

BAYOU TECHE AT CHARENTON BRIDGE
(Bridge Recall No. 009130)
Carries Louisiana Highway 324 (LA 324) over Bayou Teche
Charenton
St. Mary Parish
Louisiana

HAER LA-37
HAER LA-37

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWINGS

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240-0001

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Location: Carries Louisiana Highway 324 (LA 324) over Bayou Teche in Charenton, St. Mary Parish, Louisiana.

The Bayou Teche at Charenton Bridge (Bridge Recall No. 009130) is located at latitude 29.88709 north, longitude -91.52269 west.¹ The coordinate represents the center of the bridge. It was obtained in 2016 by plotting its location in Google Earth. The location has no restriction on its release to the public.

Present Owner: State of Louisiana.

Present Use: Vehicular traffic. When in its open position, the bridge allows for marine traffic on Bayou Teche.

Significance: This Warren pony truss swing bridge has significance as an example of a movable swing bridge. Its significance is demonstrated by the presence of distinctive engineering and design features of a pony truss swing bridge, which is characterized by the polygonal Warren truss configuration, center-bearing turning mechanism, pivot pier, and operator's house. This bridge was determined eligible for listing in the National Register of Historic Places (National Register) in 2013 under *Criterion C: Design/Engineering* at the state level of significance.²

Historian(s): Emily Pettis, Senior Cultural Resource Specialist, and Katherine Haun Schuring, Cultural Resource Specialist; Mead & Hunt, Inc. (Mead & Hunt); 2017.

Project Information: This documentation was prepared as mitigation to fulfill Stipulation IX.5 of the *Programmatic Agreement Among the Federal Highway Administration, the Louisiana Department of Transportation and Development, the Advisory Council on Historic Preservation, and the Louisiana State Historic Preservation Officer Regarding Management of Historic Bridges in Louisiana*, dated August 18, 2015, and executed September 21, 2015. The Louisiana Department of Transportation and Development (LADOTD) retained Mead & Hunt to prepare this document. It was prepared by senior cultural resource specialist Emily Pettis and cultural resource specialist Katherine Haun Schuring of Mead & Hunt. Dietrich Floeter completed the photography.

¹ For clarity, the bridge is referred to as the Charenton Bridge in this document. The bridge is also known as Structure No. 03512410209141.

² Mead & Hunt, Inc., *National Register Eligibility Determination Report: Pre-1971 Louisiana Highway Bridges* (prepared for the Louisiana Department of Transportation and Development, September 2013).

Part I. Historical Information

A. Physical History:

1. Date(s) of construction: 1945.

2. Engineer: Louisiana Highway Commission.

3. Builder/Contractor/Supplier: The Austin Bridge Company of Dallas, Texas, served as the builder/contractor for the project; Jones & Laughlin Steel Corporation of New Orleans supplied the steel; and Earle Gear & Machine Company of Philadelphia fabricated the electric motor for the swing span.

4. Original plans and construction: Plans available for the Charenton Bridge include as-built and shop drawings. These plans were prepared by the Louisiana Highway Commission (LHC) and are available in the General Files room at the LADOTD's Baton Rouge headquarters. As-built plans for the new swing span structure crossing Bayou Teche in Charenton are dated June 25, 1941, and signed by the State Highway Engineer, Harry Henderlite. Shop drawings date to 1941 and 1942 and include plan sets by the Jones & Laughlin Steel Corporation, steel fabricator, and the Earle Gear and Machine Company, swing span electric motor fabricator.

The majority of the bridge's components were constructed using standard plans. The swing span conformed with standard plan S-S 55-15, "204'-0" Swing Span," which is dated July 3, 1941. Plans for the approach spans and bents (numbered 1-6) were built from standard plan S-C 51, dated April 1941. Plans for the rest piers (piers 1 and 3) are dated May 1940 with revision in February 1941. The operator's house, plan sheet T-M-18, dates to June 1941 with revision in October 1941. Only the bridge's center pivot pier and fender system were not based on a standard plan. Dated April 1941, the pivot pier was a special detail plan sheet titled "Center Pivot Pier | Charenton Bridge Over Bayou Teche." Plans for the fender system are dated May 1941 and are titled "Fender Details | Bridge over Bayou Teche Charenton, LA." The designer for both the pivot pier and fender system is illegible on plans.

5. Alterations and additions: Alterations to the bridge include traffic barrier installation in 2009, replacement of the timber piling below the operator's house at an unknown date, and placement of metal sheet pile on the southeast corner to prevent scour at an unknown date.

B. Historical Context:

Historical background

The Charenton Bridge carries LA 324 over Bayou Teche on the east side of Charenton in St. Mary Parish. Bayou Teche reaches 125 miles from Bayou Courtableau at Port Barre, located approximately 50

miles north of Charenton, to the Atchafalaya River at Berwick.³ The lumber and sugar industries were prominent along this stretch of the bayou and mills for both products were historically located along it.⁴ While the U.S. Army Corps of Engineers (USACE) still manages Bayou Teche as a navigable waterway, commercial traffic has significantly decreased in recent years.

The Charenton Bridge construction contract was awarded to the Austin Bridge Company of Dallas, Texas, in August 1941 under Project 913-04-84 with a contract amount of \$100,073.⁵ According to the 1940-1941 Biennial Report, it was one of several contracts awarded that year for swing truss bridges along the bayou. Contracts were also awarded for bridges at Iberia and Jeanerette in Iberia Parish, Sterling and Oaklawn in St. Mary Parish, and St. Martinville in St. Martin Parish.⁶ Based on a review of available highway maps, bridges spanned Bayou Teche at these locations prior to 1941, including Charenton. At least two of the previous spans, Sterling and Oaklawn, were pontoon bridges.⁷

Although it is unclear why five new bridges were needed along Bayou Teche during World War II, when most other construction was suspended, contributing factors can be surmised. In August 1940 a hurricane stalled over this area of the state, resulting in substantial flooding.⁸ In the years following the flooding, the USACE made improvements to Bayou Teche and the nearby Atchafalaya River basin, including a series of levees and canals. In 1941 the USACE excavated a drainage and navigation canal at Charenton, between Bayou Teche and the Atchafalaya, as part of the larger improvement project.⁹ The Charenton Bridge, which is just downriver from the canal, may have been replaced in response to these improvements. Sugarcane production and transportation along the bayou may also have been a factor in the need for new crossings. The Oaklawn crossing provided access to a plantation and the Sterling crossing was located near a plantation and sugar refinery.¹⁰

³ Vincent Pizzolato, "Preliminary Case Report for the Bayou Teche Bridge at Ruth, St. Martin Parish, Ruth, Louisiana," prepared for the U.S. Department of Transportation Federal Highway Administration and the Louisiana Department of Transportation and Development Office of Highways (April 1984), 4.

⁴ David C. Johnson and Elaine G. Yodis, *Geography of Louisiana* (New York: McGraw Hill, 1998), 133; "Determination of Eligibility for the Bayou Teche Bridge (Oaklawn), LA 323, St. Mary Parish, Louisiana."

⁵ Louisiana Department of Highways, *Eleventh Biennial Report of the Louisiana Highway Commission* (Baton Rouge, La.: Louisiana Highway Commission, 1942), 14–15.

⁶ Louisiana Department of Highways, *Eleventh Biennial Report of the Louisiana Highway Commission*, 14–15, 18–19, 30–31, 36–37.

⁷ "Hearing Called on Bridge Plans," *Times-Picayune*, November 22, 1940.

⁸ Gresham, Matt, "Hurricanes in Louisiana: The Last 100 Years," *The Courier*, June 2, 2002, <http://www.houmatoday.com/news/20020602/hurricanes-in-louisiana-the-last-100-years>.

⁹ United States Army War Department, *Report of the Chief of Engineers, U.S. Army, 1941* (Washington, D.C.: United States Government Printing Office, 1942), 2152.

¹⁰ Coastal Environments, Inc., "Determination of Eligibility for the Bayou Teche Bridge (Oaklawn), LA 323, St. Mary Parish, Louisiana," 2012; "Hearing Called on Bridge Plans."

Both the Sterling and Oaklawn bridges were completed on schedule, in time for the 1941 sugarcane harvest.¹¹ The Charenton and Jeanerette Bridges were delayed, likely due to wartime steel shortages. As a result, the Jeanerette bridge was not completed until 1944 and the Charenton Bridge was not complete until 1945.

The Charenton Bridge, as well as the Jeanerette, Sterling, and Oaklawn Bridges, shared a common design of swing span with polygonal Warren pony truss configurations. In fact, the Charenton and Jeanerette Bridges appear to be almost identical. The Austin Bridge Company was responsible for each of the four bridges. The Dallas-based company was founded by brothers George and Frank Austin in 1902. However, George had been working with the George E. King Bridge Company of Des Moines, Iowa, since the 1890s. Initially known as Austin Brothers Contractors, the company had fabrication plants in Dallas and Atlanta, Georgia. In 1918 company agent Charles R. Moore purchased the bridge portion of the business and subsequently changed the name to the Austin Bridge Company. The company continued to grow and is considered one of the South's leading bridge builders in the early twentieth century. The company survives today as a subsidiary of Austin Industries in Dallas.¹²

Engineering background

Louisiana has one of the largest collections of movable bridges of any state, largely due to its proliferation of navigable waterways, particularly in the southern part of the state near the Gulf of Mexico. Louisiana's movable bridges represent the three major types found throughout the country: swing-span, bascule, and vertical lift.¹³ Due to their popularity and frequent use, a series of standard plans for movable bridges was developed by the LHC and Louisiana Department of Highways (LDH, predecessor to the LHC) between 1924 and 1963. Standard plans were periodically revised with small adjustments to meet site-specific needs.¹⁴ The Charenton Bridge utilized standard plans for the major components, including the Warren polygonal pony truss swing span, six I-beam approach spans, and operator's house.

The Charenton Bridge is an example of a swing bridge with a polygonal Warren pony truss configuration and center-bearing type swing span. Swing-span bridges open by rotating (swinging) the movable span 90 degrees in a horizontal plane about a vertical axis (the central pivot pier), so the span is parallel with the navigation channel. This creates open navigation channels on one or both sides of the central pier that supports the movable span. When in the closed position (closed to marine traffic), the span is supported at three points: the two span ends and the pivot pier. The pivot pier, generally at the mid-span point, supports the weight of the swing span itself. The piers at each span end are "rest piers," which

¹¹ Coastal Environments, Inc., "Determination of Eligibility for the Bayou Teche Bridge (Oaklawn), LA 323, St. Mary Parish, Louisiana."

¹² National Register of Historic Places, Multiple Property Documentation Form, "Historic Bridges of Texas, 1866-1945," Statewide, Texas, E23-24.

¹³ Mead & Hunt, Inc., *Historic Context for Louisiana Bridges*, 72, 73.

¹⁴ Mead & Hunt, Inc., *National Register Eligibility Determination Report: Pre-1971 Louisiana Highway Bridges*, 36, 40.

stabilize the span end along with the pivot pier, and also support the live load (the weight of vehicular traffic) as it passes over the bridge.¹⁵

The center-bearing type swing span receives its name from a large spherical thrust bearing at the center of the span. The center of gravity of the movable span is located over the bearing. The bearing supports the entire weight of the movable span and also keeps the span in proper location. Balance wheels are provided on the center-bearing swing span to prevent the span from tipping out of plane during operation. When compared to the rim-bearing type, which distributes the load over a drum, rollers, and track, the center-bearing span requires a smaller central pier. This allows for a wider and more navigable stream channel, which made it the more popular choice for smaller bayous, such as Bayou Teche.¹⁶

Swing-span bridges were commonly used nationally from the 1890s to the 1920s, after which they were gradually supplanted by bascule and vertical lift bridges for many applications. Although the type fell out of favor nationally, swing spans continued to be constructed in Louisiana as they were less expensive and easier to construct than the alternative bascule or vertical lift spans. The restrictive element for a swing-span bridge is the unavoidable center pier, which remains an obstruction to navigation in the waterway when the span is open. Additionally, the swinging span requires a large circle of clear space in which to operate, limiting its applicability in congested urban waterway locations.

There are 17 extant swing-span pony truss bridges in Louisiana. The earliest was constructed in 1916 and the latest was constructed in 2013. Five of these are located along Bayou Teche. In addition to the Bayou Teche at Charenton Bridge, these spans are located at Iberia (1930), Oaklawn (1941), Jeanerette (1944), and Adeline (1990).¹⁷

Part II. Structural/Design Information

A. General Statement:

1. Character: The Charenton Bridge is a swing-span pony truss bridge and is a representative example of this movable bridge type.

2. Condition of fabric: Good.

B. Description: The Charenton Bridge is located within Charenton, in northern St. Mary Parish, Louisiana. The bridge carries LA 324 (locally known as Convent Street) nominally east-west over Bayou Teche and connects with LA 87. The bridge is a Warren with polygonal top chord pony truss swing

¹⁵ Louisiana Department of Transportation and Development, *Movable Bridge Inspectors Program Workbook*, typescript (Baton Rouge: LADOTD, n.d.): II-11.

¹⁶ Mead & Hunt, Inc., *Historic Context for Louisiana Bridges* (prepared for the Louisiana Department of Transportation and Development, December 2013), 74.

¹⁷ Louisiana Department of Transportation and Development, *Master Structure File Database*.

bridge with I-beam approach spans. Construction on the Charenton Bridge was completed in 1945 as a part of State Project No. 913-04-84. The overall structure length is 350'-0" with a main swing span length of 210'-0". The bridge has an out-to-out width of 26'-0" with a 24'-0" steel, grated deck roadway.

Swing span

The swing span, which conforms with LHC standard plan S-S-55, titled "204'-0" Swing Span" (1941), is comprised of a steel, riveted, Warren pony truss with a polygonal top chord. The depth of the truss web gradually decreases from 15'-0" at the center to 10'-0" at the ends. The verticals, diagonals, and top and bottom chords are composed of rolled I-beam sections connected with riveted gusset plates. Three plate beam hangars extend below the center of the bottom chord: two connect the truss to pivot framework beneath the truss and the third, a large plate, connects with a live load shoe on the central pivot pier. A rub rail extends the length of the truss and is comprised of two horizontal channels mounted on I-beam posts on the inside of the spans. The rail continues on the approach spans and is mounted on brackets that are riveted to the approach span steel stringers. A ladder mounted on the north side of the truss provides access from the bridge deck to the turning mechanism and the top of the pivot pier.

The bridge has a 24'-0"-wide grated deck with a 1'-0" metal curb to either side. The deck is supported by rolled I-beam stringers that are riveted to I-beam floorbeams. Bottom laterals are comprised of angle sections connected at the center by gusset plates. The swing span is supported by three piers: a central pivot pier, discussed below with the turning mechanism, and two "rest piers." The rest piers support the swing span ends in the closed position and are composed of battered timber pilings with timber cross bracing and a reinforced-concrete cap.

Turning mechanism

In order to open the bridge for navigation on the bayou, the swing span rotates on a center-bearing turning mechanism that is set on the pivot pier. Cast-steel bearings serve as the pivot point. The turning mechanism is mounted within a structure of rolled I-beams, one of which has a variable depth, framed between the truss girders and rolled floorbeams. Four balance wheels ride on a circular steel track mounted on the top of the concrete pivot pier to keep the span in a level plane as it rotates open and closed.

When the swing span is in the closed position, a steel wedge affixed to each end of the swing span is driven into a wedge seat on each rest pier. The wedge seats provide vertical stability for the bridge. Lateral stability is created using a vertical latch pin, located at the center of each end of the truss, which is extended into a latch pocket centered on each rest pier. The power to open the bridge and engage the wedges is provided by electric motors located above the pivot pier and beneath the deck and connected to the operator's house. Details for the turning mechanism and wedge seats are included in the standard plan for the swing span.

The pivot pier, centered beneath the swing span, consists of a grid of battered timber pilings located at the side of the bayou's navigation channel. The pilings are driven to the bedrock; a poured concrete slab secures them at the river bed. A concrete cap forms the top of the pivot pier.

Approach spans

There are five rolled, I-beam approach spans on the Charenton Bridge, one to the east of the swing span and four to the west. The approach spans are based on LHC Standard Plan S-C-51 titled, "19'-31' I-Bm. Spans – 24' Roadway" (1941). Individual span lengths are undetermined as the bridge's plans are illegible; however, the overall length of the approach spans is 140'-0". The steel rub rail extends from the swing span through the approach spans. This rail is supported by steel posts comprised of angles mounted on each span's fascia I-beams. A guardrail is mounted to the ends of the approach spans.

The approach spans are supported on a series of six bents (numbered 1 through 6). One bent is located to the west of the swing span and the remaining five to the east. The bents are comprised of treated timber piles that are strengthened using sway bracing and are capped with concrete. Two stepped concrete endposts are located atop the end bents and are inscribed with "1945" and "Bayou Teche."

Operator's house

The one-story frame operator's house is located between pier 3 and bent 2 on the southeast side of the bridge adjacent to the swing span. It is supported by four treated timber pilings that replaced the original pilings prior to 2013.¹⁸ The operator's house is based on LHC Standard Plan T-M-18, titled "Standard Bridge Operators House" (1941). The basic form and window and door locations match the standard plan; however, other details do not, including the roof, siding, and windows. The house has vertical wood siding and features a hip roof with wide eaves and replacement metal cladding. Windows are located on each elevation and are original, horizontally divided sash with metal storms. A multi-panel door is located on the north elevation. The operator's house contains the controls to operate the swing span.

Fender system

A timber fender system extends upstream and downstream from the swing span to guide marine traffic through the navigation channel. The fender system is comprised of horizontally laid timber planking bolted to treated timber pilings. The fender section extends approximately 115'-0" from each side of the pivot pier.

Traffic control devices

Electrically operated traffic gates are paired on either side of the approach spans to control vehicular access when the bridge is in its open position. A more modern and larger traffic control arm is located between the traffic gates and each end of the swing span. The arm extends across the bridge deck, locking into a steel receiving unit on the opposite side of the deck when in the closed position. Both the arm and the receiving unit are mounted on cantilevered steel platforms surrounded by pipe railings.

C. Site Information: The Charenton Bridge spans the Bayou Teche in Charenton, St. Mary Parish, Louisiana. The city of Charenton is located to the west of the bridge and scattered residential development and agricultural fields are located to the east. Though formally within the city limits, the bridge is on the edge of town.

¹⁸ *Bridge Inspection Report* (Recall No. 009130, December 8, 2013), Available in Bridge Maintenance and Inspection Division, Louisiana Department of Transportation and Development, Baton Rouge, La.

Part III. Sources of Information**A. Primary Sources:**

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B. Secondary Sources:

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