

FRYER'S FORD BRIDGE

(Fryer Bridge)

(Solgohachia Bridge)

Arkansas Bridges 2005

Spanning East Fork of Point Remove Creek at Fryer Bridge Road

(CR 67)

Solgohachia vicinity

Conway County

Arkansas

HAER AR-64

AR-64

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWINGS

FIELD RECORDS

HISTORIC AMERICAN ENGINEERING RECORD

National Park Service

U.S. Department of the Interior

1849 C Street NW

Washington, DC 20240-0001

HISTORIC AMERICAN ENGINEERING RECORD

FRYER'S FORD BRIDGE

(Fryer Bridge)

(Solgohachia Bridge)

HAER No. AR-64

LOCATION: Spanning East Fork of Point Remove Creek at Fryer Bridge Road (County Road 67), Solgohachia vicinity, Conway County, Arkansas
UTM: 15.526052.3902977, Solgohachia, Arkansas Quad.

AHTD #: 17862

STRUCTURAL TYPE: Pratt through truss

DATES OF CONSTRUCTION: 1890-91

FABRICATOR: Wrought Iron Bridge Company, Canton, Ohio

OWNER: Conway County, Arkansas

USE: Vehicular bridge

SIGNIFICANCE: Fryer's Ford Bridge is the oldest in-service bridge—and the second-oldest bridge of any type—in the State of Arkansas. It is an intact example of a pin-connected Pratt through truss, a type that is growing increasingly rare. The Wrought Iron Bridge Company, a nationally significant nineteenth-century bridge firm, fabricated the bridge in 1890, and it was erected in 1891.

HISTORIAN: Researched and written by Lola Bennett, Summer 2005

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 National Park Service, United States Department of the Interior. The Arkansas State Highway and Transportation Department cosponsored and funded this project.

Chronology

- 1570 Andrea Palladio introduces truss bridges in *The Four Books of Architecture*
- 1764 John Bliss erects a 124' "geometry work" bridge at Norwich, Connecticut
- 1803 Louisiana Purchase
- 1819 Arkansas Territory created
- 1825 Conway County created
- 1836 Arkansas admitted to the Union
- 1840 First all iron bridge in America built on Erie Canal at Frankfurt, New York
- Howe truss begins the transition to prefabricated truss bridges
- 1844 Thomas and Caleb Pratt patent the Pratt truss
- 1852 First all-iron Pratt truss built
- 1855 Henry Bessemer invents process for the mass production of steel
- 1865 David Hammond establishes Wrought Iron Bridge Company at Canton, Ohio
- 1871 First iron bridge in Conway County erected at Springfield
- 1874 Structural steel first used in bridge construction in the Eads Bridge, St. Louis, Missouri
- 1875 Arkansas State Legislature authorizes counties to construct and maintain bridges
- 1876 Solgohachia appears on Frank A. Gray's map of Arkansas
- 1878 Solgohachia postmaster notes Point Remove Creek is "bad to cross"
- 1889 Conway County appoints committee to examine potential bridge sites near Fryer's Ford
- 1890 Wrought Iron Bridge Company awarded Fryer's Ford Bridge contract
- 1891 Fryer's Ford Bridge completed
- 1978 Sologohachia Bridge listed on the National Register of Historic Places
- 2005 Fryer's Ford Bridge recorded by the Historic American Engineering Record

Introduction

Bridges were rare in Arkansas until the late nineteenth century. Crossings over most rivers were by ford or ferry, both often unreliable and dangerous. Although wood and stone spans were built in some instances, there were few bridges in Arkansas until after the Civil War, by which time iron and steel truss bridges dominated American bridge building.

The rise of specialized bridge building firms in the 1860s and 1870s occurred in response to the rapid growth of American railroads and the concomitant demand for strong, economical, efficient railroad bridges. Iron manufactories specialized in the fabrication of standard truss bridge designs that could be shipped to the site by rail and erected quickly by local workmen. These companies found an eager market in town and county governments seeking strong and affordable prefabricated iron bridges.

In 1871, the Conway County Court awarded a contract for the county's first iron bridge—and presumably, one of the first prefabricated roadway bridges in Arkansas—at Springfield.¹ The successful completion of this bridge in 1874 led to the erection of other iron bridges in the 1880s and 1890s, including Fryer's Ford Bridge.

Financed by county taxes, manufactured by a bridge fabricating firm in another state, shipped to the site by rail, and erected by local workmen, Fryer's Ford Bridge is highly representative of both the era of metal truss bridge technology and the period of Arkansas history that saw the development of county road systems, prior to the establishment of the Arkansas State Highway Department in 1913.

Description

Fryer's Ford Bridge is a single-span, pin-connected Pratt through truss bridge on stone masonry abutments. The bridge has a 126' span and is 131' long overall. The trusses are 22' high and spaced 15' apart. The roadway is 14' wide. Clearance is 12'-10".

The seven-panel trusses are framed in a manner patented by Thomas and Caleb Pratt in 1844. The upper chords and inclined endposts are riveted, built-up 7¾"x12" 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 1¾"x3/4" in the first and second panels, to 7/8"x2½" in the third panels, to 7/8"x3" in the center panel. The upper and lower chords are parallel and are connected by built-up 5½"x8" posts and paired 2½" loop-ended tension bars angling up towards the ends. The center panel has paired adjustable 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 trusses are connected at both the top and bottom chord with 2" diameter pins that pass through (from the outside): the lower

¹ See HAER No. AR-32, Springfield-Des Arc Bridge.

lateral bracing, the eyes of the lower chord, the eyes of the diagonal rods, and the deck beam hangers. The pins are secured with a 3-5/8" hex nut at each end.

The deck system consists of transverse steel deck beams, longitudinal steel stringers and a transverse wood deck. The steel deck beams are comprised of plates and angles riveted together and suspended below the lower chord by 1" square U-bolt hangers that loop over the pins at each lower chord panel point. The beams are 15'-8" long and tapered from 2' at the center to 1' at the ends. There are six lines of 3¾"x7" steel stringers on top of the deck beams. The wearing surface of the deck consists of 3½"x8" wood planks laid transversely on the stringers, with longitudinal 3' wide running boards along the length of the deck.

Upper and lower lateral sway bracing consists of 1"-diameter rods with threaded ends, which cross between panel points and are held secure with brackets and nuts on the transverse struts (upper) and the deck beams (lower). There is additional sway bracing over the portals. Both ends of the bridge have builder's plates.

History

An 1825 act of the Arkansas Territorial Legislature established Conway County. This section of the county was settled prior to 1864, when the village of Centerville, near present-day Solgohachia, appears on William Hoelcke's map of Arkansas.² Solgohachia established its own post office in 1878, and by 1890, was "*a thrifty and growing village.*"³

When the Solgohachia post office was established east of Point Remove Creek in 1878, the postmaster noted on his official report: "*This creek is bad to cross.*" While no written documentation has been found concerning Fryer's Ford, census records show that a number of families by the name of Fryer lived in Washington Township in the mid-nineteenth century and Conway County Court records state that this bridge was located a short distance downstream from the site known as Fryer's Ford.⁴

The Conway County Court authorized construction of bridges at other locations along Point Remove Creek in the 1870s and 80s, but it was not until 1889 that they appointed a committee to examine sites "*at or near Fryer's Ford for the purpose of building a new bridge.*"⁵ The court originally agreed to build a wooden bridge, but after investigating the site, the bridge commissioners advocated construction of an iron bridge. County records suggest that a section of present-day Fryer Bridge Road was laid out prior to construction of the bridge.

² Lt. William Hoelcke, *Map of Louisiana and Arkansas*, 1864.

³ *Historical Reminiscences and Biographical Memoirs of Conway County, Arkansas* (Chicago: Goodspeed Publishing, 1890).

⁴ The 1850 and 1860 Federal census index for Conway County, Arkansas, also lists Frier, Friar and Fryar as surnames. According to local legend, Fryer's Ford Bridge is haunted by the ghost of an outlaw's horse that was tethered there during the murders of the Richard Fryer family in April 1915 or 1916. [Don Fryer (Conway, Arkansas), email correspondence, 6 September 2005.]

⁵ *Conway County Court Records*, 13 April 1889, Book L, 335.

In January 1890, the Conway County Court awarded a contract for the iron superstructure to the Wrought Iron Bridge Company of Canton, Ohio, for \$3,898. They awarded a separate contract to local stone mason Alfred Cook for building stone abutments. The trusses arrived at the site in January 1891, and the bridge was erected in the spring of 1891. Upon the span's completion, *The Morrilton Pilot* observed, "*the iron bridge at Friar's Ford is a beautiful structure.*"⁶

Fryer's Ford Bridge has served as part of Arkansas' secondary road system for well over a century and continues to carry a steady volume of rural traffic.⁷ Despite showing evidence of minor vehicular damage and repairs, the bridge is in remarkably intact condition, including retaining its original builder plates.

Builder

In 1871, David Hammond, W.R. Reeves and Jon Abbott incorporated the Wrought Iron Bridge Company to manufacture and market their patented iron truss bridges, taking over a foundry that had operated at Canton, Ohio, since 1840. By 1881, the 270-employee firm had built bridges in twenty-five states and was advertising the single-intersection Pratt through truss as "*almost universally adopted for both railway and highway bridges of moderate span.*"⁸ In 1901, the Wrought Iron Bridge Company merged with twenty-four other bridge fabricating firms to form the American Bridge Company, a subsidiary of United States Steel.⁹

Design

In 1844, railroad engineer Thomas Pratt and his father, Boston architect Caleb Pratt, received a patent for a wood and iron truss with vertical members in compression and diagonal members in tension. A reversal of the 1840 Howe truss, the Pratt truss shortened the compression members and reduced the danger of buckling. Developed at a time when railroads were placing new demands on bridges and 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. While the type was not immediately popular for wood spans, the Pratt truss came to be favored for its straightforward design, strength and adaptability, and by 1870, in a simplified all-metal version, it had become the standard American truss for moderate road and railroad spans, and remained so well into the twentieth century.

⁶ *The Morrilton Pilot*, 3 April 1891.

⁷ Average traffic volume estimated at one to two vehicles per hour, with heavier volumes in early morning and late afternoon.

⁸ *Illustrated Pamphlet of Wrought Iron Bridges Built by Wrought Iron Bridge Company* (Canton, Ohio: Wrought Iron Bridge Company, 1884), 6.

⁹ United States Steel Corporation, *American Bridge Division: History and Organization* (New York: United States Steel Corp. 1975), 7, 15.

Fryer's Ford Bridge is the oldest of twelve Pratt through truss bridges listed in the Arkansas State Highway and Transportation Department (AHTD) Historic Bridges Database. It is the oldest in-service bridge and the second oldest bridge of any type in Arkansas.¹⁰

Pratt Through Truss Bridges in the AHTD Historic Bridge Database

HAER AR-64	17862	Fryer's Ford Bridge	Conway County	1891	pinned	Wrought Iron Bridge Co.
HAER AR-46	SA0019	Old River Bridge	Saline County	1891	pinned	Youngstown Bridge Co.
	14014	Island Slough Bridge	Independence County	1909	pinned	Joliet Bridge Co.
HAER AR-30	10622	Osage Creek Bridge	Benton County	1911	pinned	Youngstown Bridge Co.
HAER AR-77	M2747	Pryor's Ford Bridge	Grant County	1916	pinned	Boardman Co.
	11047	Terre Noir Creek Bridge	Clark County	c1916	pinned	
	10631	Pedro Bridge	Benton County	1922	pinned	
	M1791	Point Remove Creek Bridge	Conway County	1926	riveted	Virginia Bridge & Iron Co.
HAER AR-71	18091	Mulberry River Bridge	Crawford County	1929	pinned	Lakeside Bridge & Steel Co.
	17726	Petit Jean River Bridge	Yell County	1930	riveted	Vincennes Bridge Co.
HAER AR-73	M3349	Petit Jean River Bridge	Logan County	1938	riveted	WPA
	03140	Cove Creek Bridge	Logan County	1958	riveted	Forsgren Brothers

¹⁰ See HAER No. AR-32, Springfield-Des Arc Bridge (1874) and HAER No. AR-46, Old River Bridge (1891). Note correction to HAER No. AR-46, Old River Bridge was completed in July 1891, making Fryer's Ford Bridge the second oldest bridge in Arkansas.

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