



Historic Bridge Management Plan for the Bayou Teche Bridge at Breaux Bridge

Recall Number: 008570

Structure Number: 03500560400141

Parish: St. Martin

Route: LA 336-1

Crossing Description: Teche Bayou



Prepared for

**Louisiana Department of
Transportation and
Development**

Prepared by

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August 2016

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Executive Summary

The Bayou Teche Bridge at Breaux Bridge (Bayou Teche Bridge; Recall No. 008570) is located in the city of Breaux Bridge, St. Martin Parish, Louisiana, and is owned by the State of Louisiana. The bridge was completed in 1951. It was determined to be eligible for the National Register of Historic Places (National Register) in 2013. It is significant as a movable bridge that features an important variation within the vertical lift type; namely, the bridge features centrally located drive machinery that operates the four sheaves.

The bridge carries two lanes of Louisiana Highway (LA) 336-1 across the Bayou Teche. Its total length of 281 feet encompasses approach spans to the west and east and a central vertical lift span. The central steel girder span is 65 feet long and features an open steel grid deck. The operating machinery, which drives the four sheaves on each corner of the lift towers, is located on a platform at the top of the central span. Four western approach spans and three eastern approach spans feature steel I-beams and cast-in-place concrete decks. The operator's house is located on the southeast corner of the lift span, outboard of the sidewalk, and displays decorative concrete pilasters. A timber fender system provides for a 40-foot-wide navigation channel through the bridge. When the bridge is open, approximately 51 feet of vertical clearance is provided above the high water line for Bayou Teche. The bridge is classified as a complex structure because it contains one vertical lift span unit.

The bridge is in fair condition overall and appears to adequately serve its purpose of carrying vehicular and pedestrian traffic, with the ability to open to allow water navigation traffic to pass under the bridge when it is open. The major deficiency is that the paint system on the movable portion of the bridge, including the towers, has completely failed, and areas of exposed metal have moderate surface corrosion throughout. Vehicles are used to block the roadway when the bridge is opened because the traffic gates do not function. Heavy steel traffic barrier gates on the lift span are operational and lower when the bridge is opened. The operation of the bridge is also satisfactory, as observed in two opening-closing cycles during the field visit, and the machinery and electrical systems are adequately maintained. With proper maintenance and rehabilitation, the Bayou Teche Bridge at Breaux Bridge can continue to serve in its present capacity for 20 years or longer.

Any work on the bridge should proceed according to recommendations in this Historic Bridge Management Plan (Plan), which adhere to the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (Secretary's Standards), the *Management Plan for Historic Bridges Statewide* (Statewide Historic Bridge Plan), and 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* (PA).

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1. Introduction

This Plan, used in conjunction with the Statewide Historic Bridge Plan, provides guidance on the approach to preservation activities for the Bayou Teche Bridge (Recall No. 008570), identified as a Preservation Priority Bridge. Completion of individual management plans for Preservation Priority Bridges and the Statewide Historic Bridge Plan fulfills terms of the PA, which was executed on September 21, 2015.

The PA provides the basis and procedures for the management of historic bridges in Louisiana and outlines the procedures for the treatment of historic bridges, including Preservation Priority Bridges. In accordance with the PA, an owner seeking state or federal funding for Preservation Priority Bridges will be required by the Louisiana Department of Transportation and Development (LADOTD), in cooperation with the Louisiana State Historic Preservation Office (LASHPO) and the Federal Highway Administration (FHWA), to follow the procedures outlined in this Plan and the Statewide Historic Bridge Plan.

The Statewide Historic Bridge Plan outlines the overall approach to bridge preservation through a discussion of the collaboration of the historian and engineer, guidance on assessing preservation needs, and resources and technical guidance on maintenance and rehabilitation activities that are broadly applicable to historic bridges. A glossary of common engineering and historical terms is included in the Statewide Historic Bridge Plan.

This Plan for the Bayou Teche Bridge compiles and summarizes the specific historic and engineering information for this Preservation Priority Bridge. It documents the existing use and condition of the bridge, along with assessments of the preservation needs, including cost estimates. Preservation can be accomplished in two manners: preventative maintenance and rehabilitation. Maintenance includes cyclical or condition-based activities that, along with regular structural inspections, are directed toward continued structure serviceability. Rehabilitation activities are near- or long-term steps that need to be taken to preserve and in some cases restore a bridge's structural condition and serviceability. In assessing preservation activities for each Preservation Priority Bridge, a design life of 20 years was considered, which is consistent with the duration of the PA. This Plan provides the bridge owner, and other interested parties, with detailed information related to the historic nature of the bridge and the necessary background to make an informed planning decision. Recommendations within this Plan should be reviewed in 10 years following completion of the Plan to identify any needed updates or revisions.

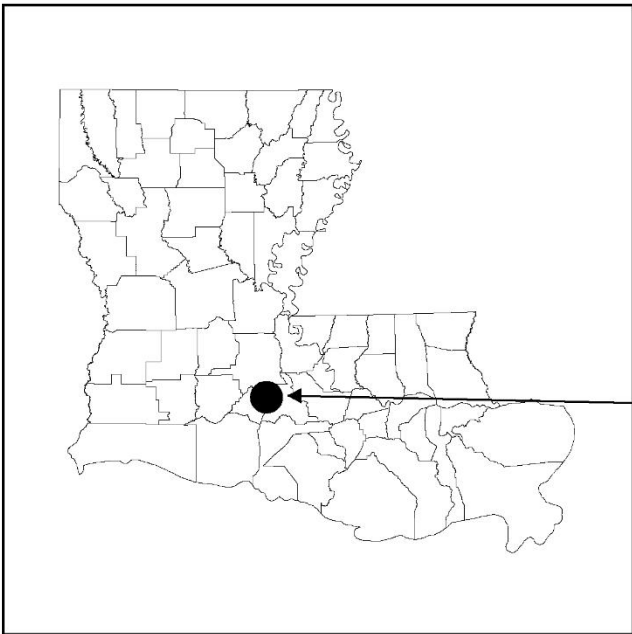
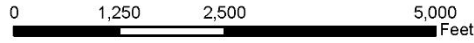
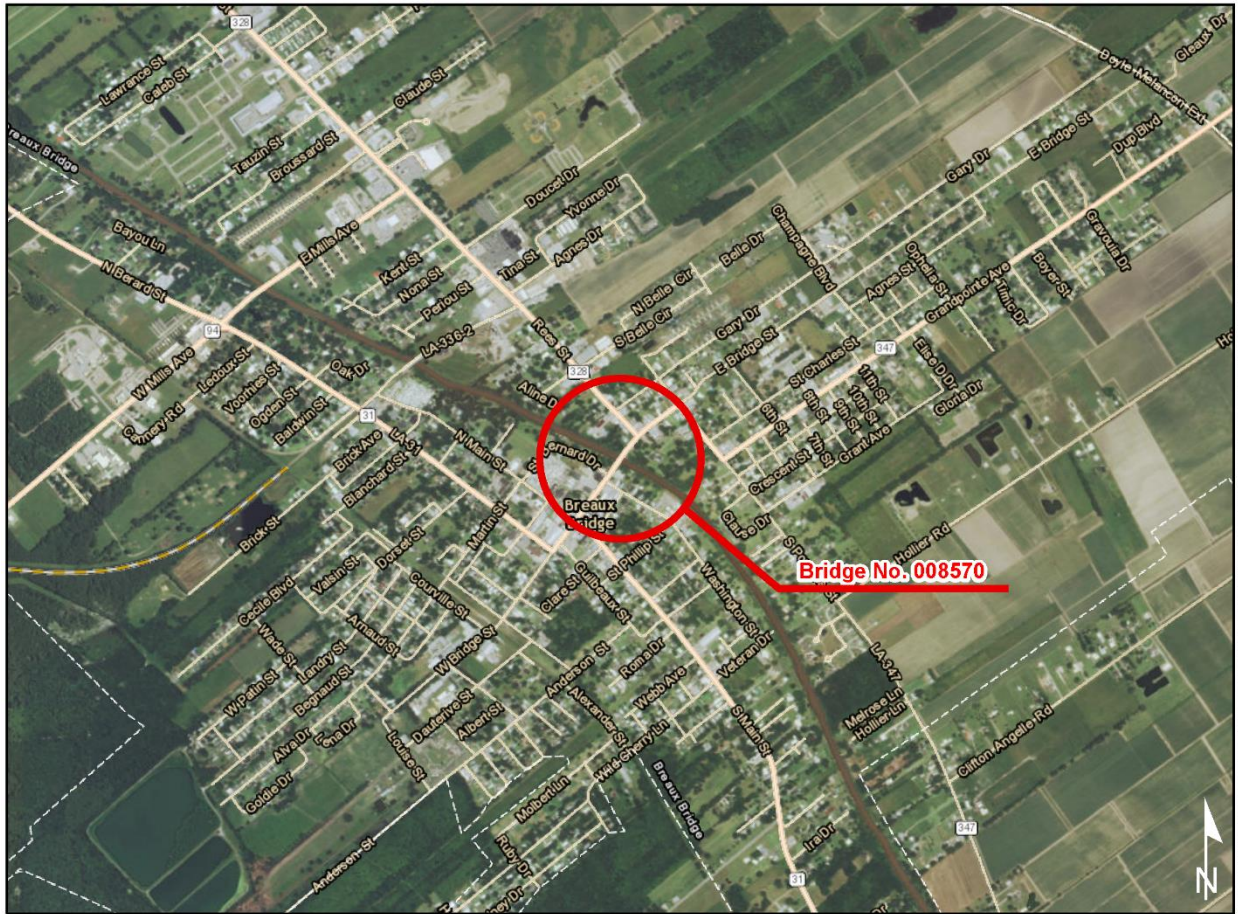
Existing bridge data sources typically available for Louisiana bridges were gathered for this Plan, and field investigation confirmed the general structural condition and character-defining features of the subject bridge. These sources include:

- The current LADOTD Bridge Inspection Report, and any other similar inspection reports
- Original bridge construction plans, any rehabilitation plans, and record as-built plans, as available
- Existing historical and documentary material related to the historic bridges

Recommendations within this Plan are consistent with the Secretary's Standards. The Secretary's Standards are basic principles created to help preserve the distinct character of a historic property and its site, while allowing for reasonable change to meet new engineering standards and codes. The Secretary's Standards recommend repairing, rather than replacing, deteriorated features whenever possible. A version of the Secretary's Standards that is specific to historic bridges is included in the Statewide Historic Bridge Plan. Following these standards is a requirement of the PA.

A bridge historian and bridge engineer from Mead & Hunt, Inc. (Mead & Hunt) jointly prepared this Plan under contract to the LADOTD. The LADOTD, FHWA, and LASHPO reviewed and provided input into the final Plan.

2. Location Map



PROJECT LOCATION
 Bridge Number: 008570
 Structure Number: 03500560400141
 St. Martin Parish
 Route: LA 336-1
 Crossing Description: Bayou Teche

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3. Historic Data

A. Identifying information

Structure Number: 03500560400141

Recall Number: 008570

LASHPO Number: 50-00765

Bridge Name: Bayou Teche Bridge at Breaux Bridge

Date of Construction: 1950-1951

Main Span Type: Steel Vertical Lift Span (Tower Drive with Connected Towers)

Contractor: J.P. Ewin, Inc., Mobile, Alabama

Designer/Engineer: C.J Russell served as the Project Engineer. Drive machinery was designed by the Waterman Foundry Division of the Waterman Steamship Corporation, Mobile, Alabama.

B. Description of bridge

The Bayou Teche Bridge carries two lanes of LA 336-1 across Bayou Teche in the city of Breaux Bridge, St. Martin Parish. The average daily traffic (ADT) across the bridge is approximately 9,400 vehicles. The 281-foot-long crossing consists of a central steel vertical lift span flanked by steel approach spans to the west and east. It has a posted weight limit of 20 to 35 tons (20T–35T). The bridge is classified as a complex structure because it contains one vertical lift span unit. The bridge is also classified as fracture critical for two reasons. First, the lift span is a two-girder system, with two longitudinal steel girders providing the primary structural framing and support. Second, the steel floorbeams of the lift span are greater than 14 feet apart.

The central span corresponds to the Louisiana Department of Highways 1950 Standard Plan S-L 9-15 for a 65-foot vertical lift span, and the drive machinery and sheaves were designed for this crossing by the Waterman Foundry Division of the Waterman Steamship Corporation.¹ While the Bayou Teche Bridge has an endpost that reads “1950,” it was officially completed and accepted by the Louisiana Department of Highways in 1951. Other tiered endposts on the bridge read “Route LA 43,” which was the original highway that spanned the crossing, and “Bayou Teche,” which appears on both sides of the span.

¹ Waterman Foundry, “Layout of Lifting Machinery for Bayou Teche Bridge at Breaux Bridge, La.: St. Martin Parish, Department of Highways,” December 8, 1949.

The bridge's main, central span is a 65-foot-long vertical lift span. The operating machinery, which drives the sheaves (grooved steel wheels) on each of four corners of the lift towers, is located on a central platform at the top of the span. Heavy steel ropes on the sheaves are attached to the movable span below, which is counterweighted at each end. The combined weight of the counterweights is equal to the weight of the lift span, and thus for movement to occur the drive machinery needs to provide only enough force to overcome friction and wind resistance. The span consists of two main, longitudinal, steel girders with transverse, rolled, steel I-beam floorbeams and five rolled, steel I-beam, longitudinal stringers. It also features an open grid steel deck. This main span stretches between two cross-braced, steel I-beam towers. The lift span and towers rest on cast-in-place concrete piers supported by piles.

The westerly approach spans consist of four 30-foot-long steel I-beam spans with a cast-in-place concrete deck with a total length of 120 feet. The easterly approach spans consist of three 30-foot-long steel I-beam spans with a concrete deck with a total length of 90 feet. Expansion joints are located in the concrete deck slab above the ends of the steel beams at each pier. Each approach span consists of five simple-span, rolled, steel I-beams. Concrete approach slabs with a length of 20 feet are located at the ends of the bridge. The substructure for the approach spans is cast-in-place concrete abutments and cast-in-place concrete piers (bents), all supported on 16-inch square concrete piles.

The bridge deck features a 24-foot clear roadway width as measured between faces of the sidewalk curbs. There are 5-foot-6-inch-wide sidewalks with standard curbs located on each side of the roadway. These sidewalks are constructed of metal plates on the lift span and cast-in-place concrete on the approach spans. A decorative picket-type metal railing is located along the sidewalks on the lift span, and a decorative concrete open balustrade railing is located to the outside of the sidewalks on the approach spans. Four lanterns on the bridge exhibit original concrete bases; however, their light fixtures are not original.² One of what were originally four traffic gates is still in place adjacent to the bridge's southwest endpost. Steel traffic barrier gates on each side of the lift span lower when the bridge is opened.

A separate foundation supports an original operator's house at the southeast corner of the lift span. The operator's house was built from a 1935 standard plan; while the plan shows a two-story structure, the version at Breaux Bridge was modified to include just the upper story on concrete-piling supports.³ The concrete-walled, box-like building features decorative concrete pilasters; original, six-over-six, double-hung sash windows; and an original central entry door that is accessed from the bridge deck through a break in the handrail. The addition of metal sheathing at the roofline of the house results in a minor loss of integrity.

² "Plans of Proposed State Highway: Bayou Teche Bridge at Breaux Bridge" (Baton Rouge, La.: State of Louisiana Department of Highways, 1949).

³ "Standard Plan C-M-16: Operator's & Machinery House" (Baton Rouge, La.: Louisiana Highway Commission, 1935).

Under the bridge a timber fender system provides a 40-foot-wide navigation channel. When the bridge is open, there are approximately 51 feet of vertical clearance above the high water line. The Bayou Teche Bridge is typically unmanned and can only be opened on demand with advance notification.

C. History and significance

The Bayou Teche Bridge, located in the Breaux Bridge Historic District in the center of Breaux Bridge, Louisiana, carries LA 336-1/Bridge Street across the Bayou Teche. It is one of four crossings of the Bayou Teche in Breaux Bridge, the others being at LA 336-2/E. Refinery Street, State Highway 94/E. Mills Avenue, and Interstate (I-) 10. The city of Breaux Bridge was historically known for its bayou crossings, the first of which was a suspension footbridge built in 1799 by Firmin Breaux. The footbridge was replaced by a more substantial wagon crossing in 1817, which was modified to become a drawbridge in 1845. The city grew on both sides of the bridge, gleaning its name from the crossing's importance to local development and the regional economy. Subsequent spans across Bayou Teche in Breaux Bridge included an 1855 turntable bridge and an 1899 steel crossing, the latter of which collapsed and was replaced with the current bridge.⁴

In September 1949 the Louisiana Department of Highways put out a bid for the Bayou Teche Bridge during a major boom period for road improvement projects.⁵ Later that month the department awarded the contract to J.P. Ewin, Inc. of Mobile, Alabama, for \$233,728 for construction; that firm would become Volkert, Inc., which designed the Lake Pontchartrain Causeway in the 1960s.⁶ The Bayou Teche Bridge was modeled after a standard plan that the department used for other span drive vertical lift bridges throughout the state. The design, first developed in 1935, was modified by 1950 to include an open steel grid deck and more elaborate picket-type railing.⁷ The Bayou Teche Bridge exhibits the alterations from the 1950 standard plan, even though its original plans date to 1949.⁸ The crossing was completed and accepted by the Louisiana Department of Highways in April 1951, coming in under budget at \$229,929.⁹ A statewide Police Jury publication from 1951 touted that the bridge had been constructed quickly to

⁴ "History and Culture," *Breaux Bridge Louisiana*, 2015, <http://breauxbridgela.net/project/history-culture/>; "The Bridges," *Breaux Bridge Louisiana*, 2015, <http://breauxbridgela.net/project/the-bridges/>.

⁵ "September Ads Keep Up Record," *Louisiana Highways* 3, no. 9 (September 1949): 6, 8.

⁶ "\$3 Million Awarded in Road Contracts during September," *Louisiana Highways* 3, no. 10 (October 1949): 6; J.P. Ewin, Inc., "Breaux Bridge, La.," 22 November 1949, State of Louisiana Department of Highways.

⁷ "Standard Plan: 65'-75'-80' Vertical Lift Span" (Baton Rouge, La.: Louisiana Highway Commission, 1935); "Standard Plan: 65'0"-75'0" Vertical Lift Span" (Baton Rouge, La.: State of Louisiana Department of Highways, 1950).

⁸ "Plans of Proposed State Highway: Bayou Teche Bridge at Breaux Bridge."

⁹ "Sixteenth Biennial Report: Statistical and Technical Supplement," prepared for the Department of Highways of the State of Louisiana (1951), 46.

replace the previous span.¹⁰ By 1959 the Bayou Teche Bridge was identified as one of 214 major bridges in Louisiana, four of which were located in St. Martin Parish.¹¹

The Bayou Teche Bridge originally carried State Highway 43 and later accommodated motorists who needed to continue east once they reached the terminus of State Highway 94 on the west bank of the bayou in Breaux Bridge.¹² Today, trucks are rerouted to newer bridges north along the bayou, including the I-10 span. This crossing sees mostly local traffic and accommodates daily commuters to St. Bernard School, which stands just west of the bridge.

Waterway transportation has also changed since the bridge was constructed. Bayou Teche reaches 125 miles from Bayou Courtableau at Port Barre, located about 30 miles north of Breaux Bridge, to the Atchafalaya River at Berwick.¹³ The lumber and sugar industries were prominent along this stretch and mills for both products were historically located on the bayou.¹⁴ While the U.S. Army Corps of Engineers still manages Bayou Teche as a navigable waterway, commercial traffic has significantly decreased in recent years. The Bayou Teche Bridge only opens rarely for special community events, and newer local bridges are standard, fixed, concrete slab spans that only accommodate the passage of smaller boats underneath. The vertical lift span on the Bayou Teche Bridge displays painted crawfish on both counterweights in celebration of the city's annual Crawfish Festival that brings thousands of visitors to the region.

The Bayou Teche Bridge is eligible for listing in the National Register under *Criterion C: Engineering*. It has significance as a movable bridge and as an important variation within the vertical lift bridge type. This variation is demonstrated in the centrally located drive machinery that operates the four sheaves, a configuration that is uncommon nationally and represents a variation based on the small size of the navigation channel and necessary span length. The structure exhibits alterations to the operator's house that result in a minor loss of integrity. However, the bridge's significant features are not affected by this alteration.

D. Character-defining features

Character-defining features are prominent or distinctive aspects, qualities, or characteristics of a historic property that contribute significantly to its physical character. Features may include materials, engineering design, and structural and decorative details. Elements of the bridge that are not identified

¹⁰ "Louisiana's Highway Department Has Full Program," *Louisiana Police Jury Review* (April 1951): 19.

¹¹ "Major Bridge Locations," prepared for the State of Louisiana Department of Highways (May 1959, revised November 1965), 6.

¹² *Highway Map of Arkansas-Louisiana-Mississippi*, 1 inch: 23 miles (Chicago: Shell Oil Company, 1956).

¹³ 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.

¹⁴ 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."

as character-defining features may be historic fabric. Historic fabric is material in a bridge that was part of original construction. It is important to consider both character-defining features and the bridge's historic fabric when planning any work.

The Bayou Teche Bridge has one character-defining feature: its central vertical lift span (described below). Other elements that represent historic fabric but are not considered to be character-defining are the approach spans, including the endposts and railings (excluding the light fixtures, which are altered); the bridge's operator's house; substructure elements; and traffic barrier gates.

The following item is the character-defining feature of this bridge:

Feature 1: Design and construction of a vertical lift span with central drive machinery

This feature includes the entire main span, comprised of a vertical lift span with the operating machine located on a platform on top of the lift span, and with machinery to drive four sheaves, one located on top of each corner of the lift towers. The lift span also consists of two main longitudinal steel girders with transverse, rolled, steel I-beam floorbeams and five rolled, steel, I-beam, longitudinal stringers, an open grid steel deck, and metal picket-type railing.



Character-defining Feature Photo 1: Design and construction of a vertical lift span with central drive machinery. The operating machinery, located at the center of a platform, drives the four sheaves on each corner of the lift towers.



Character-defining Feature Photo 2: Design and construction of a vertical lift span with central drive machinery. The operating machinery, located at the center of a platform, drives the four sheaves on each corner of the lift towers.



Character-defining Feature Photo 3: Steel grid deck and original metal railings on the vertical lift span.

The following images illustrate other bridge features that are of historic fabric, meaning they are part of original construction but are not considered to be character-defining features:



Historic Fabric Photo 1: Typical steel I beam approach span with decorative concrete railing.



Historic Fabric Photo 2: Endposts on decorative concrete railing of approach spans.



Historic Fabric Photo 3: Bridge operator's house.

4. Engineering Data

A. Existing conditions

(1) Structural observations

The Bayou Teche Bridge is in fair condition overall and appears to adequately serve its purpose of carrying vehicular and pedestrian traffic over the waterway, with the ability to open to allow water navigation traffic to pass under the bridge when it is open. The operation of the bridge is also satisfactory, as observed in two opening-closing cycles during the field visit, and the machinery and electrical systems are adequately maintained. The major deficiency is that the paint system on the movable portion of the bridge, including the towers, has completely failed, and areas of exposed metal have minor surface corrosion throughout.

The bridge is classified as fracture critical. The latest bridge inspection report noted that fracture critical members were visually inspected, and no cracks were found. The bridge is load (weight) posted at 20 to 35 tons (25T–35T), with signs indicating this at each end of the bridge.

Approach spans

The concrete decks of the approach spans are in good condition. The deck joints (expansion joints) are in poor condition. They are not sealed and are allowing water and debris to pass through to the elements below the joints. The concrete sidewalks and concrete railings are in good condition. The paint system on the steel I-beams and steel bearings has failed, but the structural condition of the beams and bearings is good with minor deterioration. All bearings need to be cleaned and painted, and deteriorated anchor bolts and nuts need to be removed and replaced. Some anchor bolts have approximately 50 percent section loss and some anchor bolt nuts have nearly 100 percent section loss. The concrete substructure units (abutments and piers) are in good structural condition. The exposed surfaces of the substructure units are generally covered with mold and mildew.

Lift span

The paint system has failed on all structural steel elements of the lift span and towers. The structural condition of the steel elements of the lift span and towers is good with minor deterioration. It is anticipated that the gusset plates, bracing members and other similar members that were not visible during the field visit may be deteriorated and may need to be repaired or be removed and replaced. There is minor corrosion and/or deterioration on all members due to the failed paint system. The open metal grid deck is in good condition with light corrosion throughout. There is minor debris accumulation with vegetation growing in the corners of the deck. The checkered metal plates for the sidewalks are in fair condition, mainly due to the failed paint system. The metal railings are in fair condition structurally, but the paint system has failed, with some light corrosion developing. The operating machinery is functional and generally in fair condition. The sheaves, gears, bearings and exposed machinery are rusty, but functioning properly. The operating electrical system is functional and generally in good condition. There is

minor damage to the east and west portals from vehicular impact, but the damage is not affecting the function or structural capacity of the damaged members.

(2) Non-structural observations

Heavy steel traffic barrier gates adjacent to the lift span on each side are lowered when the bridge is opened, and are in good functional and structural condition. When the bridge is opened (only two or three times per year) vehicles are used to block the roadway at each end because three of the four traffic gates have been removed from the sides of the road. The fourth gate is not functional. Due to the infrequent openings of the bridge and the use of temporary traffic control, there is not a need to replace the traffic gates.

The horizontal and vertical geometry of the bridge is good.

The operator's house is in fair condition and fully functional. The exterior concrete surface is discolored from age and the door paint has failed. The control panel for operation of the bridge is original, and fully functional.

The timber fender system is in fair condition. Approximately 5-10 percent of the timber walers and piles are weathered with decay, but for the most part the fender system has been maintained to provide its function of protecting the bridge from impact loading from river navigation traffic. The timber fender system appears to be well maintained overall and was not in need of any maintenance or rehabilitation at the time of the site visit.

Minor scour of the waterway embankment under the westerly approach spans and under one easterly approach span was observed, but the extent of the scour was not observed or determined due to high water conditions. The latest bridge inspection report noted scour under the approach spans. Scour should be monitored after each high-water event, and annually at a minimum.

(3) Serviceability observations

The ADT across the bridge is about 9,400 vehicles. The bridge clear roadway width of 24 feet provides for two lanes of traffic, one in each direction, without shoulders. The bridge adequately handles this traffic volume. The open balustrade-type concrete railings on the approach spans, and the metal picket-type railings on the lift span, do not meet current height standards for pedestrian usage on the bridge. However, the functionality of these railings is acceptable without modification. The curbs of the sidewalks provide a barrier between the roadway and the railings; therefore, the railings do not need to be structurally crash-test rated.

It is also noted that there is a school located approximately one-half block from the west end of the bridge, on the north side. Traffic on the bridge and road is very heavy when school is starting and ending.

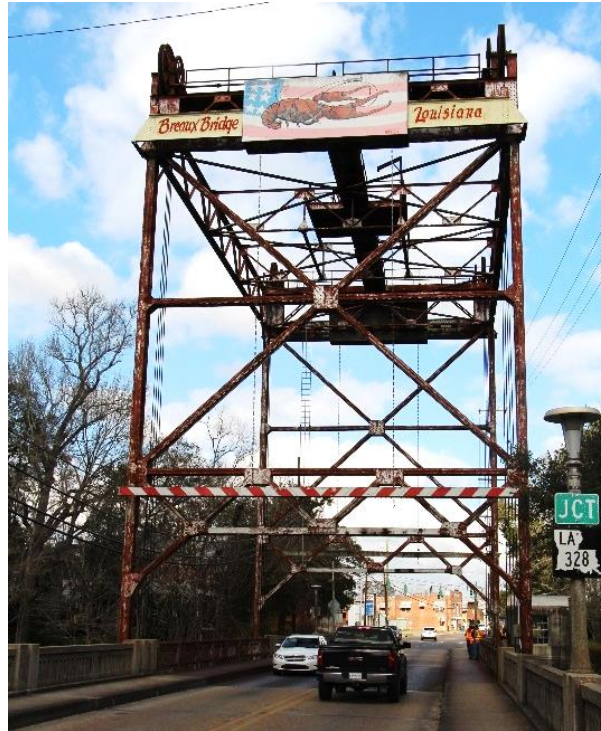
According to discussions with the bridge operators and District Engineer, the bridge is infrequently operated. The bridge is not manned, and advanced notification is required for bridge openings.

B. Sources of information

Plans available:	Yes, available at the LADOTD Bridge Section office
Inspection report date:	August 4, 2015
Fracture critical report date:	(included as part of routine inspection)
Underwater inspection report:	March 26, 2009
Date of site visit:	February 1, 2016



Condition Photo 1: Lift span paint failure throughout.



Condition Photo 2: Lift span paint failure throughout.



Condition Photo 3: Lift span steel grid deck, metal plate sidewalk, metal railing.



Condition Photo 4: East approach spans concrete deck, sidewalk, concrete railing.



Condition Photo 5: Lift span partially open, condition of structural steel, paint failure.



Condition Photo 6: Machinery and cables atop tower, counterweight paint failure.



Condition Photo 7: Underside of lift span showing paint failure on all steel members.



Condition Photo 8: Underside of lift span showing paint failure on all members.



Condition Photo 9: Machinery platform in middle of lift span; traffic barrier gate condition.



Condition Photo 10: Concrete deck of west approach spans; note truck used to block traffic.



Condition Photo 11: Typical expansion joint in roadway deck of approach spans. Note that the joint is not sealed and there is scaling on each side of the steel armor members.



Condition Photo 12: Lift span partially open; condition of bridge components.



Condition Photo 13: Bridge up; traffic barrier gate, counterweight, general bridge condition.



Condition Photo 14: Condition of timber fender system and waterway.



Condition Photo 15: Condition of tower base, span lock, edge of approach span.



Condition Photo 16: Impact damage to bottom horizontal member of end portal in tower.



Condition Photo 17: Approach span steel beams bearings, showing corrosion and paint failure.



Condition Photo 18: Operator's house exterior condition.

5. Recommendations

This Preservation Priority Bridge should remain in use and can meet current and projected transportation needs for the next 20 years or more. Maintenance and rehabilitation activities should be completed in a manner consistent with the long-term preservation of this historic bridge. The Statewide Historic Bridge Plan provides additional guidance and approaches to completing maintenance and rehabilitation activities that adhere to the Secretary's Standards. Work should be conducted under the supervision of a qualified professional historian, as defined in the PA. The bridge engineer, or the bridge engineer's supervising engineer, should have demonstrated expertise in historic bridge projects and must have completed the LADOTD's historic bridge training. When developing plans and specifications for a project, the bridge engineer should follow the recommendations below.

Under the terms agreed upon in the PA, the bridge owner may undertake certain activities that are considered to be best practices without additional consultation or public notification. These activities are documented in Attachment 5 of the PA and are limited to the activities specifically noted. All recommended preventative maintenance and rehabilitation activities for this bridge are included in Attachment 5 and are not expected to alter character-defining features or historic fabric of the bridge. Some cyclical or condition-based maintenance items are noted below under Rehabilitation because they are expected to be completed as part of an overall rehabilitation project for this bridge. These activities may need to be completed as conditions dictate to promote long-term preservation of this historic bridge. Recommendations within this Plan should be reviewed in 10 years following completion of the Plan to identify any needed updates or revisions.

The opinions of probable costs provided below are in 2016 dollars. The costs were developed without benefit of preliminary rehabilitation plans and are based on the above identified tasks using engineering judgment and/or gross estimates of quantities and historic unit prices and are intended to provide a programming level of estimated costs. Refinement of the probable costs is recommended once preliminary plans have been developed. The estimated preservation costs include a 10 percent contingency and 7 percent mobilization allowance of the preservation activities, excluding soft costs. Actual costs may vary significantly from those opinions of cost provided herein. Engineering design, historical consultation, and construction administration costs are not included as these may be provided by the owner or consultants.

A. Preventative maintenance

The following are recommendations for cyclical maintenance. There are no condition-based maintenance recommendations at this time, based on the bridge condition as observed during the site visit and as documented in available information.

1. Clean out debris in corners of open grid deck on the lift span annually. Clean debris from the sidewalks and bridge deck regularly to maintain good condition. The cost for these activities are not included in the cost estimate.

2. Lubricate all operating machinery for the bridge regularly to maintain good condition. Because this activity is routinely done, the cost is not included in the cost estimate.
3. Remove and replaced decayed timber walers of the fender protection system regularly to maintain good condition. Because this activity is routinely done, the cost is not included in the cost estimate.

B. Rehabilitation

The following are recommendations for rehabilitation. The activities listed should be performed when necessary (estimated to be within the next five years).

1. Clean to near white finish and paint the entire lift span structural steel framing system, including the structural steel framing system for both towers and metal railing. This activity includes cleaning and painting the steel railings on the lift span.
2. Clean to near white finish and paint steel I-beams for all approach spans.
3. Clean and paint steel bearings for the approach spans, and replace deteriorated anchor bolts and nuts.
4. Repair or replace deteriorated structural metalwork on lift span and towers.
5. Clean, paint, lubricate, and adjust the exposed operating machinery, including sheaves, shafts, speed reducers, bearings, and motors.
6. Replace expansion joints in the concrete roadway decks for approach spans.
7. For the operator's house, repaint the entrance door.
8. Correct scour under ends of approach spans with stone riprap or similar revetment.

Bridge Recall No. 008570		Date:	3/23/2016	
Bayou Tech Bridge at Breaux Bridge				
Opinion of Probable Costs				
Rehabilitation				
Item	Quantity	Unit	Unit Cost	Total
Clean and paint entire lift span structural steel, incl. towers, incl. metal railings (near white finish)	1	LS	\$750,000	\$750,000
Clean and paint steel I-beams of approach spans (near white finish)	1	LS	\$200,000	\$200,000
Clean and paint bearings of approach spans (includes jacking of beams in order to clean and paint all surfaces of bearings); replace deteriorated anchor bolts and nuts	50	EA	\$1,000	\$50,000
Provide containment system for all painting; incl. air monitoring	1	LS	\$100,000	\$100,000
Structural metalwork repairs and new members, lift span & towers	1	LS	\$100,000	\$100,000
Clean, paint, lubricate and adjust all exposed operating machinery	1	LS	\$100,000	\$100,000
Reseal deck expansion joints in all approach spans	144	LF	\$50	\$7,200
Pressure wash exterior concrete of control house; repaint door	1	LS	\$1,000	\$1,000
Correct scour under approach spans with stone riprap or similar revetment	1	LS	\$5,000	\$5,000
Temporary signs and barricades; temporary traffic control for detour	1	LS	\$200,000	\$200,000
Item Subtotal				\$1,513,200
Contingency			10.00%	\$151,320
Mobilization			7.00%	\$116,516
Number of Days Bid at \$5000 per day	120	Day	\$5,000	\$600,000
TOTAL ESTIMATED CONSTRUCTION COST				\$2,381,036
			Round to:	\$2,381,000

C. Identification of any anticipated design exceptions

No design exceptions were noted, nor are any design exceptions recommended.

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Appendix A. Historic Inventory Form

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Louisiana Historic Bridge Inventory

Recall Number: 008570

Structure Number: 03500560400141

SHPO Number: 50-00765

Bridge Name: TECHE BAYOU

Location Data:

District: 03

Parish: St. Martin

Feature Crossed: TECHE BAYOU

Facility Carried: LA03361

Location: LA0336-01

City, Village or Town (if applicable): Breaux Bridge

Status: Open

Bridge Owner: State of Louisiana

Latitude: 30.27554

Longitude: -91.89761

Structural Data:

Bridge Type: Steel Vertical Lift Span

Year Built: 1950

Main Span Configuration (if applicable): Tower drive with connected towers

Maximum Span Length (feet): 66

Number of Spans: 1

Overall Structure Length (feet): 281

Approach Span Type (if applicable): Steel stringer/multi-beam or girder

Posted Load: 20-35

Current ADT: 010500

Design and Construction Data:

Engineer or Builder:

Unknown

Bridge Plaque:

None

National Register of Historic Places Evaluation:

This tower drive with connected towers vertical lift bridge has significance as a movable bridge and as an important variation within the vertical lift bridge type. This variation is demonstrated in the location of the drive machinery at the center of a fixed span that operates the four sheaves. This configuration is uncommon nationally and represents a variation based on the small size of the navigation channel and necessary span length. The bridge exhibits alterations to the operator's house that result in a minor loss of integrity, but continues to convey the significant design features of this variation within the vertical lift type. This bridge is eligible for listing in the National Register under Criterion C: Design/Engineering.

No evidence was found during research or data collection activities to indicate that this bridge possesses a direct and important association with historical events or trends. This bridge does not possess significance under Criterion A.

Within/Adjacent to Known Historic District: Yes

National Register Historic District Name: Breaux Bridge Historic District

National Register Determination: Eligible

National Register Determination Date: 2013

Surveyor: Mead & Hunt, Inc.

Date Surveyed: 2013



Louisiana Historic Bridge Inventory

Recall Number: 008570

Structure Number: 03500560400141

Bridge Name: TECHE BAYOU

Parish: St. Martin

Bridge Owner: State of Louisiana

Feature Crossed: TECHE BAYOU

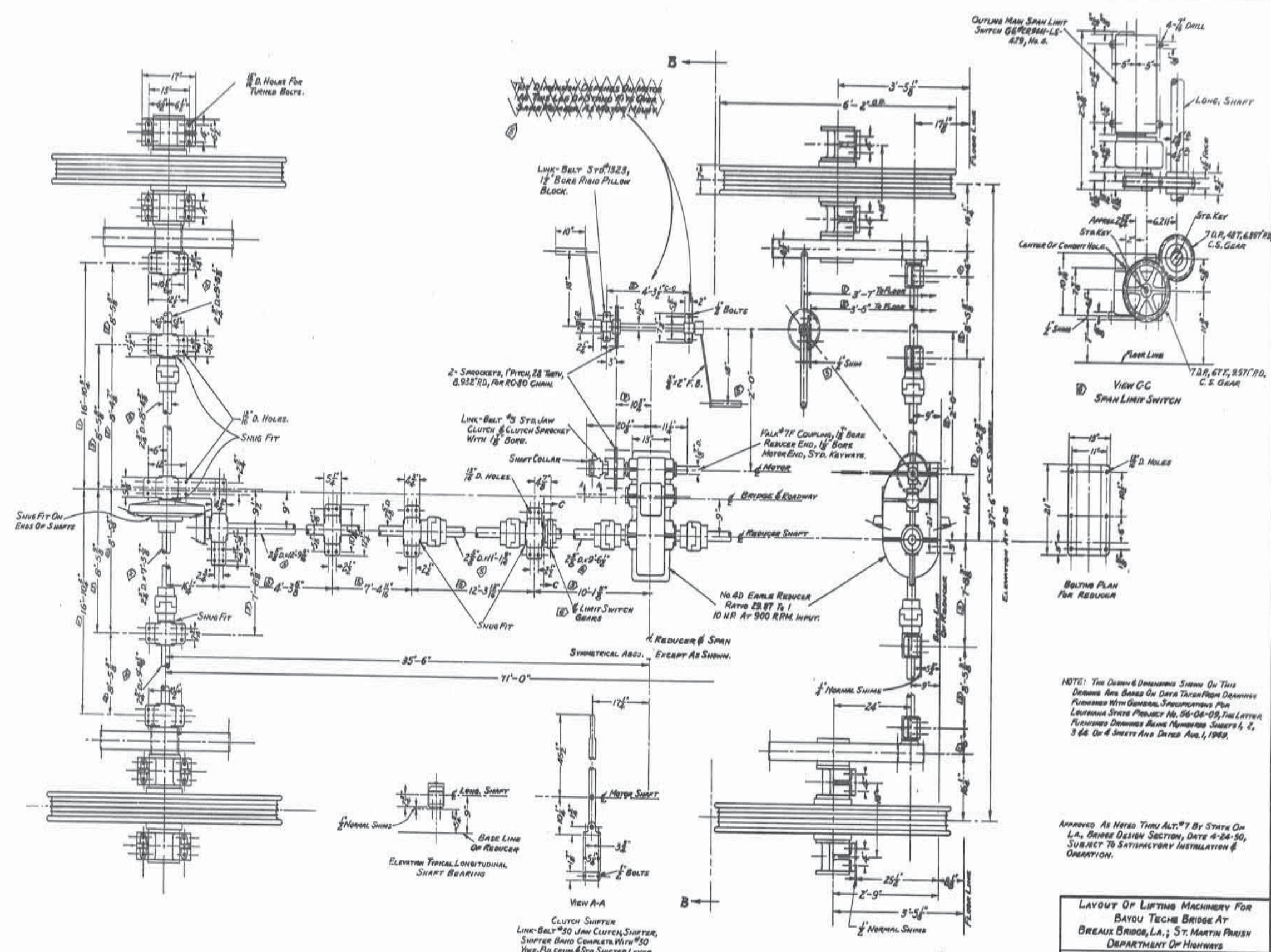
Facility Carried: LA03361

Photographs:



Appendix B. Select Plan Sheets

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NOTE: THE DIMENSIONS SHOWN ON THIS DRAWING ARE BASED ON DATA TAKEN FROM DRAWINGS FURNISHED WITH GENERAL SPECIFICATIONS FOR LOUISIANA STATE PROJECT NO. 56-04-09, THE LATTER FURNISHING DRAWINGS BEING NUMBERED SHEETS 1, 2, 3 & 4 OF 4 SHEETS AND DATED AUG. 1, 1949.

APPROVED AS NOTED THRU ALT. #7 BY STATE OF LA., BRIDGE DESIGN SECTION, DATE 4-24-50, SUBJECT TO SATISFACTORY INSTALLATION & OPERATION.

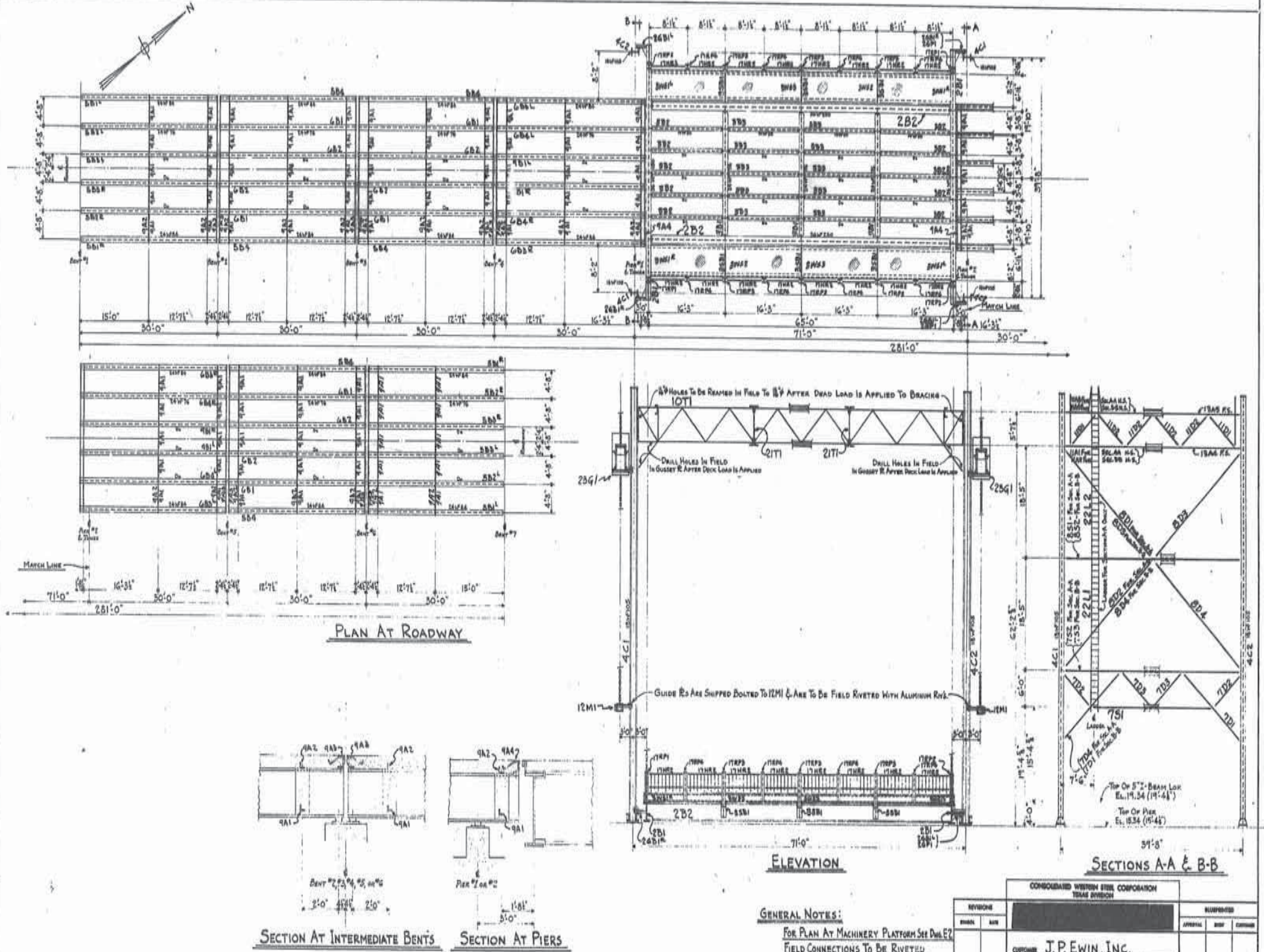
LAYOUT OF LIFTING MACHINERY FOR BAYOU TEXHE BRIDGE AT BREAUX BRIDGE, LA.; ST. MARTIN PARISH DEPARTMENT OF HIGHWAYS	
WATERMAN FOUNDRY DIVISION OF WATERMAN S. S. CORP. MOBILE, ALA.	
DWG. BY: 197/4 DATE: 12-8-49 DWG. NO. 1738	SCALE: 1"=1'-0" ALT. 7

APPROVED AS NOTED THRU ALT. #7 BY STATE OF LA., BRIDGE DESIGN SECTION, DATE 2-22-50, SUBJECT TO SATISFACTORY INSTALLATION & OPERATION.

L.A. STATE PROJECT #56-04-09



25



1/2" HOLES TO BE REAMED IN FIELD TO 1/2" AFTER DEAD LOAD IS APPLIED TO BRACING
 DRILL HOLES IN FIELD IN GUSSET PLATE AFTER DEAD LOAD IS APPLIED
 DRILL HOLES IN FIELD IN GUSSET PLATE AFTER DEAD LOAD IS APPLIED

GUIDE RAILS SHIPPED BOLTED TO GIRDS & ARE TO BE FIELD RIVETED WITH ALUMINUM RIVETS

GENERAL NOTES:

FOR PLAN AT MACHINERY PLATFORM SEE DWG E2
 FIELD CONNECTIONS TO BE RIVETED

REVISIONS		APPROVED	
NO.	DATE	APPROVAL	DATE

CONCRETE WESTERN STEEL CORPORATION
 TEXAS DIVISION

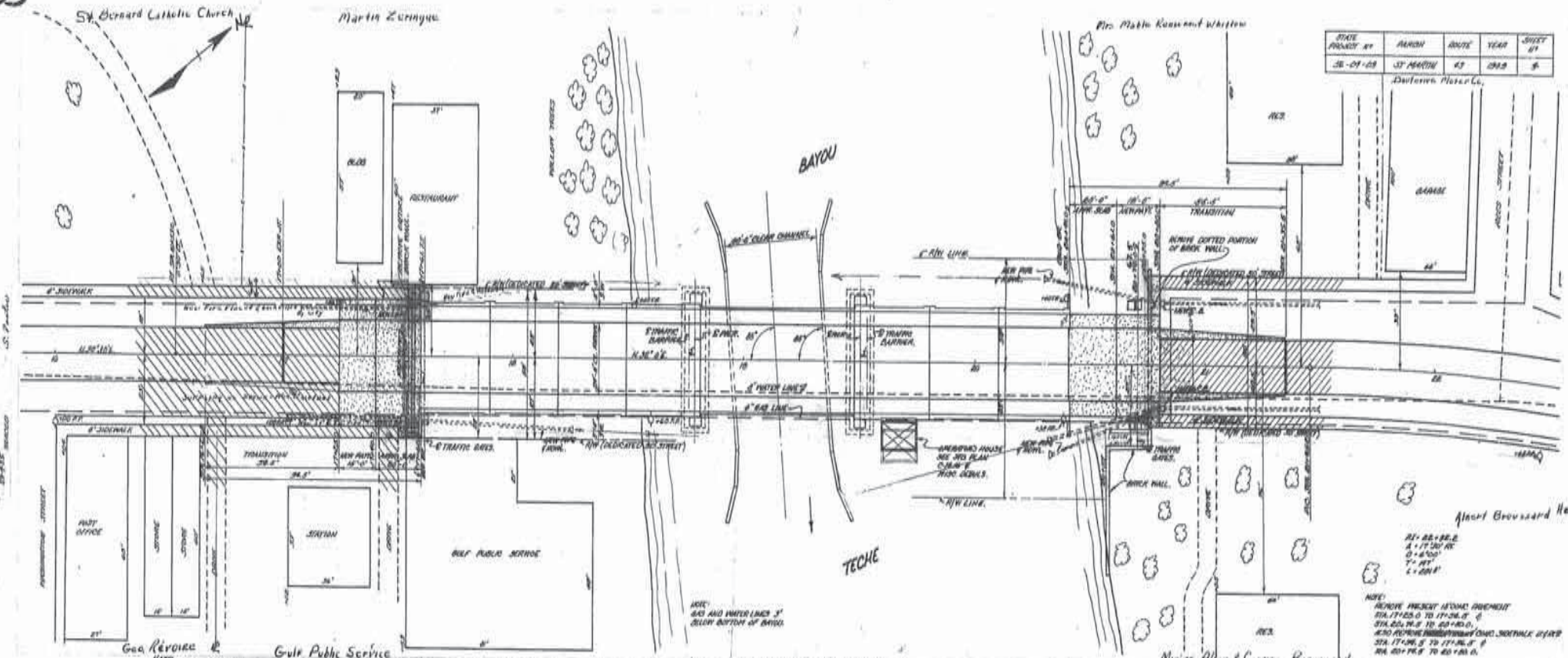
CUSTOMER: J.P. EWING, INC.
 ARCHING STATE OF LOUISIANA DEPT. OF HIGHWAYS
 PROJECT: 56-04-09
 LOCATION: DREUX BRIDGE, LA.
 MADE BY: 11-22-49 CHECKED BY: DWYER 1-27-1950
 SHOP CODE: 710 SHEET NO.: E1

IN CHARGE OF A. S. KOVAL

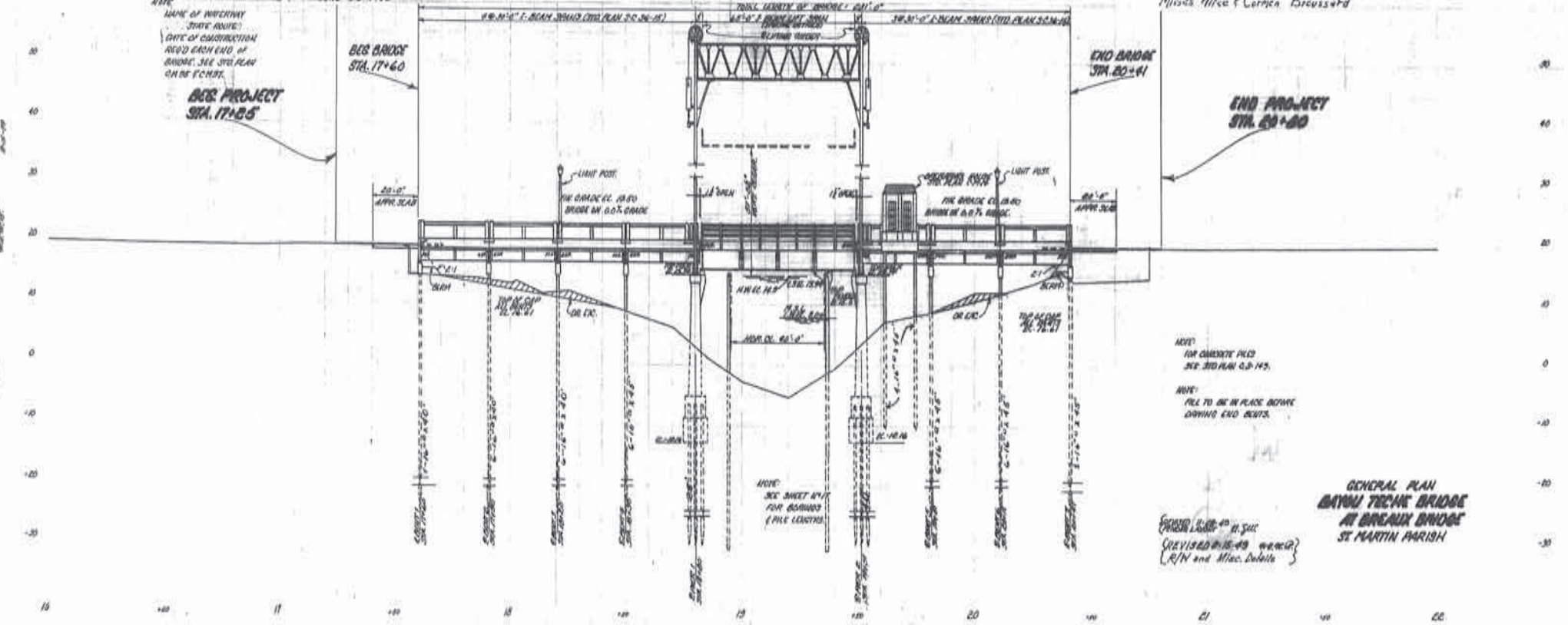
SHOP DRAWINGS



55



STATE PROJECT #	AMOUNT	DATE	YEAR	SHEET #
18-07-08	17,000.00	42	1943	5



Notes for elevation view:

- NOTE: ABOVE FINISH SURFACE ELEVATION SHALL BE TO 17+00.00 & 20+00.00.
- NOTE: ABOVE FINISH SURFACE ELEVATION SHALL BE TO 17+00.00 & 20+00.00.
- NOTE: ABOVE FINISH SURFACE ELEVATION SHALL BE TO 17+00.00 & 20+00.00.

Notes for elevation view:

- NOTE: FOR CONCRETE PILES SEE PLAN C.P. 145.
- NOTE: FILL TO BE IN PLACE DURING END BRIDGE.

GENERAL PLAN
 BAYOU TECHE BRIDGE
 AT BREAUX BRIDGE
 ST. MARTIN PARISH



PIVOTAL TRACKINGS

