Following the unprecedented damage caused by Hurricanes Katrina and Rita, the U.S. Army Corps of Engineers (USACE) committed to a 100 year level of protection in southeast Louisiana. This project calls for the construction and floodwall improvements along the south shore of Lake Pontchartrain as part of the Hurricane Storm Damage Risk Reduction System. In 2009, the USACE determined these improvements will
produce an adverse effect on the Lake Pontchartrain Expressway and the southern Toll Plaza, properties determined to be eligible for inclusion in the National Register of Historic Places. In accordance with Section 106 of the National Historic Preservation Act (36 CFR Part 800), the USACE executed a Memorandum of Agreement (MOA) with the Louisiana State Historic Preservation Officer, Greater New Orleans Expressway Commission (GNOEC), and the Coastal Protection and Restoration Authority of Louisiana. As part of the MOA, USACE agreed to document the Lake Pontchartrain Bridge and the structures of the Southern Toll Plaza and prepare an accompanying narrative history.

In December 2011, the USACE implemented the plan to improve floodwall protections on Lake Pontchartrain at the Causeway. Since that time, the USACE has demolished the buildings of the southern Toll Plaza and constructed an elevated bridge section to route drivers from Causeway Boulevard in Metairie onto the historic bridge. These alterations allow the USACE to complete a 15’ floodwall along the lakeshore to protect the greater New Orleans metro area from flooding.
Part 1: Historical Information

A. Physical History

1. Date of Construction: The Louisiana Bridge Company built the first span in 1955-56. The second span was constructed 1967-69.

2. Engineer: Palmer & Baker, Inc. designed the first span to almost exclusively consist of identical panels, caps, and pilings. This allowed for all pieces of the bridge to be prefabricated off site, cutting costs and time needed to build such a large structure. The firm of Palmer & Baker, Inc. began as a one-man operation in 1939. Walter F. Palmer, then Vice-President of the firm of Wilberding & Palmer, moved to Mobile, Alabama, in 1939 to open the firm’s southern office. He was joined two years later by Robert Baker, a former chief engineer with Wilberding & Palmer. Palmer, a transportation engineer had substantial experience working with prefabricated concrete structures and brackish water. In 1938, the City of Mobile hired Palmer under a contract with the Works Progress Administration to construct the Bankhead Tunnel in Mobile Bay. Workers constructed seven sections of prefabricated, 10.4’ wide tubes at the Alabama Drydock and Shipbuilding Company, towed the sections one mile to the site, and installed. The mixture of fresh and salt water in the Bay caused challenges when ballasting the elements. When completed in 1950, the tunnel contained two one-way lanes of traffic equipped with hurricane protection gates. Palmer also designed tunnels for Houston and Galveston.

The second span was designed by David Volkert & Associates. The Company was founded in New Orleans, Louisiana, in 1925 as Doullut & Ewin, Inc. as an engineering and construction company. The firm moved to Mobile, Alabama, and reorganized in 1946. Clients of the firm included the Cities of Mobile, Alabama; Pensacola, Florida; and New Orleans, Louisiana; the states of Alabama, Florida, Louisiana, and Tennessee; the U.S. Army Corps of Engineers; the Bureau of Aeronautics; and the Pure Oil Company. The firm again reorganized in 1963 to become David Volkert & Associates. Volkert & Associates personnel had experience with bridge construction, tunnel installation, and port development. By 1967, the firm had designed causeways and bascule bridges in Miami and Brevard County, Florida, and the Patapsco Avenue Bridge in Baltimore.

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3. Builder: The Louisiana Bridge Company, a joint venture between Brown & Root, Inc. of Houston, Texas, and the T.L. James Company of Ruston, Louisiana, implemented Palmer & Baker’s design for the Lake Pontchartrain Causeway. Like Palmer & Baker, Brown & Root, Inc. also had extensive experience with construction projects in salt water environments. In 1947, the firm built the first oil platform in the Gulf of Mexico beyond the sight of land. This feat led to the expansion of the offshore oil and gas industry worldwide.\(^7\) The T.L. James Company previously constructed Camp Ruston, a camp northwest of Ruston for the detention of European World War II prisoners of war.\(^8\) Following award of the contract, the Louisiana Bridge Company worked with the Raymond Concrete Pile Company to construct a yard in Mandeville near the planned site for the northshore Toll Plaza. All pieces of the bridge were produced at this location. The Raymond Concrete Pile Company utilized their concrete manufacturing technology to produce prestressed concrete cylinders which could withstand the corrosive conditions of Lake Pontchartrain.

In 1955, the Raymond Concrete Pile Company and the Louisiana Bridge Company built the facility for $6 million, employing approximately 750 workers. Engineers designed, planned, and built the plant to maximize efficiency in construction of the bridge. Workers dredged a canal from the Lake to the interior of the facility to facilitate loading materials on and off barges. Plant workers manufactured pilings on the east side of the plant and constructed spans on the western portion. Concrete mixing machines and spouts separated the two.

James E. Walters, a World War I veteran with a varied professional career, oversaw construction of the first Lake Pontchartrain Causeway. Walters was a sailor, rancher, and bronco-buster prior to becoming an engineer. He oversaw construction of the Pickwick Landing Dam on the Tennessee River during the Great Depression and spent much of World War II conducting aircraft salvage.\(^9\) Under Walters’ direction and utilizing prefabrication techniques, the first span was completed four months ahead of schedule.\(^10\)

Construction on the second span began in June 1967. The GNOEC chose another joint Brown & Root-T.L. James & Company-Raymond International (formerly the Raymond Concrete Pile Company) called Prestressed Concrete Products, Inc. to build the span utilizing the same prefabrication techniques that had proven successful before.\(^11\) Prestressed Concrete Products, Inc. manufactured nearly all components of the second bridge at the plant in Mandeville and transported by barge to the construction site in Lake Pontchartrain.\(^12\) James E. Walters, project

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\(^8\) Louisiana Tech University Special Collections, “Camp Ruston”, (2010).

\(^9\) *The St. Tammany Farmer* 31 August 1956:


\(^12\) Gulf Engineers & Consultants, Krebs, LaSalle, Lemieux Construction, Inc. [GEC-KLL], *GNOEC Consulting Engineers’ Annual Report of the Lake Pontchartrain Causeway*, 2-4.
engineer for the first span, was by then Executive Vice-President of the Prestressed Concrete Pile Company and once again directed construction.

4. Structure type: The Causeway consists of twin spans of prestressed concrete trestle bridges with a joint bascule to allow for marine traffic. The first span was modified from two bascules to one when the second span was constructed in 1967-69. A bascule bridge, commonly referred to as a drawbridge, is a bridge with a moveable section which swings upwards to allow traffic below. The GNOEC operates the Causeway bascule at Mile 16 and has an operator on site at all times. The bascule is closed during peak traffic times with the exception of vessels in distress.13

5. Original plans and construction: The Louisiana Bridge Company constructed a 23.83-mile long two-lane concrete bridge across Lake Pontchartrain from Jefferson to St. Tammany Parish. Designers utilized new technologies in prestressed concrete to create a modern appearance and safe travel route. The Times-Picayune, a local newspaper, described the Causeway on opening day as a “glistening snowlike ribbon of concrete and steel, shimmering in brilliant sunlight.”14 Each span measured 56'-0" long, 33'-0" wide, and weighed 180 tons. The piling height allowed for an average clearance of 15-16'-0" above average water levels in Lake Pontchartrain.15

Utilizing prestressed technology and Upson’s techniques, workers at the manufacturing plant in Mandeville created 415,000 linear feet of concrete piling to support the Lake Pontchartrain Causeway. Each piling was formed by spinning concrete at high speeds in a form to create a hollow tube 54" in diameter to a strength of 8,500 psi. The ring held twelve $1^{3/8}\text{"}$ formed holes for the prestressing wire.16 These holes were evenly spaced in the 4" thick concrete rings. Once the concrete was set, the 16'-0" long tubes were lined end to end, strung with wire, and capped. Once combined, the tubes measured between 72'-0" and 104'-0" in length. The caps were turned four times at each end and sealed. Once the concrete had set completely, the piling was taken by barge to the construction site in Lake Pontchartrain and drilled into the sandy bottom of Lake Pontchartrain. The first piling was laid on May 23, 1955, only fourteen months, five days before the first span was completed.17 In all, workers used 4,482 pilings to build the first bridge.18

Prefabricated concrete capped each pair of pilings, allowing an average clearance of 15-16'-0" above average water levels in Lake Pontchartrain.19 Caps measured 3'-0" wide and 32'-0" long. Spans were constructed 56'-0" long and 33'-0" wide although the roadway was limited to 28'-0".

14 The Times-Picayune, August 31, 1956, “Pontchartrain’s 24-Mile Span is Formally Opened to Traffic.”, 16.
15 GNOEC, Program.
18 GNOEC, Program.
19 GNOEC, Program.
Eleven 65'-0" spans comprised the humps for marine traffic. At the prefabrication plant, workers fitted steel and wire into span forms which were then pumped with concrete and smoothed to allow for surface traffic. After curing, employees loaded each of the 2,235 spans onto barges and transported each to the construction site where they were mounted by cranes onto the caps. Each 56'-0" span weighed 180 tons. The plan called for every fifth joint to be an expansion joint to accommodate the physical stress of expansion and contraction on the structure.

The first span of the Lake Pontchartrain Causeway opened Thursday, August 30, 1956, just in time for the long Labor Day weekend. More than 600 vehicles crossed the new bridge between celebrations on both shores of Lake Pontchartrain which included fireworks, bands, and a flyover by the Louisiana Air National Guard. Fred Mizell, Vice-Chairman of the GNOEC and President of the St. Tammany Parish Police Jury, called the bridge a “100-year-old dream” and announced that the opening of the bridge was “the greatest moment of my life.” Although the bridge was not in the City of New Orleans, Mayor deLesseps “Chep” Morrison held one side of the ceremonial ribbon as evidence of the Causeway’s importance to the City.

As anticipated, the construction and opening of the first span of the Causeway produced a population explosion in St. Tammany and Jefferson Parishes. The population of St. Tammany Parish grew by approximately 8,000 people between 1910 and 1950, from 18,917 to 26,988. By 1960, the parish population had grown at 1.5 times that rate to 38,643. The population of Jefferson Parish more than doubled during that same decade. By 1959, Jefferson Parish was the second largest number of voters in Louisiana, an impressive feat considering that the Parish had so few voters that voting machines were not installed until 1951.

In response to the population shifts and in anticipation of continuing growth, the GNOEC announced on January 25, 1968, that Blythe & Company of New York would purchase the Causeway’s outstanding 1954 bonds and finance the construction of an additional span to the bridge. The design by David Volkert & Associates of Washington, D.C. added a second two-lane span but also called for updates to the existing span such as reducing the number of bascules, widened navigation passages, and produced space for distressed vehicles to pull over.
Advances in technology allowed for the spans of the second bridge to be 84′-0″, a substantial increase over the 56′-0″ spans of the first bridge. For this reason, every second span of the new bridge aligned with the third span of the first. Construction workers drove pilings in sets of three rather than two. The roadway of the second span measures 28′-0″ wide with 18″ safety curbs. In addition, seven crossovers were completed between the two spans to allow vehicles to turn around, pull over, or offer police units a space to monitor traffic.

The opening ceremony for the first span of the Causeway focused on innovation and change. Safety, however, was the theme of the dedication ceremony when the second span opened on May 10, 1969. The new span almost eliminated the possibility of dangerous head-on collisions that had been a risk with the first span. The narrow lanes of the first span made emergency response difficult but crossovers and separated lanes ensured that problems could be resolved more quickly on the second span. “There should be no safer 24-mile drive anywhere than what now stretches in straight, two-lane lines across the lake,” declared John R. Lambert, Jr., Chairman of the GNOEC. The addition of the second span doubled the Causeway’s capacity as a hurricane evacuation route as well.

6. Alterations and additions:
With the notable exception of construction associated with adding the second span, no significant structural changes have been made to either span of the Lake Pontchartrain Causeway since their respective completions. Repairs due to marine vessel collisions have included replacement of span sections identical to the original construction. Many of these collisions, including a crash on January 28, 1960, have resulted in fatalities. On that day, heavy fog descended on Lake Pontchartrain and a barge hit the Causeway. Whole sections of the span began to collapse while Bradley Coleman, a truck driver, was crossing the Causeway. Coleman accelerated and claims to have jumped his truck from section to section until getting to a secure section of the bridge. In the early hours of August 1, 1974, a tugboat collision caused a roughly 252′ gap in the northbound lane. On June 16, 1964, four sections of the original span collapsed into Lake Pontchartrain when a tugboat hit the bridge around 1:30 a.m. causing a Continental Trailways bus to plunge into the water. In each of these instances, workers repaired the damaged sections within weeks.

These collapses and the quick repair time raised questions in the community about the construction materials and method of the first span. In March 1964, Herman Nebel, Jr.,

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35 The Times-Picayune, August 1, 1974, “Tug Pilot’s Out on Bond.”, 1.
36 The Times-Picayune,” ‘Passed Out’ Before Barges Hit Span, First Mate Quoted.” June 17, 1964, 3.
Chairman of the American waterways Operators, Inc., Regional Bridge and Lock Committee, New Orleans, claimed the nature of the Causeway’s construction could cause a “match stick effect” that “could prove disastrous any time a vessel comes into contact with it.” Contracted engineers for the GNOEC countered that Nebel did not understand the nature of bridge construction: “Of course, it is constructed in section. Anyone who attempts to build a continuous bridge 24 miles long would find himself confronted with a bridge that grew 50’ in the summer and shrunk 500’ in the winter. Sectional construction is not an element of weakness.” The GNOEC praised the strengths of sectional construction at the dedication of the second span.

The brackish water of Lake Pontchartrain can have a detrimental effect to the structural integrity of the Lake Pontchartrain Causeway. Inspections in 1987 revealed cracks in the concrete that corresponded to the location of the prestressing wires. Although the cracks were deep, inspectors did not find staining to indicate that water had damaged the wires. At that time, engineers chose to correct the damage on twenty-one piles by pumping an epoxy grout through ports in a marine-grade jacket. Engineers selected a process known as all-polymer encapsulation or APE, because the pilings would be repaired as well as protected from additional damage.

In 1996, engineers began applying the APE process to more than 400 pilings of the Lake Pontchartrain Causeway that were exhibiting cracks in the splash zone. Workers cleaned the surface of each piling with three or more cracks with a high-pressure water blaster. After the surface was prepared, the piling was wrapped in a marine-grade polyester resin jacket with ports where an aggregate-filled epoxy grout was pumped beginning with the bottom of the jacket. Each encapsulation was then capped with a water-resistant epoxy paste. This initial piling restoration phase was completed in 1997.

B. Historical Context

In December of 1810, William Charles Cole Claiborne, Governor of the Territory of Orleans, declared West Florida part of the Louisiana Purchase and, therefore, U.S. territory. By proclamation dated October 7, 1763, King George III of England had designated the boundaries of British West Florida as follows:

. . . West Florida, bounded to the Southward by the Gulph of Mexico, including all islands within six leagues of the coast from the river Apalachicola to lake Pontchartrain; to the Westward by the said lake, the lake Maurepas, and the river

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37 Ibid.
38 Ibid.
West Florida from the Mississippi River eastward to the Perdido River became Feliciana County, which was further subdivided into six parishes on April 24, 1811. The Pearl River to the east, the Tangipahoa (originally the Tanchipao) River to the west, the Mississippi Territory to the north, and Lake Pontchartrain to the south bounded the newly-created St. Tammany Parish. The parish name is believed to have been derived from Tamanend, or Taimenand, a chief of the Delaware Nation said to be friendly to early east coast settlers.

Congress approved the constitution for the new State of Louisiana on April 8, 1812, without the West Florida parishes. Divided loyalties split citizens of the region as most residents of the western region wanted to become part of Louisiana, while those in St. Tammany petitioned Congress to annex that parish to the Mississippi Territory. On April 14, 1812, President Monroe resolved the issue by signing a bill adding the four parishes west of the Pearl River to Louisiana. On April 30, 1812, the State of Louisiana joined the Union, although the State Legislature did not approve annexation of the Florida Parishes until August 4 of that year.44

Unlike much of southern Louisiana, St. Tammany and the Florida Parishes were populated by British or Scots-Irish Protestants, most of whom had emigrated from the eastern seaboard colonies during the British and Spanish regimes. Initially, settlement concentrated along the area’s rivers, their major tributaries, and the north shore of Lake Pontchartrain. Little changed in the ethnic character of the region from 1820 until after Reconstruction. As one area historian noted, "the number of inhabitants . . . increased mostly by the growth of family trees rather than by a population influx."46

Because Lake Pontchartrain provided the quickest route northward from New Orleans, shore-to-shore traffic increased during the early nineteenth century. In the 1820s, steamboats joined schooners in the lake trade making regular mail and commercial stops as well as running Sunday excursions. Between 1821 and 1840, builders constructed forty boats, including the steamer

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**Pontchartrain**, in St. Tammany shipyards located along the Tchefuncte, Pearl, and West Pearl Rivers, as well as Bayou Castine, Bayou Liberty, and other area bayous. Overland traffic increased as well during the early nineteenth century, as major roads were built through the parish.47

Bernard Phillippe de Marigny de Mandeville, son of the fabulously wealthy New Orleanian Pierre Philippe Enguerrand de Marigny de Mandeville, was the exception to the small farmer class of antebellum St. Tammany Parish. Although an extensive landholder, Bernard Marigny was best known as an entrepreneur and popular politician, with a penchant for dueling, gaming, and a lavish lifestyle.48 In early 1829, Marigny purchased the Lake Pontchartrain/Bayou Castine tracts previously granted to Morgan Edwards during the Spanish colonial period, and, along with adjoining property acquisitions, established his vast Fontainebleau Plantation on the north shore of Lake Pontchartrain. In 1834, Marigny organized the town of Mandeville on his Fontainebleau property west of Bayou Castine. Shortly thereafter, he created a ferry system across Lake Pontchartrain, a service that connected Mandeville and New Orleans until 1936.49 Marigny’s St. Tammany sugar plantation survives today as Fontainebleau State Park, a 1,000-acre expanse that extends approximately 3 km (2 mi) along the lakefront between Bayou Castine and Cane Bayou.50

The Lake Pontchartrain Causeway meets the south shore of Lake Pontchartrain in Metairie, Jefferson Parish, Louisiana. The Jefferson Parish Planning Department described the area as being “a thin scattering of farms, pastures and fishing villages, with several large plants dotting the banks of the Mississippi River” until the 1930s when manufacturing and improved roads replaced agrarian living in the area.51 In 1720, the French Crown issued the first land concessions in Kenner or Cannes Brulées (“burnt canes” an early French name for the area) to Count Joseph M. D’Artagnan and Jean Baptiste Martin D’Artaguiette. Indigo and farming formed the basis of the economy until the turn of the nineteenth century, when the technical innovations of Eli Whitney’s cotton gin and Étiènne de Boré’s successful granulation of sugar transformed southern agriculture into a brisk industry. Enterprising planters from other regions of the South began to purchase plantations along the Mississippi and to acquire large numbers of slaves to keep agricultural operations at a steady pace.52 This trend is apparent in the current project area—the first Federal census taken in Jefferson Parish in 1830 recorded a slave population of 4,907 (71 percent) out of a total parish population of 6,846.53

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47 Ellis St. Tammany Parish, L’Autre Côté du Lac, 102-03,111.
51 Marion Favret Meador, Jefferson, the Parish of Plenty (Metairie, Louisiana: Jefferson Parish Planning Department, 1968), 4.
As the premier port city of the Mississippi River, New Orleans possessed strategic significance for both Union and Confederate troops during the Civil War. Confederate defenses proved futile in 1862 when Union General David Farragut’s forces captured the Crescent City. Union forces occupied the area for the duration of the war. In Jefferson Parish, Union soldiers prepared for a counterattack by enhancing existing fortifications. Camp Parapet at the river end of present-day Causeway Boulevard served as a repository for munitions and troops marching through Louisiana. Like most of the south, residents of Orleans and Jefferson Parishes suffered high casualties, a depleted workforce, and the social confusion of Reconstruction. These changes led to slow economic growth but not stagnation. The 1880s saw the arrival of Italian, German, Irish and African American truck gardens, small family farms that supplied local markets. Prior to the Civil War, a foundry, sawmills and brickyards made up the few industrial sites. Postbellum, the manufacturing focus shifted to the processing, packing, and shipping of farm products. Barrel, box, and lumber companies, canneries and ice factories sprung up and grew into large firms.  

At approximately the same time, ca. 1911-22, a nationwide campaign started for road improvements to principal routes. Federal and state agencies, along with the new American Automobile Association (AAA), first sponsored the gravel-surfaced National Auto Trails. The original Jefferson Highway started as a Trails project and followed the route of the modern-day Airline Drive, beginning in New Orleans and reached as far as Winnipeg, Manitoba, Canada, earning the nickname the “Palm to Pine Highway,” and today a 1917 obelisk which marked the southern end of the highway still exists at the corner of St. Charles Avenue and Common Streets in New Orleans.  

Governor Huey P. Long’s methods of bringing modern highways to Louisiana were unconventional – upon going to the office of the Highway Commission in 1928, he drew a few short lines on map. Each line represented a short stretch of paved highway coming in and out of principal towns. Long believed that samples of excellent roads would create the public demand for more. This perhaps is why a 1933 road map shows a strangely truncated Airline Highway (U.S. 61), which doesn’t even reach Jefferson Parish. However, 1938 photograph shows U.S. 61 highway construction fast approaching its end point in New Orleans.  

The newly-constructed highways, in combination with the war boom, propelled Jefferson Parish into a new era of growth and economic development. “Industrial expansion during the 10 year period since 1945 has been almost fantastically rapid,” a trade writer wrote in 1956. By 1968, at least 250 industrial companies maintained an office, warehouse, or plant in the parish and the

55 Hanson, Louisiana: A Guide to the State:78.  
57 Meador, Jefferson, the Parish of Plenty, 23.
combined traffic on Airline Highway/Jefferson Avenue/Veterans Boulevard grew to approximately 150,000 vehicles a day. Wartime contractors such as Avondale Marine Ways and Rheems Manufacturing became multi-million dollar enterprises.58

Hoping to capitalize on this growth, the Louisiana Legislature in Act 121 of 1924 provided for construction of a toll bridge across Lake Pontchartrain. The legislature required that the bridge would be “free of competition” to ensure success of the project. The Act also mandated the toll bridge to be built through a privately funded franchise. In December 1924, a group of investors and interested citizens known as the Lake Pontchartrain Causeway Association met in Covington to discuss construction of a bridge across Lake Pontchartrain from Mandeville to New Orleans. Led by former Governor Ruffin G. Pleasant, a Democrat from Shreveport, Louisiana, the group proposed to build a string of 18 islands between Mandeville and Metairie both to serve as foundations for such a long bridge, and to generate income. Members anticipated that monies gained from the land sales would offset costs of constructing the bridge.59

Around the same time, another group offered a less expensive plan to build across Lake Pontchartrain. The “Watson-Williams” plan proposed a route connecting Slidell and eastern New Orleans by a seven-mile bridge. Former Governor Jared Young Sanders, Sr., a Democrat from St. Mary Parish, led the Watson-Williams contingent. Both the Association and the Watson-Williams Bridge Company planned to take out bonds to construct the bridge, charge tolls, and give the bridge over to the State once the bonds debt had been serviced. The Watson-Williams group planned to charge $1.30 per car each way for the first million cars each year and then reduce the fares by half for the remainder of the year. That group anticipated that it would be able to give the bridge to the State in twenty years. Members of the Association planned to charge $1.00 per car or $1.50 round trip (Table 1). After thirty years, the bonds would be paid and the State would receive ownership of the bridge from Mandeville to the south shore.

Both plans faced stiff opposition because both advocated tolls rather than public roads. The most vocal opponent to the toll bridges was Huey P. Long, Jr., then Public Service Commission Chairman for the state, and already a flamboyant personality. Long threw his lot in with public road advocates in early 1925, filing a lawsuit to place any future bridge under the control of the Public Service Commission. After the state Supreme Court rejected the suit, Long erupted with claims of monopoly and favoritism.60 Other agencies balked at the idea of toll roads, including the Federal Bureau of Roads, which was worried that any additional bridge planning would interrupt the State’s designs to build free bridges at Chef Menteur Pass and the Rigolets, a fear that Long exploited.

Table 1

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On February 26, 1925, the State Highway Commission chose the Watson-Williams Bridge Company plan to build a bridge from Slidell to New Orleans. The contract included a provision prohibiting other bridges across Lake Pontchartrain. This stipulation infuriated Long and others who saw it as a way for the State to avoid having to build the free bridges mandated in the Louisiana Constitution of 1912. Long again filed suit with the state Supreme Court, this time winning in 1926 when the Court declared the free bridges at Chef Menteur and the Rigolets constitutionally protected. Politics fueled the controversy during the US Senate election of 1926 in which Watson-Williams plan supporter Jared Y. Sanders, Sr., ran against Senator Edwin Broussard, a political associate of Huey Long. On the campaign trail, Long repeatedly labeled Sanders an agent of tolls and self-interest for his role in the bridge controversy. During his tenure as Public Service Commission Chairman, Long learned the political power of expanding public roads, a key element to his legacy as Governor.61

On February 18, 1928, the Watson-Williams bridge connecting Slidell with eastern New Orleans, now known as the Highway 11 Bridge, opened as the world’s longest concrete pile bridge (4.78 miles).62 The bridge also has been called the Pontchartrain Bridge, the Five Mile Bridge, and the Maestri Bridge.63 Initially, bridge officials charged $1.25 per vehicle each way, as well as an additional 10 cents for passengers. Two years later, Huey Long spoke at the opening of the public Rigolets Pass Bridge (The State of Louisiana replaced the bridge in January 2008).64 Once the Rigolets Pass Bridge opened, the toll bridge fell out of popular use. In addition, the State of Louisiana during the term of Governor Huey Long established a system of free ferries along the proposed bridge routes. After falling into receivership, the Watson-Williams Bridge Company and

64 Erik Sanzenback, “U.S. 11 Bridge Celebrates 80th Birthday” *St. Tammany News* [St. Tammany Parish, Louisiana], February 18, 2008.
investors sold the bridge to the State in the late 1930s for less than $1 million, a substantial sum of money during the Great Depression but far less than the $6 million investment to construct the bridge.

Continued development on the southshore in the mid-twentieth century again opened discussion of a bridge between New Orleans and the Mandeville area. On November 2, 1948, voters in Louisiana were asked to decide on the proposed Amendment No. 20 to authorize “$40,000,000 in bonds to finance a causeway across Lake Pontchartrain and completion of additional links in the Lakeshore-Hammond Highway.”65 By a vote of 87,564 to 18,034, the citizens of Louisiana voted in favor of the causeway amendment. 66

In 1951, the police juries and political leadership of St. Tammany and Jefferson Parishes, encouraged by the 1948 causeway financing amendment, began a cooperative endeavor to build a bridge across Lake Pontchartrain between their jurisdictions. By December 1953, Palmer & Baker, Inc., of Mobile, Alabama, had been awarded the preliminary engineering contract for design of the bridge, which was to become the longest bridge in the world. Less than one year later, the voters of St. Tammany and Jefferson Parishes approved a $6 million bond issue for additional funds to complete financing of the construction of a causeway across Lake Pontchartrain and the roads to support anticipated growth. The State through Highway Fund No. 2 contributed an addition $5 million to the project. This fund grew by collection of vehicular license taxes from six Louisiana parishes including Orleans, Jefferson, and St. Tammany Parishes. The State funds were limited to the construction of auxiliary roads related to predicted growth caused by the bridge across Lake Pontchartrain.67 These auxiliary projects included:

- Extension of Veterans Memorial Highway from Pontchartrain Boulevard (Orleans Parish) to a point “near the Orleans-Jefferson parish line in Jefferson parish;”68
- Construction of a bypass in St. Tammany Parish connecting U.S. 190, U.S. 190 West, and State Highway 25, and;
- An extension of Causeway Boulevard from the Airline Highway interchange to Jefferson Highway including overpasses and grade separations.

The police juries handled the bid process as a single large project in three phases rather than three individual pieces. In addition, the plans called for completion of all work within eighteen months.69

65 New Orleans States [NO States], November 1, 1948, “Vote Tuesday Will Decide Amendments.”, 1.
68 NO States, August 29, 1956, “Bonds, State Funds Built Span.”
Plans coalesced and in 1954 the police juries of St. Tammany and Jefferson Parishes formed a commission to oversee construction of the Lake Pontchartrain Causeway, manage the bridge once operational, and negotiate finances. Called the Greater New Orleans Expressway Commission (GNOEC), the group consisted of appointed representatives from both police juries and Parish governments. John J. Holtgreve of Jefferson Parish, Chairman; Fred Mizell of St. Tammany Parish, Vice-Chairman; Ben Abadie of Jefferson Parish, Secretary-Treasurer; Thurston B. Martin of Jefferson Parish, Ivy A. Champagne of St. Tammany Parish, and Archie R. Singletary of St. Tammany Parish served as the GNOEC’s first members.70

The decision to build the Lake Pontchartrain Causeway reflects the growth of automobile ownership in the mid-twentieth century as well as the desire of city dwellers to relocate to the suburbs following World War II. In part, the shift from New Orleans to nearby parishes can be tied to the rise of the automobile use in America. Automobile registrations in the United States skyrocketed 150 percent between 1920 and 1930.71 In Louisiana, the number of licensed vehicles more than doubled between 1922 and 1926. The number of miles in the state highway system rose from 1,800 miles, to 4,158 miles increasing to 8,145 miles by 1930.72 Together, these advances decreased residents’ reliance on public transportation and expanded New Orleans’ residential areas.

After World War II, communities across the United States witnessed a common phenomenon. Returning soldiers with new families and flush with money from the GI Bill increased the demand for new homes. Neighborhoods quickly sprang up around many urban areas. The model for the rapid suburbanization of previously rural areas came from the Levittown development in New York. Starting in 1947 the partnership of Levitt and Sons built, sold, and rented pre-fabricated homes on Long Island. The Levitt company built homes quickly and inexpensively on concrete slabs. Soon other similar developments grew around the United States, including in New Orleans.

The move to a new Crescent City development was not far enough for some. Racial tensions in New Orleans began as early as 1950 when the National Association for the Advancement of Colored People (NAACP) filed a motion in Federal court demanding race-based restrictions be dropped at the golf course in City Park. That same year, Carlton Pecot became New Orleans’ first African American police officer following protests of that segregated force. Many in New Orleans saw these changes as a social problem, rather than social progress, and often blamed New Orleans Mayor deLesseps “Chep” Morrison. Morrison, a progressive and pro-business politician with a cautious

Scheduled.”, 46.

view toward racial relations, was elected mayor in 1946. Under his leadership, New Orleans expanded international trade and successfully courted the oil and gas industry. In addition to economic reforms, Morrison established the New Orleans Recreation Department (NORD), which operated parks and recreation leagues throughout the City, always maintaining segregated facilities. Many people saw these steps as encouraging African Americans to move to New Orleans. Angry white residents circulated pamphlets claiming that “Morrison Betrays the White Race.” Without claiming them as his own sentiments, Morrison took a segregationist stand, saying “I represent the majority of the citizens and they are overwhelmingly for segregation.”

In September 1952, the NAACP filed suit against the Orleans Parish School Board demanding racial integration of all New Orleans public schools. The case continued until February 1956 when the US District Court ruled that segregation in New Orleans schools was illegal under the 1954 *Brown v. Board of Education* Supreme Court decision. The court also ordered the integration of public libraries and other recreational facilities. Despite the court’s ruling, not until November 14, 1960, did four female African American students entered William Frantz Elementary and McDonogh School No. 19. The backlash was immediate, and ugly. Leander Perez, political boss of Plaquemines and St. Bernard Parishes, offered white children space in St. Bernard Parish schools to undermine the force of new integration laws. By January 1961, Dr. James Redmond, Superintendent of Orleans Parish Public Schools estimated that 1,600 students had been removed from the integrated elementary schools to attend classes in St. Bernard Parish, leaving only one white student between the two schools. That year, just 43 percent of students attending New Orleans’ public schools were white. By 1974, white enrollment in the City’s public schools had dropped to 19 percent.

Fast-paced residential development, less expensive land, arriving big business, and racial tensions encouraged many residents and business owners to leave the City, a phenomenon often labeled “white flight.” This exodus, especially from New Orleans to the northshore, was made possible by the construction of the Lake Pontchartrain Causeway. By cutting commute time, living on the northshore became a viable alternative to the racially-charged atmosphere of New Orleans. Between 1950 and 1960, the population of Orleans Parish grew by approximately 10 percent. The white population of the parish, however, grew only 0.7 percent. The population of St. Tammany Parish has exploded since completion of the Causeway and by 2000, the population of St. Tammany Parish swelled to more than ten times larger than it had been in 1910. By comparison, the population of New Orleans grew by only 30 percent in those years.

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The Lake Pontchartrain Causeway continues to the Greater New Orleans area as a safe commuter corridor. On August 29, 2005, Hurricane Katrina struck southeast Louisiana, causing rampant flooding and devastation. The U.S. Army Corps of Engineers, the agency responsible for coastal protection along Lake Pontchartrain and in other areas, committed to providing a level of protection in the area capable of withstanding a severe hurricane. In 2009, the Corps of Engineers determined that improvements associated with the Hurricane Storm Damage Risk Reduction System would necessitate the demolition of the southern Toll Plaza and alterations to the Lake Pontchartrain Causeway in Jefferson Parish. Activities began in 2011 and the Corps of Engineers demolished the southern Toll Plaza in December of that year.

**Part 2: Structural/Design Information**

**A. General Statement**

1. Character: At more than 23 miles long, the Lake Pontchartrain Causeway was the longest bridge in the world when constructed and continues to be the world’s longest continuous span over water. This feat was made possible by advances in concrete technology following World Wars I and II, specifically the use of prestressed reinforced concrete. By using concrete, builders were able to mass produce bridge sections which greatly reduced the construction and labor costs. The success of the Causeway demonstrated the capabilities of prestressed reinforced concrete, a substance now used for a variety of applications from floors to nuclear reactors.

The devastation and destruction of Europe during World War II necessitated a mass rebuilding of the infrastructure across the continent. These needs coupled with the shortage of steel caused engineers and planners to look for strong, less expensive means of constructing bridges. In the decades leading to WWII, scientists researched a method of strengthening concrete by adding high strength, high tensioned steel to the interior of concrete pieces known as prestressing. Eugene Freyssinet, a pioneer in the field of reinforced concrete, conducted studies into prestressed technology. The technique, however, was not widely understood or accepted. Following the war, demand for infrastructure rebuilding and materials shortages encouraged a re-examination of Freyssinet’s research. In 1946, France built the Luzancy Bridge across the Marne River, marking the first major bridge in the world to be built of precast, prestressed concrete.78

Much of Freyssinet’s research and techniques came to the United States during the construction of the Walnut Lane Memorial Bridge in Philadelphia, Pennsylvania. Gustave Magnel, a professor of reinforced concrete at the University of Ghent, studied and taught Freyssinet’s work. Magnel designed a bridge for the Walnut Lane Bridge project for the proposal prepared by the Preload Corporation. Charles Zollman, a former student of Magnel’s, was the company’s

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structural engineer assigned to the project. The design consisted of a 260'-0" span bounded by 74'-0" end spans with four columns supporting each end. Traffic was allowed on the bridge in 1950.\textsuperscript{79}

In March 1944, Maxwell Upson and John Philbrook of the Raymond Concrete Pile Company secured a patent to “provide an economical method of constructing reinforced concrete vessels” (Upson 1944 US Patent No. 2,344,223:1). This technique involved manufacturing sections of prestressed concrete and then “welding or otherwise firmly fastening together” the sections.\textsuperscript{80}

2. Condition of fabric: The condition of the Lake Pontchartrain Causeway is generally good. The GNOEC retains an engineering firm to perform periodic assessments and repairs to the structure.

B: Description

The Lake Pontchartrain Causeway consists of twin spans of prestressed concrete toll bridges with a joint bascule to allow passage of tall marine vessels. The first span of the bridge opened in 1956 and measured 23.83 miles, making the Causeway the longest bridge in the world. This record was broken in 1969 when the GNOEC completed the second span of the bridge (Tables 2, 3).

<table>
<thead>
<tr>
<th>Table 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COMPONENTS OF FIRST SPAN OF THE LAKE PONTCHARTRAIN CAUSEWAY,</strong></td>
</tr>
<tr>
<td><strong>completed 1956</strong></td>
</tr>
<tr>
<td>Pilings</td>
</tr>
<tr>
<td>Diameter: 54&quot;</td>
</tr>
<tr>
<td>Walls: 4&quot; thick</td>
</tr>
<tr>
<td>Section Length: 16'-0&quot;</td>
</tr>
<tr>
<td>Piling length: 72-104'.0&quot;</td>
</tr>
<tr>
<td>Spans</td>
</tr>
<tr>
<td>Roadway Length: 56'-0&quot;</td>
</tr>
<tr>
<td>Span Width: 33'.0&quot;</td>
</tr>
<tr>
<td>Hump Length: 65'-0&quot;</td>
</tr>
<tr>
<td>Roadway Width: 28'-0&quot;</td>
</tr>
<tr>
<td>Caps</td>
</tr>
<tr>
<td>Length: 32'-0&quot;</td>
</tr>
<tr>
<td>Width: 3'-0&quot;</td>
</tr>
<tr>
<td>Total Length of Bridge</td>
</tr>
<tr>
<td>23.83 miles</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>QUANTITIES OF MATERIALS USED IN CONSTRUCTION OF FIRST SPAN OF</strong></td>
</tr>
<tr>
<td><strong>LAKE PONTCHARTRAIN CAUSEWAY,</strong></td>
</tr>
<tr>
<td><strong>completed 1956</strong></td>
</tr>
<tr>
<td>Material</td>
</tr>
<tr>
<td>concrete</td>
</tr>
<tr>
<td>prestressing wire- decks (0.375&quot;)</td>
</tr>
<tr>
<td>Quantity</td>
</tr>
<tr>
<td>296,000 cubic yards</td>
</tr>
<tr>
<td>4,150 miles</td>
</tr>
</tbody>
</table>


The original span now serves as the southbound lanes of the extant Causeway. Travelers bound for the northshore travel the span completed in 1969. Each was constructed of concrete panels atop concrete pilings. Advances in prestressed concrete technology developed in the years between span construction allowed builders to reduce the number of concrete panels needed to form the superstructure of the northbound lanes.

<table>
<thead>
<tr>
<th>Table 4</th>
<th>SPANS OF THE LAKE PONTCHARTRAIN CAUSEWAY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>First Span</strong></td>
</tr>
<tr>
<td>Start of construction</td>
<td>June 1955</td>
</tr>
<tr>
<td>Designer</td>
<td>Palmer &amp; Baker, Inc.</td>
</tr>
<tr>
<td>Number of spans</td>
<td>2,240</td>
</tr>
<tr>
<td>Length of spans</td>
<td>56’-0” (eleven sections 65’-0”)</td>
</tr>
<tr>
<td>Number of pilings per support</td>
<td>2</td>
</tr>
<tr>
<td>Direction of traffic after completion of second span</td>
<td>Southbound</td>
</tr>
<tr>
<td>Railings</td>
<td>Aluminum railing</td>
</tr>
<tr>
<td>Length of bridge</td>
<td>23.83 miles</td>
</tr>
<tr>
<td>Opening Date</td>
<td>August 30, 1956</td>
</tr>
</tbody>
</table>

**C. Operations**

**Bascules & Humps**

On August 30, 1956, the Lake Pontchartrain Causeway opened to great fanfare and celebration. On that date, most of the bridge was completed although the turnaround, Toll Plazas, and south bascule were not yet complete. Palmer & Baker designed the first span with three elevated humps for small craft clearance and two bascules for larger marine traffic.
The three elevated humps are located at mile markers 4, 12, and 20 (miles count from the south shore to the north) constructed of prestressed, prefabricated panels constructed at the plant in Mandeville and delivered by barge to the construction zone in Lake Pontchartrain. All three offer a vertical clearance of 25'-0" and 55'-0" of horizontal clearance for marine traffic across the lake. Clearance under non-elevated portions of the bridge is limited at 16'-0" above the average water level for Lake Pontchartrain when the span was completed.81

The design counterpoised drawbridges at both bascules offering unlimited vertical clearance for larger marine traffic across Lake Pontchartrain.82 Marine traffic was limited to a 25'-0" vertical clearance when closed. Horizontal clearance at these portals was limited to 75'-0". Each bascule possessed a fog horn and lighting-meeting Coast Guard requirements for safety of marine vessels.83

<table>
<thead>
<tr>
<th>Table 5</th>
<th>ELEVATED SECTIONS OF THE LAKE PONTCHARTRAIN CAUSEWAY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1956</td>
</tr>
<tr>
<td></td>
<td>Type of Passage</td>
</tr>
<tr>
<td>Mile 4</td>
<td>Hump</td>
</tr>
<tr>
<td>Mile 8</td>
<td>Bascule</td>
</tr>
<tr>
<td>Mile 12</td>
<td>Hump</td>
</tr>
<tr>
<td>Mile 16</td>
<td>Bascule</td>
</tr>
<tr>
<td>Mile 20</td>
<td>Hump</td>
</tr>
</tbody>
</table>

Traffic on the Lake Pontchartrain causeway doubled between 1956 and 1965 but many motorists were frustrated by traffic jams related to the drawbridge openings.84 David Volkert & Associates decided to include one fixed elevated marine pass and only one bascule in the design of the second span to reduce these traffic issues. Plans also included alteration of the first span to mimic the new design. During construction, the GNOEC rerouted traffic from the first span to the second span and then routed back to minimize interruption of the Causeway’s daily activities.85

82 GNOEC, Program.
84 Betsy Peterson, “Twin with a Difference.” Dixie April 21, 1968, 32-34.
Workers replaced the north bascule (Mile 16) with a double leaf bridge with unlimited vertical clearance when the bridge was raised. When closed, the bridge offered 45′-0″ of vertical clearance for marine vessels. A fixed span replaced the south bascule (Mile 8) offering barges and boats 50′-0″ of clearance and a horizontal clearance of 150′-0″.\textsuperscript{86}

Today, the GNOEC operates a bascule at Mile 16, a fixed marine span at Mile 8, and three marine humps located at Miles 4, 12, and 20. The fixed marine span offers horizontal clearance of 150′-0″ and vertical clearance of 50′-0″. Per Department of Transportation and Coast Guard regulations, the bascule does not operate during peak traffic time on the Causeway. Only vessels in distress can pass through the open drawbridge Monday-Friday between 5:30-9:30 am and 3:00-7:00 pm with the exception of federal holidays. The bascule is manned 24 hours a day to ensure the safety of marine and vehicular traffic. When closed, the drawbridge allows 45′-0″ of vertical clearance and 125′-0″ of horizontal space.\textsuperscript{87}

\textbf{1\textsuperscript{st} span Guardrail}

The most obvious difference between the two spans of the Causeway is the aluminum handrail installed along the southbound span that was completed in 1956. David Volkert & Associates chose not to include this feature on the second span.

Palmer & Baker designed each 56′-0″ prestressed concrete panel fitted with seven sections of aluminum railing consisting of an aluminum pipe 4 inches in diameter and 8′-0″ long held in place by 12″ guardrail posts. Workers drilled these posts into a concrete barricade that ran the length of the panel as a safety feature. The guardrail posts began 25″ above the roadway. The seven sections alternated open and closed bases to allow for roadway drainage. Like most of the Causeway, the concrete barrier was prefabricated at the plant in Mandeville. The aluminum guardrail was added once the panel was installed.\textsuperscript{88}

\textbf{1\textsuperscript{st} span Turnaround}

Palmer & Baker designed the first span of the Lake Pontchartrain Causeway with a turnaround located nine miles north of the southern Toll Plaza for motorists desiring to return to the shore they left. The posted speed limit for the Causeway when constructed was 60 miles an hour with an allowed turnaround speed of 15 miles per hour. Like the rest of the Causeway, the decks of the turnaround measured 56′-0″ long. Cars exited the Causeway and descended for the length of four decks (224′-0″), traveled the length of seven decks, and then turned. The turnaround

\textsuperscript{86} GNOEC 2010.  
\textsuperscript{87} GNOEC 2010.  
included lights and curbs for safety. Within the turnaround but outside the roadway, engineers included gas tanks in the event of an emergency.\textsuperscript{89} With the construction of the second span and the inclusion of seven crossovers, the turnaround closed to traffic.\textsuperscript{90}

Site Description: Palmer & Baker designed identical toll plazas-completing the overall Causeway Complex-at both the north and south shore terminuses of the Lake Pontchartrain Causeway for administrative offices, storage, and toll collection. The southern Toll Plaza sits on a small projection of land into Lake Pontchartrain. Prior to demolition, the GNOEC undertook routine landscape maintenance and installed various plants. These decisions were made aesthetically and did not constitute a formal planned landscape.

Northbound drivers passed under the canopy (HAER LA-21-A) with the toll booth (HAER LA-21-B) outside their west window and the administration building (HAER LA-21-C) to the east. The police building (HAER LA-21-D) was situated between the canopy and the entrance to the bridge. The canopy did not extend to the southbound lanes. Southbound lanes bowed slightly beyond the Toll Plaza and straightened at a neutral ground less than a mile south of the canopy.

\textsuperscript{90} \textit{The Times-Picayune}, August 31, 1956, “Pontchartrain’s 24-Mile Span is Formally Opened to Traffic.”, 16.
Part 3: Project Information and Sources of Information

Following the unprecedented damage caused by Hurricanes Katrina and Rita, the U.S. Army Corps of Engineers (USACE) committed to a 100 year level of protection in southeast Louisiana. This project calls for the construction and floodwall improvements along the south shore of Lake Pontchartrain as part of the Hurricane Storm Damage Risk Reduction System. In 2009, the USACE determined these improvements will produce an adverse effect on the Lake Pontchartrain Expressway and the southern Toll Plaza, properties determined to be eligible for inclusion in the National Register of Historic Places. In accordance with Section 106 of the National Historic Preservation Act (36 CFR Part 800), the USACE executed a Memorandum of Agreement (MOA) with the Louisiana State Historic Preservation Officer, Greater New Orleans Expressway Commission, and the Coastal Protection and Restoration Authority of Louisiana. As part of the MOA, USACE agreed to document the Lake Pontchartrain Bridge and the structures of the Southern Toll Plaza and prepare an accompanying narrative history. This narrative presents a general overview of the north and south shores of Lake Pontchartrain where the Lake Pontchartrain Causeway abuts land, the development of transportation methods in these areas, and the engineering components of the structure.
Primary and/or Unpublished Sources


Secondary and/or Published Sources:


Meador, Marion Favret. *Jefferson, the Parish of Plenty.* Metairie, Louisiana: Jefferson Parish Planning Department, 1968.


---. June 17, 1964, “‘Passed Out’ Before Barges Hit Span, First Mate Quoted.” Available on microfilm, East Bank Regional Library, Jefferson Parish Public Library System.


Sources for Additional Research:

Additional Annual Reports of the GNOEC were not located in local repositories. These reports primarily contain financial data but likely contain information about minor repairs and staffing.
Figure 1

Piling, Lake Pontchartrain Causeway
Photocopy of engineering drawing
(original in the files of the Greater New Orleans Expressway Commission)
Palmer & Baker, Inc.
February 26, 1954
Sheet No. 81
Figure 2

Piling, Lake Pontchartrain Causeway
Photocopy of engineering drawing
(original in the files of the Greater New Orleans Expressway Commission)
Palmer & Baker, Inc.
February 26, 1954
Sheet No. 81
Figure 3

Railing plan, Lake Pontchartrain Causeway
Photocopy of engineering drawing
(original in the files of the Greater New Orleans Expressway Commission)
Palmer & Baker, Inc.
October 15, 1953
Sheet No. 138
Figure 4

Turnaround plan, Lake Pontchartrain Causeway
Photocopy of engineering drawing
(original in the files of the Greater New Orleans Expressway Commission)
Palmer & Baker, Inc.
January 31, 1956
Sheet No. 112
Construction of the first span of the Lake Pontchartrain Causeway
Photocopy of photograph
(original in the files of the Greater New Orleans Expressway Commission)
Photographer Unknown
No date given, ca. 1955
Construction of the second span of the Lake Pontchartrain Causeway
Photocopy of photograph
(original in the files of the Greater New Orleans Expressway Commission)
Photographer Unknown
No date given, ca. 1968
Figure 7

Hump, Lake Pontchartrain Causeway
Photocopy of photograph
(original in the files of the Greater New Orleans Expressway Commission)
Photographer Unknown
May 29, 1968
Support pilings, southbound span of Lake Pontchartrain Causeway
Support pilings of northbound span visible in background
Photocopy of photograph
(original in the files of Terry Greene)
Terry Greene, Photographer
March 18, 2010