

HAER  
IOWA  
8-BOONE V,  
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HAER No. IA-45

WAGON BRIDGE  
(Bluff Bridge)  
(Boone Bridge)  
Iowa Bridges Recording Project  
Spanning Des Moines River  
Boone  
Boone County  
Iowa

BLACK & WHITE PHOTOGRAPHS  
WRITTEN HISTORICAL & DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD  
National Park Service  
Department of the Interior  
P.O. Box 37127  
Washington, D.C. 20013-7127

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(Bluff Creek Bridge)  
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Location: Spanning the Des Moines River on county road; 4.5 miles west of Boone; Boone County, Iowa  
UTM: 15.419730.4657010  
USGS: Boone West, Iowa quadrangle (7.5 minute series, 1965, photorevised 1976)

Date of Construction: 1910-1911

Designer/Builder: Iowa Bridge Company, Des Moines, Iowa

Fabricators: Iowa Bridge Company, Des Moines, Iowa; Jones & Laughlin, Lackawanna, and Carnegie Steel Companies, Pittsburgh, Pennsylvania; Inland Steel Company, Indiana Harbor, Indiana

Present Owner: Boone County

Present Use: Roadway bridge

Significance: This bridge is one of the few remaining large-scale wagon trusses in Iowa. A locally important crossing of a major river, it is one of the few multiple span pin-connected Pratt trusses remaining in the state. One of its four spans is a long-span Pennsylvania through truss, an important sub-type of the Pratt truss.

Historian: Robert W. Jackson, August 1995

Project Information: This document was prepared as part of the Iowa Historic Bridges Recording Project performed during the summer of 1995 by the Historic American Engineering Record (HAER). The project was sponsored by the Iowa Department of Transportation (IDOT). Preliminary research on this bridge was performed by Clayton B. Fraser of Fraserdesign, Loveland, CO.

In 1909 Boone County was embroiled in a bridge controversy. Sometime in late spring or early summer of that year the Boone County board of supervisors received a petition from several hundred farmers of Yell, Amaqua, Grant and Pilot Mound townships, and from a large number of the businessmen of the town of Boone and some from the town of Ogden, asking that a wagon bridge be built over the Des Moines River at Incline, a site a few miles northwest of the town of Boone. Incline, located in section 23 of Yell Township, was the site of a post office, established near the Milford coal mines, that operated from 1893 to 1901. At some point a wooden bridge was built at this location for the use of the Chicago & North Western Railroad Company (presumably to haul coal), but by 1909 the bridge had become unserviceable due to damage. The petition presented to the board was subsequently lost, and a second petition containing approximately 100 signatures was submitted to the board by advocates of a second bridge location about a half mile south of Incline and about twenty rods north of the Chicago and North Western railroad viaduct. The presenters of the first petition quickly countered this new initiative with a new petition of their own containing approximately 800 signatures. As the Boone News-Republican characterized the conflict, "the advocates of both sites have been warm in their contest and the dispute had become quite acrid".<sup>1</sup>

The bridge question was settled early in November of 1909 when the board of supervisors met privately with the directors of the Boone Commercial Association at the offices of the latter. The Association offered to buy the existing, inoperable Incline Bridge from the board for \$750, the same price for which the board had purchased it from the railroad company, if the advocates of a new bridge at Incline would repair the approaches and if the board of supervisors would make other necessary repairs. It was thus agreed that the Incline bridge would be repaired and put into a useable condition right away and that the board would eventually build a new bridge at the viaduct site. In commenting on this agreement, the Boone County Democrat estimated that it would cost the board "at least \$6,000 or \$8,000" to make the necessary repairs to the Incline Bridge.<sup>2</sup>

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<sup>1</sup>"Two Bridges To Be Built," Boone News-Republican, 4 November 1909; N.E. Goldthwait, History of Boone County, Iowa 1 (Chicago: Pioneer Publishing Co., 1914), 201.

<sup>2</sup>"The Bridge Question," Boone County Democrat 10 November 1909. See also "The Bridge Question," Boone County Democrat 30 September 1909; "The Bridge Question," Boone County Democrat 8 October 1909.

Despite these dire cost predictions, repair of the existing wooden Incline bridge began almost immediately and a new 124' steel span was added to the east side. On March 3, 1910 the county paid Iowa Bridge Company (IBC) of Des Moines \$2,360 for the additional span, plus \$91.25 for labor. Other costs associated with repair of the approaches to the bridge no doubt pushed the total cost much higher, although certainly nowhere near the estimates of the Democrat. The bridge was opened to traffic in late February or early March of 1910, and an additional \$25 was spent by the county in June to paint the bridge.<sup>3</sup>

Before the county could begin work on the new bridge at the viaduct site, it was necessary to secure right-of-way for the western approach road. Although a private road leading to the east side of the bridge already existed and could easily be acquired by the county, a road to the west side would have to be built before the bridge could be used. Building such a road would not be easy due to the existence of a rather steep hill on that side of the river. During the summer of 1910 the county began acquiring the necessary right-of-way for the proposed road with the financial assistance of the Boone Commercial Association. Although the plat for the "Bluff Creek River Bridge Road" was not officially filed until May 27, 1911, the work of clearing and grading was begun by local farmers in early fall of 1910.

Construction of the bridge began in late fall of 1910 with the signing of a contract to have the piers in place before the onset of freezing weather. No records exist indicating who was awarded the substructure contract, but such work may have been conducted by a local contractor, as was the practice with several other area bridges around this time. The erection of the superstructure was essentially completed late in December, although delays in construction of the western approach road delayed the official opening of the bridge until April of 1911.<sup>4</sup>

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<sup>3</sup>"The Incline Bridge," Boone County Democrat 28 January 1910; "Bridge Nearing Completion," Boone County Democrat 25 February 1910; "Activity of the Board of Supervisors," Boone News-Republican 16 February 1911; "Activity of the Board of Supervisors," Boone County Democrat 17 February 1911.

<sup>4</sup>Proceedings of the Boone County Board of Supervisors Book 5, 1 July 1910, 28 June 1911, a document contained in the files of the Boone County Auditor's Office, Boone, Iowa; "New River Bridge," Boone County Democrat 2 September 1910; "Farmers West of Boone Are Making A New Road," Boone News-Republican 3 November 1910; "The Bluff Creek Bridge Near Pea's Ford Is Finished," Boone

The superstructure of the bridge was probably erected by the Iowa Bridge Company, a firm responsible for several bridges built in Boone County in 1910, including the new steel span of the Incline Bridge, the Jones Ford Bridge, and the Elk's Rapid Bridge. There is also a surviving IBC nameplate from a 1909 bridge over the Des Moines River at Sugar Valley, a crossing that was located a few miles south of Boone. It is probable that the company built the Honey Creek bridge around 1910, which is located about 3.4 miles southwest of Boone, and also designed the Moore Bridge over Beaver Creek, located about 5.7 miles southeast of Berkley. The Moore Bridge was erected by the Federal Bridge Company of Des Moines, a company owned by a relative of IBC president and treasurer James S. Carpenter. There are no surviving records, however, that indicate which firm actually built the Wagon Bridge superstructure.<sup>5</sup>

A 1913 road map of Boone County drawn by M. Huebinger shows an advertisement for IBC which reads: IOWA BRIDGE CO.; CONCRETE - STEEL - WOOD; Highway Bridges Our Specialty; Materials, Designs, Estimates; Write for Prices.<sup>6</sup> This advertisement seems to indicate that the company believed sufficient business remained in the area to satisfy placement of the notice. However, the creation of the Iowa State Highway Commission in the spring of 1913, and the subsequent adoption by that commission of a

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News-Republican 22 December 1910; "Local Brevities," Boone County Democrat 23 December 1910; "A Highway Proposition," Boone News-Republican 16 March 1911; "The Bluff Creek Bridge," Ogden Reporter 6 April 1911; "Bridge Completed," Boone County Democrat 7 April 1911; "That New Bridge," Boone County Democrat 21 April 1911

<sup>5</sup>The only support for the assumption that the bridge was built by Iowa Bridge Company comes from bridge consultant Clay Fraser of Loveland, Co. Fraser claims to have seen a photograph of the bridge, when the contractor's plate was still attached, in the offices of Calhoun-Burns and Associates, Consulting Engineers, Des Moines, IA. Although that plate was too small in the photograph for the contractor's name to be discernable, it had, according to Fraser, the "characteristic shape" of an Iowa Bridge Company plate. Calhoun-Burns is no longer able to locate that photograph. The IBC plate taken from the Sugar Valley Bridge, which has the "characteristic shape" noted by Fraser, is on display at the Museum of the Historical Museum Society of Boone County, Boone, Iowa (a separate organization from the Boone County Historical Society, which runs its own museum).

<sup>6</sup>This document is on display at the Museum of the Historical Museum Society of Boone County, Boone, Iowa.

standard design that differed from the design most favored by IBC for bridges in this area, may have curtailed the company's once thriving business in Boone County.

Iowa Bridge Company was formed about 1902 by James S. Carpenter, who had been a traveling salesman for the N.M. Stark Company of Des Moines in the late 1890s. The main office of IBC was in Des Moines, but there was also a branch office in Minneapolis, Minnesota. Carpenter successfully competed with his former employer in contracts for bridge work in Iowa and several other states and the Dakota Territory. There are at least two IBC bridges known to have been built in South Dakota in 1903; the Turtle Creek Bridge is a 60' pin-connected Pratt pony truss near Tulare in Spink County; the Big Sioux River Bridge is a 70' pin-connected half-hip Pratt pony truss near Bruce in Brookings County. IBC also constructed a 140' pin-connected Pratt through truss in 1910 over the James River near Frankfort, and a 150' riveted Parker through truss in 1919 over the James River near Redfield. In the first two decades of the twentieth century, IBC was the most active out-of-state bridge company in South Dakota. It is not known exactly when this company went out of business, but it is listed in the Des Moines city directory as late as 1929. In 1947 a new company with the same name, but no connection to the original firm, was formed in Des Moines.<sup>7</sup>

The Federal Bridge Company of Des Moines, which erected the IBC designed Moore Bridge over Beaver Creek in Boone County, also did a considerable amount of business in South Dakota. This firm was created sometime around 1911 by Edwin S. and Hamilton Carpenter, who were apparently related to IBC president James Carpenter, and to IBC vice president D.S. Carpenter. Both Edwin and Hamilton had worked for IBC before forming Federal, and it is probable that the two firms cooperated in the bidding of contracts for bridges in several states. Both companies bid for the Moore Bridge contract against Clinton Bridge and Iron Works and A.E.

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<sup>7</sup>R.G. Dun & Co., Mercantile Agency Reference Book (New York: R.G. Dun & Co., June 1917) 131; R.L. Polk & Co., Des Moines City and Valley Junction Directory For the Year Commencing December 1, 1914 23 (Des Moines, IA: R.L. Polk & Co., 1915) 1488; R.L. Polk & Co., Polk's Iowa State Gazetteer and Business Directory, 1922-23 20 (Des Moines, IA: R.L. Polk & Co., 1923) 367, 378; Fredric L. Quivik and Lon Johnson, "Final Report on the Determination of Eligibility to the National Register of Historic Places for Historic Bridges in South Dakota," September 1990, a paper prepared for the South Dakota Department of Transportation by Renewable Technologies, Butte MT; Interview with Roland Jensen (son of Hartwig Jensen, owner of the Iowa Bridge Company formed in 1947), Des Moines, Iowa, by author, 14 June 1995.

Shorthill, and both IBC and Federal apparently profited from the awarding of the contract to Federal.

The Wagon Bridge is an approximately 703' four-span steel bridge composed, beginning at the east end, of a timber stringer approach span of about 160', one approximately 124' pin-connected Pennsylvania through truss, one approximately 200' pin-connected Pratt through truss, one approximately 124' pin-connected Pratt through truss, and one approximately 96' pin-connected Pratt through truss. The roadway width is 16'-0" and has a timber deck. The substructure consists of concrete-filled steel cylindrical piers with plate or bar diaphragms, and a concrete abutment at the west end. This abutment was originally constructed of stone, and may have been originally covered with concrete.

The main span of this bridge is one of the oldest and best preserved large wagon trusses in Iowa. The bridge continues to serve as a locally important stream crossing, and also serves as an excellent example of the work of a very prolific and important Iowa bridge company, about which relatively little is known.

APPENDIX  
IMPLICATIONS FOR FURTHER RESEARCH

Several questions concerning the Wagon Bridge arose during the research and writing of this report. Some of these questions, due to limitations in the scope of the Iowa Historic Bridges Recording Project, have remained unanswered. It is suggested that scholars interested in this bridge consider pursuing the following:

1. What additional evidence exists to prove that Iowa Bridge Company built the bridge?
2. How much did the bridge cost?
3. Was there collusion between Iowa Bridge Company and Federal Bridge Company in contact bidding?
4. When was the Incline Bridge taken down?



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ADDENDUM TO  
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This appendix is an addendum to a 8-page report previously transmitted to the Library of Congress.

**APPENDIX: ADDITIONAL REFERENCES**

Interested readers may consult the Historical Overview of Iowa Bridges, HAER No. IA-88: "This historical overview of bridges in Iowa was prepared as part of Iowa Historic Bridges Recording Project - I and II, conducted during the summers of 1995 and 1996 by the Historic American Engineering Record (HAER). The purpose of the overview was to provide a unified historical context for the bridges involved in the recording projects."