TULL BRIDGE
(Brown's Ferry Bridge)
(Pryor's Ford Bridge)

HAER No. AR-77

Location: Spanning Saline River at CR 5 (Old AR 291), Tull, Grant County, Arkansas

UTM: 15.536749,3811178, Tull, Arkansas Quad.

AHTD #: M2747

Structural Type: Pratt through truss

Construction Date: 1916

Builder: Boardman Company, Oklahoma City, Oklahoma

Original Owner: Grant County and Saline County, Arkansas

Present Owner: City of Tull, Arkansas

Original Use: Vehicular bridge

Present Use: Pedestrian bridge and historic landmark

Significance: Tull Bridge is representative of early twentieth century metal truss bridge-building technology. The bridge was bypassed in 2005 but has been preserved in place as a pedestrian bridge and historic landmark.

Project Information: The Arkansas Historic Bridges Recording Project is part of the Historic American Engineering Record (HAER), a long-range program that documents historically significant engineering sites and structures in the United States. HAER is administered by the Heritage Documentation Programs Division of the National Park Service, United States Department of the Interior, Richard O'Connor, Manager. The Arkansas State Highway and Transportation Department sponsored this project.

Lola Bennett, HAER Historian, 2007
Chronology
1803 Louisiana Purchase doubles size of the United States
1819 Arkansas Territory created from part of Louisiana Purchase
1819 Saline River delineated on S.H. Long’s "Map of Arkansa [sic] and other Territories"
1835 Saline County formed
1836 Arkansas becomes 25th state to join the Union
1840 America's first all-iron bridge built on the Erie Canal at Frankfurt, New York
1840s Abraham and Archibald Tull settle near this site on Saline River
1844 Pratt truss patented
1850 First all-metal Pratt truss built for the Pennsylvania Railroad
1869 Grant County formed
1870 Road and crossing appear on Taintor & Merrill's map of Arkansas
1873 Arkansas Legislature authorizes counties to build and maintain bridges
1887 Tull population 200
1890 Saline County begins erecting iron bridges
   Tull appears on Rand McNally & Co.'s map of Arkansas in Indexed Atlas of the World
1910 John R. Boardman establishes the Boardman Company at Oklahoma City, Oklahoma
1916 Boardman Company erects Tull Bridge
1981 61 percent of Arkansas' bridges deemed inadequate for modern traffic
1995 Tull Bridge closed for repairs
2005 Tull Bridge bypassed and preserved in place

1 "61% of State Bridges are Deficient," Arkansas Highways, Spring 1981.
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Description
Tull Bridge is a 130' long, single-span, pin-connected steel Pratt through truss on concrete-filled steel cylinder piers. The trusses are 22' high and spaced 15' apart. The roadway is 14' wide. There is a stringer approach span at each end.

The upper chords and inclined endposts are riveted, built-up 7-1/2" x 12" members, comprised of back-to-back channels connected by a solid plate on top and lacing bars underneath. The lower chords are paired forged eyebars, which vary in size from 3/4" x 2" in panels 1, 2, 6 and 7, to 7/8" x 3" in panels 3 and 5, to 1" x 3" in panel 4. The upper and lower chords are parallel and are connected by 5" x 10-1/2" built-up posts and paired loop-ended 3/4" x 2" tension bars angling up towards the ends. The center panel has paired adjustable 1"-diameter tension rods with turnbuckles angling in both directions. The trusses are braced overhead with transverse struts, comprised of angles and lacing, at each panel point. The truss members are connected with 2-1/2"-diameter pins secured with a hex nut at each end. Upper and lower lateral sway bracing consists of rods with threaded ends that cross between panel points.

The floor system consists of transverse steel floor beams, longitudinal steel stringers and a transverse wood deck. The floor beams are comprised of plates and angles riveted together and suspended below the lower chord by U-bolt hangers that loop over the pins at each lower chord panel point. There are five lines of steel stringers on top of the floor beams. The deck consists of wooden planks laid transversely on the stringers.

History
In 1912, Grant County, Arkansas, embarked on an aggressive program of steel truss bridge building. The county subsequently contracted with Hope Bridge Company of Hope, Arkansas, and Vincennes Bridge Company of Vincennes, Indiana, for the erection of steel truss bridges across the Saline River at Pratt's Ferry, Jenkin's Ferry and Lee's Ferry. In early 1916, Grant County Judge Isaac McClellan advocated erecting another bridge across the Saline near the community of Tull, whose residents needed access to the railroad at neighboring Traskwood:

_This closes my second year as county judge, and during the two years there has been much improvement done on bridges, and much interest in the betterment of out public highways. Nearly all the bridges have been built anew and there will be very few bridges to build for several years. The court should take steps towards cooperating with Saline County for the building of a bridge at Tull across Saline River._

Accordingly, the Grant County Court appropriated $1,000 for "the building of a steel bridge across Saline river in the Tull neighborhood." An agreement was reached with Saline County

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2 Grant County Court Records, Book F, 289.
3 Grant County Court Records, Book F, 290.
and a contract arranged with R.M. Tate, agent for the Boardman Company of Oklahoma City, Oklahoma.

In June, the *Benton Courier* reported that work had begun on the bridge at Tull, stating, "A bridge across the Saline near this point is a long felt need in both Tull and Traskwood communities." The cost of the new bridge was split by Grant and Saline counties, with Grant County paying $2,433 and Saline County paying $6,200.5

**Design**

Civil engineer Thomas Willis Pratt (1812-1875) was born in Boston, where his father, Caleb Pratt, was a noted architect. After obtaining his secondary education in the public schools of Boston, he enrolled at the Rensselaer Academy (now Rensselaer Polytechnic Institute) in Troy, New York, where he studied architecture. After graduation, Pratt worked for the Army Corps of Engineers, building dry docks for the Navy Yards at Charleston, South Carolina, and Norfolk, Virginia. In 1833, Pratt was employed by the Boston & Maine Railroad, where he began designing bridges. The remainder of his career was devoted to engineering and supervising work for railroad lines in the Eastern Unites States.

During his career, Thomas Pratt patented several inventions, including a steam boiler and a method of ship hull construction. The patent he achieved notoriety for is a roof and bridge truss, patented in 1844. The Pratt truss reversed the configuration of the 1840 Howe truss, putting the shorter web members in compression and the longer web members in tension, which greatly reduced the chances of structural failure through buckling. Developed at a time when the structural action of trusses was just beginning to be understood, the Pratt truss was one of several truss types that heralded the transformation from empirical to scientific bridge design. Over time, the Pratt truss came to be favored for its strength and straightforward design; by the 1870s it was the standard American truss type for moderate railroad and highway spans and continued to be so well into the twentieth century.

**Builder**

In 1910, Illinois native John R. Boardman founded the Boardman Company at Oklahoma City, Oklahoma. Four years later, he purchased the Imperial Iron & Steel Company plant and began fabricating structural steel for buildings and bridges. The company was one of two bridge manufacturers that received many contracts from the Oklahoma State Highway Department.6 The Boardman Company continues heavy industrial steel fabrication today.7

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5 *Benton Courier*, 18 June 1916.  
6 *Saline County Court Records*, Book F, 434 and Book H, 537-39.  
7 The Oklahoma Department of Transportation website lists five extant Boardman Company bridges with dates ranging from 1914 to 1926. See <www.okladot.state.ok.us>.  
Sources


Benton Courier, 18 June 1916.


Grant County Court Records, Books F and G (1912-17), Office of the County Clerk, Grant County Courthouse, Sheridan, Arkansas.


Saline County Court Records, Books H and I (1911-1922), Office of the County Clerk, Benton County Courthouse, Benton, Arkansas.
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Jet Lowe, photographer, April 2008

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