

KRALLTOWN ROAD BRIDGE
Pennsylvania Historic Bridges Recording Project
Spanning Bermudian Creek at Kralltown Rd. (State Rt. 4017)
Kralltown vic.
York County
Pennsylvania

HAER No. PA-469

HAER
PA
67-KRALL.V
1-

PHOTOGRAPHS

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HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
1849 C Street, NW
Washington, DC 20240

HISTORIC AMERICAN ENGINEERING RECORD

KRALLTOWN ROAD BRIDGE

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Location: Spanning Bermudian Creek at Kralltown Road (State Route 4017),
Kralltown vicinity, York County, Pennsylvania.

USGS Quadrangle: Wellsville, Pennsylvania (1963, photorevised 1972).

UTM Coordinates: 18/332460/4430350

Date of Construction: 1884.

Designer: Wrought Iron Bridge Company (Canton, Ohio).

Builder: Wrought Iron Bridge Company (Canton, Ohio).

Present Owner: Pennsylvania Department of Transportation.

Present Use: Vehicular bridge.

Significance: The Kralltown Road Bridge was built in 1884 by the Wrought Iron
Bridge Company, a leading nineteenth-century bridge fabricator
and builder. It is a double-intersection Pratt through truss, a
representative truss type used for highway bridges in the late
nineteenth century. The Kralltown Road Bridge was listed in the
National Register of Historic Places in 1988.

Historian: Blythe Semmer, August 1997.

Project Description: This bridge was documented by the Historic American
Engineering Record (HAER) as part of the Pennsylvania Historic
Bridges Recording Project - I, co-sponsored by the Pennsylvania
Department of Transportation (PennDOT) and the Pennsylvania
Historical and Museum Commission during the summer of 1997.
The project was supervised by Eric DeLony, Chief of HAER.

The Kralltown Road Bridge is a representative example of the commonly built iron Pratt truss that facilitated the improvement of roads and the replacement of wooden bridges with metal truss bridges in the late nineteenth century. This bridge was built by the Wrought Iron Bridge Company of Canton, Ohio, one of a number of bridge companies that marketed their products to local governments in the nineteenth century. The era of the bridge companies is a unique period in the history of bridge building. Private companies became influential in the popularization of their distinctive varieties of metal trusses. York County frequently employed the Wrought Iron Bridge Company, demonstrating the company-client relationships that often developed. American bridge companies occupy a transition period between construction by local craftsmen and the development of a state highway system responsible for the construction and maintenance of highway bridges.

Description

The Kralltown Road Bridge is a double-intersection wrought iron Pratt through truss. It spans Bermudian Creek in western York County, near the Adams County line, one and a half miles southeast of Kralltown. The bridge carries State Route 4017, known locally as Kralltown Road. Farmland and residences surround the bridge, which is 153'-0" long. The deck, 13'-0" wide, carries one lane of traffic with a vertical clearance of 13'-6". There is a four ton weight limit on traffic across the bridge. Stone abutments support the truss, which has a minimum clearance of 17'-0" over Bermudian Creek.¹

The deck system still rests on original built-up steel floor beams, which are suspended at each lower-chord panel point from a U-bolt hanger looped over the pin, except at L1 and L9, where the U-bolt is suspended directly from the eye of a forged hanger rod. There is lateral deck bracing between the deck girders on the underside of the bridge. Six rolled steel I-beam stringers, which are not original, rest on the floor beams. The bridge still has a wooden deck, which has been replaced several times during its century-long history. The most recent deck surface replacement was in March 1982.

There is light lateral bracing between the upper chords. Overall, the superstructure of the bridge has a very light and thin appearance, thanks to its height and the thin diagonal tension members. The fact that these diagonal members cross two panel points distinguishes the double-intersection variety of Pratt truss. The vertical compression members are built up from channels and single lacing into box sections. There is webbing at the portal below the decorative bridge plaque that bears the name of the Wrought Iron Bridge Company and its location in Canton, Ohio.

The Pratt truss was patented by Thomas and Caleb Pratt in 1844. It has vertical members in compression and diagonal tension members. These trusses were especially popular as highway bridges because of the ease with which they could be assembled in the field. The

¹ Bridge inspection file, BMS No. 66-4017-0030-0000, Pennsylvania Department of Transportation Engineering District 8-0, Harrisburg, Pennsylvania.

Pratt's versatility sealed its popularity with bridge companies, which could fabricate components and ship them to be assembled at the site. The double-intersection Pratt variation was first used by Squire Whipple as a railroad bridge on the Saratoga and Rensselaer in New York in 1852. It is sometimes referred to as a Whipple truss.²

Bridge Companies and York County

In 1884 the commissioners of York County allotted approximately \$3000.00 for bridges and bridge repairs in their budget. The flood of Codorus Creek in York Borough during June 1884, however, led to their advertisements for bids for numerous bridge replacement projects. The Wrought Iron Bridge Company of Canton, Ohio, turned in bids for several of these bridges. They were the low bidders on two sites in York Borough and were awarded contracts for the Main Street Bridge, a 156'-0" span, for \$14,437.92, and the George Street Bridge, a 180'-0" span, for \$11,600.00. The cost of the George Street Bridge reflected the lower price of using wooden stringers. The Wrought Iron Bridge Company made an unusual proposal to the county commissioners on the next round of bids, when they offered a \$250.00 discount on the aggregate amount if they were awarded contracts on all three iron bridges for which they submitted bids. Later, the Wrought Iron Bridge Company was hired to replace yet another bridge destroyed in the 1884 flood, the Market Street Bridge in York Borough. This double-intersection Pratt truss was constructed during 1885 and 1886.³

Given the amount of business that the Wrought Iron Bridge Company was doing in York County in the 1880s, it is logical that they would have been chosen to construct a popular type of truss bridge over Bermudian Creek. No written documentation of the construction of the Kralltown Road Bridge was found in the commissioners' minutes or road docket of York County, although other sources agree on the 1884 date of construction.

Washington Township

Washington Township, in the western portion of York County bordering Adams County, was an agricultural community in 1884. It also supported some industries along the banks of Conewago and Bermudian Creeks. Jesse Krall's mill on Bermudian Creek near the site of the Kralltown Road Bridge had been operating since it was built in 1782. Lewis Strayer ran a wool carding mill on Bermudian Creek as well. The area was developing quietly, and the spot on the map called Hall Post Office was becoming known locally as "Kralltown" when a county history was written in 1886. Kralltown included about twenty houses at that time, although it had no

² Donald C. Jackson, *Great American Bridges and Dams* (New York: John Wiley and Sons, 1988), 24.

³ Bridges file, Historical Society of York County, York, Pennsylvania.

hotel. A mail route passed through the village on its way from York Springs to York Borough.⁴ As the other bridges being built in the county attest, a growing population and developing agriculture and industry made it desirable to have new iron bridges rather than the fords that had often been the only crossing of the county's many creeks. A year after the construction of the Kralltown Road Bridge, another bridge was needed across the Bermudian Creek where there had been none before. The ford was difficult to cross and often obstructed by ice, according to petitioners.⁵

The Kralltown Road Bridge is a significant example of the products of American bridge building companies in the second half of the nineteenth century. The ability to prefabricate truss parts and ship them to be assembled at a distant site allowed companies like the Wrought Iron Bridge Company of Canton, Ohio, to sell bridges as far away as Pennsylvania. This process of erecting bridges helped standardize the types of spans built across the country, especially in the case of the popular Pratt truss.

⁴ John Gibson, ed., *History of York County, Pennsylvania, From the Earliest Period to the Present Time, Divided Into General, Special, Township and Borough Histories* (Chicago: F. A. Battey Publishing Company, 1886), 672-73.

⁵ York County, Pennsylvania, *Road Docket* (York County Courthouse, York, Pennsylvania), 464 (April Session 1885).

SOURCES CONSULTED

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- Darnell, Victor C. *Directory of American Bridge-Building Companies 1840-1900*. Occasional Publication No. 4. Washington, D.C.: Society for Industrial Archaeology, 1984.
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- York County, Pennsylvania. *Bridge Book*. York County Courthouse, York, Pennsylvania.
- _____. *Commissioners' Minutes*. York County Courthouse, York, Pennsylvania.
- _____. *Road Docket*. York County Courthouse, York, Pennsylvania.

APPENDIX: Suggestions for Future Research

Some questions concerning the Kralltown Road Bridge arose during the research and writing of this report. Some of these questions, due to limitations in the scope of the Pennsylvania Historic Bridges Recording Project - I, remain unanswered. Scholars interested in this bridge are encouraged to pursue the following:

1. If the Wrought Iron Bridge Company agent for York County could be identified, this might lead to the discovery of the contract for the construction of this bridge.