

BLAINE SPRING CREEK BRIDGE
Spanning Blaine Spring Creek at Milepost 7.5, Secondary Highway
249
Ennis vicinity
Madison County
Montana

HAER MT-63
HAER MT-63

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

BLAINE SPRING CREEK BRIDGE

HAER No. MT-63

I. INTRODUCTION

Location: Blaine Spring Creek Bridge
Spanning Blaine Spring Creek on
Secondary Highway 249 at Milepost 7.5
Ennis Vicinity
Madison County
Montana

Quad: Varney, Montana (1988)

UTM: 12/440637/5009070

Date of Construction: 1892

Present Owner: Montana Department of Transportation
Helena, Montana

Present Use: Highway Bridge

Significance: The Blaine Spring Creek Bridge is significant as one of the oldest surviving steel truss bridges in Montana. It is representative of the type of pin-connected Pratt through truss bridges built in Montana between 1891 until 1915 when the Montana State Highway Commission standardized a different truss design. The bridge is also significant for its association with the King Bridge Company of Cleveland, Ohio, a firm of national prominence and a prolific bridge-building company in Montana during the last decade of the nineteenth century.

Historian: Frederic L. Quivik, Renewable Technologies, Inc.
June 1989

Jon Axline, Montana Department of Transportation
April 2014 (revisions)

II. HISTORY

The upper Madison River valley was well-known to trappers and traders in the first half of the nineteenth century. Brigades from the Rocky Mountain Fur Company and its competitors were frequent visitors to the area. In October 1832, a brigade under the command of Jim Bridger and Tom Fitzpatrick purposely led trappers captained by rival Henry Vanderburgh into an ambush by the Blackfeet Indians a few miles south of the future site of the bridge. With the decline of the Blackfeet in this area because of small pox epidemics beginning in the mid-1830s and the waning of the western fur trade after 1840, the valley was less frequented by non-Indians. The upper valley was remote and not included as an agricultural area associated with the mining camps in nearby Alder Gulch in the 1860s. It did, however, function as a cattle ranching area. Local men established cattle and sheep ranches in the valley by the late nineteenth century. By the mid-twentieth century, the valley had become important as a route to West Yellowstone and the northwest entrance to Yellowstone National Park. The Madison River is also significant as a blue ribbon trout stream. The area has attracted recreationalists and the establishment of expensive residences, many of which are summer homes for fishermen and hunters and their families.¹

Iron Rod Area

Transportation was important to the success of Montana's mines beginning in 1862. The discovery of gold on Alder Gulch in May 1862 sparked a stampede to the new gold fields in what would become southwestern Montana. From the gulch, other prospectors fanned out across the region in search of new bonanzas. By 1865, a well-established system of roads, bridges, and ferries were scattered across the Montana landscape. One of the most important routes was the road between Fort Benton, a steamboat port on the upper Missouri River, and Virginia City in Alder Gulch. The Benton Road was a branch of the Utah-Montana Road, which was the primary supply route for the territory's mining camps. The Benton Road also functioned as a stagecoach route and enterprising entrepreneurs had established Iron Rod as a stage station on the road by 1864. The stage station grew to include several cabins, a hotel of sorts, and a saloon. The settlement was originally known as Upper Silver Star and then Ragtown before its christening as Iron Rod in 1892. According to local lore, the settlement was named for the bridge built across the Jefferson River just south of the community.²

¹ Bernard DeVoto, *Across the Wide Missouri*, (Boston: Houghton Mifflin, 1947), 89; Michael P. Malone, Richard B. Roeder and William L. Lang, *Montana: A History of Two Centuries*, Rev. ed. (Seattle: University of Washington Press, 1991), 59; Hiram Martin Chittenden, *The American Fur Trade of the Far West*, Vol. I, (New York: Press of the Pioneers, 1935), 301.

² Patricia Ingram, "Historic Transportation Routes Through Southwestern Montana," (Dillon: Bureau of Land Management, 1976), 22, 38; Roberta Carkeek Cheney, *Names on the Face of Montana: The Story of Montana's Place Names*, (Missoula: Mountain Press Publishing Company, 1990), 145; Muriel Sibell Wolle, *Montana Pay Dirt*, (Athens, Ohio: Sage Books, 1963), 206-207; Mitzi Rossillon, "What's Left of Iron Rod," *The Newsletter of the Klepetko Chapter of the Society for Industrial Archeology*, vol. 4, no. 2 (June 1989), 2, 6; Phyllis Smith, *Montana's Madison County: A History*, (Bozeman: Gooch Hill Publishers, 2006), 96.

In 1872, the Territorial Legislature abolished its toll road system in Montana and made all roads county-owned facilities. With the rise of the automobile and the explosion in automobile tourism in the west following World War I, local boosters and businessmen formed the Vigilante Trail Association in 1923 to promote tourism in southwest Montana, specifically between West Yellowstone and Butte. The Vigilante Trail marketed the area's rich gold rush history and blazed the route with the Montana vigilante's infamous "3-7-77" sign. In 1921, the county road through Iron Rod became a part of Montana's Federal Aid highway system and was designated a part of U.S. Highway 287 in 1926. In 1937, the Montana State Highway Commission awarded a project to reconstruct the road, which entailed the replacement of Iron Rod's namesake bridge with a steel pony truss structure. Madison County relocated the old Iron Rod Bridge to its existing site across Blaine Spring Creek south of Ennis in 1938 (see below).³

Varney Area

Concurrent with the establishment of the Alder Gulch mines and the mining camps of Virginia City and Nevada City fifteen miles to the west of the bridge, men founded cattle and horse ranches in the Madison River Valley. Partners Osmund Varney and Thomas Farrell amassed a substantial horse herd in the valley in the vicinity of the bridge by the late 1860s. By the 1880s, other people had established horse, cattle, and sheep ranches in the area. In 1897, however, Varney and Farrell dissolved their partnership and Varney settled on a small ranch just east of the bridge. He died in 1903.⁴

The abundant water supply in the valley drew the attention of Virginia City banker and entrepreneur Henry Elling in the late 1890s. He hired a Dillon surveyor to investigate the hydroelectric possibilities of Blaine Springs Creek "where the water did not freeze in the winter."⁵ Elling intended to build a power plant to provide electricity to his Easton, Pacific, and Prospect mines and to light Virginia City. Unfortunately for Elling, he died in 1900 before the plant was completed. It wasn't until June 1908 that his son, Karl, incorporated the Economy Electric Power and Light Company and completed the project his father had started nearly a decade before. The company electrified Virginia City in November 1908. The power plant building is on private land just south of the bridge.⁶

³ Ingram, "Historic Transportation Routes," 64-65; *Laws, Memorials, and Resolutions . . . Passed at the Fifth Session of the Legislative Assembly*, 98-99; *Laws, Memorials, and Resolutions Passed at the Sixth Session of the Legislative Assembly*, (Helena, Mont. Territory: Robert E. Fisk, Public Printers, 1870), 66-73, 89-90; Vigilante Trail Association, *Vigilante Trail*, (Butte: Murphy-Cheely Printing Company, c. 1923), 3, 5; *Third Biennial Report State Highway Commission of Montana, 1921-1922*, (Helena: Montana State Highway Commission, 1922), Map Insert; Montana State Highway Commission Meeting Minutes, book 7, pp. 214, 215 (27 August 1937).

⁴ Black, Don. *Varney, Montana: A Condensed History*, (Virginia City: Madison Valley History Association, 2011); 2, 4; Smith, *Montana's Madison County*, 78; *Pioneer Trails and Trials: Madison County, 1863-1920*. (Virginia City: Madison County History Association, 1976), 192.

⁵ Smith, *Montana's Madison County*, 121.

⁶ Smith, *Ibid*, 121-122; Black, *Varney, Montana*, 18.

Homesteading developed in the vicinity of the bridge beginning in the late 1890s. In 1892, the county created the Wigwam School District that encompassed the bridge site. The school also functioned as a community hall and church. In 1914, a post office opened in the small settlement of Varney. William Wilcox was the first postmaster. He operated a saw mill a short distance from the Blaine Spring Creek Bridge. The Economy Power Company plant, the nearby Ennis Fish Hatchery (established in 1930), and homesteading provided the basis of the local economy. The recreational opportunities of the Madison River and its tributaries resulted in the opening of a gas station and bait shop at Varney in the 1930s. The post office permanently closed in in 1944 and the gas station has disappeared.⁷

The Blaine Spring Creek Bridge

The General Land Office conducted its survey of Section 8, Township 7 South, Range 1 West in May 1870. The GLO map, published in July 1870, shows roads to Henry's Lake (in present Idaho) bracketing Section 8 on the approximate alignments of U.S. Highway 287 and a county road. Alabama native Calvin "Doc" Holley obtained the title to 160 acres encompassing the future site of the bridge in October 1877. He was granted title to the land under the first Morrill Act. Holley was only a handful of African-American residents in Madison County. He died about 1882 and rancher Paul Daems bought Holley's ranch. In September 1897, the Madison County Commissioners approved a petition that created a road between the west side of the Madison River south of Ennis and the main route east of the river between Ennis and Henry's Lake. The county built bridges on the road over Blaine Spring Creek and the Upper Madison River (Varney Bridge) in 1892 and 1897.⁸

In April 1892, the Madison County Commissioners advertised for the bids to construct a bridge over the Jefferson River at Iron Rod, about fifty miles north of Blaine Spring Creek. The county commissioners specified an iron bridge with two 130-foot truss spans. On June 7th, the county commissioners opened bids from several of the larger regional bridge building companies who were active in Montana, including the Wisconsin Bridge and Iron Company of Milwaukee; the A. Y. Bayne Company and S. M. Hewett & Company, both of Minneapolis; the St. Joseph Bridge and Iron Company of St. Joseph, Missouri; the Wrought Iron Bridge Company of Canton, Ohio; and the King Iron Bridge and Manufacturing Company of Cleveland. Milo A. Adams, agent for the latter company, submitted the lowest bid, \$9,491 and the commissioners awarded

⁷ *Pioneer Trails and Trials: Madison County, 1863-1920*. (Virginia City: Madison County History Association, 1976), 5; Cheney, *Names on the Face of Montana*, 278-279; Black, *Varney, Montana*, 18; 119; *Madison County, Montana: Its Resources, Opportunities and Possibilities*. (Virginia City: Board of County Commissioners, 1912), 34, 36.

⁸ Land Patent Records, viewed at www.glorerecords.blm.gov on 14 January 2014; Smith, *Montana's Madison County*, 119; United States Census Records, viewed at www.ancestry.com on 14 January 2014; County Commissioners Journal, book P, pp. 81-82 (11 September 1897).

the contract for the Iron Rod Bridge to the King Bridge Company, which completed construction of the bridge by December 1892.⁹

In 1918, the Madison County Commissioners, in cooperation with the Bridge Department of the Montana State Highway Commission, advertised for bids for two bridges, one over O'Dell Creek southeast of Ennis and another over Blaine Spring Creek on the road connecting the Wigwam School south of Ennis. At the Blaine Spring site, the commissioners selected a two-span structure consisting of 60-foot wood combination trusses of the standardized design developed by the highway commission in 1915. The contract for both bridges was awarded to L. J. Baker, the low bidder with a combined price of \$7,476. Presumably this new structure replaced an earlier bridge which dated to 1897, or shortly thereafter, when the Upper Madison (Varney) Bridge and the road connecting the two sides of the valley were completed. The bridge rested on concrete abutments and a concrete pier.¹⁰

The Montana State Highway Commission replaced the old Iron Rod Bridge in 1938 with a two-span, Warren pony truss bridge. The county commissioners discussed what use they could make of the old Iron Rod Bridge spans, with one possibility being to use them for a bridge over the Big Hole River between Beaverhead and Madison counties. Apparently, only one span went to the Big Hole; a 128-foot, single-span, pin-connected Pratt through truss presently spans the Big Hole River linking the two counties. County forces moved the second span to Blaine Spring Creek. The major alteration to the latter span is that one panel of the Blaine Spring Creek Bridge was shortened from the standard 18 feet 5 inches to 14 feet 5 inches. By this alteration the crews who moved the bridge from Iron Rod to Blaine Spring Creek were able to set the single span on the abutments of the 1918 two-span bridge. Additionally, the sills of the abutments at the latter site were raised about one foot so that the Iron Rod span would not rest on the 1918 pier, which still stands beneath the bridge.¹¹

⁹ This history of the Blaine Spring Creek Bridge is taken from Frederic L. Quivik, Blaine Spring Creek Bridge HAER documentation, June 1989 with additional information provided by Axline (2014). This documentation was never submitted to the National Park Service and a copy was discovered in the historic bridge files in Environmental Services Bureau at the Montana Department of Transportation. The historical information was double-checked at the Madison County Clerk and Recorders Office in Virginia City in April 2014.

¹⁰ Quivik, Ibid.

¹¹ County crews relocated one of the spans to a crossing of the Big Hole River on the Burma Road east of Glen. The MDT replaced the bridge (24MA0413) about 1996 and for many years it was sitting on the east bank of the river. It is not known the current disposition of the bridge. Quivik, Ibid; Montana State Highway Commission Meeting Minutes, book 7, pp. 214, 215 (27 August 1937).

III. THE BRIDGE

A. DESCRIPTION

The Blaine Spring Creek Bridge is a single-span, steel pin-connected through truss structure. The bridge has a total length of 125 feet and is fifteen feet wide with a 14-foot roadway width. The bridge rests on concrete abutments. A reinforced concrete pier is located about midway in the river and is located directly beneath the bridge. It is, however, associated with the earlier structure at this site and serves no structural function for the existing bridge.

Substructure

The bridge consists of two reinforced concrete abutments. The concrete pier under the deck was constructed in 1918 and does not provide any structural support to the bridge. A description of it is not included in this document.

Abutment No. 1 (west) is a reinforced concrete wall that is approximately nineteen feet in length and $6 \pm$ feet in height. It was constructed in 1918 for the second bridge that was located at this site. The abutment is about 16 inches wide. The sill upon which the bridge end rests was raised about one foot in 1938 to accommodate the placement of the existing structure at this site.

Abutment No. 1 (east) is a reinforced concrete wall that is approximately nineteen feet in length and $11 \pm$ feet in height. It was constructed in 1918 for the second bridge that was located at this site. The abutment is sixteen inches wide. The sill upon which the bridge end rests was raised about one foot in 1938 to accommodate the placement of the existing structure at this site. The abutment has diagonal concrete wingwalls that extend to the north and south along the river bank.

Superstructure

The Blaine Spring Creek Bridge is a single-span pin-connected Pratt through truss structure. The bridge is 125 feet in length and 15 feet wide with a roadway width of 14 feet. The trusses are twenty feet in height from the lower chord to the upper chord. The bridge consists of seven panels each 18' 5" in length, except for the third panel from the west end which is four feet wide. The 12" x 7" upper chords have continuous metal plates riveted to the top flanges of the channel sections with lacing bars riveted to the bottom flanges of the chords. The lower chords are paired punched eyebars that are $\frac{5}{8}$ " thick and three inches deep. The structure's hip verticals are paired forged $\frac{7}{8}$ " square rods. The remaining verticals are 5" x 10" and consist of

two laced channel sections. The counters are eyebars and eyebars with turnbuckles. Diagonal members in the second and sixth panels are paired bars. The fourteen pin-connections at upper and lower chords are 1 $\frac{5}{8}$ " in diameter. The angle section portal braces are arranged in a lattice pattern. Top stop struts are two pairs of laced angle sections and the top lateral braces are eyebars. Builder plates are attached to the inclined endposts on the east and west ends of the bridge. They read: "Built by the King Bridge Co./Cleveland Ohio/1892."

The deck is supported by fourteen lines of 4" x 12" timber stringers resting atop six steel floor beams. The beams are comprised of riveted variable depth plate girders and are suspended from the pins by hangers bolted to the ends of the beams. The floor beams are 12 inches deep at the ends and 20 inches deep at the center. The stringers support a timber deck with running planks. Bottom lateral braces are forged eyebars. Steel W-beam guardrails are welded to the vertical members of the truss. The guardrails were installed sometime after 1989.

Material

The bridge was constructed during a transition period (1890-1894) when bridge companies changed from iron to steel for bridge components. Therefore, it is not known if the bridge is an iron, steel or combination structure. Because the bridge was originally located on the Jefferson River at the community of Iron Rod and was moved to Blaine Springs Creek by Madison County in 1938, It is not known how much steel and/or iron was utilized by the county for its construction.

B. MODIFICATIONS

The Blaine Spring Creek Bridge originally crossed the Jefferson River near the community of Iron Rod in northern Madison County. The bridge was 130 feet in length when originally constructed by Madison County in 1892. When the county relocated the bridge to Blaine Spring Creek in 1938, one of the panels was shortened so that the bridge would fit the existing abutments (which were raised about one foot). The structure, therefore, is about 4 $\frac{1}{2}$ feet shorter than it was in 1892. Other than in 1938, there have been few modifications to the bridge other than the occasional replacement of the timber deck. Sometime before 1989 the original guardrails were replaced with timber rails. Those rails were replaced by steel W-beam type rails sometime after 1989. The sills on the 1918 concrete abutments were raised in 1938 to accommodate the placing of the old Iron Rod Bridge at this location.

C. OWNERSHIP AND FUTURE

The Blaine Spring Creek Bridge is owned and maintained by the Montana Department of Transportation (MDT). The MDT determined the bridge eligible for the National Register of Historic Places in April 1985. The department programmed the bridge for replacement in 1989, but that project was shelved in 1992 because of public opposition to the project and difficulties associated with an archaeological site located east of the bridge. The MDT programmed a new

project involving the replacement of this bridge in 2013. Prior to that, in 1989, however, a draft HAER document was prepared by Fredric L. Quivik of Renewable Technologies, Inc. of Butte, Montana. The document, however, was never completed and submitted to the National Park Service. In Montana, mitigation for National Register of Historic Places-eligible bridges is treated under the terms of a Programmatic Agreement (PA) that was implemented by the MDT in 2007. The Blaine Spring Creek will be replaced sometime after 2015.

IV. BIOGRAPHICAL MATERIAL

The King Bridge Company

Formed by self-taught bridge engineer Zenas King in Cleveland, Ohio in 1858, the King Bridge Company was one of the most prolific builders in the United States by the end of the nineteenth century. Like many of his contemporaries, King was a trained carpenter who later put his expertise to practical use as a bridge builder. King went to work as a salesman for Cincinnati bridge builder Thomas Mosely in 1857 before establishing his own company, the King Iron Bridge & Manufacturing Company, in Cleveland the following year. King specialized in the construction of iron bowstring arch bridges, for which he obtained a patent in 1861. A shrewd businessman, he also hired sales agents all over the eastern and Midwestern United States, including Iowa, Missouri, and Texas to sell the company's products. After the completion of the first transcontinental railroad in 1869, he tried to break into the bridge-building business west of the Mississippi River. To that end, he established fabrication factories in Kansas and a field office in Des Moines, Iowa by the mid-1870s. By 1882, King claimed to have constructed 5,000 bridges – mostly in New England and the Mid-Atlantic states.¹²

By the 1880s, competition between the bridge construction companies was intense throughout the United States as the railroads and local governments sought to improve their infrastructures. Like their counterparts in the railroad and steel industries, the bridge companies were compelled to form pool arrangements whereby certain firms would, in a sense, monopolize the industry in specific areas in the states in which they were active. The pool participants would contribute thirteen percent of their profits on specific projects into the pool “which would then distribute the accumulated sums to the participants based on the size of the company.”¹³ Although never entirely legal, this was a method companies used in highly competitive markets to ensure work and maximize profits. While the county governments often conspired with the bridge companies, they did not always receive a good bridge in the bargain. In at least two instances, bridges constructed by King's company suffered catastrophic failures. Zenas King and six other companies formed a successful bridge pool in 1883. Bridge pooling was certainly a common practice in Montana beginning in the 1890s. Still, there is no direct evidence that the King company was a participant in the practice in the state. Other companies active in the state at that time, such as William S. Hewett of Minneapolis, the Billings, Montana-based Security Bridge

¹² Allan King Sloan, “Discovering Zenas King,” paper presented at the annual meeting of the Society for Industrial Archeology, Savannah, Georgia, June 1999.

¹³ Sloan, *Ibid.*

Company, and O. E. Peppard of Missoula, Montana, were inarguably involved in bridge pooling during this period.¹⁴

Just prior to his death in October 1892, Zenas King finally broke into the Montana bridge market with the construction of two bridges in Madison County. Both were pin-connected Pratt through trusses. One crossed the Big Hole River near Twin Bridges and the other the Jefferson River near Iron Rod (MT-63). With Zenas's death, his son, James, took over control of the firm and renamed it the King Bridge Company. Under James's leadership the company finally became a prolific bridge builder in the western United States. Evidence suggests that while the company frequently bid on county bridge projects, it was not often successful because of the state's pre-existing bridge pool agreements.¹⁵

The company was successful in Lewis and Clark County, obtaining the contract to building the Dearborn River High Bridge (HAER No. MT-23) in 1897, the Elk Creek (24LC1168), Smith Creek, and Flat Creek (24LC1167) bridges in the northern part of the county in 1901. The company also constructed bridges across the Jefferson River in 1897, the Upper Madison (Varney) Bridge (HAER No. MT-64) in 1897, and the Musselshell River in central Montana in 1900. There are, undoubtedly, more King-built bridges in Montana that have either been demolished or have not, as yet, been identified. But as the pooling agreements solidified after the turn-of-the-twentieth century, the King Bridge Company was increasingly edged out of the Montana market by the Montana and Minnesota based companies. The Minnesota companies had direct access to Montana over the Northern Pacific and Great Northern railroads. They also had active field offices in the state, while the King Bridge Company did not. There was also a definite swing by the county commissioners in favor of the Montana-based firms, specifically the Security Bridge Company and O. E. Peppard.¹⁶

With the inclusion of markets in the western United States, the King Bridge Company increased its bridge shop output from 18,000 to 30,000 tons of steel per year between 1894 and 1903. It was the largest bridge company based in Ohio and was, nationally, second only to the Pennsylvania-based American Bridge Company. During the first decade of the twentieth century, the federal government aggressively sought to break up the bridge pools through enforcement of the 1890 Sherman Anti-Trust Act. Because the pool agreements, however, were not formal pacts, but were more "gentleman's" agreements, the government had a difficult time eliminating something that was advantageous to industry and the county governments.

¹⁴ Sloan, *Ibid*; Jon Axline, *Conveniences Sorely Needed: Montana's Historic Highway Bridges, 1860-1956*, (Helena: Montana Historical Society Press, 2005), 31, 34; Fredric L. Quivik, *Historic Bridges in Montana*, (Washington DC: National Park Service, 1982), 33, 38-39, 41, 43.

¹⁵ Sloan, "Discovering Zenas King; Axline, *Monuments Above the Water: Montana's Historic Highway Bridges*, (Helena: Montana Department of Transportation, 1992), 8, 10.

¹⁶ Sloan, "Discovering Zenas King;" Axline, *Conveniences Sorely Needed*, 40-41.

Consequently, other means were sought to break the power of the pools. The Good Roads movement and the U.S. Department of Agriculture tried to remedy the situation by promoting modern, scientifically engineered bridges and the creation of state highway departments to oversee road and bridge construction in the states. Standardized and efficient bridges that would best serve the public good were an important part of the Progressive reform movement of the early twentieth century. Through legislation beginning in 1903 and culminating in the Federal Aid Road Act of 1916, the federal government sought to end the “good old boy” system by giving the state and federal governments more influence on road and bridge construction.¹⁷

In 1913, the Montana State Legislature formed the Montana State Highway Commission. Two years later, the highway commission created a bridge department to standardize bridge designs in the state and provide oversight to the counties for the bridge construction process. This development spelled the doom of the bridge construction companies in Montana, including the King Bridge Company. Instead of highly individualized structures built, essentially, by non-professional engineers, the state’s infrastructure was increasingly dominated by riveted Pratt and Warren through and pony truss bridges. The loss of a previously lucrative market is likely what caused the King Bridge Company to branch out into the construction of prefabricated steel building frames rather than concentrating only on bridges. By 1923, declining revenues caused the King Bridge Company to go out of business.¹⁸

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¹⁷ Axline, *Ibid*, 59.

¹⁸ Sloan, “Discovering Zenas King;” Axline, *Conveniences Sorely Needed*, 60-61; Federal Highway Administration, *America’s Highways, 1776-1976*, (Washington DC: U.S. Department of Transportation, 1976), 80-81; State Wide Highway Planning Survey, *History of the Montana State Highway Department, 1913-1942*, (Helena: Montana State Highway Commission, 1943), 9-11; Quivik, *Historic Bridges*, 43-44; George R. Metlen, *Report of the Montana State Highway Commission, 1915-1916*, (Helena: Montana State Highway Commission, 1916), 4-8.

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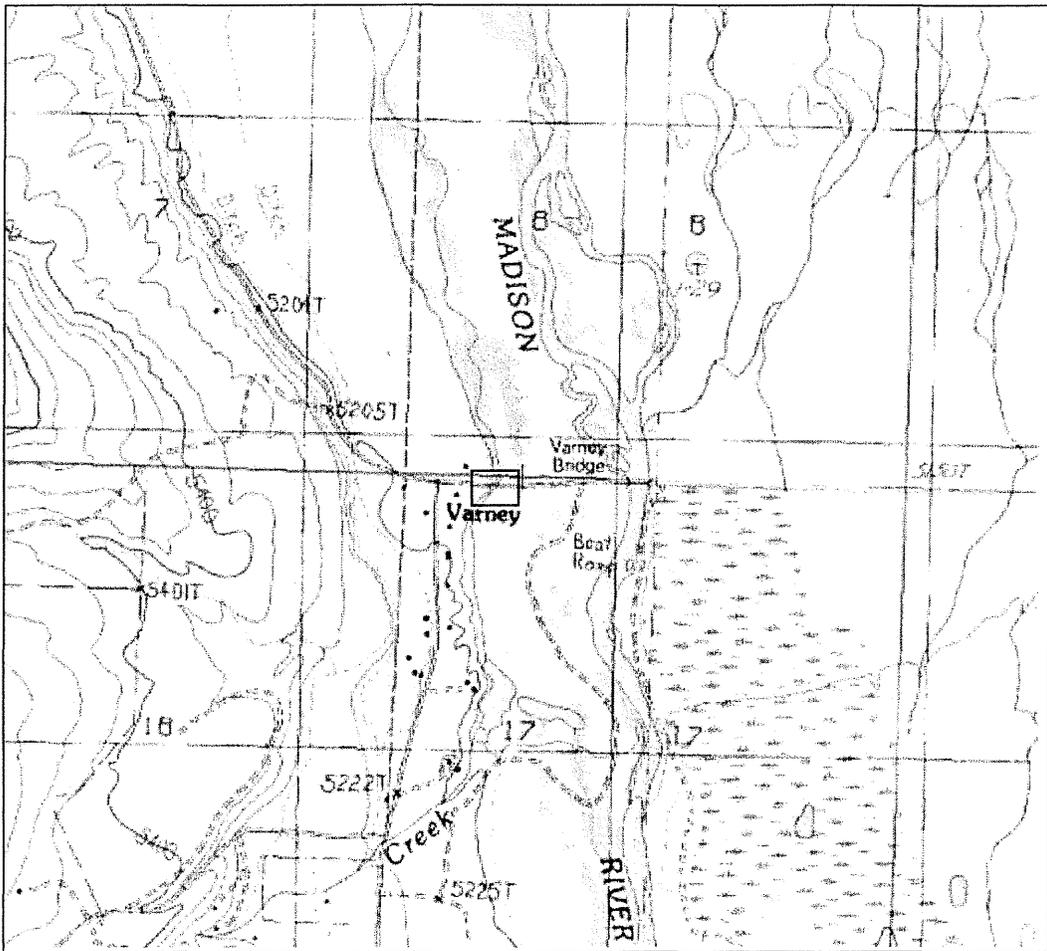
General Land Office Map, July 1870. Viewed at www.glorerecords.blm.gov. Viewed on 15 January 2014.

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Varney, Montana USGS Quadrangle Map, 1988