CHARENTON BRIDGE HAER No. LA-43
(Bridge Recall No. 008970)
Carries Louisiana Highway 182 (LA 182) over Charenton Drainage and Navigation Canal
Baldwin
St. Mary Parish
Louisiana

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED & INTERPRETIVE DRAWINGS

FIELD RECORDS

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

HISTORIC AMERICAN ENGINEERING RECORD
CHARENTON BRIDGE
(Bridge Recall No. 008970)

HAER No. LA-43

Location: Carries Louisiana Highway 182 (LA 182) over Charenton Drainage and Navigation Canal (Charenton Canal) in the town of Baldwin, St. Mary Parish, Louisiana.

The Charenton Bridge (Bridge Recall No. 008970) is located at latitude 29.825298 north, longitude -91.537959 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 and pedestrian traffic.

Significance: The Charenton Bridge is significant as an important example of a distinctive truss type. The bridge's significant design feature is its K-truss configuration, characterized by the arrangement of vertical and diagonal members to form a "K" in each truss panel. The K-truss is a rare variation both nationally and in Louisiana, where there are only three extant examples of the bridge type.[2] The Charenton Bridge retains good integrity and clearly conveys the significant design features of the through K-truss. It was determined eligible for listing in the National Register of Historic Places (National Register) in 2013 under *Criterion C: Engineering* at the state level of significance.[3]

Historian(s): Angela Hronek, Cultural Resource Specialist, and Robert M. Frame, Senior Cultural Resource Specialist; Mead & Hunt, Inc. (Mead & Hunt); 2017.

Project Information: The 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 of Historic Preservation, and the Louisiana State Historic Preservation Office 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 cultural resource specialist Angela Hronek and senior cultural resource specialist Robert M. Frame of Mead & Hunt. Dietrich Floeter completed the photography.

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[1] The bridge is also known as Structure No. 03510040609371.

[2] Mead & Hunt, Inc., *Crossing the Bayou: Louisiana's Historic Bridges* (prepared for the Louisiana Department of Transportation and Development, 2015), 20.

[3] 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: 1941.

2. Engineer: Louisiana Highway Commission (LHC).[4]

3. Builder/Contractor/Supplier: Austin Bridge Company of Dallas, Texas (contractor). Nashville Bridge Company of Nashville, Tennessee (structural steel fabrication).

4. Original plans and construction: Photocopies of the original plan sheets are available in the General Files room at the LADOTD's Baton Rouge headquarters. The contract between the LHC and the Austin Bridge Company was dated November 28, 1939. The bridge was completed on May 20, 1941, and provided a highway crossing across the newly constructed Charenton Canal.[5] Structural steel plans for the K-truss main span from the Nashville Bridge Company dating to 1940 are also available in the General Files room at the LADOTD's Baton Rouge headquarters.[6]

5. Alterations and additions: The bridge shows only minor alterations in addition to routine maintenance and repairs. In 1969 it underwent repairs for minor damage, and in 1973 it was sandblasted and painted. The bottom members of each portal appear to have been replaced to adjust the vertical clearance of the portals. The original truss expansion bearings have been replaced with elastomeric bearings.

B. Historical Context:

Historical background

The Charenton Bridge crosses the Charenton Canal just south of Bayou Teche on the south side of the town of Baldwin in St. Mary Parish, Louisiana. Bayou Teche reaches 125 miles from Bayou Courtableau at Port Barre to the Atchafalaya River at Berwick. The lumber and sugar industries were historically

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[4] The as-built plan sheets, which date to 1941, indicate that the bridge was designed by Charles A. Myers with plans ultimately approved and signed by J.E. Jarman. Jarman was employed throughout the 1920s, 1930s, and 1940s as a district engineer for the LHC. He worked under renowned chief engineer Norman E. Lant and supervised bridge projects statewide. "New River Bridge Opened Saturday at Sterlington," *Monroe Morning World*, September 4, 1932; "Lincoln Parish Men Get Service Awards in State Department," *Ruston Daily Leader*, February 9, 1948.

[5] Louisiana Highway Commission, "Final Estimate, Charenton Drainage and Navigation Canal Bridge," 1941, As-built plans, available in the General Files room, Louisiana Department of Transportation and Development, Baton Rouge, La.

[6] Nashville Bridge Company, "Charenton Drainage and Navigation Canal Bridge Near Baldwin – 300'0" – for Austin Br. Co.," 1940, structural steel fabrication plans, available in the General Files room, Louisiana Department of Transportation and Development, Baton Rouge, La.

prominent along this stretch, with mills for both products located on the bayou.[7] St. Mary Parish, founded in 1811, was a wealthy plantation region that produced a significant amount of sugar. Sugarcane remains an important fixture in the area economy. In addition, crops like soybeans and rice and industries such as petroleum and fishing contribute to local production.[8] Baldwin is located approximately 5 miles northwest of the parish seat of Franklin.

The Charenton Bridge was constructed as part of a larger, federally funded flood control project that sought to manage water levels along the lower Mississippi River by diverting flow to the Atchafalaya River and its outlets. A major levee-protected flood basin for the Atchafalaya River was established east and south of the Charenton Canal, reaching through Grand Lake, Six Mile Lake, and Wax Lake into the Gulf of Mexico. Meanwhile, the Charenton Canal was constructed to provide drainage for areas west of the flood basin as well as a point of navigation between Bayou Teche above Calumet and the Gulf of Mexico.[9]

By August 1936 $12 million in funding had been secured for the Charenton Canal, which would measure 10 miles long, 40 feet deep, and 1,000 feet wide and run from the Charenton area near Lake Fausse Point through Bayou Teche and then southwest to West Cote Blanche Bay in the Gulf of Mexico.[10] In January 1939 the larger flood control effort along the Mississippi River received an additional $31 million in federal funding, $2 million of which was allotted to the Charenton Canal and nearby Wax Lake Outlet.[11] By June of that year the canal was approximately 60 percent complete, with land purchased and provisions for the construction of a railroad bridge and a highway bridge in place.[12] The U.S. War Department funded all state highway improvements related to the flood control measures, while the LHC oversaw projects, such as the construction of the highway bridge over the Charenton Canal. By June 1940 the canal was complete.[13]

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[7] 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), 2-4; 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," n.d., prepared for the Louisiana Department of Transportation and Development.

[8] Alana A. Carmon, "About the Parish," *St. Mary Parish*, http://www.stmaryparishla.gov/about-the-parish (accessed September 2, 2016).

[9] Louisiana Highway Commission, *Tenth Biennial Report of the Louisiana Highway Commission of the State of Louisiana* (Baton Rouge, La.: Louisiana Highway Commission, 1939), 122.

[10] "Opportunity for Floodway Cited," *The Monroe News-Star*, August 27, 1936.

[11] "Flood Control Increase Asked: Decrease Proposed in Allotment for Rivers and Harbors," *The Monroe News-Star*, January 5, 1939.

[12] *Report of the Chief of Engineers, U.S. Army, 1939, Part I, Volume 2* (Washington, D.C.: United States Government Printing Office, 1939), https://books.google.com/books?id=EQhPAAAAIAAJ (accessed October 5, 2016), 265.

[13] *Report of the Chief of Engineers, U.S. Army, 1940, Part I, Volume 2* (Washington, D.C.: United States Government Printing Office, 1941), https://books.google.com/books?id=bqhIAAAAMAAJ (accessed October 5, 2016), 2, 201.

Arrangements for the Charenton Bridge originated on January 14, 1939, when the LHC entered into an agreement with the federal government to design and construct bridges for U.S. Highway (US) 90 (now LA 182), and LA 129 (now LA 87) over the Charenton Canal. The LHC released a call for bids for the subject bridge in September 1939 and accepted the low bid of $457,389 by the Austin Bridge Company of Dallas, Texas, on October 25, 1939.[14] The contract between the LHC and the Austin Bridge Company was signed on November 28, 1939. By the end of 1939 the Bridge Department of the LHC had completed surveys, plans, specifications, and borings for the Charenton Bridge, which became State Project Nos. 6007 and 913-233, as well as two other nearby crossings.[15] The Austin Bridge Company contracted with the Nashville Bridge Company of Nashville, Tennessee, to provide structural steel for the truss span.[16] A work order was issued on January 2, 1940, and by June construction was well underway. A swing truss railroad bridge just south of the Charenton Bridge was also built around this time with a work order dated May 1, 1940; it would carry the Texas & New Orleans Railroad (TNO) run by Southern Pacific Lines. In a related effort, utilities including power lines, telephone lines, and a gas pipe were also extended over the canal. The LHC and the railroad company were reimbursed for all construction costs by the U.S. government.[17] Construction on the Charenton Bridge was completed on May 20, 1941, and it was officially accepted by the LHC on June 13.[18] The bridge's cost by 1941 totaled $479,526.59, which included a portion of the total federal disbursement for flood control projects in Louisiana.[19]

At the time of the Charenton Bridge's construction, US 90 (now LA 182) was a major thoroughfare.[20] This route was historically associated with the Old Spanish Trail, a transcontinental highway begun in 1915 that stretched from St. Augustine, Florida, to San Diego, California, and purported to trace the history of Spanish forts, missions, and trails through the American south.[21] The highway lasted until the 1960s, when Interstate Highways 8 and 10 bypassed the Old Spanish Trail in providing a more direct transcontinental route for travelers. The stretch of US 90 that crossed the Charenton Bridge became a

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[14] "Bids to Erect Two Bridges are Asked," *The Times-Picayune*, September 22, 1939, 40; "$457,389 Offer Listed to Build Bridge on Canal," *The Times-Picayune*, October 26, 1939, 17.

[15] Louisiana Highway Commission, "Final Estimate, Charenton Drainage and Navigation Canal Bridge;" *Tenth Biennial Report of the Louisiana Highway Commission of the State of Louisiana*, 123-124.

[16] Nashville Bridge Company, "Charenton Drainage and Navigation Canal Bridge Near Baldwin – 300'0" – for Austin Br. Co."

[17] *Report of the Chief of Engineers, U.S. Army, 1940, Part I, Volume 2,* 2,275.

[18] Louisiana Highway Commission, "Final Estimate, Charenton Drainage and Navigation Canal Bridge;" *Report of the Chief of Engineers, U.S. Army, 1941, Part I, Volume 2* (Washington, D.C.: United States Government Printing Office, 1942), https://books.google.com/books?id=OgtPAAAAIAAJ (accessed October 5, 2016), 2,234.

[19] Louisiana Highway Commission, *Eleventh Biennial Report of the Department of Highways of the State of Louisiana* (Baton Rouge, La.: Louisiana Highway Commission, 1941), 32, 104, 108.

[20] Louisiana Highway Commission, *St. Mary Parish, Louisiana*, n.s. (Baton Rouge, La.: Statewide Highway Planning Survey, Louisiana Highway Commission, 1937); United States Department of the Interior, *Franklin Quadrangle, Louisiana – St. Mary Parish, 7.5 Minute Series (Topographic)*, 1:24,000 (Washington, D.C.: U.S. Geological Survey, 1963).

[21] "The Old Spanish Trail: Building the Shortest Highway in the Longest Amount of Time," 2004-2005, *Drive the Old Spanish Trail*, http://www.drivetheost.com/history.html (accessed August 30, 2016).

state road and was renumbered to LA 182 in the late twentieth century, when a new four-lane alignment and modern highway crossing was constructed for the U.S. Highway approximately 1 mile southwest of the Charenton Bridge.

The Charenton Bridge has largely maintained its original configuration. In 1969 it underwent repairs for minor damage. In 1973 the bridge was sandblasted and painted at a cost of $82,500. Today the crossing continues to serve local and regional traffic traveling on LA 182 through Baldwin.

Engineering background

The main span of the Charenton Bridge across the Charenton Canal is a steel K-truss. While the K-truss was first conceived and used by Stephen H. Long in 1830, it subsequently fell into obsolescence until the early twentieth century. The K-truss was one of only two new truss types that emerged in the twentieth century, the other being the Vierendeel truss. It was reintroduced in 1911 by renowned bridge engineer Ralph Modjeski, who was likely not aware of Long's early design. Modjeski's K-truss was first employed for the Quebec Bridge over the St. Lawrence River in Canada, completed in 1917. It was initially used in the U.S. by engineer A.F. Robinson for the Arkansas River Bridge in Pueblo, Colorado. The bridge type then saw increased use in the U.S. in the 1920s and 1930s.[22]

The K-truss is one of the easiest truss configurations to recognize because the individual vertical and horizontal members form characteristic "K" shapes in each panel that are arranged symmetrically around each truss's center point.[23] The design is unique in that it transfers an equal amount of loading to each of its individual members, resulting in reduced secondary stresses and notable compressive and tensile strength.[24] It is considered to be the lightest truss for its length, providing long spans from 200' to 800' nationally.[25]

In addition to its engineering advantage, the repetition of the "K" created by the vertical and diagonal members was considered to be an aesthetic statement.[26] The picturesque qualities of the K-truss were

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[22] Paul Hawke, "Krotz Springs Bridge, Spanning Atchafalaya River, Krotz Springs, St. Landry Parish, LA" Written Historical and Descriptive Data, Historic American Engineering Record, National Park Service, U.S. Department of the Interior, page 5, from Prints and Photographs Division, Library of Congress (HAER No. LA-7, http://cdn.loc.gov/master/pnp/habshaer/la/la0200/la0218/data/la0218data.pdf, accessed October 18, 2016).

[23] Mead & Hunt, Inc., *Crossing the Bayou: Louisiana's Historic Bridges* (prepared for the Louisiana Department of Transportation and Development, 2015), 20.

[24] Joseph E. King, "K-Truss," Center for Historic Preservation & Technology Texas Tech University, *Spans of Time: Oklahoma Historic Highway Bridges*, 1993, http://www.okladot.state.ok.us/hqdiv/p-r-div/spansoftime/ktruss.htm (accessed October 5, 2016); URS Corporation, Historic American Engineering Record (HAER) Level II Documentation for the Fort Buhlow Bridge, Alexandria, Rapides Parish, Louisiana (prepared for the Louisiana Department of Transportation and Development, 2001), 6.

[25] David Huval, interview by Robert Frame of Mead & Hunt, Inc., Lafayette, La., July 18, 2012; National Park Service, Historic American Engineering Record, *Trusses,* Poster, available at http://www.nps.gov/history/hdp/samples/HAER/truss%20poster.pdf (accessed September 2, 2016).

[26] David Huval, interview by Robert Frame of Mead & Hunt, Inc.; URS Corporation, Historic American Engineering Record (HAER) Level II Documentation for the Fort Buhlow Bridge, 6.

highlighted in the nonextant Wax Lake Outlet Bridge, a crossing designed by Louisiana Bridge Engineer Norman Lant in 1940. This bridge stood just 16 miles southeast of the Charenton Bridge near Calumet and received an honorable mention in the American Institute of Steel Construction bridge competition for 1941. The contest was created to promote appreciation for the most beautiful steel bridges constructed each year as judged by a panel of architects, consulting engineers, engineering educators, and art museum curators.[27]

One disadvantage of the K-truss was that they were complex to build, in part due to the significant amount of individual steel members used. This meant that K-truss bridges often required additional construction time and had a greater potential for errors in steel fabrication and erection.[28] Engineers also had difficulty designing the end panels, which sometimes required significant modifications to evenly distribute stresses. As a result, the K-truss was not a popular bridge type nationally. More streamlined truss types such as the Warren truss and Parker truss were often used instead. Sometimes the K-truss design was used for the central panels on a bridge of a different truss type; in certain areas of the country these hybrid examples are relatively common.[29] Today there are only approximately 50 known examples of full K-trusses across the U.S.[30]

Though it was a rare type nationwide, the K-truss was used by the Louisiana Department of Highways (previously the LHC) throughout the mid-twentieth century for long spans. In particular, a number of K-truss bridges were constructed using standard plans developed by the LHC in 1931. The standard plans included both through and deck truss configurations, with spans of 100'-0" feet for the deck truss, and 500'-0" and 608'-0" for the through truss. The main K-truss span of the Charenton Bridge measures just 300'-0", making it shorter than the state's standard K-truss spans.[31] It is one of three extant K-truss bridges remaining in Louisiana, the others being the Atchafalaya River/Morgan City Bridge in St. Mary Parish (Bridge Recall No. 009000) and the Red River (Texas Avenue) Bridge in Bossier Parish (Bridge Recall No. 012060).[32] The uncommon nature of the K-truss and the low number of surviving examples statewide contribute to its considerable engineering significance.

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[27] Nonextant. American Institute of Steel Construction, Inc., *Prize Bridges 1928-1956* (New York, published by the author, 1958), see 1941 section.

[28] URS Corporation, Historic American Engineering Record (HAER) Level II Documentation for the Fort Buhlow Bridge, 6.

[29] Jeffrey L. Durbin, "Austin Peay Bridge, State Route 56 Spanning Cumberland River, Gainesboro, Jackson County, TN" Written Historical and Descriptive Data, Historic American Engineering Record, National Park Service, U.S. Department of the Interior, page 6, from Prints and Photographs Division, Library of Congress (HAER No. TN-28 http://cdn.loc.gov/master/pnp/habshaer/tn/tn0200/tn0265/data/tn0265data.pdf accessed October 18, 2016).

[30] Mead & Hunt, Inc., *Crossing the Bayou: Louisiana's Historic Bridges*, 20.

[31] Mead & Hunt, Inc., *Historic Context for Louisiana Bridges* (prepared for the Louisiana Department of Transportation, December 2013), 70-72.

[32] Mead & Hunt, Inc., *Crossing the Bayou: Louisiana's Historic Bridges*, 20.

Part II. Structural/Design Information

A. General Statement:

1. Character: The Charenton Bridge is a representative example of the steel K-truss bridge type in Louisiana.

2. Condition of fabric: Good.

B. Description: The Charenton Bridge is located just east of the city of Baldwin, Louisiana, and carries LA 182 over the Charenton Canal. LA 182 extends generally southeast for approximately 173 miles across southern Louisiana beginning at LA 29 west of Whiteville, continuing through Lafayette and Houma, and ending at the intersection with U.S. Highway 90 east of Raceland.

The Charenton Bridge was completed in 1941 and follows an approximate west-east axis. It has an overall length of 2,422'-0". The main span unit is comprised of a 300'-0" K-truss, through truss span. Approach spans consist of 52 reinforced-concrete deck girder spans with 26 on each side of the main truss that each measure 40'-8".

Main span
The main truss web is subdivided into twelve 25'-0" panels. The top chord, including end diagonals, is built up of back-to-back channels riveted with top and bottom plates. The bottom plate has regularly spaced oval openings. The bottom chord is comprised of two side plates riveted with angles and batten plates on the top and bottom. The truss panels that create the “K” configuration with vertical and diagonal members are comprised of channels or angles riveted with V-lacing or batten plates depending on their location in the length of the truss. Connections are riveted gusset plates. Extending between the trusses are riveted sway-bracing panels and diagonal bracing, including members comprised of angles riveted with X-bracing. The truss portals are comprised of channels or angles with X-bracing and connected with the truss end diagonals with gusset plates that also serve as part of the end-diagonal cover-plate system. The bottom member of each portal is a rolled I-beam connected with bolts, indicating that it is a more recent replacement member to adjust the portal’s vertical clearance. The original truss expansion bearings have been replaced with elastomeric bearings.

The main-span floor system is comprised of rolled I-section transverse floorbeams with gusset-plate connections at panel points above the lower chord. Extending between the floorbeams are five lines of rolled I-section stringers. The bottom lateral bracing below the floorbeams is comprised of riveted, paired angle members. Sidewalks are cantilevered on steel brackets on both sides of the main span, extending wider at the span ends, over the piers. The concrete deck is poured on the stringers and is elevated on each side to create an integral curb and sidewalk. A decorative metal railing is located along the main-span sidewalks, consisting of I-section metal posts with curved tops, a single round top rail, and metal picket panels. These railing panels appear inverted, with the smallest openings at the top and larger openings at the bottom, where the pickets terminate short of the sidewalk surface at varying lengths. There is no bottom rail.

Approach spans
The approach spans are identical, reinforced-concrete, deck-girder spans with cantilevered concrete sidewalks supported by solid concrete brackets. They follow a curved alignment. The approach spans have concrete open-balustrade railings that terminate in decorative geometric endposts. The endposts read “1941” and “Charenton Canal.” Where the approach spans terminate at the main-span piers, the sidewalks widen to meet the wider main-span sidewalks to create a bay. At the center of each bay, directly over each pier, the different railing types (metal and concrete) meet with no transition element.

Substructure
The substructure includes two cast-in-place, reinforced-concrete piers that support the truss main span (piers 26 and 27). Each pier is comprised of two round columns joined by a web wall with a full-height, pointed-arch opening above a concrete collar at grade and a solid web wall below grade, between the collar and the foundation. The columns are supported on a reinforced-concrete foundation resting on pilings. At the top is a concrete pier cap with rounded ends.

The remaining substructure consists of piers with a pair of free-standing, reinforced-concrete columns on individual pile-supported foundations. Each column is a cross-shaped section at the base. As the column rises, the transverse width of the column remains consistent while the longitudinal width (in the direction of bridge travel) tapers to zero at the pier cap. At that point, the column sides widen to support the cap. A mid-height concrete strut extends between the columns. In place of two end piers are “end bents” (piers 1 and 52), which serve as abutments and support the stepped concrete end posts. Instead of columns they are each comprised of six precast concrete pilings and a concrete cap.

C. Site Information: The Charenton Bridge spans the Charenton Canal in the town of Baldwin, St. Mary Parish, Louisiana. The Charenton Canal, completed in 1940, runs from the Charenton area near Lake Fausse Point through Bayou Teche and then southwest to West Cote Blanche Bay in the Gulf of Mexico. The bridge is located just south of where the Charenton Canal splits off from the Bayou Teche. At this juncture the canal consists of a wide channel with a grassy shoreline featuring scattered trees on either side. Several industrial and manufacturing complexes line the canal. LA 182 carries two lanes of vehicular traffic across the bridge, one heading west into Baldwin and the other going east toward Franklin.

Part III. Sources of Information

A. Primary Sources:

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Dietrich G. Floeter, photographer, February and March 2016
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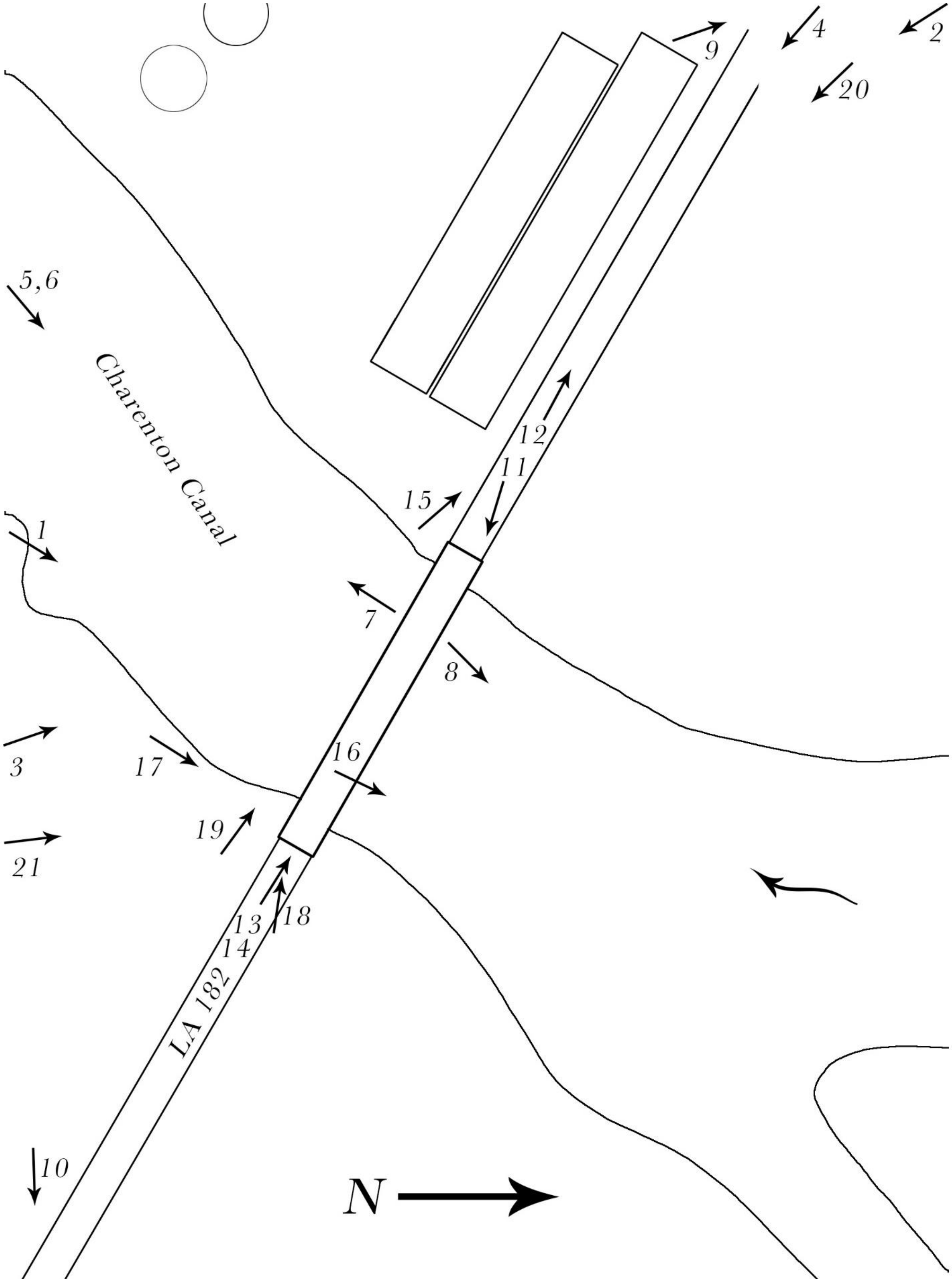
LA-43-20	West approach, from northwest
LA-43-21	South elevation, from south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HISTORIC AMERICAN ENGINEERING RECORD
See Index to Photographs for Caption
HAER NO. LA-43-1

HISTORIC AMERICAN ENGINEERING RECORD
See Index to Photographs for Caption
HAER NO. LA-43-2

HISTORIC AMERICAN ENGINEERING RECORD
See Index to Photographs for Caption
HAER NO. LA-43-3

HISTORIC AMERICAN ENGINEERING RECORD
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HAER NO. LA-43-4

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HAER NO. LA-43-5

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See Index to Photographs for Caption
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See Index to Photographs for Caption
HAER NO. LA-43-7

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See Index to Photographs for Caption
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HISTORIC AMERICAN ENGINEERING RECORD
See Index to Photographs for Caption
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HAER NO. LA-43-10

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HAER NO. LA-43-12

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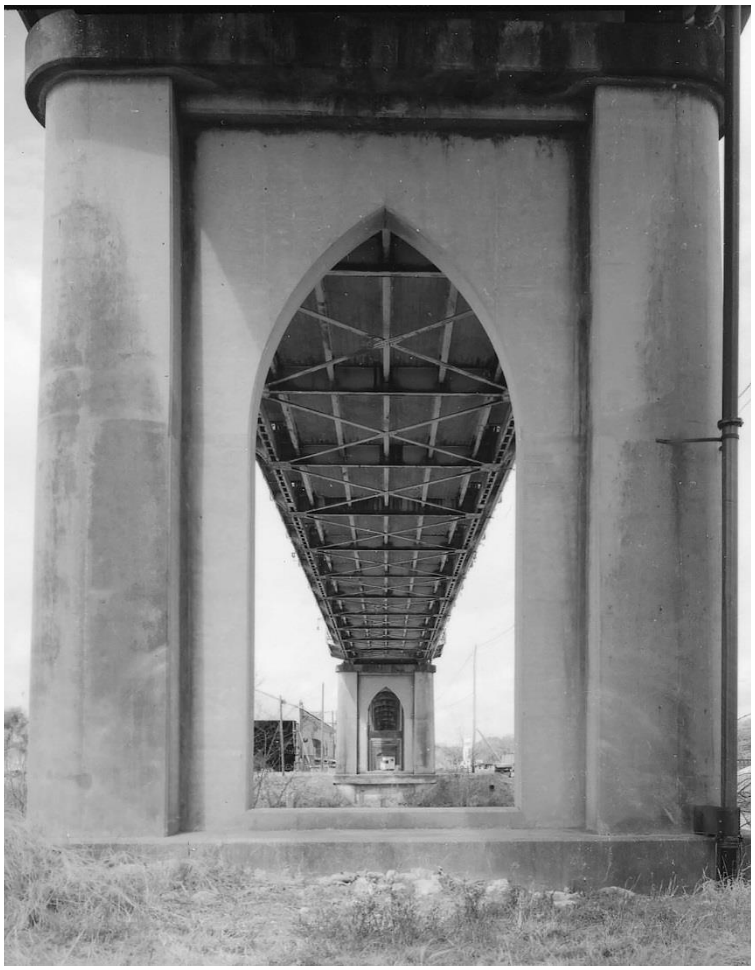
See Index to Photographs for Caption
HAER NO. LA-43-14

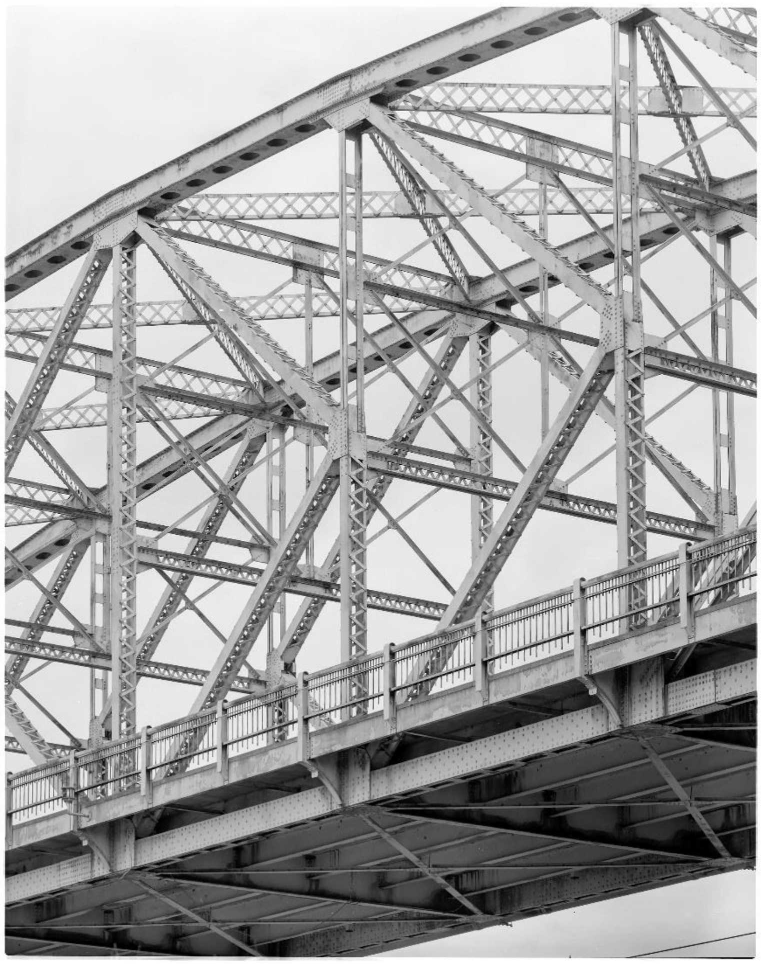


HISTORIC AMERICAN ENGINEERING RECORD
See Index to Photographs for Caption
HAER NO. LA-43-16

HISTORIC AMERICAN ENGINEERING RECORD
See Index to Photographs for Caption
HAER NO. LA-43-17

HISTORIC AMERICAN ENGINEERING RECORD
See Index to Photographs for Caption
HAER NO. LA-43-18

HISTORIC AMERICAN ENGINEERING RECORD
See Index to Photographs for Caption
HAER NO. LA-43-19



HISTORIC AMERICAN ENGINEERING RECORD
See Index to Photographs for Caption
HAER NO. LA-43-20

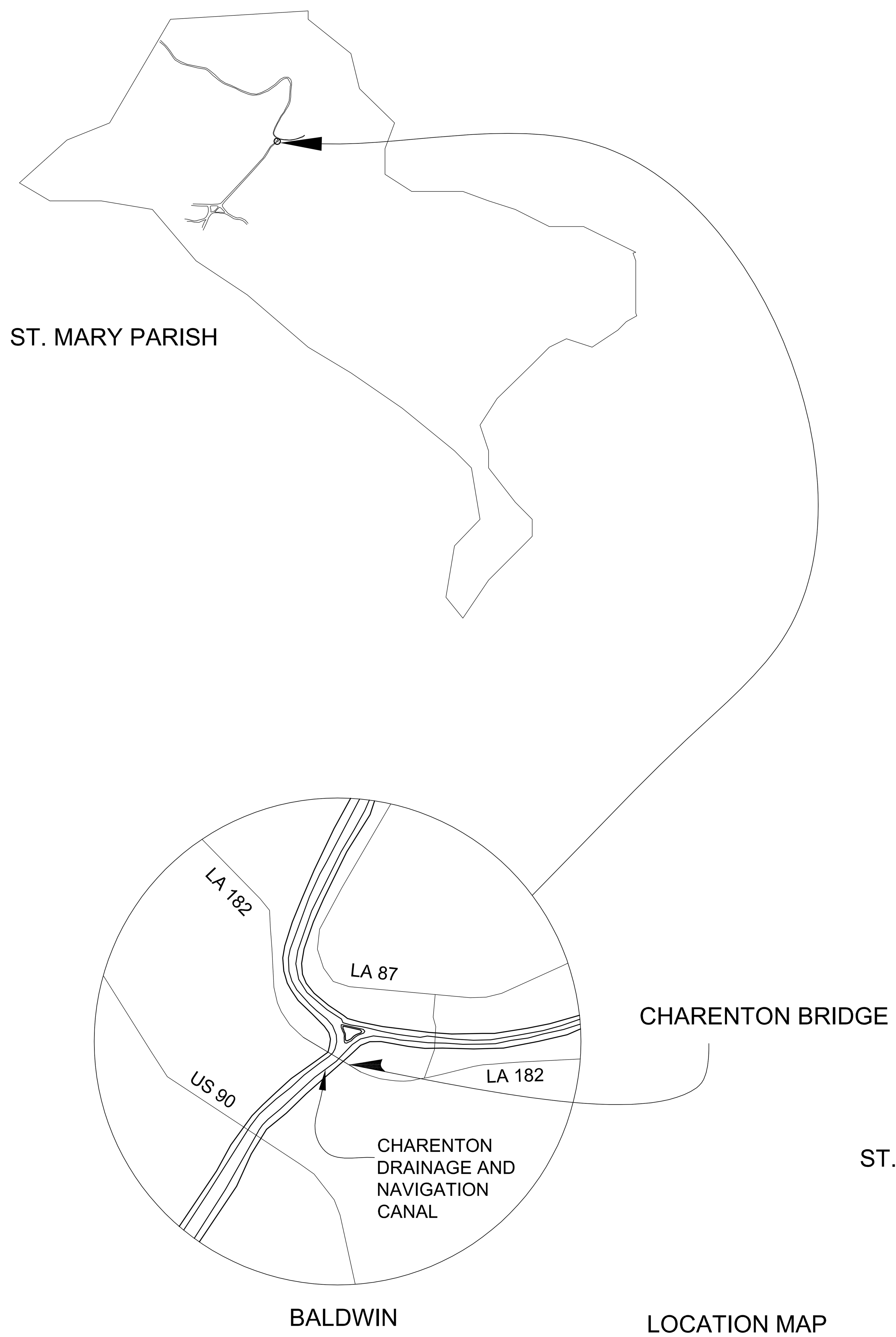
HISTORIC AMERICAN ENGINEERING RECORD
See Index to Photographs for Caption
HAER NO. LA-43-21

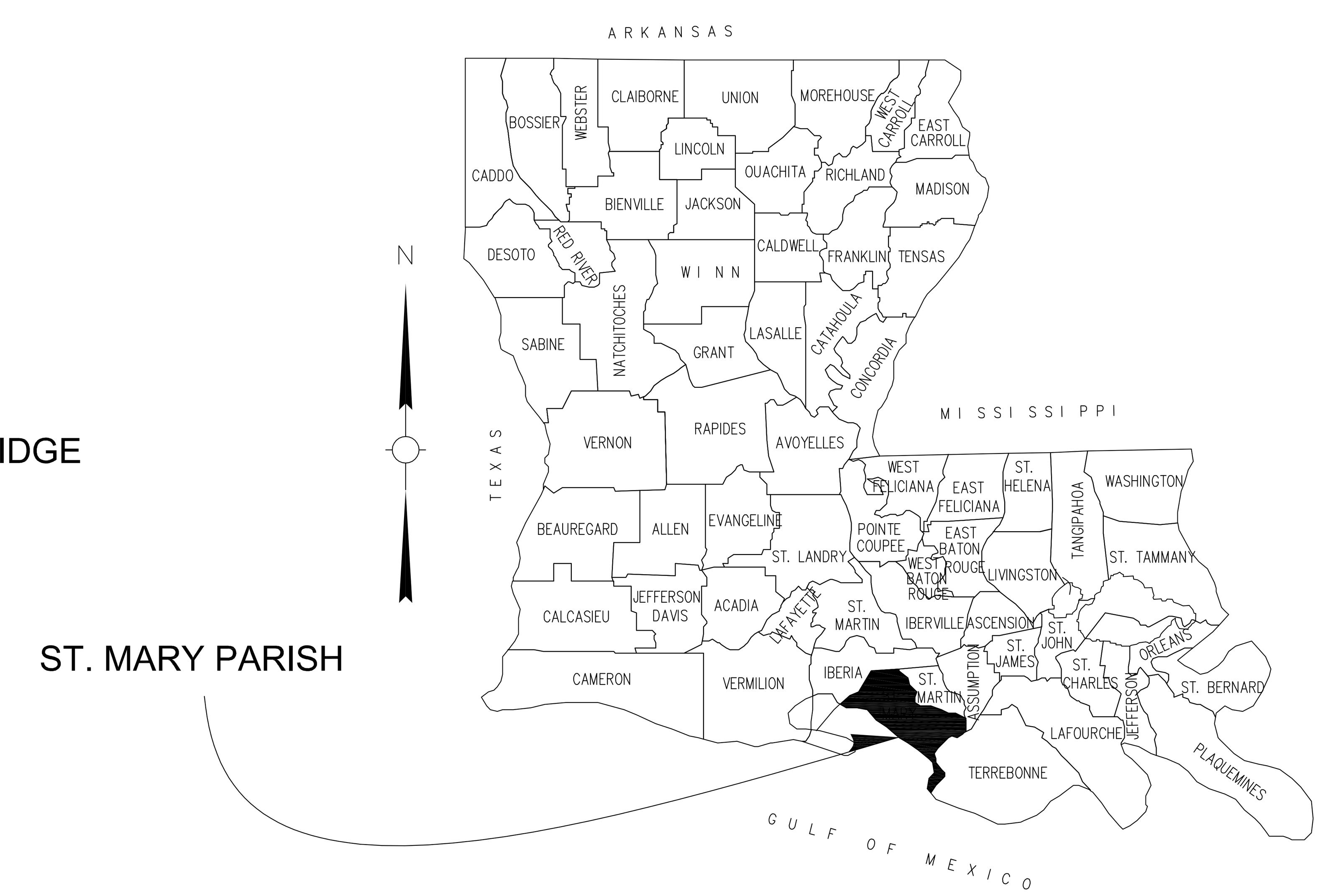
CHARENTON BRIDGE

The Charenton Bridge (Bridge Recall No. 008970), designed by Louisiana Highway Commission and completed in 1941, is significant as an important example of a distinctive truss type. The bridge's significant design feature is its K-truss configuration, characterized by the arrangement of vertical and diagonal members to form a "K" in each truss panel. The K-truss is a rare variation both nationally and in Louisiana, where there are only three extant examples of the bridge type. The Charenton Bridge was determined eligible for listing in the National Register of Historic Places in 2013 under Criterion C: Engineering at the state level of significance.

This documentation was prepared 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 Angela Hronek and Robert M. Frame, Cultural Resource Specialists, of Mead & Hunt, Stephen V. Estopinal, P.E., P.L.S. and Trenton Iglehart, Geodetic Analyst, of SJB Group, LLC. Dietrich Floeter completed the photography.

These measured drawings were prepared based on a site visit to complete laser scanning of the bridge, with selective hand measuring in the field to verify measurements.





LOUISIANA

LOCATION MAP
Latitude: 29.825298 North
Longitude: -91.537959 West

LIBRARY OF CONGRESS INDEX NUMBER

HISTORIC AMERICAN ENGINEERING RECORD
LA-43

SHEET 1 OF 4

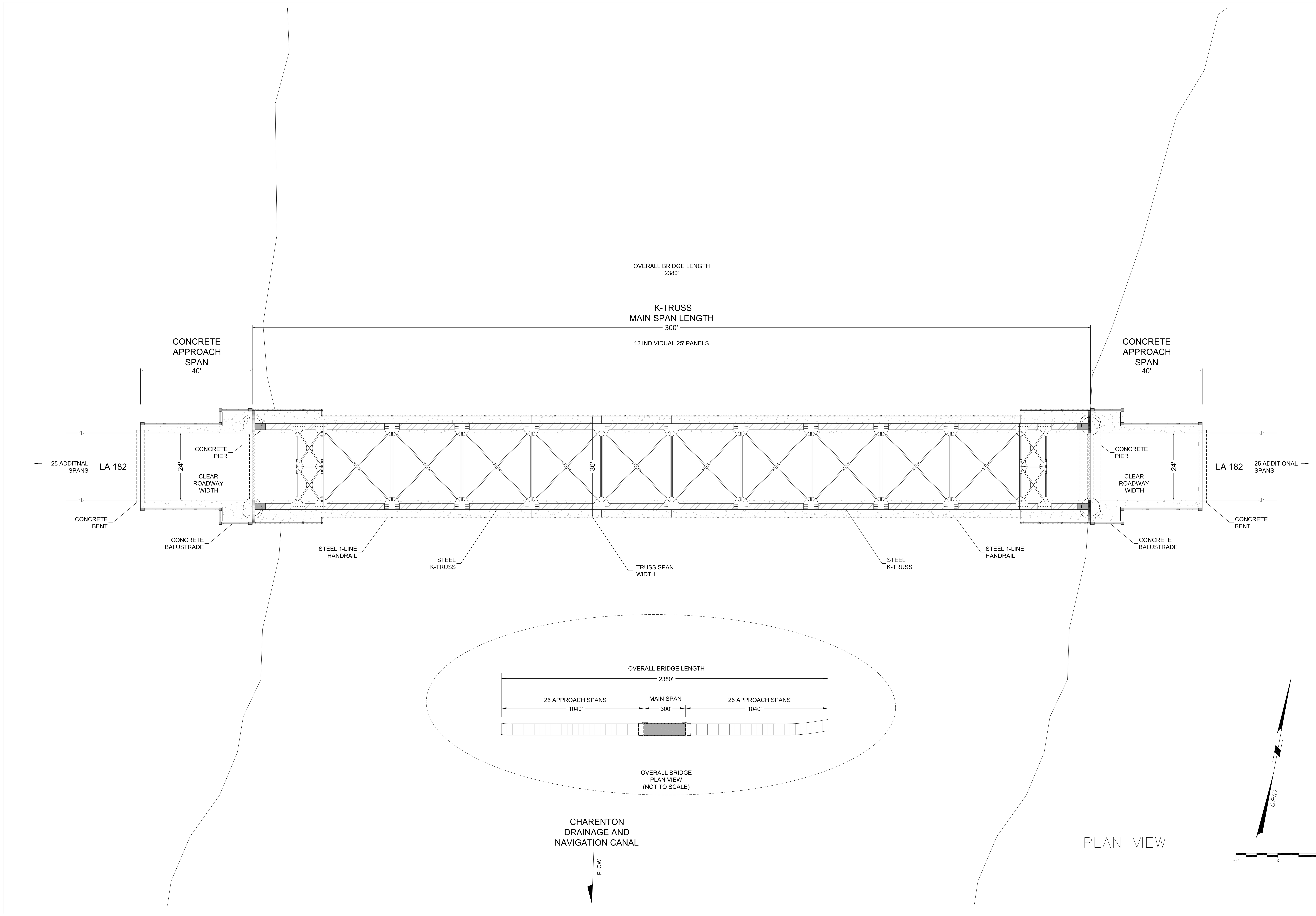
CHARENTON BRIDGE
CARRIES LOUISIANA HIGHWAY 182 (LA 182) OVER CHARENTON DRAINAGE AND NAVIGATION CANAL
ST. MARY PARISH

BALDWIN

LOUISIANA

LOUISIANA HISTORIC BRIDGE INVENTORY
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

DELINEATED BY: T. IGLEHART, SJB GROUP, LLC., 2017



PLAN VIEW

DELINEATED BY: T. IGLEHART, SJB GROUP, LLC., 2017

LOUISIANA HISTORIC BRIDGE INVENTORY
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

CHARENTON BRIDGE
CARRIES LOUISIANA HIGHWAY 182 (LA 182) OVER CHARENTON DRAINAGE AND NAVIGATION CANAL
ST. MARY PARISH
BALDWIN LOUISIANA

SHEET 2 OF 4

HISTORIC AMERICAN ENGINEERING RECORD
LA-43

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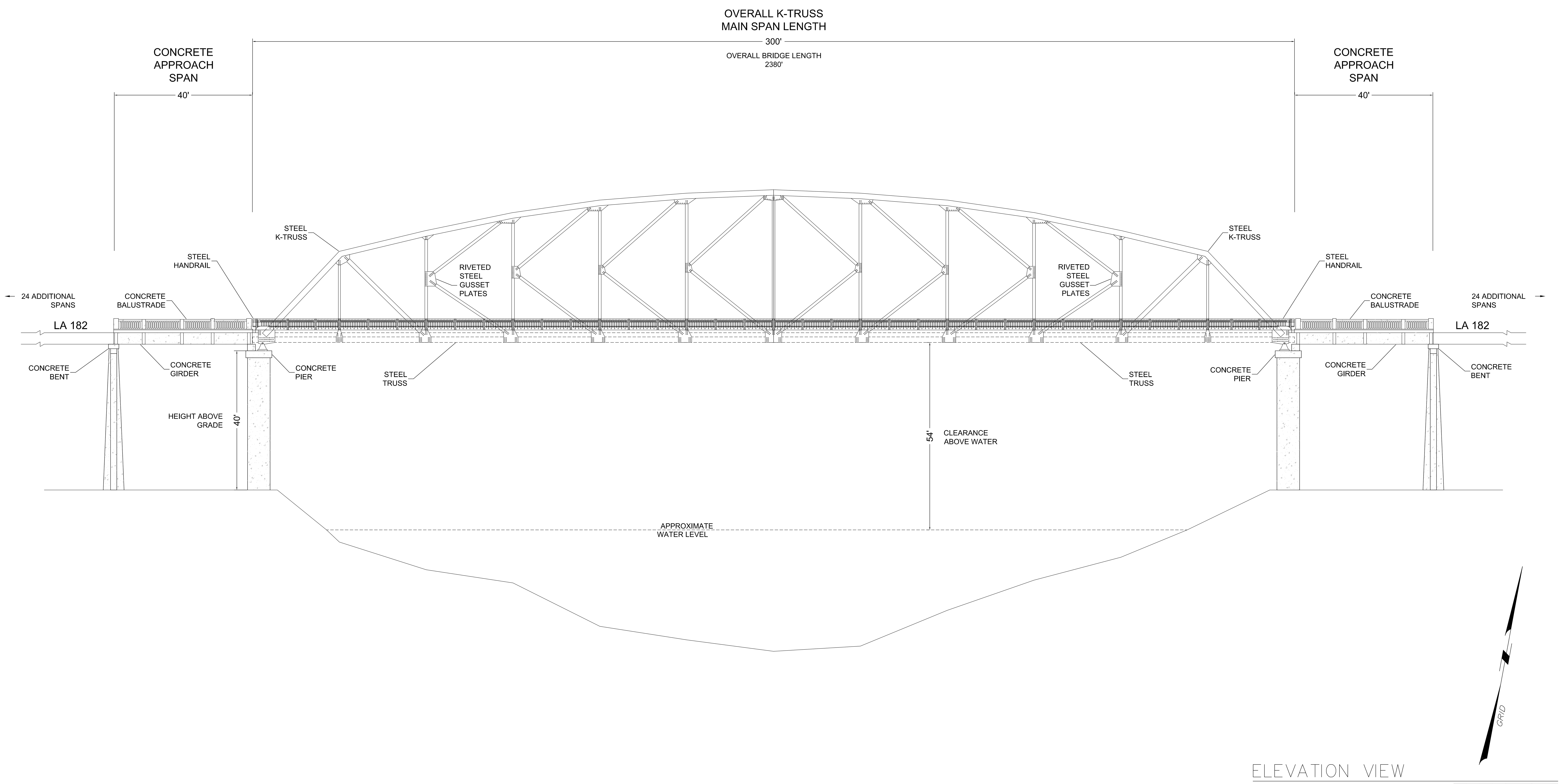


ELEVATION VIEW

DELINEATED BY: T. IGLEHART, SJB GROUP, LLC., 2017

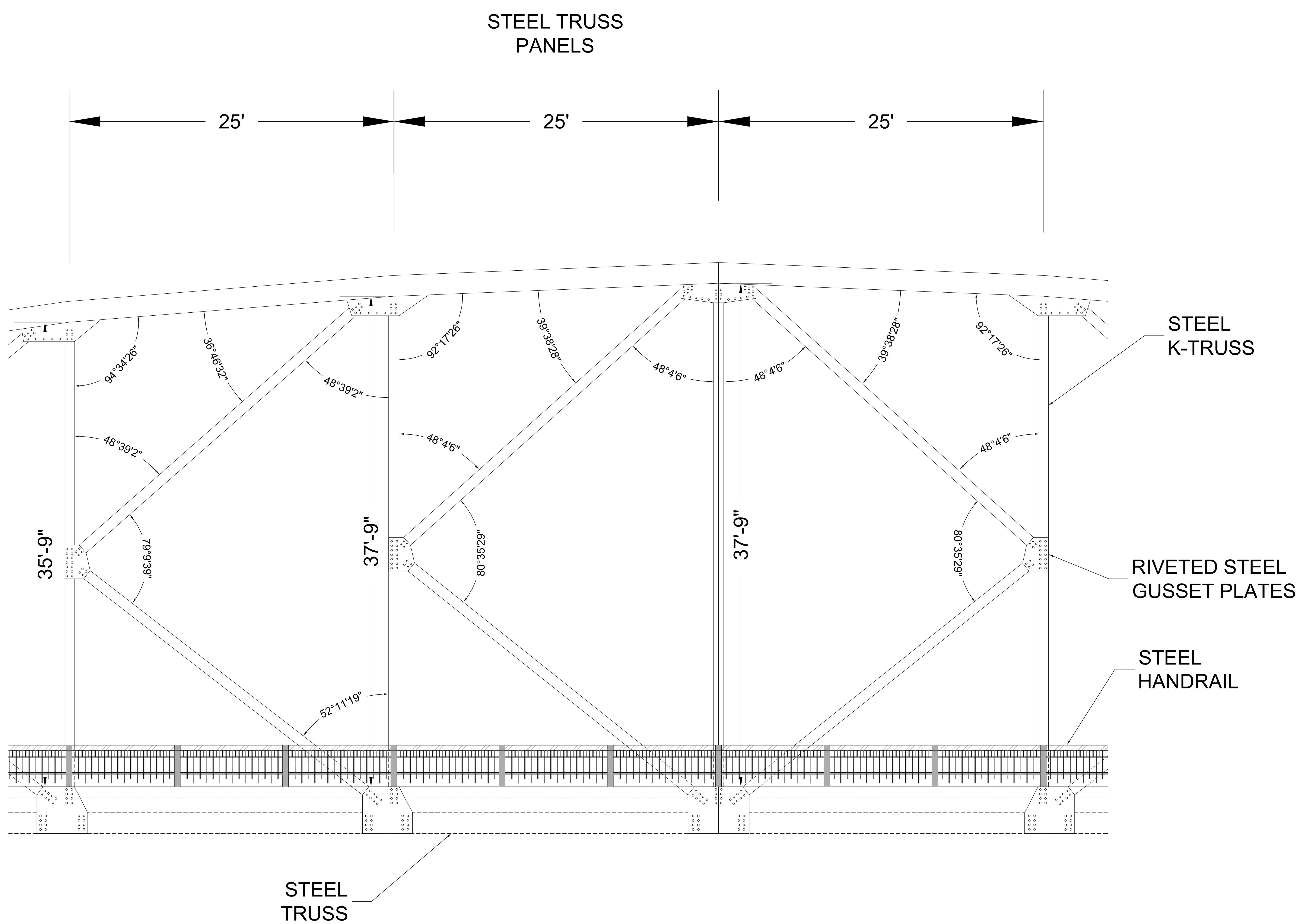
LOUISIANA HISTORIC
BRIDGE INVENTORY
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

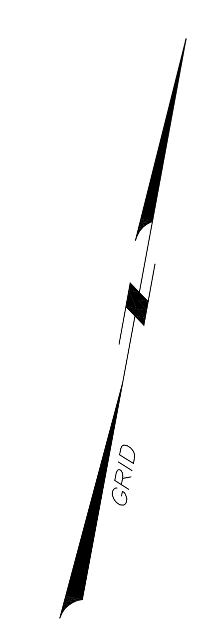
CHARENTON BRIDGE
CARRIES LOUISIANA HIGHWAY 182 (LA 182) OVER CHARENTON DRAINAGE AND NAVIGATION CANAL
BALDWIN ST. MARY PARISH LOUISIANA

SHEET
3 OF 4

HISTORIC AMERICAN
ENGINEERING RECORD
LA-43

LIBRARY OF CONGRESS
INDEX NUMBER





ELEVATION VIEW

DELINEATED BY: T. IGLEHART, SJB GROUP, LLC., 2017

LOUISIANA HISTORIC
BRIDGE INVENTORY
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

CHARENTON BRIDGE
CARRIES LOUISIANA HIGHWAY 182 (LA 182) OVER CHARENTON DRAINAGE AND NAVIGATION CANAL
ST. MARY PARISH

BALDWIN

LOUISIANA

SHEET
4 OF 4

HISTORIC AMERICAN
ENGINEERING RECORD
LA-43

LIBRARY OF CONGRESS
INDEX NUMBER

JOB #31435

GS 15 MODEM 2M POLE

PT #	DESC
1-3	SET 1/2" REBAR w/ALUM CAP
318, 319	SET 60D NAIL
SJB 2	START TIE

J. FONTENOT
M. PRUITT 11/9/16

Processed by A.M.B

Filename : 31435c3 110916 Modem

Control File : Control for Bridge 008970

11/11/16

JOB # 31435

BASE @ 3 C.S. 15' TRI-POD

HI = 1.175m SATEL RADIO

PT #	DESC
319	TIE
308	"X" IN CONC walk way
309	"X" IN CONC walk way
316	"X" IN CONC walk way
317	"X" IN CONC walk way
320	"X" IN CONC SLAB
321	SET 60D NAIL
319	TIE

J. FONTENOT

M. PRUITT 11/10/16

Processed by A.M.B

Filename: 31435c3111016RTK

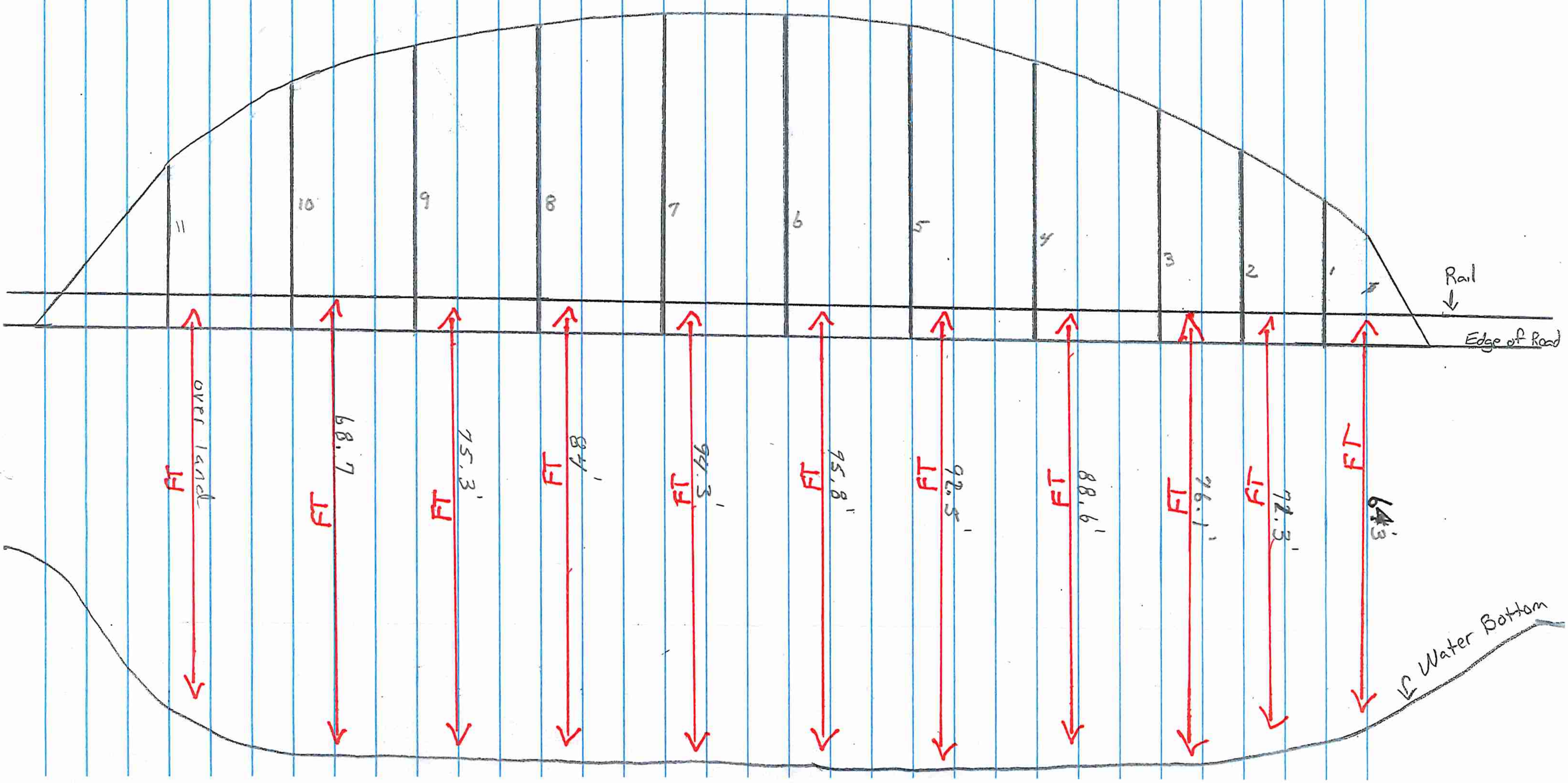
Control Filename: Control for Bridge 008970

[signature]

11/11/16

Project #	~~31380.7 – I 210~~	31435			KEYS:		
Partychief	J. FONTENOT			TL= TOPO LIFT			
Iman	M. PRUITT			FS = FREE STATION			
				OP= OVER KNOWN POINT			
DATE	SCAN WORLD	TARGET 1/STA	TARGET 2	TARGET 3	TARGET 4	BS CK	TYPE OF SETUP
11/10/16	1	318	2			2	OP
	2	318	1			1	OP
	320	321	3			3	OP
	3	321	320			320	OP

Cross Section of the Charenton River



Bridge 008970

AX1202

Base 3 @	HI		FS	DESC	
1	1.210'		2	TIE	½" IR w/
			308	"X" in Conc	
			309	" "	"
			316	" "	"
			317	" "	"
			2	TIE	
			2	TIE	
			308	"X" in Conc.	
			309	" "	"
			316	" "	"
			317	" "	"
			[illegible]		
			308	"X" in Conc	
			309	" "	"
			316	" "	"
			317	" "	"
			2	TIE	

R. Gillingham
T. Dupre
T. Allen

54
11-28-16
Cldy 60°

Silver Cap

Processed by A.M.B

Filename: 31435cl 112916RTK

11/30/16

3143S

⊼	HI	BS	FS	DESC
308	5.00	309	317, ~~308~~ 309	TIE
			310-315	"X" IN CONC
			~~308~~ 309	TIE

J. FONTENOT
M. PRUITT

11/29/16

Processed by A.M.B

Filename: 31435c3 11,29,16 TPS

11/30/16

31435

BASE @ 1 AX 1202 TRI-POD

HI= 1.21 M SATEL RADIO

PT #	DESCRIPTION
2, 3	TIE
318	SET 60 D NAIL
320	"X" IN CONC SLAB
321	SET 60 D NAIL
319	SET 60 D NAIL
320	SET 60 D NAIL
2	TIE

J. FONTENOT

M. PRUITT

11/28/16

Processed by A.M.B

Filename: 31435c3112816 RTK

11/30/16

37

31435

⊼	HI	BS	FS	DESC
1	5.69	2	2	TIE
			3/8	SET 60D NAIL
			2	TIE

J. FONTENOT

M. PRUITT

11/30/16

38

Processed by A.M.B

Filename: 31435c3 11/3016 JPS

12/4/16


2
309
318
310
311
1
312
313
319
314
315
3
316
320
317
321

bridge 008970 r1.txt 10/5/2017

Status: VALID Registration

Mean Absolute Error:

for Enabled Constraints = 0.016 ft

for Disabled Constraints = 0.000 ft
Date: 2017.10.05 10:31:16

Database name : bridge 008970

ScanWorlds
bridge 008970.txt (Leveled)
1: SW-001 (Leveled)
2: SW-002 (Leveled)
3: SW-004 (Leveled)
320: SW-003 (Leveled)

Constraints

Name	ScanWorld	ScanWorld	Type	On/Off	Weight	Error	Error Vector	Horz	Vert
319	bridge 008970.txt (Leveled)	3: SW-004 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.040 ft	(0.024, 0.017, -0.027) ft	0.029 ft	-0.027 ft
3	bridge 008970.txt (Leveled)	3: SW-004 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.023 ft	(-0.017, -0.013, 0.011) ft	0.021 ft	0.011 ft
3	bridge 008970.txt (Leveled)	320: SW-003 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.014 ft	(-0.010, -0.008, -0.006) ft	0.013 ft	-0.006 ft
2	bridge 008970.txt (Leveled)	1: SW-001 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.008 ft	(0.004, 0.007, -0.001) ft	0.008 ft	-0.001 ft
2	bridge 008970.txt (Leveled)	2: SW-002 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.013 ft	(0.006, 0.010, 0.004) ft	0.012 ft	0.004 ft
1	bridge 008970.txt (Leveled)	1: SW-001 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.008 ft	(-0.004, -0.007, 0.001) ft	0.008 ft	0.001 ft
1	bridge 008970.txt (Leveled)	2: SW-002 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.013 ft	(-0.006, -0.010, -0.004) ft	0.012 ft	-0.004 ft
320	bridge 008970.txt (Leveled)	320: SW-003 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.023 ft	(0.003, 0.004, 0.022) ft	0.004 ft	0.022 ft
1	1: SW-001 (Leveled)	2: SW-002 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.006 ft	(-0.002, -0.003, -0.005) ft	0.004 ft	-0.005 ft
2	1: SW-001 (Leveled)	2: SW-002 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.006 ft	(0.002, 0.003, 0.005) ft	0.004 ft	0.005 ft
3	3: SW-004 (Leveled)	320: SW-003 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.019 ft	(0.007, 0.005, -0.017) ft	0.008 ft	-0.017 ft

ScanWorld Transformations
bridge 008970.txt (Leveled)
translation: (0.000, 0.000, 0.000) ft
rotation: (0.0000, 1.0000, 0.0000):0.000 deg

1: SW-001 (Leveled)
translation: (3215788.765, 482043.587, 16.691) ft
rotation: (0.0000, 0.0000, 1.0000):-152.836 deg

2: SW-002 (Leveled)
translation: (3215849.117, 482144.529, 17.665) ft
rotation: (0.0000, 0.0000, 1.0000):-167.165 deg

3: SW-004 (Leveled)
translation: (3216143.428, 481954.964, 16.746) ft
rotation: (-0.0000, -0.0000, -1.0000):24.474 deg

320: SW-003 (Leveled)
translation: (3216085.007, 481873.541, 16.607) ft
rotation: (0.0000, 0.0000, 1.0000):63.134 deg

Unused ControlSpace Objects
bridge 008970.txt (Leveled):
Vertex : TargetID : 309
Vertex : TargetID : 310
Vertex : TargetID : 311
Vertex : TargetID : 312
Vertex : TargetID : 313
Vertex : TargetID : 314
Vertex : TargetID : 315
Vertex : TargetID : 316
Vertex : TargetID : 317
Vertex : TargetID : 318
Vertex : TargetID : 321

bridge 008970 r2.txt 10/5/2017

Status: VALID Registration

Mean Absolute Error:

for Enabled Constraints = 0.012 ft

for Disabled Constraints = 0.000 ft
Date: 2017.10.05 10:31:40

Database name : bridge 008970

ScanWorlds
bridge 008970.txt (Leveled)
311: SW-008 (Leveled)
312: SW-002 (Leveled)
313: SW-007 (Leveled)
315: SW-005 (Leveled)
316: SW-004 (Leveled)

Constraints

Name	ScanWorld	ScanWorld	Type	On/Off	Weight	Error	Error Vector	Horz	Vert
313	bridge 008970.txt (Leveled)	311: SW-008 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.016 ft	(0.004, -0.003, 0.015) ft	0.005 ft	0.015 ft
313	bridge 008970.txt (Leveled)	313: SW-007 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.009 ft	(0.003, -0.002, 0.008) ft	0.003 ft	0.008 ft
315	bridge 008970.txt (Leveled)	313: SW-007 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.006 ft	(-0.005, 0.003, -0.002) ft	0.006 ft	-0.002 ft
315	bridge 008970.txt (Leveled)	315: SW-005 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.011 ft	(-0.009, 0.005, -0.004) ft	0.010 ft	-0.004 ft
316	bridge 008970.txt (Leveled)	315: SW-005 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.012 ft	(0.005, -0.003, 0.010) ft	0.006 ft	0.010 ft
316	bridge 008970.txt (Leveled)	316: SW-004 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.015 ft	(-0.002, 0.001, 0.015) ft	0.002 ft	0.015 ft
317	bridge 008970.txt (Leveled)	316: SW-004 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.022 ft	(0.009, -0.006, -0.019) ft	0.011 ft	-0.019 ft
312	bridge 008970.txt (Leveled)	312: SW-002 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.009 ft	(-0.008, 0.005, -0.001) ft	0.009 ft	-0.001 ft
311	bridge 008970.txt (Leveled)	311: SW-008 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.024 ft	(-0.006, 0.004, -0.023) ft	0.007 ft	-0.023 ft
310	bridge 008970.txt (Leveled)	312: SW-002 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.009 ft	(0.008, -0.005, 0.001) ft	0.009 ft	0.001 ft
313	311: SW-008 (Leveled)	313: SW-007 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.008 ft	(-0.002, 0.001, -0.008) ft	0.002 ft	-0.008 ft
315	313: SW-007 (Leveled)	315: SW-005 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.005 ft	(-0.004, 0.002, -0.002) ft	0.004 ft	-0.002 ft
316	315: SW-005 (Leveled)	316: SW-004 (Leveled)	Coincident: Vertex - Vertex	On	1.0000	0.010 ft	(-0.007, 0.004, 0.004) ft	0.008 ft	0.004 ft

ScanWorld Transformations
bridge 008970.txt (Leveled)
translation: (0.000, 0.000, 0.000) ft
rotation: (0.0000, 1.0000, 0.0000):0.000 deg

311: SW-008 (Leveled)
translation: (3215910.405, 482057.057, 64.370) ft
rotation: (0.0000, 0.0000, 1.0000):-112.811 deg

312: SW-002 (Leveled)
translation: (3215940.670, 482009.431, 64.724) ft
rotation: (-0.0000, -0.0000, -1.0000):-133.949 deg

313: SW-007 (Leveled)
translation: (3215995.217, 482005.839, 64.663) ft
rotation: (-0.0000, -0.0000, -1.0000):59.446 deg

315: SW-005 (Leveled)
translation: (3216081.555, 481953.757, 64.420) ft
rotation: (0.0000, 0.0000, 1.0000):83.923 deg

316: SW-004 (Leveled)
translation: (3216154.723, 481909.541, 63.415) ft
rotation: (-0.0000, -0.0000, -1.0000):23.895 deg

Unused ControlSpace Objects
bridge 008970.txt (Leveled):
Vertex : TargetID : 1
Vertex : TargetID : 2
Vertex : TargetID : 3
Vertex : TargetID : 309

```
    Vertex : TargetID : 314
    Vertex : TargetID : 318
    Vertex : TargetID : 319
    Vertex : TargetID : 320
    Vertex : TargetID : 321
```

SJB GROUP, LLC
QUALITY BY DESIGN

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P. O. Box 1751
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70821-1751
(225) 769-3400
Fax (225) 769-3596
www.sjbgroup.com

State Project No. H.007020
Historic Bridge Inventory

SJB Group performed terrestrial laser scanning and created deliverables in accordance with HAER 4.0 Measured Drawings for six bridges throughout Louisiana. The six bridges surveyed under this contract were bridge numbers 008970, 009130, 014900, 058710, 200865 and 200896. The following sections are a description of the equipment and procedures used for this project.

Section I – Equipment

The equipment used in the establishment of the primary control network for this project was manufactured by Leica. Real-time kinematic GPS observations were collected using a Leica GS15 Smart Antenna "Performance" and CS15 3.5G Field Controller. Figure 12 is an image of the equipment used.

Figure 1: Photograph of Leica TS15 Total Station and Leica CS/GS15 GPS uni

Below is a table of the serial numbers for the equipment used for this project.

Description	Model Number	Serial Number
Leica ScanStation	C10	1260997
Leica Base	GS15	1508955
Leica Rover	GS15	1509134
Leica Controller	CS15	25022556

Section II – Field Procedures

Marks set via real-time kinematic GPS observations were established through a series of ten (10) second observations. Each mark was occupied three (3) times throughout the day from at least two (2) different base stations for a total of six (6) observations. Primary control marks were periodically cross checked throughout the day to ensure an accurate basis of measurement.

Section III – Equipment

Scanning was performed with the Leica ScanStation C-10, serial number 120997, in conjunction with HDS 6 inch circular planar fixed height (1.472 meters) targets

Figure 2: Photograph of Leica ScanStation C10

Section IV – Field Procedures

Scanning observations were made by independent instrument locations which included a minimum of four HDS targets on Secondary Control Marks. At each scanning location the C10 collects observed data relative to the instrument and builds a data set which identifies the HDS target marks. Each data set is called a “Scan World” for the purposes of computation.

Section V – Data Processing

The separate Scan Worlds were “registered” using Leica Cyclone Version 8.0 software which merges the independent observations by resection and statistical comparison of the State Plane values associated with each of the HDS target locations. The State Plane resolution data set which merges all scanned information is presented in Appendix “E.” TopoDOT version 9.0.0.0 was used to extract features from the point cloud registered in Leica Cyclone.