

LEE CREEK K THROUGH TRUSS
Spanning Lee Creek
Short Vicinity
Sequoyah County
Oklahoma

PHOTOGRAPHS

AND

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD

Submitted to:

Oklahoma State Historic Preservation Office
800 Nazih Zuhdi Drive
Oklahoma City, Oklahoma 73105

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Anna Eddings, Photographer, March 2009

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LEE CREEK K THROUGH TRUSS

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WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD

LEE CREEK K THROUGH TRUSS

- Location:** Spanning Lee Creek, at Road SH 101, in the Short Vicinity, Sequoyah County, Oklahoma.
UTM: 15/E361200/N 361200
Quad: Nicut
- Legal Location:** Between Sections 27 and 34, T13N, R26E
- Present Owner:** Oklahoma Department of Transportation
ODOT Structure Number 6817 1865 X
- Present Use:** Vehicular Bridge
- Significance:** The Lee Creek K Through Truss Bridge is located on State Highway (SH) 101 crossing Lee Creek in northeast Sequoyah County, Oklahoma. This single-span bridge constructed in 1946 was built to replace a previously existing bridge over Lee Creek washed away by flood waters in 1945. The replacement bridge was built using a K Through Truss, a standard design used by the state of Oklahoma from the early 1930s through the 1950s. The K-truss type has an arched top chord and subdivided panels that facilitated the efficient construction of a longer bridge. The standard K-trusses built by the state measured 140 feet (ft) to 210 ft in length and had an average road width of 22 ft. The Lee Creek K Through Truss Bridge, however, measures 214 ft in length and has a road width of 18 ft. The noncompliant size of the Lee Creek K Through Truss Bridge is due to the road being a Farm-to-Market road and not a State Highway at the time of its construction. The road was designated SH 101 in 1958–1959, changing the bridge’s status from a county-maintained to a state-maintained structure. The Lee Creek K Through Truss Bridge has remained unaltered since its construction and is a good example of its type. Furthermore, the bridge demonstrates a pattern of rural development during the 1940s through the 1950s.
- Project Information:** Historic American Engineering Record (HAER) Level II equivalent documentation was performed in March 2009 and June 2012. Tanya McDougall, Architectural Historian, conducted an on-site visit and compiled the historical information in June 2012. Photo documentation was conducted in March 2009 by Anna Eddings, an Architectural Historian with the Oklahoma Department of Transportation. Photographs for this report have been digitally reproduced following National Park Service (NPS) standards for digital images. This HAER recordation serves as mitigation for the removal of the structure from vehicular traffic.

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PART I. HISTORICAL INFORMATION

A. Physical History:

- 1. Date of Construction:** 1946
- 2. Architect/Engineer:** Not Known
- 3. Builder/Contractor/Supplier:** The bridge was constructed by the Oklahoma Paving Company, a general contractor based in Oklahoma City. The steel used to construct the bridge was provided by the Illinois-S-USA company.
- 4. Original Plans:** Not Available
- 5. Alterations and Additions:** The bridge has remained unaltered.

B. Historical Context:

1. Introduction

The Lee Creek K Through Truss Bridge spans Lee Creek along SH 101 in northeast Sequoyah County, Oklahoma, near the Arkansas border. The nearest populated center to the bridge is Short, a small farming community located on the east side of Lee Creek. The area now encompassed by Sequoyah County was part of the Sequoyah and Illinois districts of the Cherokee Nation until 1907, when Oklahoma was admitted as a state.¹ At statehood, Sequoyah County, named after the inventor of the Cherokee alphabet (syllabary),² was officially formed and Sallisaw designated as the county seat (Benedict 1922:537; Mize 2012).

Early non-Native American settlement in the Sequoyah County area began soon after the end of the U.S. Civil War in 1861. During the war, the Cherokee Tribe, along with the other tribes in Indian Territory, signed treaties in support of the Confederacy. At the war's end, the Cherokee Tribe, viewed as a Confederate ally, was required to relinquish portions of land and open the territory for the construction of railroads as part of the terms of the 1866 Treaty of Fort Smith (Strickland 2012). The terms of the Treaty of Fort Smith, along with additional Reconstruction treaties signed by the other tribes in Indian Territory, left Indian Territory vulnerable to illegal non-Native American settlement. The Sequoyah District of the Cherokee Nation was particularly prone to this illegal settlement due to its proximity to Fort Smith and the Arkansas border. Furthermore, as a federal judicial district, the courts of the Cherokee Nation had no jurisdiction over U.S. citizens and little power to remove the intruders. As a result, several mostly non-Native American communities, including Paw Paw, Cottonwood, and Muldrow, developed near the Arkansas border (Mize 2012). In 1890, Cherokee land was further invaded by the coming of the Kansas and Arkansas Valley Railroad, which crossed the area westward from Van Buren, Arkansas. In the coming years, additional railroad lines were also built through Indian Territory (Mize 2012).

During the early 1900s, farming and cattle ranching became the area's economic mainstay, and farm communities, such as Short near the Arkansas border, began developing (Sequoyah County Historical Society 1976:153). By 1907, when Oklahoma became a state, Sequoyah County had a population of 22,499 residents and the primary crops grown were cotton and corn (Mize 2012). Farming and agricultural activities remained the primary economic driving force through the 1930s, when changes in agricultural practices caused a downturn in the population (Department of Commerce and Labor 1907:9; Mize 2012). Although, some manufacturing industries

¹ In 1829, the U.S. government removed the Cherokees living in Arkansas to Indian Territory, now eastern Oklahoma, and the area became part of the Western Cherokee Nation called Skin Bayou District, later renamed Sequoyah District in 1851 (Mize 2012).

² Sequoyah, born in Tennessee ca. 1770, moved east to Arkansas in 1818 to operate a salt production and blacksmith works. Known as a skilled blacksmith, silversmith, and artist, Sequoyah began experimenting with producing a written form of the Cherokee language, which he successfully completed by 1821. In 1829, Sequoyah moved to Indian Territory and established a home on Big Skin Bayou Creek, west of Lee Creek in what is now Sequoyah County, Oklahoma (Mize 2012; Oklahoma Historical Society 2012)

have developed throughout the county, agriculture remains an important part of the county's economy even today (Mize 2012).

During the years after statehood, road and transportation development was a particularly important issue throughout Sequoyah County and the state as a whole. Since the early 1900s, good-roads associations were created in many cities throughout Oklahoma, advocating for road improvements. The effort was well received, and in 1907, the Oklahoma constitution provided for the establishment of a state highway department (Burke 2011:7). Due to the lack of funding and personnel, the state highway department was unable to provide for the construction of roads and bridges until the 1920s, when changes in federal law mandated that state highway departments directly supervise plans and contracts for construction projects (Burke 2011:18; Oklahoma Department of Highways 1970). It was during this period that a bridge was constructed over Lee Creek, west of the town of Short. However, severe flooding in 1945 caused the bridge to wash away and a replacement bridge, the Lee Creek K Through Truss Bridge, was subsequently constructed. At the time of the bridge's construction, however, the road it carried was a Farm-to-Market³ road that was redesignated SH 101 in 1958–1959.

2. Development of the Sequoyah County, Lee Creek K Through Truss Bridge

The Lee Creek K Through Truss Bridge crosses Lee Creek along SH 101, between Sections 27 and 34, Township 13N, Range 26E, in northeast Sequoyah County, Oklahoma. By 1899, the area surrounding the bridge was rural with some agricultural fields. An irregular road system existed at that time, likely a result of the area's proximity to the Arkansas border to the east and Sallisaw (a stop along the rail line) to the west. Although SH 101 did not exist at that time, located approximately .25 miles south of the section line (between Sections 27 and 34) was an east-west road and likely early version of the Farm-to-Market road that became SH 101 (Bureau of Land Management 1899).

The construction date of the road now known as SH 101 is unknown, but it likely existed by 1903 when a post office and town were located just east of Lee Creek in the northwest corner of Section 35, Township 13N, Range 26E. At that time, the town associated with the post office was known as Shakespeare, but in 1905, postal service was discontinued and moved approximately 6 miles east to Uniontown, Arkansas. However, in 1908 after Oklahoma became a state, postal service resumed at the Oklahoma location on Section 35, but the town's name was changed to Short (Ragland 1957:34). By 1915, the farming community of Short had a blacksmith, general store, cotton gin, and grist mill (Sequoyah County Historical Society 1976:153).

By the 1920s, a growing agricultural economy and the increased use of the automobile created a greater demand in Sequoyah County for the development of good roads. However, as with many counties throughout the state, limited funding often delayed or prevented road improvement projects. Such was the case in Sequoyah County, when in

³ In 1931, the state of Oklahoma approved a Farm-to-Market road improvement program “designed to benefit small towns, rural communities, the farms and rural mails” (*The Democrat-American [TDA]* 9 July 1931). Later that same year, the County Commissioners of Sequoyah County approved several roads for the program, including the road crossing Lee Creek that would later be SH 101 (*TDA* 19 November 1931).

1920 the Board of County Commissioners found there to be a lack of money in the county treasury to fund road and bridge projects. As a result, they called for a special election to approve a \$202,000 road and bridge bond. Among the road and bridge projects to be funded was the construction of a bridge over Lee Creek between Sections 27 and 34, Township 13N, Range 26E (*Sequoyah County Democrat* [SCD] 22 October 1920). For reasons unknown, the election was delayed until March 29, 1921, at which time the bond was approved (SCD 4 March 1921; SCD 1 April 1921). Although the county now had funding, the contract for the construction of the Lee Creek Bridge was not awarded until August 1922. The County Commissioners of Sequoyah County awarded the project to the Forebe-Gravelle-Hamblin company of Oklahoma for the amount of \$6,641.80 (SCD 18 August 1922).

Once completed, the bridge over Lee Creek remained in service until 1945, when severe flooding washed the bridge away (Sequoyah County Historical Society 1976:153). In 1945–1946, the County Commissioners of Sequoyah County approved the construction of a replacement bridge over Lee Creek. The contractor of the bridge was the Oklahoma Paving Company of Oklahoma City (King 1993; Sequoyah County Clerk 1946:Deed Book 176:193). At the time of the bridge's construction, the road it carried was a Farm-to-Market road (number designation unknown) maintained by the county. In 1953–1954, approximately 8 miles of the road's western portion, connecting eastward from U.S. Highway 59 to just past the town of Atkins, appears for the first time as SH 101 and as part of the State Highway System (Oklahoma State Highway Commission 1953–1954:233). Several years later in 1958–1959, the eastern portion of the road crossing Lee Creek to the Arkansas state line (Highway 220 in Arkansas) was designated as SH 101; however, this portion of the road remained a gravel-surfaced road until 1966 (Oklahoma State Highway Map 1958–1966).

At the time the Lee Creek K Through Truss Bridge was constructed in 1946, the state of Oklahoma had been using the K-truss type as a standardized design for several years. The K-truss features a curved top chord and vertical members with two small inclined members forming a K-shape within the truss panels, design elements that allowed for a longer structure that could be constructed more efficiently. Due to these design qualities, the state of Oklahoma used the K-truss as a standard design from the early 1930s through the 1950s. The standardized K-trusses built by the state varied in length from 140 ft to 210 ft and had a road width of 22 ft (King 1993).⁴ However, unlike the state standardized K-trusses, the Lee Creek K Through Truss Bridge has a length of 214 ft and a road width of 18 ft due to the structure being built with county funding on a Farm-to-Market road. Thus, as an unaltered structure, the Lee Creek Through Truss Bridge is a unique example of its type and period of construction.

PART II. STRUCTURAL/DESIGN INFORMATION

- A. General Description:** The Lee Creek K Through Truss is located on SH 101 crossing Lee Creek in northeast Sequoyah County, Oklahoma. The structure runs east–west to accommodate the north–south drainage of Lee Creek. The Lee Creek bridge has a single span featuring a K Through Truss and a two-lane concrete slab deck with a road width of 18 ft. The structure as a whole measures a total of 214 ft in length and 19.5 ft in width.

⁴ The standard road width of 22 ft was also adopted by the State of Oklahoma in the 1930s (Oklahoma State Highway Commission 1929–1930:57).

The top chords of the K Through Truss are made up of 10 inclined built-up members with V-lacing, creating the design's defining characteristic of an arched top chord. The walls of the K-through truss have 10 panels defined by nine vertical built-up members with V-lacing. The two center panels each exhibit two diagonals made of channels and a horizontal built-up member that cross at the center of the panel. The four panels flanking the center panels, two on each side, have two small diagonal members that form an inward-facing K-shape and provide the truss with its defining design characteristic. The second to last panels have an inward- angled diagonal, but the end panels are void of diagonals. The railing along the truss walls consists of two parallel metal bars that extend past the endposts. The web connecting the truss walls at the top chord consists of eight panels with lateral bracing made up of angles with V-lacing and nine struts with lateral bracing made up of bars. All of the members of the truss are riveted together with gusset plates located at each connection.

The bridge's concrete slab deck is supported by five floor stringers and a series of floor beams with lateral bracing between the beams. The substructure consists of formed concrete abutments located at each end of the bridge deck. The bridge's substructure and superstructure (truss) are connected with rocker bearings that allow the structure to make small expansion movements.

1. **Character:** The non-uniform measurements of the Lee Creek K Through Truss Bridge are indicative of a structure constructed by the county in a rural area on a secondary road. Furthermore, the bridge has retained the design's character defining features of an arched top chord and K-shaped diagonals.
 2. **Condition of Fabric:** The Lee Creek K Through Truss Bridge is an unaltered structure and retains its character and integrity. The structure is in good condition and shows little evidence of deterioration.
- B. **Site Information:** The area surrounding the Lee Creek K Through Truss Bridge is rural with cultivated fields in all directions. On the northwest end of the bridge is the gravel road S4765.

PART III. SOURCES OF INFORMATION

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Bureau of Land Management

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LOCATION MAP

LEE CREEK K THROUGH TRUSS
SEQUOYAH COUNTY, OKLAHOMA
LOCATION MAP

