

HISTORIC AMERICAN ENGINEERING RECORD

AUGUSTA BRIDGE

HAER No. AR-13

LOCATION: Spanning the White River on U.S. Highway 64 in Augusta, Woodruff County, Arkansas.

UTM: 15/3906160/64035

QUAD: Augusta SW, Arkansas

DATE OF CONSTRUCTION: 1930

CONTRACTOR: Missouri Valley Iron and Bridge Company, Leavenworth, Kansas.

PRESENT OWNER: Arkansas State Highway and Transportation Department, Little Rock, Arkansas 72203.

PRESENT USE: Vehicular bridge

SIGNIFICANCE: Built in 1929-1930, the Augusta bridge provided an important link in a major highway. The double-cantilevered span shares its design and designer with similar bridges at Newport and Clarendon, Arkansas. Spanning 400 feet with a price greater than half a million dollars when it was finished, the bridge's construction was begun only after years of legal delays were resolved.

HISTORIAN: Kathryn Steen

DESCRIPTION BY: Corinne Smith
Arkansas Historic Bridge Recording Project, 1988.

TOWN HISTORY

In 1917, some Tulsa, Oklahoma entrepreneurs met together and decided that an interstate highway between two vacation areas, Hot Springs, Arkansas and Colorado Springs, Colorado, would be a welcome addition to the country's growing highway network. Naming themselves after author and Confederate general Albert Pike, the Albert Pike Highway Association organized on January 29, 1917, in Tulsa, and started to promote their highway. By 1924, when the Oklahoma part of the route was designated U.S. Highway 64, the Oklahoma contingent was looking beyond their borders for the route's extension. In April of 1928, a revised organization, the U.S. 64 Highway Association, was formed in Pawnee, Oklahoma. In meetings that followed, the originally planned route was scrapped and the goal became a 1,027-mile stretch from Memphis, Tennessee to Raton, New Mexico.(1) One glitch in the route was the need to bridge the White River and to complete an adjacent twelve-mile stretch of road near Augusta, Arkansas.

The White River is a tributary of the Mississippi River. It starts in the Ozarks of northwest Arkansas, and meanders into Missouri before coming back into Arkansas and growing to a navigable size about fifty miles upstream from Augusta, a town in Woodruff county in east central Arkansas. Originally called Chickasaw Crossing as a popular Indian trading spot, the town was successful because of its location on a navigable river and also its fertile surrounding area.(2) In 1846 a man named Thomas Hough moved into the territory and bought a sufficient amount of land to entitle him to change the name of the town to Augusta, the name of his niece. Although settled earlier, the town did not become incorporated until 1861.(3)

When the era of railroads was upon Arkansas, the wealthy landowners in Augusta, who also happened to own stock in steamboats, were able to steer the railroad away from Augusta in the hopes of maintaining Augusta's strong steamboat business. Eventually the need for railroads was great enough to induce the building of a one and one-half mile spur out to where the Iron Mountain Railroad track lay, the junction of which was called New Augusta. In 1925, the spur was disconnected because highway and trucking had made the track obsolete.(4)

With a population of about two thousand in 1930, the town continued to be very agriculturally oriented, with the only manufacturing being a box factory. Until about 1927 there had been two ferries but, because of the generally poor condition of the road leading to Augusta from the west, it had been difficult for them to get sufficient traffic to operate at a profit. The nearest bridge over the White River was twenty miles to the south of Augusta.(5)

LEGAL DELAYS

On March 3, 1925, the R.L. Gaster Construction Company of Little Rock was granted authorization by the U.S. Congress to build a bridge across the navigable White River. The act allowed Gaster to collect tolls to cover his costs with a twenty-year amortization. The time limit on this saleable act expired, but was renewed June 15, 1926.(6) On March 17, 1927, the Gaster company had sent out an engineer to take preliminary measurements on the White River.(7)

In the meantime, support for a state supported bridge at Augusta had been growing. In February of 1927, state legislation to fund just such a bridge was introduced.(8) By March 10, the

governor had signed the bill and said that the bridge construction was now "in the hands of the State Highway Department." (9)

As if two interests competing to build a bridge were not enough, a third party surfaced with plans to build the Augusta bridge. In January of 1926, the Woodruff County Judge E.M. Carl-Lee had granted to Alvin Bell of Little Rock a franchise to construct the bridge. In late March 1927, after the legislative funding was available for a state bridge, "local citizens" went to court to get Bell's franchise revoked: it had been awarded without public notice, and Bell happened to be the judge's son-in-law. Besides, the suit argued, Bell's franchise was awarded when another, Gaster's, had already been given. (10)

The dilemma was simplified to some extent by the death of R.L. Gaster on September 5, 1927. (11) Gaster's estate sold the franchise for \$3000 to W.N. Gregory of Augusta who had collected money from local, private citizens interested in seeing Highway 64 completed. (12) The franchise was turned over to the Arkansas State Highway Department the following month. (13)

While the state highway department had the additional leverage of the Gaster franchise, they were still immobilized by the Bell suit. In March 1928 the suit made it all the way to the state's Supreme Court only to have the high court dismiss the case because the suit should have been filed "in the Chancery Court instead of the Circuit court." (14) The Arkansas State Highway Department took over from the local citizens and, on April 25, filed another suit against Bell, this time in Chancery Court. (15) The highway department did not want to start construction before the suit was settled, but they hired the consulting engineering firm of Harrington, Howard and Ash of Kansas City to draw up plans. (16)

In addition to the legal problems specific to the Augusta bridge, there had been a lawsuit filed contesting the State Highway Commission's authority to construct toll bridges at all. This suit had some fairly large stakes involved. In early 1927, Arkansas Governor Martineau had sponsored and obtained legislative approval for a road improvement bill. This \$52 million bill to be spread over four years contained more than one toll bridge.(17) The matter was cleared up by the Arkansas Supreme Court on January 31, 1928. The court decided in favor of the Highway Commission and stated that it was legal to collect tolls "until the cost of construction is met; then the bridges will be free ones."(18)

In April, 1928, Donald H. Connally, of the War Department's Corps of Engineers office in Memphis, learned through the newspapers of the Harrington, Howard and Ash drawings and informed the State Highway Commission that it was illegal to change the plans without approval from his office. Gaster's original authorization had called for a swing bridge, but Harrington, Howard and Ash and the State Highway Commission had abandoned those plans, though the site remained the same. In addition, the one-year time limit to begin construction, imposed on Gaster's authorization, had expired June 14, 1927. Connally even suggested that a new act of Congress might be required.(19) Thus the legal battles had gradually been pared down to just one, and, at the suggestion of Alvin Bell, this final suit was settled out of court in June 1928.(20) More than three years after the original Gaster franchise was authorized, the legal part of the process was over.

PRELIMINARY PLANNING

Construction had still not begun, but the plans had been drawn up and now outside consultants were hired to determine the feasibility of a toll bridge at Augusta. On February 1, 1929, the "Report: Estimated Traffic and Revenue, Proposed Toll Bridge across the White River at Augusta, Arkansas" by the Ford, Bacon & Davis, Inc. consulting firm of New York was complete. The report, in reaching its estimates on profitability, considered factors such as population and population growth, current (and potentially competing) methods for crossing the river, the economic basis of surrounding communities, and the number of local vehicles. The fact that the bridge would be a link in the new paved highway U.S. 64 figured very positively in the predicted success of the bridge. The report suggested a net income of \$18,500 the first year, increasing to \$24,500 by the fifth year.(21)

In March 1929 the highway department sent engineers out to Augusta to check the site. The engineers drilled down into the river bed to check rock samples and found bedrock at 52 feet.(22) Notices were put out informing the public and bridge companies that bids for the bridge would be opened May 15, 1929. With the Augusta bridge, and the almost identical Newport bridge, there were to be two separate bids - one for the bridge proper, and one for the approaches, as the highway department hoped to save money by breaking up the contract.(23) When the bids were opened, the low bid for the bridge's main span went to the Missouri Valley Bridge and Iron Company of Leavenworth, Kansas. The Parham Construction Company of East St. Louis had the low bid on the approaches.(24)

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CONSTRUCTION

Despite the fact there still was no "final" War Department approval, construction work began June 15, 1929, after years of legal difficulties and a few weeks of high water.(25) The town celebrated the start of construction with that year's Fourth of July; expectations were high for an economic boom resulting from the construction process and the eventual flow of traffic.(26)

War Department approval was granted July 23, 1929, and construction went ahead at full speed. On August 1 the local newspaper reported:

The Parham Construction Co. of St. Louis is building the long and high concrete approaches. The Raymond Pile and Concrete Co. is engaged in driving concrete piles for foundations. The Missouri Valley Bridge and Iron Co. is towing its barges up White River preparatory to commencing operations. The Calhoun and Walker Co. having the contract for the earth fill are on the ground and working. Horton, Price and Co. who have the contract for the fill west of the river are at work.(27)

Much of the preliminary approach work progressed quickly during the fall of 1929. The Missouri Valley Bridge and Iron Company, which was constructing the Newport bridge simultaneously, began with the Newport's pneumatic pier building and then planned to have the Augusta's piers in by the end of the year.(28) The State Highway Department's hired consulting engineer had told the local newspaper that the Augusta had perhaps the best foundation of the White River bridges.(29)

This Highway Department consulting engineer was Ira G. Hedrick, who was also involved in the building of several other Arkansas bridges. Despite the fact the highway department had employed the firm of Harrington, Howard, and Ash to draw plans, apparently those plans were not used, for it is Hedrick's name that appears on the full set of existing drawings. Hedrick had an

impressive credential list by the time he was hired by the Arkansas Highway Department. He had studied in Arkansas for a short time around the turn of the century and his first wife was from Fayetteville, Arkansas. As a professional engineer, Hedrick was first an assistant and then a junior partner to the great bridge engineer, J.A.L Waddell. Over the course of his life, he was a member of several engineering firms and also of the American Society of Civil Engineers.(30)

The superstructure was nearing completion in mid-June 1930 with the paint due to be finished shortly.(31) July saw the completion of all but the west approach.(32) In September the finishing touches were added. Since the Augusta bridge was to be a toll bridge, a one-story house was built at the east end of the bridge for the tollkeeper. This "neat, attractive structure" had an island between the two lanes from which to take the tolls. Lights were to be added at a later date.(33)

COMPLETION CELEBRATION

Thanksgiving Day was the day Augusta and several other communities celebrated the opening of the bridge and interstate Highway 64. There was a parade, a coronation, speeches, the bridge's christening, a "musical program," a football game, a street dance, and a queen's ball. There was a feeling expressed that the new route would add to Augusta's economy. In addition to the through traffic, the town hoped to attract more tourists to its own recreational opportunities of fishing, hunting and boating.(34)

TOLLS

John James Ferguson was appointed as tollkeeper and his original assistants were W.R. Cain and C.R. Ramey. They would cover the day's twenty-four hours in three shifts.(35) The toll was 50 cents for an automobile, although coupon books could be purchased to reduce the fee to 25 cents, one and one-half ton trucks were 75 cents, buses were \$1.00, and it cost 25 cents for a wagon or buggy.(36) A newspaper article a week after its opening suggested business on the bridge was fine. There had been an average collection of \$97.63 in tolls per day, and this was expected to increase when more people knew of the new route. Local businesses, especially gas stations and restaurants, saw increased activity. The same article reported:

Several attempts have been made to run the bridge without paying toll, but none of them have been successful. It is not good judgment to even try it while Mr. Looney is on the job. One car sped past the gate and the driver looked back to laugh at the collector till he heard a pistol shot and a bullet ripping a tiny hole through the top. With shaking knees he returned to pay his fifty cents. Others have been stopped with a shot fired into the air.(37)

As it turned out, tolls remained a concern for eight years. In 1938 federal legislation made \$4.3 million in federal money available to the State of Arkansas, provided Arkansas took the toll off all of its bridges. On April 1, 1938, Augusta and the state's other toll bridges became free.(38) While the local paper mourned for the loss of three jobs, there were no complaints for the loss of tolls. The town of Augusta joined the Newport community, twenty miles upstream, for a celebration of the removal of tolls.(39)

ENGINEERING DESCRIPTION

The Augusta Bridge is a two-lane, double-cantilever truss, with 121-foot anchor-arms. Two cantilever-arms of 138 feet and a suspended span of 125 feet make the main opening 400 feet wide. The top chord of the anchor-arms and cantilever-arms are polygonal, with a slight concave upward curve to a peak at 60 feet above the road deck. The suspended span has a horizontal top chord at a constant height of 25 feet. Except where noted, all joints are riveted connections.

The truss design uses the philosophy of a Warren truss, where diagonal members carry compressive and tensile forces. The vertical members brace the triangular web system. All panels are twenty feet wide. Most web members and chord members are one of two basic sections: four angles with lacing or two channels with lacing. The top chord in the two panels to either side of the peak is the exception to this rule because it uses four eyebars. Eyebars are used here to support the tremendous tensile forces imposed by the cantilevered suspension span. Large pins connect the top chord to the anchor-arm and the cantilever-arm.

The suspension span is also hung by pins a U12 and L12 (see Highway Drawing No. 4973) from the cantilever-arms. Member U12-U13 is referred to as an idle member because it carries no force. The suspension span acts as a truss which is supported at L12 and L20. The compression forces in its top chord are transmitted through member L12-U13, which acts as an impost, to the bottom chord. The forces from the suspension span are then distributed to the cantilever-arm by the bottom chord and web members.

The bridge is supported by reinforced concrete piers at the ends and underneath the two peaks. The concrete approaches are on 14-inch-square concrete pilings, extending an average of 50

feet into the ground. The west approach from Bald Knob, Arkansas is 951 feet long, and the Augusta approach is 1,471 feet long. Electric lamps once lined the approaches.

The Augusta Bridge is identical to the bridge over the White River at Newport. It is also similar to the bridge over the White River at Clarendon, but that bridge has two more panels in the anchor arms.

ENDNOTES

1. "Celebrating the Completion of Highway 64 with Bridge Dedication at Augusta - Joining East and West," Augusta Advocate, Vol. VII, No. 27 (November 13, 1930), special pamphlet.
2. Virgil H. Holder, "Historical Geography of the Lower White River," The Arkansas Historical Quarterly, Vol. XXVII, No. 2 (Summer 1968), pp. 132,136.
3. "Celebrating the completion of Highway 64" pamphlet.
4. "Old Augusta Once Barred Railroads; Now Regretful," Arkansas Gazette, (April 5, 1925), p. 22.
5. Ford, Bacon & Davis, Inc., consultants, "Report: Estimated Traffic and Revenue, Proposed Toll Bridge across the White River at Augusta, Arkansas," February 1, 1929), pp. 8-9.
6. Sixty-ninth U.S. Congress, "An Act to Extend the Time for Commencing and Completing the Construction of a Bridge across the White River near Augusta, Arkansas," Report No. 397 (H.R. 10942).
7. "Sounding the River," Augusta Advocate, Vol. 3, No. 46 (March 17, 1927), p. 1.
8. "Augusta Bridge Bill Passes Both Houses of Legislature," Augusta Advocate, Vol. 3, No. 44 (March 3, 1927), p. 1.
9. "Augusta Bridge Bill is Signed By Governor," Augusta Advocate, Vol. 3, No. 45 (March 3, 1927), p. 1.
10. "Seek to Squash Bridge Franchise," Augusta Advocate, Vol. 3, No. 47 (March 24, 1927), p. 1.
11. "R.L. Gaster, Road Contractor, Is Dead in Minnesota," Arkansas Gazette, Vol. 108, No. 287 (September 6, 1927), p. 8.
12. "Buys Federal Bridge Permit," Augusta Advocate, Vol. IV, No. 23 (October 6, 1927), p. 1.
13. O.G. Baxter, letter to C.S. Christian, Arkansas State Highway Department engineer, October 15, 1927.

14. "Bridge Franchise Case Quashed," Augusta Advocate, Vol. IV, No. 45 (March 8, 1928), p. 1.
15. "Franchise Case in Court Again," Augusta Advocate, Vol. 4, No. 52 (April 26, 1928), p. 1.
16. "Are Ready to Build Bridges," Augusta Advocate, Vol. IV, No. 26 (October 27, 1927), p. 1.
17. "White River Bridge at Newport will be Major Highway Project in 1928," Newport Weekly Independents, Vol. XXVII, No. 38 (December 23, 1927), p. 1.
18. "Toll Bridge Act Declared Legal," Augusta Advocate, Vol. IV, No. 40 (February 2, 1928), p. 1.
19. Donald H. Connally, U.S. Corps of Engineers, letter to State Highway Commission Chairman, April 21, 1928.
20. "Bridge Franchise Case is Settled," Augusta Advocate, Vol. V, No. 8 (June 21, 1928), p. 1.
21. Ford, Bacon & Davis Report, p. 20.
22. "Highway Engineers Make Soundings on Bridge Site," Augusta Advocate, Vol. V, No. 45 (March 21, 1929), p. 1.
23. "To Save Money on Bridge Contracts," Arkansas Gazette, Vol. 110, No. 173 (May 12, 1929), p. 6.
24. "Bids Received on Highway Projects," Arkansas Gazette, Vol. 110, No. 177 (May 16, 1929), p. 12.
25. "Work Began Monday, June 15, On State River Bridge at Augusta," Augusta Advocate, Vol. VI, No. 7 (June 20, 1929), p. 1.
26. "Augusta Celebrates Beginning of Work on White River Bridge," Augusta Advocate, Vol. VI, No. 10 (July 11, 1929), p. 1.
27. "One Thousand Men Filling, Driving Piles, Etc. for Augusta Bridge," Augusta Advocate, Vol. VI, No. 13 (August 1, 1929), p. 1.

28. "Rushing Work on Augusta Bridge," Augusta Advocate, Vol. VI, No. 25 (October 24, 1929), p. 1.

29. "May Drive Across White River Bridge at Augusta in August," Augusta Advocate, Vol. XL, No. 45 (March 13, 1930), p. 1.

30. John William Leonard, Who's Who in Engineering, 1925, 2nd ed. (New York: Who's Who Publications, Inc., 1925), p. 937

31. "Drive Last Rivet in New White River Bridge," Augusta Advocate, Vol. VII, No. 6 (June 12, 1930), p. 1.

32. "Thanksgiving Day Set as Date for Dedication of New Bridge," Augusta Advocate, Vol. VII, No. 12 (July 31, 1930), p. 1.

33. "Flooring Completed on All New Bridges," Augusta Advocate, Vol. VII, No. 29 (September 25, 1930), p. 1.

34. "Celebrating the completion of Highway 64" pamphlet.

35. "Celebrating the completion of Highway 64" pamphlet.

36. "Thousands Acclaim Bridge Celebration Great Success," Augusta Advocate, Vol. VII, No. 28 (November 20, 1930), p. 1.

37. "Bridge Tolls Bring \$684 in First Week," Augusta Advocate, Vol. VII, No. 29 (November 27, 1930), p. 1.

38. "What the Special Session Did and Didn't," Brinkley Argus, Vol. 61, No. 2 (March 31, 1938), p. 1.

39. "Augusta Pleased As Tolls Are Dropped," Augusta Advocate, Vol. LXXIX, No. 46 (April 7, 1938), p. 1.

BIBLIOGRAPHY

- "Are Ready to Build Bridges." Augusta Advocate. Vol. IV, No.26 (October 27, 1927), p. 1.
- "Augusta Bridge Bill is Signed by Governor." Augusta Advocate. Vol. 3, No.45 (March 10, 1927), p. 1.
- "Augusta Bridge Bill Passes Both Houses of Legislature." Augusta Advocate. Vol. 3, No. 44 (March 3, 1927), p. 1
- "Augusta Celebrates Beginning of Work on White River Bridge," Augusta Advocate, Vol. VI, No. 10 (July 11, 1929), p. 1.
- Baxter, O.G. Letter to C.S. Christian, Arkansas State Highway Department engineer, October 15, 1927.
- "Bids Received on Highway Projects." Arkansas Gazette. Vol. 110, No. 177 (May 16, 1929), p. 12.
- "Bridge Franchise Case is Settled." Augusta Advocate. Vol. V, No. 8 (June 21, 1928), p. 1.
- "Bridge Franchise Case Quashed," Augusta Advocate Vol. IV, No. 45 (March 8, 1928), p. 1.
- "Bridge Tolls Bring \$684 in First Week." Augusta Advocate. Vol. VII, No. 29 (November 27, 1930), p. 1.
- "Buys Federal Bridge Permit." Augusta Advocate. Vol. IV, No. 23 (October 6, 1927), p. 1.
- "Celebrating the Completion of Highway 64 with Bridge Dedication at Augusta - Joining East and West." Augusta Advocate. Vol. VII, No. 27 (November 13, 1930), special pamphlet.
- Connally, Donald H., U.S. Corps of Engineers. Letter to State Highway Commission Chairman, April 21, 1928.
- "Drive Last Rivet in New White River Bridge." Augusta Advocate. Vol. VII, No. 12 (July 31, 1930), p. 1.
- "Flooring Completed on All New Bridges." Augusta Advocate. Vol. VII, No. 29 (September 25, 1930), p. 1.

Ford, Bacon & Davis, Inc., consultants. "Report: Estimated Traffic and Revenue, Proposed Toll Bridge across the White River at Augusta, Arkansas." February 1, 1929, pp. 8-9.

"Franchise Case in Court Again." Augusta Advocate. Vol. 4, No. 52 (April 26, 1928), p. 1.

"Highway Engineers Make Soundings on Bridge Site." Augusta Advocate Vol. V, No. 45 (March 21, 1929), p. 1.

Holder, Virgil H. "Historical Geography of the Lower White River," The Arkansas Historical Quarterly. Vol. XXVII, No. 2 (Summer 1968), pp. 132,136.

Leonard, John William. Who's Who in Engineering, 1925. 2nd ed. New York: Who's Who Publications, Inc., 1925), p. 937.

"May Drive Across White River Bridge at Augusta in August." Augusta Advocate. Vol. XL, No. 45 (March 13, 1930), p. 1.

"Old Augusta Once Barred Railroads; Now Regretful." Arkansas Gazette. (April 5, 1925), p. 22.

"One Thousand Men Filling, Driving Piles, Etc. for Augusta Bridge." Augusta Advocate. Vol. VI, No. 13 (August 1, 1929),p. 1.

"R.L. Gaster, Road Contractor, Is Dead in Minnesota." Arkansas Gazette. Vol. 108, No. 287 (September 6, 1927), p. 8.

"Rushing Work on Augusta Bridge." Augusta Advocate. Vol. VI, No. 25 (October 24, 1929), p. 1.

"Seek to Squash Bridge Franchise." Augusta Advocate. Vol. 3, No. 47 (March 24, 1927), p. 1.

Sixty-ninth U.S. Congress. "An Act to Extend the Time for Commencing and Completing the Construction of a Bridge across the White River near Augusta, Arkansas." Report No. 397 (H.R. 10942).

"Sounding the River." Augusta Advocate. Vol. 3, No. 46 (March 17, 1927), p.1.

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