

LITTLE MINERAL CREEK BRIDGE
(Pottsboro City Park Bridge)
Texas Historic Bridges Recording Project
Pottsboro City Park (moved from Little Mineral Creek
at County Route 456, Pottsboro Vicinity)
Pottsboro
Grayson County
Texas

HAER No. TX-39

HAER
TEX
91-POTT,
1-

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD

National Park Service
Department of the Interior
1849 C St., NW
Washington, DC 20240

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Location: Pottsboro City Park, Pottsboro, Grayson County, Texas.
(Moved from Little Mineral Creek at County Route 456,
Pottsboro vicinity, Grayson County, Texas.)
UTM: 14/715860/3740840
USGS: Pottsboro, Texas, quadrangle.

Date of Construction: 1913.

Designer: Unknown.

Builder: Unknown.

Present Owner: City of Pottsboro.

Present Use: Pedestrian bridge.

Significance: This bridge is one of three similar short-span Warren pony trusses in Grayson County apparently built by the same company in 1913. While this structure and one other display a combination of riveted and bolted connections, the third is riveted exclusively. As a representative of the trio, the Little Mineral Creek Bridge reflects transitions in early twentieth-century bridge engineering. In its original location, the structure served as an important local transportation link in the development of the county's agricultural economy.

Historian: Robert W. Jackson, August 1996.

Project Information: This document was prepared as part of the Texas Historic Bridges Recording Project performed during the summer of 1996 by the Historic American Engineering Record (HAER). The project was sponsored by the Texas Department of Transportation (TxDOT).

Introduction

The Little Mineral Creek Bridge is one of three identical short-span Warren pony trusses in Grayson County bearing plates with both a 1913 construction date and the names of county commissioners in office at that time, but no information concerning the builder. Because Grayson County commissioners' court records for this period were destroyed in a 1930 fire, it is difficult to ascertain what company erected these structures. However, it may be said that the Little Mineral Creek Bridge, originally spanning Reeves Road (County Route 456) just north of the City of Pottsboro, and since moved to City Park in Pottsboro, survives in its current location as a valuable example of early twentieth-century bridge technology. In its original location, the bridge served as an important local transportation link in the development of the county's agricultural economy.

Development of Grayson County

The economy of Grayson County has had a strong foundation in agriculture since it was created by the Texas legislature on March 17, 1846, shortly after Texas was annexed to the United States. Named for Texas attorney general Peter Grayson, the county is drained principally by Choctaw Creek and its two main tributaries, Post Oak Creek and Iron Ore Creek. The northern portion of the county drains into the Red River, while the southern portion drains into tributaries of the Trinity River.¹

Prior to the introduction of two railroad lines into the county in 1872, supplies from the east came into the area either by ox-pulled wagon trains from Jefferson, Texas, or by boats navigating the Red River, with landings at Shawneetown and at Preston.² Any products or goods received or shipped from these points had to be carried by wagon across the county's creeks at low-water crossings. The distances to be traveled and the number of creeks to be traversed were limiting factors in the expansion of the county's economy. These limitations were eased considerably with the introduction of the railroad in 1872.

On Christmas Eve of that year the first train of the Missouri, Kansas, and Texas Railroad reached the town of Denison. Denison was established by the railroad as a counter to the October 1872 introduction of the Houston and Texas Central railroad into the county seat at

¹ Donna J. Kumler, "Grayson County," *The New Handbook of Texas*, ed. Ron Tyler, vol. 3 (Austin: Texas State Historical Association, 1996), p. 298.

² Mattie Davis Lucas and Mita Holsapple Hall, *A History of Grayson County, Texas* (Sherman, Texas: Scruggs Printing Company, 1936), p. 90.

Sherman, located approximately eight miles to the southwest. The Texas and Pacific Railroad came to Sherman in April 1875, and the Cotton Belt Line arrived in 1888.³

These railroads facilitated the development of the regional economy because they made it easier for finished manufactured goods, including the metal truss bridges needed to span creeks, to be shipped into the area.⁴ They also created a number of points at which goods and produce could be shipped out of the county. Thus, area creeks became somewhat less of a barrier to commerce than they had been previously.

Following the introduction of the railroads, manufacturing and milling operations steadily expanded in the county, but the area economy remained predominately agricultural. The number of farms increased each year, reaching a high of 5,762 in 1900. The county recorded the highest production of corn in its history in 1900 with 3,681,640 bushels produced. High yields of wheat and cotton were also achieved, and commercial orchards flourished. Farms accounted for 553,527 of the county's 602,880 acres by 1910.⁵

A bill passed by the state legislature in 1903 empowered county commissioners' courts to issue bonds for road and bridge building, but development of the county transportation network was very slow. In 1908, Denison businessmen concerned with the poor condition of the county's transportation network established "Good Roads Districts" in an effort to facilitate the construction of new roads and bridges.⁶ Between 1910 and 1912 the first macadamized road in Texas was built from Denison to Carpenter's Bluff on the Red River, and the first county-wide road system, virtually all gravel, was established in 1915.⁷ In the first decade of the century, however, most of the roads in Grayson County were dirt, and the bridges erected across these roads were designed to serve only one lane of wagon traffic.

The Warren Truss

The short-span Warren pony truss was particularly well suited for use on secondary, moderately traveled roads such as those serving rural areas of Grayson County. It is a simple and

³ Ibid., pp. 164-65.

⁴ Graham Landrum and Allen Smith, *Grayson County: An Illustrated History* (Fort Worth: Historical Publishers, 1967), p. 8.

⁵ Kumler, p. 299.

⁶ B. McDaniel, "Highway Administration in Grayson County, Texas" (M.A. thesis, University of Texas at Austin, 1929), pp. 97-99.

⁷ Sherrie S. McLeRoy, *Black Land, Red River: A Pictorial History of Grayson County, Texas* (Virginia Beach, Virginia: Donning Company, 1993), p. 107; Kumler, p. 299.

widely used design noted for its easily recognizable triangular outline. In its original form, the truss is composed of a series of equilateral triangles, without any vertical members. The diagonals function both as compression and tension members, and without counters or verticals the midspan members can suffer from stress reversal under certain loads.

British engineers James Warren and Willoughby Monzani built the first Warren truss in 1846, and patented the design in England in 1848. Unaware of the British patent, Squire Whipple built the first Warren truss in America a few years after it was introduced in England. Due to the potential problems caused by stress reversal at midspan, such as excessive wear at pin connections, the design was initially slow to catch on in America. However, as bolts and rivets began to replace pin connections toward the end of the nineteenth century, the form began to gain wider acceptance. Warren trusses were often built with vertical members which stiffen the entire structure, and in this configuration the design eventually became very popular.⁸

Little Mineral Creek Bridge

Like most surviving Warren trusses, the Little Mineral Creek Bridge was built with vertical members.⁹ One design aspect of the bridge worthy of note is that verticals are solid I-beams while the diagonals are laced angles. The bridge is 46'-2" long, from end of bearing plate to end of bearing plate, and has a roadway width of 12'-0" from inside of inclined end post to inside of inclined end post. The inclined end posts, vertical members, diagonals, and top-chord I-beams are 8" wide and constructed of 1/8"-thick steel. The inclined end posts are 9'-11" long solid I-beams. The verticals are also solid steel I-beams, stamped "Illinois 2," indicating that the steel was furnished by the Illinois Steel Company of Chicago, Illinois. The diagonals are 8'-6" long and are composed of 2" x 2 1/2" angles laced together with 1 1/2" wide, 1/8" thick steel lacing bars riveted to the angles.

The vertical end posts of the railing are 3" x 2" angles, and the top and bottom rails are 2" x 2" angles. These angles are stamped "Jones & Laughlin," indicating that the steel was furnished by the Jones and Laughlin Steel Company of Pittsburgh, Pennsylvania. The double lattice between the top and bottom rail is composed of 1/8" thick, 1 1/4" wide steel bars, riveted together at the point of intersection and riveted to the rails. The railing is 1'-11" high from top rail to bottom rail.

The bridge is both riveted and bolted with square bolts. There is another bridge in Grayson County erected by the same company in the same year that is both riveted and bolted,

⁸ Carl Condit, *American Building Art: The Nineteenth Century* (New York: Oxford University Press, 1960), pp. 117-118; James Cooper, *Iron Monuments to Distant Posterity: Indiana's Metal Bridges, 1870-1930* (Indianapolis: Pierson Printing, 1987), p. 84.

⁹ T. Allen Comp and Donald Jackson, "Bridge Truss Types: A Guide to Dating and Identifying," *History News* 32, No. 5 (May 1977).

LITTLE MINERAL CREEK BRIDGE
(Pottsboro City Park Bridge)
HAER No. TX-39
(Page 5)

but a third bridge, also erected in 1913 by the same company, is an all-riveted structure. It is possible that the company was in the midst of a transitional period in 1913, moving away from the practice of shop-riveting some members while field-bolting others, towards the utilization of field riveting equipment.

A fourth bridge, identical to the Little Mineral Creek Bridge and erected by the same company, spanned a creek southwest of Gordonville in Grayson County. It was destroyed in 1985 when an eighteen-wheel tractor trailer tried to cross it, even though it was posted for a 10-ton weight limit. It is likely that a number of other bridges were erected in Grayson County by the same company, but have since been destroyed or replaced.

The Little Mineral Creek bridge was stripped, primed and repainted when moved to its present location in Pottsboro's City Park, and is in good condition. It should survive for many years into the future, providing generations of Pottsboro residents with tangible evidence of both their own local history and the technological history of the nation.

SOURCES CONSULTED

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APPENDIX A: Questions for Further Research

Due to limitations in the scope of the Texas Historic Bridges Recording Project, several questions which arose during the research and writing of this report remain unanswered. It is suggested that scholars interested in this bridge consider pursuing the following:

1. What company erected the bridge, and how extensive were the operations of this company in Texas?
2. What was the cost of the bridge?
3. Why was a similar bridge erected in Grayson County by the same company at the same time all riveted, while the Little Mineral Creek Bridge was both riveted and bolted?

LITTLE MINERAL CREEK BRIDGE
(Pottsboro City Park Bridge)
HAER No. TX-39
(Page 8)

APPENDIX B: Sketch Elevation and Plan

