PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

LOCATION MAP

HISTORIC AMERICAN ENGINEERING RECORD
Submitted to:
Oklahoma State Historic Preservation Office
800 Nazih Zuhdi Drive
Oklahoma City, Oklahoma 73105

PHOTOGRAPHS

HISTORIC AMERICAN ENGINEERING RECORD

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Tori Raines, Photographer, September 2012

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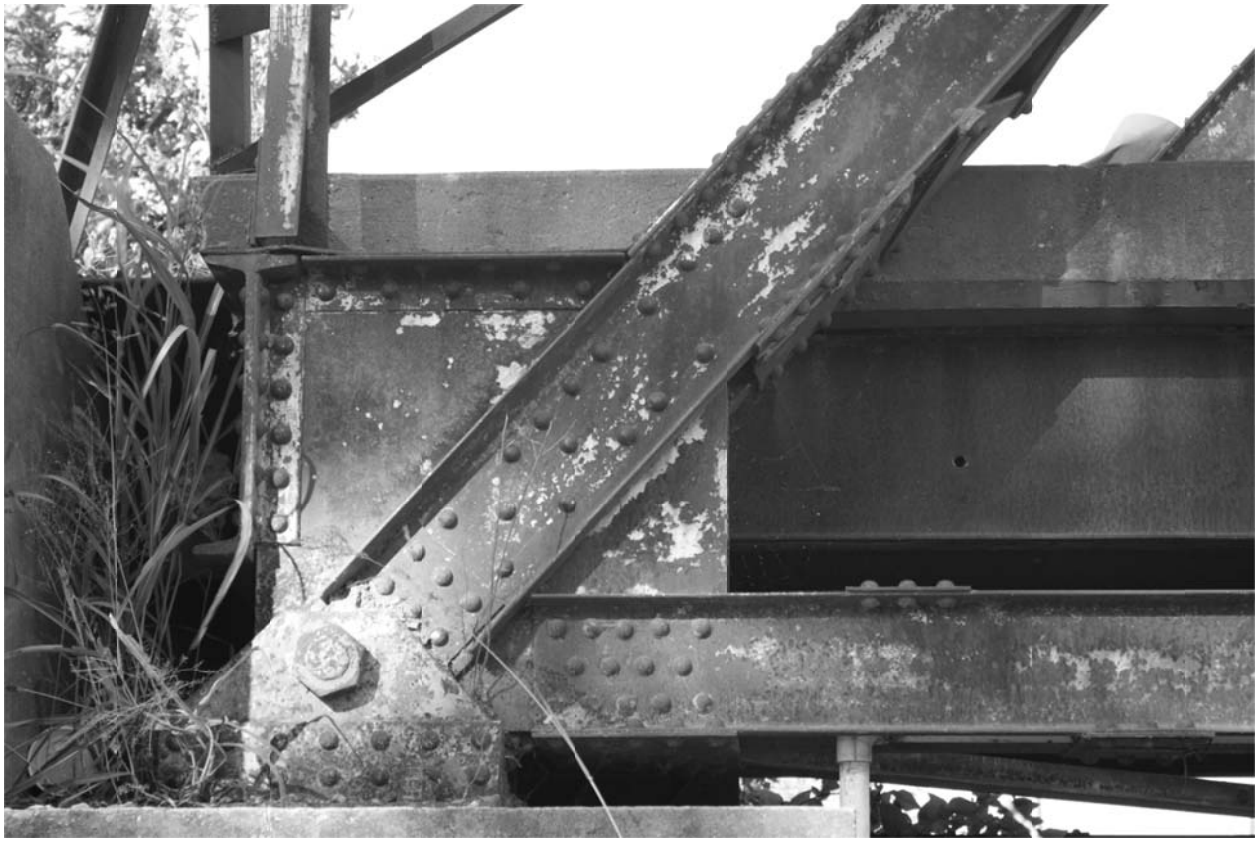

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WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD

INTRODUCTION

Location:	Spanning Grand/Neosho River along County Road EW 83.5 approximately .5 miles northwest of downtown Fort Gibson, Muskogee County, Oklahoma. Section 2 T15N, R19E
.	UTM: Zone 15N 0295688E 3964518N
Map Reference:	U.S.G.S. 7.5' series, Northeast Muskogee (1974)
Present Owner:	Muskogee County
Present Use:	Single-lane vehicular bridge
Significance:	The Grand/Neosho Bridge is considered a significant example of engineering associated with a relatively uncommon bridge type within Oklahoma, the modified Parker through truss.
Project Information:	Historic American Engineering Record (HAER) Level II equivalent documentation was performed in late 2012 and early 2013. Tori L. Raines, Architectural Historian for the Oklahoma Department of Transportation Cultural Resources Program, conducted photographic documentation of the bridge in September 2012, and compiled the historical information in December 2012 and January 2013. Photographs for this report have been digitally reproduced following Oklahoma State Historic Preservation Office (SHPO) guidelines for digital images. Per a Memorandum of Agreement, this HAER documentation serves as mitigation for the removal of this structure from vehicular traffic to pedestrian traffic.
Preparer:	Tori L. Raines, Architectural Historian, ODOT Cultural Resources Program, Norman, Oklahoma

PART I. HISTORICAL INFORMATION

A. Physical History:

1. **Date of Construction:** 1925-1926
2. **Architect/Engineer:** Muskogee County
3. **Builder/Contractor/Supplier:** Muskogee Iron Works; J. A. Moore; E. G. Fike and Company
4. **Original Plans:** None available
5. **Alterations and/or Additions:** Minimal Patching/Repair on bridge deck

B. Historical Context:

Fort Gibson

In April of 1824, Colonel Matthew Arbuckle (commander of the 7th Infantry) left his post at Fort Smith in Arkansas and moved portions of his regiment to a new post on the east side of the Grand River, approximately a mile north of its confluence with the Arkansas River. A main reason for his choice of location was the presence of a natural rocky landing area where he and his men could disembark from their boats. There, he established Cantonment Gibson (honoring U.S. Army Commissary General George Gibson), a military installation that was the first U.S. military post in what would later become the state of Oklahoma and also the furthest point west that the military had ventured to date. The post was established to protect the country's southwestern border as well as to maintain peace on the rugged frontier. The local Cherokee and Osage tribes had a bloody history of scuffles, and the military hoped to keep the peace between the two tribes while working to facilitate the construction of infrastructure facilities in the area, including roadways. [1,2,3]

Following the Indian Removal Act of 1830, the Cantonment was renamed Fort Gibson in 1832 and became an integral part in the removal of eastern tribes to Indian Territory. In response to complaints from immigrant Indians from eastern states of brutality by the Plains tribes, Osage officials created a commission chaired by Montfort Stokes (a former governor of North Carolina) to address the issues and facilitate peaceful integration of the removed peoples. The Montfort Commission, as it was referred, convened operations at Fort Gibson, and troops stationed there were tasked with supporting the work of the Commission. The work did not pose a particular

danger from tribes; however disease was rampant and the missions of the Commission were commonly seen as almost a death sentence by the men stationed at the post. Still, progress in establishing barracks, constructing roads, and facilitating peaceful integration of tribal members from the east continued through the 1840s. Trade and transportation along the river was initially conducted by keelboat, using the natural rocky landing Colonel Arbuckle had discovered as a docking area. Later, steamboats came to the fort bringing military supplies and merchandise for the local store. In fact, in 1833 during the height of the fort's significance, there were as many as 17 steamboats tied to the docking area at any given time, maintaining the bustling post's needs for supplies, trade, and men. However, once the immigrants became settled into their new nations and had relatively peacefully established their governments, the post became less important. In fact, complaints began to circulate about brothels and alcohol consumption at the Fort because of the surplus of available time that the troops were afforded. Upon request from the local tribes, Fort Gibson was abandoned by the War Department in 1857, leaving the property to the Cherokee.[4,5,6]

Briefly in 1862, Fort Gibson was reoccupied during the Civil War when Union troops invaded Indian Territory, but it was again abandoned when the troops withdrew into Kansas. Union forces occupied the post for a short period in 1863, led by Colonel William A. Phillips who was the commander of the Union Indian Brigade. It remained under the control of Union forces until the end of the war. Following the war, Fort Gibson remained a military post until 1871 when most troops transferred away. From time to time, the post was again occupied by small numbers of troops to address local unrest, white encroachment, intratribal disputes and other local issues. In 1890, the U.S. government once again officially abandoned Fort Gibson, though occasionally the post was temporarily and sparsely occupied by troops to settle local unrest.[7]

In the years following the military occupation at Fort Gibson, the infrastructure and settlement that had occurred adjacent the fort became an independent municipality that housed military families, free African-Americans, and Indians seeking military protection. In 1898 the Articles of Incorporation for the town of Fort Gibson were established under that Arkansas Statutes, making it one of the oldest non-Indian settlements in the state. In 1907, the population of Fort Gibson reached 1,063, and the population has hovered around that same level since its establishment.[8]

Muskogee County

Muskogee County was originally named for the Muscogee (Creek) Tribe in the former Indian Territory, and a portion of it falls within the current boundaries of the Creek Nation, with another portion (including Fort Gibson) falling within the boundaries of the Cherokee Nation. Muskogee

County is situated in northeastern Oklahoma and is bordered by Wagoner and Cherokee counties to the north, Haskell and McIntosh counties to the south, Cherokee and Sequoyah counties to the east and Okmulgee and McIntosh counties to the west. The county seat is Muskogee, established in 1872.[9]

Transportation

Indian Territory was sparsely settled in the years following the Civil War. Roads were only trails that were often winding, detouring around the inhabitants' fenced enclosures, and were haphazardly maintained under a law that required all men to spend four days a year working on the roads, supervised by a foreman. Numerous remote small towns or trading centers served the local citizenry. As was happening throughout the Indian Territory, in the area that would become Muskogee County, the process of allotting the Indians' land and the expansion of the railroads brought many more non-Indian residents, and led to the formation of new towns that were larger than the older settlements.[10]

It was during those early years, while Oklahoma's population expansion and urban growth necessitated transportation improvements, that the state benefitted from the nation's numerous bridge-building companies that had already reached their high point of productivity. Standard metal truss bridge types, their assembly in a fabrication shop, and quick on-site construction led to the development of large bridge-building companies. These standardized bridge designs, often marketed through a company's catalog, made up the majority of truss bridges sold. Generally, steel manufacturers mass produced the bridge components such as rolled beams, plates, bars, and rods. The bridge companies would buy and use these parts to construct the bridge by means of separate departments such as drafting, forging, and the riveting or truss shop where the bulk of the work was done, readying a bridge for on-site assembly.[11]

Prior to statehood, a system of county-led road construction and maintenance had been established, but roads and bridges on tribal lands were controlled by the Bureau of Indian Affairs. The mostly dirt roads were only sporadically maintained. Since the Indian nations and Oklahoma Territory did not have the financial resources nor the technology to properly maintain the roads, the public found they often had to deal with washed out crossings, quicksand filled stream and river beds, and other problems. Although railroad bridges were in use, most were simple wooden structures or "straw bridges" that consisted of straw mats which were laid on the river bottom.[12]

Oklahoma's expansion coincided not only with the rise of bridge building companies and allotment settlements, but also the growth of a national emphasis on building decent

transportation routes, specifically roads. Established in 1893, the National Good Roads Association launched a campaign known as the "Good Roads" movement amid concerns that the country's roads were on average poorly maintained and often impassable. The group was headquartered in St. Louis into the early 1900s. The movement was sponsored by the U.S. Department of Agriculture's Office of Road Inquiry (later Office of Public Roads) and railroad companies. The railroad had as much of an interest in good roads as the public, since better access meant that farmers could reach rail lines and markets more efficiently. "Good Roads" found a foothold in Oklahoma in 1902 after a series of disastrous floods highlighted the problem locally. In 1904, the first Oklahoma territorial good roads convention met at Guthrie and organized the Oklahoma-Indian Territory Good Roads Association. The association was able to secure provisions for (including the establishment of a state highway department) during the 1906 Oklahoma State Constitutional Convention. In 1908, the Democratic Party made good roads a part of their platform. Local good roads associations increased as well. In 1910, the Muskogee County Commissioners proposed a $150,000 bond issue to fund bridge construction throughout the county, and Muskogee businessmen formed the Muskogee Good Roads Association to campaign for its passage. The letters that this association mailed to county taxpayers used the typical arguments of the good roads movement, that improved roads making it easier for farmers to bring crops to market and patronize a town's merchants benefitted everyone.[13]

During the early years of statehood, individual townships had the responsibility of maintaining roads and local individuals were required to maintain the section-line roads, which were often the only roads that existed in the area. By 1911, the highway department existed, but received no funding for construction or maintenance of roads, nor did they have any authority. In fact, Oklahoma claimed only 23 miles of hard surfaced roads, the fewest in the United States. Only with the passage of the 1916 Federal Aid Highway Act were matching funds provided and state legislators made funding for state roads available. Previously, funding was channeled through county road improvement districts that had been established in 1909. Between 1917 and 1919, $690,834.00 in federal money was appropriated for Oklahoma roads, and counties were expected to match the funds 50-50.[14,15]

Parker Truss

The Parker truss was developed by mechanical engineer Charles H. Parker, an employee of the National Bridge and Iron Works in Boston. The Parker truss is a variation on the Pratt truss wherein the top chord is polygonal or inclined as opposed to being straight or curved. Parker's patent for varied truss was awarded on February 22, 1870. The variation allowed for reduced depths at the ends than at mid-span, where the loads were not as high, and shortened the vertical

and diagonal members from the center to the ends of the truss, which reduced the amount of metal (and therefore materials cost) for each bridge. Fabrication and construction costs were higher than the Pratt as the lengths for the diagonals and verticals at each panel were different; however, labor was a more fixed cost that did not drive the cost of bridge construction. The inclined end posts had the ability to be changed, which allowed for different bridge lengths; and the connection of the top and bottom chords was simplified by the casting at the bottom end post. These differences of the Parker design offered innovative improvements over previous truss designs because they allowed for greater flexibility with different bridges and a simplified fabrication process.[16,17]

Eventually, the Parker became the dominant truss type bridge over the Pratt for long spans following the turn of the 20th Century. The Parker was the most used standard pony truss design for spans of 30-60 ft. and through truss design for spans of 100-300 ft. Originally, Parker truss bridges were fabricated with of iron with pin connections; but later they were steel with rigid riveted connections. Parker pony truss bridges were built until 1950. [18]

The most historically significant extant Parker trusses are the earliest ones with the pinned connections; and the second most historically significant are those that were constructed by state transportation departments as a standard bridge type, with the earlier versions of those (dated 1900-1920) being the most important. The most important character defining features of the Parker truss type include the polygonal top chord, inclined end posts, diagonals in each panel, verticals of differing lengths that shorten as they move outward from the center panel, floor beams, stringers, struts, the method of connection (pin connections or rigid rivets), and portal features like bracing.[19,20]

Grand River Bridge History

Fort Gibson had played an important role in the westward expansion and the improvement of infrastructure in Indian Territory. Though troops had worked in the mid to late 1800s to establish roadways, their work had not been very well maintained. More importantly, passage over the massive Grand River was severely underserved. The only way to cross the river was by ferry departing from the docking area established in 1824; this activity was time-consuming and the ferry operated sporadically[21].

In July of 1923, the Muskogee County Commissioners agreed to allot $60,000 in the 1923-1924 fiscal year budget for the construction of a bridge over the Grand River to replace the outdated ferry system that had been the only option for so many years. This news was printed in the Muskogee Times-Democrat upon its approval, and residents were overjoyed. On September 8,

1924, a resolution was passed by the Commission to use $45,000 on-hand or set aside in the budget (from funds other than the gasoline tax apportioned to the county) for the construction of the Grand River bridge. It was determined that the funds should be used along with state funding under the direction of the State Highway Commission. On May 5, 1925 the County Excise Board appropriated the $45,000, and the Muskogee County Engineer prepared plans and specifications for the Grand River bridge, presumably according to general standards (note: the original plans for this bridge were not found). The plans were sent to the Highway Department for approval.[22]

Following the approval of the plans for the Grand River Bridge, bids were received from area contractors by the County Clerk, Walter F. Head. Local contractor J.A. Moore submitted a bid for a total of $63,315.45 for the completion of the bridge, and was awarded the contract. As is often the case with construction estimates, the total figure for completion of the bridge rose over the course of construction. Each month J.A. Moore submitted claims for compensation of labor and materials by the County. Presumably as a cost saving measure, in the spring of 1926 the County made a decision to proceed with the construction of the nearly complete bridge with a wooden (or other, non-concrete material) deck as opposed to the originally proposed concrete design. Responding in May of 1926, a group of 137 residents signed a petition and presented it to the Board of County Commissioners requesting that the contract for the deck construction be held until July 1st because the money originally appropriated by the County Excise Board was not sufficient. They requested the bridge to be constructed of concrete to ensure a higher quality construction that could withstand a longer period of time than wood or other materials. The Board accepted the petition, and agreed upon the increased cost for construction (the petitioners estimated an increase in construction costs of $8,000). A member of the Board moved to pay contractor J.A. Moore the remaining balance of his payment (less $50 because the contract for the flooring was postponed to July 1, 1926), and the motion was seconded.[23]

On August 18, 1926, E.G. Fike from the Tulsa area was contracted to complete the construction of the Grand River bridge with a concrete decking and floor. The contract came to a total sum of $8,455.75 for all labor and materials. It is not indicated in County Commissioner minutes why E.G. Fike became the contractor responsible for the flooring of the bridge as opposed to J.A. Moore (the original contractor for the entire bridge construction project). E.G. Fike was paid $5,695.43 in September, 1926, for the labor associated with building the approaches and floor of the bridge. At the same time, Muskogee Iron Works was awarded $238.00 for expansion plates on the bridge. Upon the completion of the bridge in October 1926, Muskogee County paid E.G. Fike the final sum owed to him, a total of $2,515.71. Also in October, the County approved a payment to J.A. Moore for $85.00 for the final claim he had submitted. [24]

PART II. ARCHITECTURAL/DESIGN INFORMATION

The Grand/Neosho River Bridge carries vehicular traffic over the Grand/Neosho River along County Road EW 83.5. The bridge was constructed from 1925-1926 using County of Muskogee funds other than the gasoline tax and matching funds from the State of Oklahoma. Muskogee Iron Works and contractor J. A. Moore were the main builders of the bridge; contractor E. G. Fike and Co. from the Tulsa area completed construction of the bridge's concrete deck.

The bridge is a four-span modified Parker through truss that is approximately 766 feet long and 14.5 feet wide. It has a concrete deck and riveted connections. The top chord and end posts of the bridge have steel channels with lace. The bottom chord and diagonals have steel eye bars. The decking of the bridge is the original concrete. The substructure of the bridge has concrete abutments at either bank of the river, and has concrete pile bent piers.

There is moderate structural damage to the bridge. The concrete decking has been patched in small portions, but is uneven and has potholes and spalling. The substructure of the bridge also exhibits spalling concrete on piers and abutment. There are areas of major damage to portions of the steel lacing and moderate to severe rust on all steel components of the bridge.

Under a Memorandum of Agreement with the Oklahoma State Historic Preservation Office, the bridge is being removed from vehicular traffic. The historic bridge will be retained and is proposed to be maintained in its current condition by Muskogee County as a pedestrian bridge until the bridge is deemed unsafe to the public, or constitutes a concern for other environmental issues.

If the bridge is deemed unsafe at some time in the future, Muskogee County agrees to notify the Oklahoma Department of Transportation of the changes and will provide adequate documentation for any removal action. As previously agreed, the County would include the bridge in the Oklahoma Department of Transportation's Statewide Historic Bridge Marketing program for a minimum of 90 days. In the event that the marketing program fails to identify a buyer, the bridge would be closed forever and maintained in its current condition by the County of Muskogee.

PART III. SOURCES OF INFORMATION

Endnotes

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[2] Agnew, Brad. Fort Gibson: *Terminal on the Trail of Tears.* University of Oklahoma Press, Norman. 1980.
[3] Agnew, Brad. Fort Gibson. *Encyclopedia of Oklahoma History and Culture.* Oklahoma State University. Electronic document, available at http://digital.library.okstate.edu/encyclopedia.
[4] Foreman.
[5] Rohrs, Richard C. "Fort Gibson: Forgotten Glory," in *Early Military Forts and Posts in Oklahoma*. Eds. Odie B. Falk, Kenny A. Franks, and Paul F. Lambert, Oklahoma Historical Society, Oklahoma City. 1978.
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[7] Rohrs.
[8] Ibid.
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[11] Guise, David. *Abstracts and Chronology of American Truss Bridge Patents, 1817-1900*. Society for Industrial Archeology. 2009.
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[14] Everett.
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[16] McVarish, Douglas C. *American Industrial Archaeology*. Left Coast Press, Inc,. Walnut Creek, California. 2008.
[17] Guise.
[18] Guise.
[19] Guise.
[20] Parsons Brinkerhoff. A Context for Common Bridge Types. for NCHRP Project 25-25. 2005.
[21] Foreman.
[22] Muskogee County Commissioners, *Commissioners' Record*.
[23] Ibid.
[24] Ibid.

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LOCATION MAP

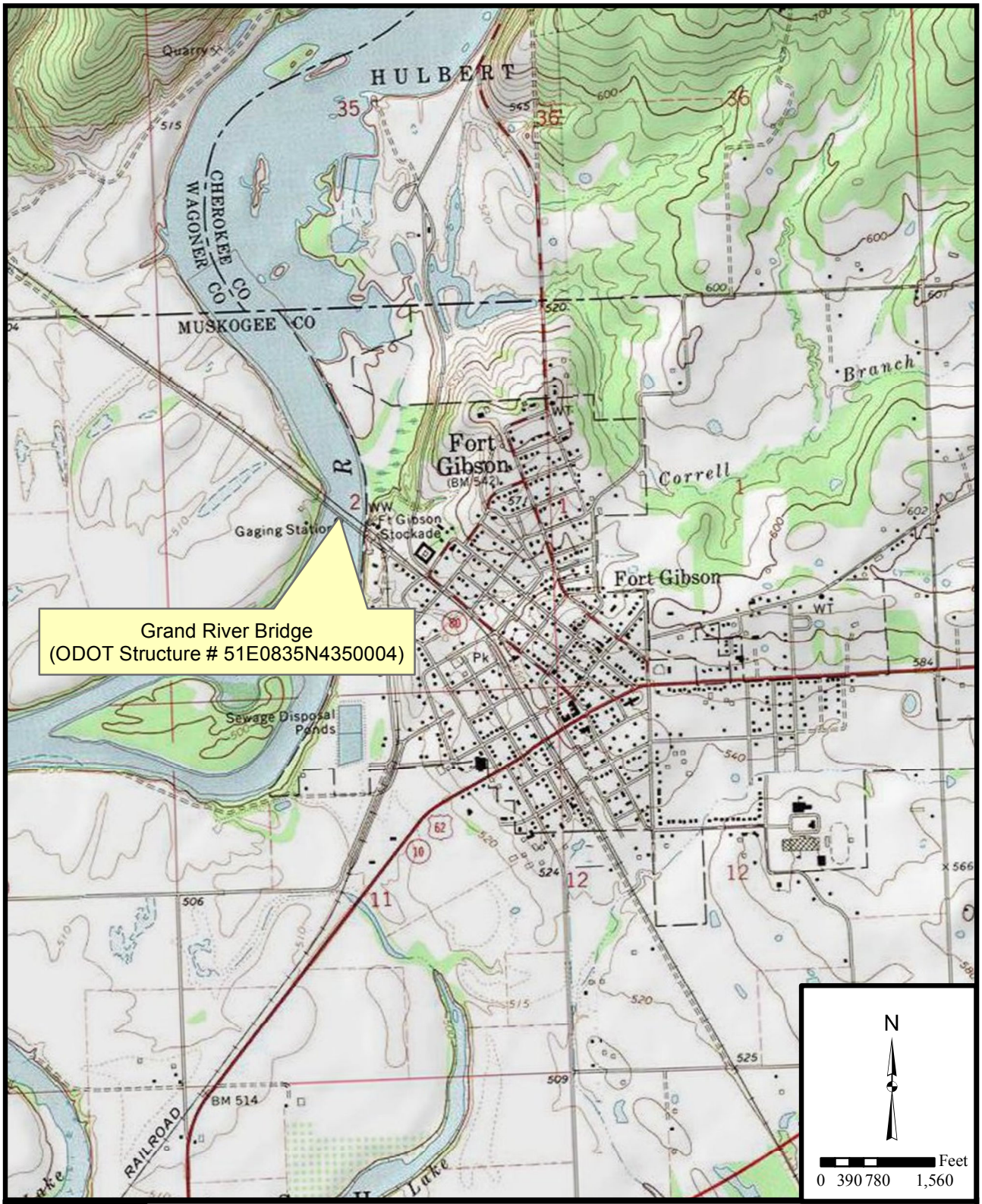

Figure 1. Location of Grand River Modified Parker Through Truss Bridge

Basemap: Northeast Muskogee 7.5' Series Quadrangle map, Section 2 T15N, R19E