

Griggs County Bridge  
Spanning the Sheyenne River, six miles south  
of Highway 200 on Route 2  
Cooperstown vicinity  
Griggs County  
North Dakota

HAER No. ND-5

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ND

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWINGS

Historic American Engineering Record  
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# HISTORIC AMERICAN ENGINEERING RECORD

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## Griggs County Bridge

HAER No. ND-5

**Location:** Spanning the Sheyenne River, six miles south of State Highway 200 on Route 2 Cooperstown vicinity, Griggs County, North Dakota

UTM: 14/575670/5245100  
Quad: Luverne, North Dakota

**Date of Construction:** 1912

**Builder:** Massillon Bridge and Structural Company, Massillon, Ohio

**Present Owner:** Griggs County  
Griggs County Courthouse  
Cooperstown, North Dakota

**Present Use:** Vehicular bridge, replaced by new vehicular bridge, summer 1989

**Significance:** The Griggs County Bridge is a single-span, Warren type through truss bridge. The Warren type was commonly built on larger roadway systems in North Dakota in the period 1900-1940. Because of increased traffic and larger vehicles, this type of bridge is becoming inadequate and increasingly rare.

**Historian:** Nancy Ross  
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Before the first bridges were built in Griggs County, North Dakota, hauling freight or traveling of any kind was difficult and often dangerous across streams and rivers. Streams and rivers had to be crossed by fording. The most desirable crossings were at shallow spots with gravel bottoms. During spring thaws, however, crossing the water was arduous and sometimes even impossible. An early Griggs County pioneer explained:

When they went to town to get provisions they had to go to Valley City, about 40 miles, and it took them two days each way...That (Spring) trip to Valley City was very hard because the (Sheyenne) River was flooding and it had to be crossed two times to get to the city.<sup>1</sup>

A traveller could either wait for the flood waters to subside, hire a boat, or leave his team of horse or oxen on the bank, cross the river, and hire another team on the opposite side. k Spring trips to Valley City for supplies of flour and seed were a necessity for Griggs County residents and the building of bridges became a priority. The first public bridge built in Griggs County was constructed in 1883 across the Sheyenne River. This bridge was considered an "accomplishment" of the county and a "benefit to all early settlers."<sup>2</sup>

Bridges were so important to the county that they often took precedence over roads. In a pattern similar to that of other counties in North Dakota, Griggs County had a number of metal through-truss and pony-truss type bridges built in the period 1890-1920.

The contract to build Griggs County Bridge was awarded on April 1, 1912, to the Massillon Bridge and Structural Company, of Massillon, Ohio. Griggs County Commission's plans for the bridge called for a high truss, six panel bridge, which would stand 12 feet above the Sheyenne River with a carrying capacity of 1,800 pounds per linear foot and would be completed by July 1, 1912.<sup>3</sup> Other companies that bid on the project were: the Federal Bridge Company of Des Moines, the Great Northern Bridge Company of Minneapolis, W. C. Kiernan & Company of Aberdeen, the Minneapolis Steel & Machinery Company, The Illinois Bridge Company of Chicago, The Beach Manufacturing Company of Grand Forks, Twin City Bridge Company of Minneapolis, and the Fargo Bridge & Iron Company. Each bidder submitted a variety of plans, with costs ranging from \$150.00 to \$5,600.00. The cost of the chosen bridge was \$2,399.00.<sup>4</sup>

The Massillon Bridge Company of Massillon, Ohio, was founded by Joseph Davenport in 1869. Davenport is credited with building the first wrought-iron cantilever bridge. He left the company in 1875. In 1887, the company was incorporated under the leadership of A. S. Sprague as president, building both railroad and highway bridges of iron and steel, as well as general structural iron work. In 1909, the corporate name was changed to The Massillon Bridge and Structural Company, with Elton Rice as president and manager. They were one of Ohio's major bridge companies, operating successfully, until the depression in the 1930s caused liquidation, at which time it became a division of the Fort Pitt Bridge Works of Pittsburgh.

The number of bridges built in North Dakota b The Massillon Bridge and Structural Company is unknown. However, the Griggs County Bridge shares common characteristics with other structures of

its class which were built between 1900 and 1940 in North Dakota, and it is probable that The Massillon Bridge and Structural Company constructed and fabricated other rural bridges in the state and in the Griggs County area. Standard bridge designs enabled companies to mass-fabricate the bridges, which could then be erected by various contractors. This type of bridge was used primarily for spanning major streams of the region, and pony-truss or stringer type bridges were used to span smaller streams.

Griggs County Bridge is a single span Warren through-truss bridge which extends 80 feet and has a 17.8-foot wide roadway. It is supported by concrete wings and abutments with I-beam piling and reinforcing steel. The deck is composed of timber planks covered by 2.5 inches of asphalt and loose gravel. Each side of the bridge holds five riveted and bolted gusset plates, three attached to the upper chord and two attached to the bottom chord [see HAER Photograph No. ND-5-17 and HAER Drawing No. ND-5, sheet 2 of 2]. The thin members of the bridge are the verticals, outer diagonal members, struts, lower chord, and portal bracing, which are constructed of joined angle irons. The center diagonal members, end posts, and top chord are joined channel beams which are thicker and more rigid than the angle irons. The most rigid members are the floor beams and stringers which are constructed mainly of I-beams.

The bridge connections are formed with batten or gusset plates which are fastened with rivets and bolts. Only the top and bottom laterals are fastened with eyelet slip-on pin fasteners [see HAER Photograph No. ND-5-16 and HAER Drawing No. ND-5, sheet 2 of 2]. Channel beams and angle irons are stamped "Cambria" which indicates the metal was fabricated at the Cambria foundry in Johnstown, Pennsylvania.<sup>5</sup> Mounted on the south portal strut is a decorative nameplate (the only non-functional element of the bridge) with the year 1912 and the following names: E. W. Blackwell, Joseph Buchheit, C. A. Nelson (Commissioner), T. A. Huso (Commissioner), B. N. Howden (Commissioner), R. M. Cowen (Auditor), and M. A. Ueland (Engineer) [see HAER Photograph No. ND-5-21 and HAER Drawing ND-5, sheet 1 of 2].

Steel through-truss bridges were important in the engineering and transportation history of North Dakota and the region. The Warren through-truss represents a distinctive patented bridge design of James Warren (1848), utilizing diagonals that support both tensile and compressive forces. This type of bridge can be identified by the "W" shape formed on the sides of the truss by the diagonals. A comparatively similar bridge type is the Pratt through-truss which uses the vertical posts for compressive forces and the diagonals for tensile forces. The through-truss design combined strength and durability with relatively small cost. These bridge types were developed with the heightening popularity of the automobile and an increasingly mobile society.

In its almost-unaltered condition, the Griggs County Bridge clearly illustrates the Warren through-truss style. The bridge commands excellent views of the Sheyenne River and surrounding farmsteads and retains good integrity. Collision damage has occurred on the southern inclined end post, portal, and west rail, which were reportedly struck by a truck in 1987. The nameplate is broken on the lower west corner, abutments are beginning to deteriorate, and truss members are rusted, but the bridge remains remarkably intact after 77 years of service.

Griggs County, North Dakota, is planning to replace the Griggs County Bridge over the Sheyenne River, which is located about five miles east and six miles south of Cooperstown, North Dakota. The existing

structure is inadequate in width and height for modern traffic needs, and it has deteriorated to a condition requiring replacement. The bridge is located in the following legal location:

T. 145 N., R. 58 W., Section 24, SE-1/4 of SE1/4 of SW1/4, Sverdrup Township  
Luverne, North Dakota, 7.5' Quadrangle

The Federal Highway Administration and the Griggs County Commission, under agreement with the North Dakota State Historic Preservation Office, requested that the existing bridge be surveyed, recorded and documented according to Section 110(b) of the National Historic Preservation Act of 1966 as amended, following Level II standards, as outlined in the Secretary of the Interior's Guidelines for Architectural and Engineering Documentation. In March 1989, Kadrmaz, Lee, and Jackson, Consulting Engineers contracted with Cultural Research & Management, who then conducted the survey and documentation of the bridge.

#### ENDNOTES

1. Griggs County Heritage Book Committee, Griggs County Heritage, Dallas: Taylor Publishing Co., 1976, p. 472.
2. Ibid., p. 436.
3. Heald, Edward Thornton, The Stark County Story, Canton, Ohio: Stark County Historical Society, 1949, pp. 633-634.
4. The Cooperstown Courier, April 11, 1912; "Proceedings of the Board of County Commissioners' of Griggs County, North Dakota," p. 1.
5. Frederick L. Quivik, Historic Bridges in Montana, Washington, D.C.: U.S. Department of the Interior, National Park Service, Historic American Engineering Record, 1982, p. 15.

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