

Krotz Springs Bridge  
(U. S. Route 190 Bridge)  
(Atchafalaya River Bridge)  
Spanning Atchafalaya River  
Krotz Springs  
St. Landry Parish  
Pointe Coupee Parish  
Louisiana

HAER No. LA-7

HAER  
LA,  
49-KROSP,  
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record  
Southeast Region  
National Park Service  
Department of the Interior  
Atlanta, Georgia 30303

HISTORIC AMERICAN ENGINEERING RECORD

HAER  
LA,  
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Krotz Springs Bridge  
(U. S. Route 190 Bridge)  
(Atchafalaya River Bridge)

HAER No. LA-7

Location: Spanning Atchafalaya River  
Krotz Springs  
St. Landry Parish  
Pointe Coupee Parish  
Louisiana

UTM: 15.620000.3378000  
Quad: Fordouche, Louisiana

Date of Construction: 1934

Present Owner: State of Louisiana  
Department of Transportation  
Box 94245, Capitol Station  
Baton Rouge, Louisiana 70804-9245

Present Use: Vehicular bridge

Significance: This bridge is a K-truss bridge and is one of six bridges of this truss type in Louisiana. The K-truss type is virtually non-existent outside of Louisiana.

Project Information: This documentation was undertaken in 1983 in accordance with the Memorandum of Agreement by the Louisiana Department of Transportation as a mitigative measure prior to demolition

Inventoried by: Unknown

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Southeast Region  
National Park Service  
Atlanta, Georgia 30303

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The Atchafalaya Bridge at Krotz Springs was the product of a series of events and circumstances that took place during the late 1920s and early 1930s. It grew out of a people's desire and a governor's promise and staunch determination to fulfill that desire. It was built during the most productive period in the history of Louisiana's Highway Department, and it remains a symbol of that period's state of the art bridge engineering.

In order to explain how and why the bridge was built, we have to go back to 1921. In that year, the issue of building more roads was very much in the forefront of the State's Constitutional Convention. There was widespread public demand for the delegates to decide on a method by which the State could finance a road program. Some of the delegates were in favor of a bond issue being used to finance construction. At the time of the convention, highway funds came from current license and gasoline taxes, and this was the only money that was allowed for construction. Roads were built when there was enough money from these taxes to pay for them.

Unfortunately, it was impossible for the Highway Commission to keep within these constraints and still build an adequate highway system. Revenues from taxes were simply not enough. At the time, the State had few good roads and even fewer bridges. "In the mud," was a term frequently used to describe Louisiana's roads.

People in Louisiana knew that other States had paved roads and good bridges, and they wanted the same things for their State. However, Louisiana presented particular problems in building roads and bridges. Aside from the many great swamp areas of the State, it is also traversed by five major rivers, the Atchafalaya being one of them.

During the 1920s, many of these major rivers were crossed by means of a ferry. Unfortunately, the ferry was not always located at the most opportune spot to cross a river. That was the case in the Krotz Springs area. Prior to 1928, when someone wanted to travel from Baton Rouge or New Orleans west to Alexandria or Opelousas via Highway 7, the only way to cross the Atchafalaya River was the ferry at Melville, Louisiana, which is 11 miles north of Krotz Springs on the west bank of the river. This detour added approximately 20 extra miles to a trip across south Louisiana. This was a considerable detour. Since this route was traveled quite a bit, a better system to cross the river was needed in order to prepare for the future. The entire State was in dire need of transportation improvements of this kind.

This was the situation that faced the delegates to the 1921 Constitutional Convention. The bond issue, selling bonds to pay for highway funds, was met with fierce resistance from most. Consequently, the delegates to the convention decided that the current policy should continue and a provision

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was written into the constitution that highway and bridge construction had to be paid for from current taxes.

Unfortunately, this solved none of Louisiana's problems. The Highway Commission could not build with the limited funds that they had. Louisiana's highways remained inadequate.

At the end of the 1920s, the situation changed. Huey Pierce Long started a campaign for governor of Louisiana that was based on giving the people what they wanted and needed, namely, good roads.

Long was elected for the 1930-1934 term as governor. He immediately set out to keep his promise to the people of Louisiana. Long decided to try to get a bond issue approved, as this once again seemed the most likely way to get funds for highway and bridge construction.

The bond issue was not easy to come by. A bond issue could not be authorized by simple legislative enactment. It would have to be embodied in a constitutional amendment, which would have to receive the approval of two-thirds of the members of both legislative houses and would then have to be ratified by the voters.

Governor Long first asked for 30 million dollars. He wanted bonds authorized for roads, as well as for bridges. He made sure that the bond issue would be secured with a tax by raising the gasoline tax from two to four cents.

These measures met with a great deal of criticism from some legislators. Critics were afraid that the money slated for the Highway Commission would perhaps go into Long's campaign chest. Long found a way to lessen the critics' fears. He promised to appoint an advisory board of citizens to oversee the expenditure of the new funds. Long even mentioned some possible members, people who were in opposition to him politically. With this promise, the legislature passed the bond issue amendment and the voters subsequently ratified it. Thus, under Article VI, Section 22 of the Constitution of 1921, as amended by Act No. 3 of the Extra Session of the Legislature of 1930, the Highway Commission was granted authority to issue and sell highway bonds. Under this same authority, the State Advisory Board was created.

This legislative act was the start of the greatest activity in highway work of any similar period in the history of the State. During Long's four years as governor, the State built 1,583 miles of concrete roads, 718 miles of asphalt roads, 2,816 miles of gravel roads, and 111 bridges, many major structures spanning the bigger streams. In 1931 alone, expenditures for roads and bridges equaled 66% of the State's total spending. There were 22,200 men on road work in 1931, more than any other State in the country. Ten percent of all men in the country working on highway projects worked in Louisiana.

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The Atchafalaya River Bridge was contracted in 1931. It was being built to provide a crossing at the Atchafalaya River that would not only provide a shorter route across south Louisiana, but also leave the river free for navigation. As stated previously, travelers had to use the Melville ferry to cross the Atchafalaya River. Around 1928, work was begun on a railroad bridge that was .5 miles south of the present Krotz Springs Bridge. This railroad bridge was being upgraded and approaches built in order to accommodate highway traffic. This was a quicker route than the ferry, but it also required waiting on trains to get across. Clearly, a better bridge was needed and the Highway Commission, funded with Huey Long's bond money, set out to build a new bridge.

The Krotz Springs Bridge was one of ten bridges to be built spanning major streams. Usually, work of this magnitude would be let out to consulting engineering firms, but it was believed that better designs and finished structures could be obtained at a savings in cost by handling all features in the Bridge Department of the Highway Commission. For the amount of bridges proposed, more engineers and draftsmen than were then employed at the Highway Commission were needed. Louisiana's colleges did not turn out many engineers or draftsmen, and most of those presently working for the Highway Commission had come from out of State. Being aware of this, Governor Long sent a man out to examine the highway organization of the State of North Carolina. They too had a large construction program underway and Long felt that some of their men might be just what Louisiana needed. It was reported that North Carolina's chief engineer, Leslie R. Ames, was a first-rate man. Huey made him an offer, doubled his present salary, and Mr. Ames, along with 21 other men from North Carolina, plus one from Oklahoma and one from Missouri, came to Louisiana. They began the task of designing bridges and highways for the State of Louisiana.

Before construction could begin, several procedures had to be followed. First, a permit from the War Department had to be obtained. This was to make sure that the bridge would be secure in any type of flooding. They had special requirements for the Krotz Springs Bridge.

They insisted that all channel piers be carried down to a minimum depth of one hundred feet below low water and also insisted that no mattress protection work be constructed around these piers on the bed of the river. Their reasons for these requirements were based on the supposition that the Atchafalaya River would be used as a relief floodway for the excess water from the Mississippi River and would, therefore, be subject to additional widening and deepening due to the steep hydraulic gradient. This is especially true at Krotz Springs, where the river had increased its cross sectional area approximately 100% in the 40 years before the bridge was constructed.

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These requirements were taken into consideration. Next, foundations and core borings had to be made, the area surveyed, and plans drawn up. The cost for the Krotz Springs Bridge were as follows: plans - \$942.68. survey and borings - \$5,905.52.

The contract for the bridge was for a steel and concrete timber trestle bridge, 0.527 miles long at a cost of \$966,062.50.

The Krotz Springs Bridge is one of six existing bridges in Louisiana utilizing the K-truss span. These were all built using standard plans developed by the Department. The bridge is 2,784 feet long and 24 feet wide. It consists of three 500'6" K-type through truss spans, with each span made up of 14 panels (each panel being 35/9"), and twenty-one 60-foot I-beam timber pile trestle approach spans.

While more economic bridge designs have been developed, the K-truss is still occasionally used in other applications. For example, in the I-10 Mississippi River Bridge at Baton Rouge, it was used in the upper lateral system of the bridge for wind bracing.

Carl W. Condit, in his American Building Art: The Twentieth Century, Oxford University Press (1961), offers the following short history of the K-truss design:

The only novel forms which have been introduced into American bridge design in the twentieth century are the K-truss and the Vierendeel truss. The former seems to have been a native invention of the past century, but this was undoubtedly forgotten when the form was revived shortly after 1900. The latter is a European importation.

...The principal (of the K-truss) was first proposed by Stephen H. Long for the horizontal bracing of the bridge which he patented in 1830, and was adopted for a span built on his plan in the same year. Long's invention does not seem to have been used after his death and disappeared from bridge construction until the twentieth century. It was revived in 1911, possibly as an original idea, by Ralph Modjeski, who proposed its use for the second St. Lawrence River cantilever bridge at Quebec (completed 1917). It was on Modjeski's authority that the form was for a short time adopted by American engineers.

...The K-truss is suitable for spans over 300 feet in length. The form was apparently introduced into the United States in 1916 by A. F. Robinson, chief bridge engineer of the Santa Fe system, for the company's Arkansas River Bridge at Pueblo, Colorado. The

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clear span of the structure, however, is only 230 feet, and the K-truss was thus not an economical choice. It has been used a few times since the building of the Pueblo bridge, but its active life was curtailed by the refinement of the more efficient Warren truss.

The design of the Krotz Springs Bridge was based on two lanes of H15 loading. Allowable stresses are 16Ksi tension for reinforcing steel and 650 psi for concrete compression in flexure.

The general contractor for this bridge was the Foundation Company of New York. Subcontractors were the Nashville Bridge Company and the Mount Vernon Bridge Company. The shop drawings for the steel superstructure were prepared by the Nashville Bridge Company at their Bessemer plant.

The Atchafalaya Bridge at Krotz Springs presented some difficult foundation problems. The Atchafalaya is a large river, having relatively large variations between low water and high water, and the river bed consists of materials unsuitable for heavy bridge foundations. The bridge had to have its foundation carried down to an underlying strata of material capable of carrying the load of the structure. The foundation had to be carried to great depths in order to render the structure safe against scour, which was an ever-present hazard in the Atchafalaya and also to locate the material that could handle the load.

The type of piers that were constructed were cylindrical in shape and extended approximately 140 feet below low water. As this depth was beyond the limits to which men can safely work under the pneumatic process of pier sinking, and it was most desirable to penetrate the river bed by this method to a depth beyond where obstructions such as sunken logs, barges, etc., might be encountered, a combination of pneumatic and open sinking was employed. In this way, the piers would be carried to a depth of approximately 100 feet below low water where the roof of the air chamber would be removed and the pier carried down to the depth desired by open dredging methods. The natural ground elevation at the site of the two back piers was approximately 30 feet above low water elevation and, consequently, these two piers were sunk to a penetration of approximately 170 feet in material, varying from gumbo clay through silt and sand to gravel. One of these piers was sealed with a tremie when the water elevation was about 33 feet above low water stage or, in other words, at a depth of approximately 173 feet.

In the erection of the 500 foot spans at Krotz Springs, the two outside or back spans were erected on timber falsework. The channel span was erected as a cantilever supported by tie-back beams from the hip joint of each of the two outside spans. The erection of the channel span proceeded simultaneously

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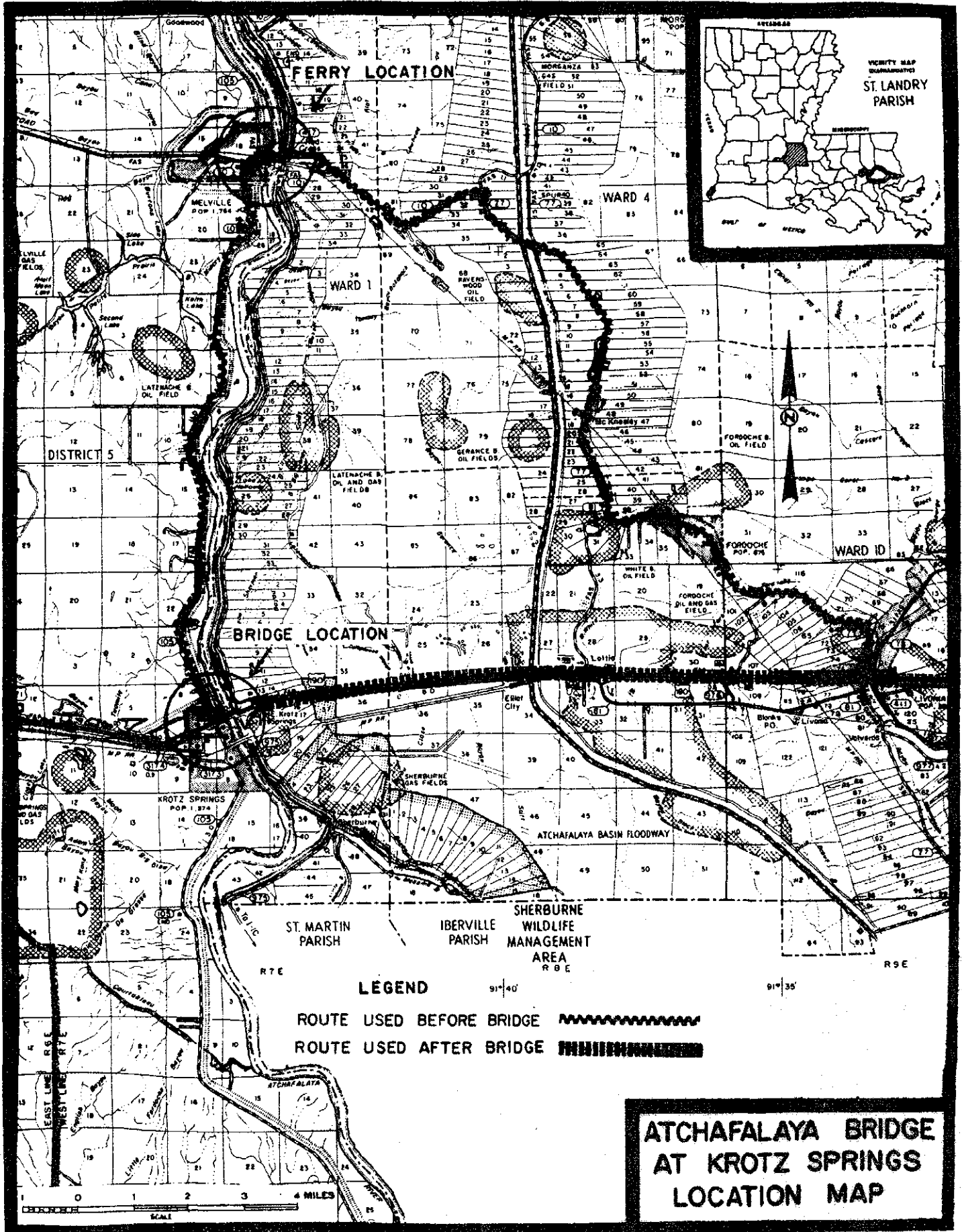
from each side of the river toward the center without the use of falsework, and the length of the tie back beams was such that when the two half spans were erected to the middle of the river, the ends were to be two feet above the grade on the completed bridge. Then by using a number of jacks under the approach ends of the back spans and jacking up these ends of these spans, the channel span was brought down to its final position and the final corrections made first in the bottom chord and then in the top chord.

The bridge was completed in 1934 at a cost of \$1,008,600.34, which was \$42,537.18 over the original contract price. There were some problems with costs. During the 1930s, the Louisiana Highway Commission was given ample money to start projects, but money ran out before many were completed. The Great Depression had caused hardships all over the country and Louisiana was no exception. Federal money had been used for the bridge, but additional money was needed. By way of the Emergency Relief and Construction Act of 1932, the project was given an additional \$200,373.35 for construction out of the \$1,745,559.00 allotted to Louisiana.

The Krotz Springs Bridge has been scheduled for replacement in 1985 because it no longer meets the current Department standards for loads or the current standards for roadway width. Alternatives were suggested and addressed, but replacement was the only one that could accommodate the Department's current specifications for bridges.

The Atchafalaya River proved no small obstacle for bridge building in the 1930s, but the Highway Commission met the challenge and created a bridge that served its time well. It closed a gap in the State Highway System that shortened the distance between major cities such as Baton Rouge and Alexandria, and it reduced driving time to many towns across south and central Louisiana, including Opelousas, Lafayette, and Lake Charles. It will be remembered as part of the most prolific and interesting era in Louisiana's Highway Department.





**ATCHAFALAYA BRIDGE  
 AT KROTZ SPRINGS  
 LOCATION MAP**

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