

WIRE FORD BRIDGE

(Silver Bridge)

(Mulberry River Bridge)

Arkansas Bridges 2005

Spanning Big Mulberry Creek at Wire Road (CR 67)

Pleasant Hill vicinity

Crawford County

Arkansas

HAER AR-71

AR-71

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

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

### WIRE FORD BRIDGE (Silver Bridge<sup>1</sup>) (Mulberry River Bridge<sup>2</sup>) HAER No. AR-71

Location: Spanning Big Mulberry Creek at Wire Road (CR 67), Pleasant Hill vicinity, between Crawford County and Franklin County, Arkansas

UTM: 15.405630.3932405, Mountainburg SE, Arkansas, Quad.

AHTD #: 13091

Structural Type: Pratt through truss

Construction Date: Westerly span—probably early 1900s  
Center and easterly spans—1929

Builder: (1929)—Lakeside Bridge & Steel Co., Milwaukee, Wisconsin

Owner: Crawford County, Arkansas

Original Use: Vehicular bridge

Present Use: Undergoing rehabilitation

Significance: Wire Ford Bridge is a good example of early twentieth century metal truss bridge technology. It is the only surviving multiple-span Pratt truss bridge in the Arkansas State Highway and Transportation Department historic bridges database.

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

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<sup>1</sup> The 1929 construction contract specified that the bridge was to be painted black, so presumably "Silver Bridge" is a contemporary name.

<sup>2</sup> This name is sometimes associated with other bridges on the river, particularly the 1896 roadway bridge at Mulberry, a few miles south of this location.

## Chronology

- 1803 Louisiana Purchase doubles size of the United States
- c1818 "Pleasant Hill" settlement established at the confluence of Arkansas and Mulberry rivers
- 1819 Arkansas Territory created from part of Louisiana Purchase  
Botanist Thomas Nuttall visits Mulberry settlement on his journey through Arkansas
- 1820s Construction of military roads stimulates white settlement west of the Mississippi River
- 1823 Military road from Little Rock to Fort Smith crosses Mulberry River near this site
- 1836 Arkansas becomes 25th state to join the Union
- 1837 Franklin County formed from a part of Crawford County
- 1844 Pratt truss patented
- 1871 Pleasant Hill Post Office established
- 1873 Arkansas Legislature authorizes counties to build and maintain bridges
- 1876 Town of Mulberry platted
- 1888 Mulberry population 525
- 1895 Maxey Township annexed to Crawford County
- 1896 Bridge erected across Big Mulberry Creek at Mulberry
- 1900 Mulberry population 800<sup>3</sup>
- 1913 Samuel Coddington forms Lakeside Bridge & Steel Company at Waukesha, Wisconsin
- 1927 Floods destroy more than 500 bridges in Arkansas
- 1929 Wire Ford Bridge rebuilt
- 1976 Wire Ford Bridge rehabilitated
- 1981 61 percent of Arkansas bridges deemed inadequate for modern traffic<sup>4</sup>
- 1990 Mulberry population 1,448
- 2006 Wire Ford Bridge closed to traffic
- 2007 Wire Ford Bridge listed in the National Register of Historic Places  
Wire Ford Bridge rehabilitated

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<sup>3</sup> "Substantial Town" *Arkansas Gazette*, 2 March 1902, 8.

<sup>4</sup> "61% of State Bridges are Deficient," *Arkansas Highways*, Spring 1981.

## Description

Wire Ford Bridge is a three-span, pin-connected, steel Pratt through truss bridge on concrete-filled steel cylinder piers. The main portion of the bridge, measuring 305' long and 12' wide, is comprised of two 100' through truss spans and one a 105' through truss span.<sup>5</sup> There is a short steel stringer approach at the westerly end and four steel stringer approaches on concrete piers at the easterly end.<sup>6</sup>

The upper chords are built-up members, comprised of back- to-back channels with a plate on top and lacing underneath. The lower chords are paired forged eyebars. The upper and lower chords are connected by built-up vertical posts and paired diagonal braces. At each panel point, the members are connected with a metal pin. The bridge is laterally braced overhead with threaded rods crossing between panel points.

Built-up floor beams are suspended from the lower chord with U-bolt hangers that loop over the pins at each panel point. Seven lines of I-beam stringers are laid longitudinally on top of the floor beams. Corrugated metal decking is laid on top of the stringers and paved with asphalt.

## History

Before Arkansas was settled, Native Americans crossed the river at a ford near this site. In 1826, the crossing became part of the military road from Little Rock to Fort Smith.<sup>7</sup> When a telegraph line was established from St. Louis to Van Buren in the mid-nineteenth century, the road came to be known as "Wire Road".

Sometime between 1810 and 1820, a settlement named "Mulberry" (later, "Pleasant Hill") was established near the confluence of Arkansas and Mulberry Rivers in Crawford County, Arkansas. As one of the earliest white settlements west of the Mississippi River, Mulberry possessed a blockhouse, and thus survived the Cherokee occupation of the 1820s.<sup>8</sup> Pleasant Hill became part of Franklin County. When the St. Louis & Iron Mountain Railroad established a line through the Mulberry Valley in 1876, residents of Pleasant Hill platted the Town of Mulberry for improved railroad access.

Located on the west side of Mulberry River, residents of Mulberry (and Maxey Township) were often isolated from the rest of Franklin County, particularly during times of high water. In 1880, citizens of Maxey Township submitted a petition in Franklin County Court requesting a bridge across Big Mulberry Creek, but bridge-building remained a low priority until the early twentieth

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<sup>5</sup> The identical spans presumably date to 1929, while the westerly span is believed to survive from an earlier structure.

<sup>6</sup> Due to hazardous site conditions, the author did not examine the approaches.

<sup>7</sup> "Route from Little Rock to Fort Smith," c.1826 (Arkansas History Commission Map Collection).

<sup>8</sup> *History of Benton, Washington, Carroll, Madison, Crawford, Franklin, and Sebastian Counties, Arkansas* (Chicago: Goodspeed Publishing, 1889), 644.

century.<sup>9</sup> In March 1895, Maxey Township petitioned the Arkansas State Legislature for annexation to Crawford County.<sup>10</sup> Shortly after the boundary change occurred, the Crawford County Court appointed commissioners to locate a bridge site on Mulberry River in Maxey Township. In 1896, the Wrought Iron Bridge Company of Ohio erected the first roadway bridge across Big Mulberry River at a cost of \$8,870.<sup>11</sup> One span of that structure still survives.

The first bridge at *this* site was reportedly completed in September 1912.<sup>12</sup> Research in Crawford and Franklin County records failed to conclusively confirm that date, but physical evidence suggests that the westerly span of the present bridge *may* have been part of a previous structure.<sup>13</sup>

In April 1927, massive floods destroyed more than 500 bridges throughout the state. Wire Ford Bridge was among the damaged bridges.<sup>14</sup> In the fall of 1928, Crawford County Judge J.C. Smalley "*purchased and had delivered on the site...two steel bridge spans of approximately 100 feet each, together with the tubes upon which said bridges were to be erected.*" Shortly after a county work crew began work on the bridge, the project was halted when "*certain parts of said spans were lost in the creek.*"<sup>15</sup>

The following February, the Crawford County Court authorized Judge Smalley to advertise for bids for construction of a bridge "*across Big Mulberry Creek near Pleasant Hill.*"<sup>16</sup> On April 1, 1929, Judge Smalley awarded a construction contract to Lakeside Bridge & Steel Company of Milwaukee, Wisconsin.<sup>17</sup> The contractors immediately began work on Wire Ford Bridge and completed the structure in early May 1929.<sup>18</sup>

Wire Ford Bridge was rehabilitated in 1976 and continued to carry local traffic until 2006, when the aging structure was closed. The bridge is currently undergoing extensive repairs.

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<sup>9</sup> Goodspeed's 1889 history (p.622) states, "*The county owns no bridges at present.*" Franklin County erected its first bridge across Mulberry River at Turner's Crossing in 1900.

<sup>10</sup> *Franklin County Court Records*, Book M (1892-1896), inside front cover.

<sup>11</sup> *Van Buren Press*, 22 February 1896.

<sup>12</sup> J. Randall Houpp, "Silver Bridge", <<http://bridgehunter.com/ar/franklin/mulberry-67/>>, accessed 11 May 2007.

<sup>13</sup> According to Franklin County Court Records (Book R, 164) in October 1912, Franklin County paid \$200.00 for a "*wooden bridge at wire ford.*" This reference does not appear to correlate to the site now spanned by a 300' steel bridge. Due to time constraints, the author did not pursue this lead.

<sup>14</sup> Wire Ford Bridge suffered unspecified damage in that flood, but presumably one span survived, as records clearly state that two spans were erected here in 1929. In addition, the westerly span of the present bridge is different from the other two, both in dimensions and construction details. That span's distinctive portal appears in an early twentieth century image of the bridge (*The [Ozark] Spectator*, December 2006), which further suggests that one span of the former bridge survived the 1927 flood and was either standing, or rebuilt, in 1929.

<sup>15</sup> *Crawford County Court Records*, Book M (1 April 1929), 424.

<sup>16</sup> *Crawford County Court Records*, Book M (4 February 1929), 391.

<sup>17</sup> "Work to Start on Two Bridges," *Van Buren Press-Argus*, 1 March 1929. According to the newspaper article, the Lakeside Bridge & Steel Company was also awarded the contracted for a bridge at Rudy. The company had just completed the Arkansas River Bridge at Dardanelle

<sup>18</sup> "Work on Roads is Going Ahead," *Van Buren Press-Argus*, 26 April 1929; "Bridge at Rudy Opened Thursday," *Van Buren Press Argus*, 24 May 1929.

## 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 United 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 1913, Samuel Coddington established the Lakeside Bridge & Steel Company at Waukesha, Wisconsin. Originally, the company fabricated structural steel for buildings and bridges, but operations soon branched to other fields, including parts for ships, spillway gates and machinery for factories and mines. During World War II, the company pioneered developments in arc welding and was a major supplier of gun mounts for the United States Navy. After World War II, the company expanded into the fabrication of machinery, cranes and moveable bridges. Lakeside Bridge & Steel Company ceased operations in 1987.<sup>19</sup>

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<sup>19</sup> *Founding Industries of Wisconsin Survey Project. Records, 1880-1993.* University of Wisconsin—Milwaukee Manuscript Collection 41, Box 20, University Manuscript Collections, Golda Meir Library.

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ADDENDUM TO:  
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