

United States Department of the Interior
National Park Service

National Register of Historic Places
Registration Form

029-0000-0030

This form is for use in nominating or requesting determinations of eligibility for individual properties or districts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, styles, materials, and areas of significance, enter only the categories and subcategories listed in the instructions. For additional space use continuation sheets (Form 10-900a). Type all entries.

1. Name of Property

historic name County Line Bowstring

other names/site number County Line Bowstring

2. Location 1 miles north and 2.2 miles east of intersection of F.A.S. 566 and F.A.S. 2037

street & number Unmarked county road

not for publication

city, town Concordia

vicinity

state Kansas

code KS

county Cloud

code 29

zip code 66901

3. Classification

Ownership of Property

- private
- public-local
- public-State
- public-Federal

Category of Property

- building(s)
- district
- site
- structure
- object

Number of Resources within Property

Contributing

Noncontributing

_____	_____ buildings
_____	_____ sites
<u>1</u>	_____ structures
_____	_____ objects
<u>1</u>	_____ Total

Name of related multiple property listing:
Metal Truss Bridges in Kansas

Number of contributing resources previously listed in the National Register 0

4. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property meets does not meet the National Register criteria. See continuation sheet.

Signature of certifying official _____

Nov. 16, 1989
Date

State or Federal agency and bureau _____

In my opinion, the property meets does not meet the National Register criteria. See continuation sheet.

Signature of commenting or other official _____

_____ Date

State or Federal agency and bureau _____

5. National Park Service Certification

I, hereby, certify that this property is:

entered in the National Register.

See continuation sheet.

determined eligible for the National

Register. See continuation sheet.

determined not eligible for the

National Register.

removed from the National Register.

other, (explain:)

Signature of the Keeper

Date of Action

6. Function or Use

Historic Functions (enter categories from instructions)

Transportation: Road related (vehicular) Bridge

Current Functions (enter categories from instructions)

Transportation Road Related (vehicular) Bridge

7. Description

Architectural Classification

(enter categories from instructions)

Other: Bowstring Pony Truss

Materials (enter categories from instructions)

foundation

walls

roof

other Metal: Wrought Iron

Describe present and historic physical appearance.

The County Line Bowstring truss, erected in 1876, is 80 feet long and 16 feet wide. The wooden deck is located 13 feet above the level of the river.

The members of a truss bridge are designated either as chord members or web members. Chord members are those mainly defining the outlines of the structure and they are termed lower or upper chord members depending on whether they are found at the bottom or the top of the structure. Members between the chords are web members. They are called posts or ties if they sustain compression or tension respectively.

The County Line Bowstring arch truss is a tubular wrought iron design, patented in 1873, by David Hammond, who was one of the most prolific designers of metal truss bridges during the 19th century and a principal of the Wrought Iron Bridge Company. The main feature of his patent was a tubular arch, made up of riveted wrought iron plates that improved the strength of the arch without adding to the weight.

The bridge is a tied arch with diagonal webs serving as bracing. The diagonal rods are threaded at both ends and pass through the upper and lower chord are attached to the ends by nuts. The verticals consist of threaded wrought iron star bars which are attached to the upper and bottom chord in a similar manner with nuts. Deck beams, supporting the road, sit on top of the bottom chord members at the panel points. Lattice sway bracing completes the design.

The bridge was relocated at an undetermined date.

A wooden railing has been attached to the bridge but this has not negatively affected the bridge's structural integrity. No major structural alterations are apparent.

8. Statement of Significance

Certifying official has considered the significance of this property in relation to other properties:

nationally statewide locally

Applicable National Register Criteria A B C D

Criteria Considerations (Exceptions) A B C D E F G

Areas of Significance (enter categories from instructions)

Engineering

Transportation

Period of Significance

1876

1876

Significant Dates

1876

1876

Cultural Affiliation

n/a

Significant Person

n/a

Architect/Builder

Phoenix Bridge Company

State significance of property, and justify criteria, criteria considerations, and areas and periods of significance noted above.

The great evolution of truss bridge construction began in the United States soon after the publication of Squire Whipple's historic work on stresses in 1840. Prior to this the design work was essentially that of trial and error, experience and judgement. He was also one of the first in our history to manufacture and erect his iron bridge designs. The Whipple bowstring dotted the countryside. As the ultimate compliments was imitation, his plans were widely copied with "improvements" that would protect the competitor from patent infringement. When his patent expired in 1869, hundreds more appeared, many even copied down to the last detail.

By 1871, Wrought Iron Bridge Company was using proprietary wrought iron bridge sections as manufactured by the Phoenix Iron Company in its bowstring arches. This Philadelphia, Pennsylvania company became famous for manufacturing everything from the initial iron to erecting finished bridges.

The particular patent for the tubular columns used in the County Line bowstring was granted to S. J. Reeves of Philadelphia on June 17, 1862. The Reeves family controlled Phoenix Iron Company.

According to the patent, Reeves claimed that he had found a new way of uniting together three or more pieces of wrought iron, "made with flanges in the direction of their length, so that they shall form a column or shaft to be used as posts and also as braces or compression chords in the construction of buildings, bridges, piers or other structures."

Dangerous river crossings in Concordia caused a strong public outcry for a safe bridge. This cry was answered on November 2, 1875 when Lincoln township voted bonds for a bridge. On January 27, 1876, neighboring Sibley township followed suit. On February 24th the two boards jointly chose a site and advertised for bids. Several firms offered proposals such as: E. I. Farnsworth, Missouri Valley Bridge Company, Leavenworth; W. D. young, King Iron Bridge Company; E. Wilson, Columbia Bridge of Dayton, Ohio; W. J.

See continuation sheet

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 1

Hobson, Wichita, Phoenix of Philadelphia and Miller of Cleveland, Ohio; and Jake Short of Concordia for a wire suspension bridge.

Phoenix of Philadelphia was awarded the contract for the amount of bonds voted, \$9,700. It is interesting to note that the local press reported the bridges were mainly manufactured at Canton, Ohio. This fact may explain why some Wrought Iron Bridge Company, also of Canton, used the proprietary column.

The bridge, as erected, consisted of four 80-foot trusses and a 25-foot trestle approach on the north end. Piers and abutments were to be of "solid stone masonry."

The bridge was completed September 23, 1876, and a big celebration was planned to be held on September 27. A disagreement arose between the two townships and the contractor, however, and it was not accepted until October 4. The celebration, needless to say, was somewhat of a disappointment.

The bridge was later divided up into its four spans and placed at various locations in the county. The bridge being nominated is one of these four spans.

Although it has been relocated to its present location, this is not considered to have a significant affect on its integrity. Such relocations were considered a common occurrence in Kansas and allowed the counties to utilize structures that might not be able to handle the load on a highly traveled road but would be more than adequate on a lesser traveled one. The location of the bridge is on a low volume road and the county highway administrator advises that he sees no way the bridge would ever be replaced. The bridge is a good early example of bowstring design in Kansas. It is the only one to have been identified specifically as having been built by the Phoenix Bridge Company. The references to fabrication in Canton, Ohio hints at a here-to-fore undisclosed relationship between Wrought Iron Bridge and Phoenix. It also represents the optimism of the surrounding settlers and stands for the prosperity they saw in the future for their community and as such is worthy of listing.

The Kansas Department of Transportation (KDOT) carried out a statewide inventory of historic bridges between 1980 and 1983. The bridges to be included were identified through computer printouts developed by KDOT, from information supplied by the counties (since almost all of the historic

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 8 Page 2

bridges were located on secondary rather than the primary road system), and by direct observation by field personnel. All bridges were inspected by KDOT personnel to verify the data on file. That information was jointly evaluated by representatives of KDOT, Kansas State Historical Society, and the State Historic Preservation Officer.

Each structure was evaluated using a points rating system adapted from the points evaluation rating developed by the Ohio Department of Transportation and Ohio Historic Preservation Office. Consideration was given to areas such as age, builder, number of spans, length, special features, history, integrity, surviving numbers, and preservation potential.

In many instances there is little information about individual structures. Often bridge plaques which may have contained information have been removed, or the county's records are not complete or have been destroyed. Due to the large numbers of similar structures there is often little to choose from in differentiating among individual bridges other than condition and the likelihood of preservation.

The purpose of the KDOT study and subsequent evaluation was to identify a representative selection of bridges of each class. Through this approach KDOT and KSHS hope to preserve for posterity some examples of each type.

9. Major Bibliographical References

- Victor C. Darnell, American Bridge Building Companies, Washington, DC: Society for Industrial Archeology Occasional Publication 4, 1984.
- David Weitzman, Traces of the Past: A Field Guide to Industrial Archeology, New York: Charles Scribner's Sons, 1980.
- James L. Cooper, Iron Monuments to Distant Posterity, DePauw University, F.H.W.A., Indiana Dept. of Highways, Indiana Dept. Natural Resources, N.P.S., 1987.
- Dan G. Deibler, A Survey and Photographic Inventory of Metal Truss Bridges in Virginia, Charlottesville: Virginia Highway & Transportation Research Council, 1975.

See continuation sheet

Previous documentation on file (NPS):

- preliminary determination of individual listing (36 CFR 67) has been requested
- previously listed in the National Register
- previously determined eligible by the National Register
- designated a National Historic Landmark
- recorded by Historic American Buildings Survey # _____
- recorded by Historic American Engineering Record # _____

Primary location of additional data:

- State historic preservation office
- Other State agency
- Federal agency
- Local government
- University
- Other

Specify repository:

Kansas State Historical Society

10. Geographical Data

Acreege of property Less than one acre

UTM References

A 14 622470 4390060
 Zone Easting Northing

C _____

B _____
 Zone Easting Northing

D _____

See continuation sheet

Verbal Boundary Description

The nominated property is located on the SW $\frac{1}{4}$, SE $\frac{1}{4}$, SW $\frac{1}{4}$, SW $\frac{1}{4}$, Section 32, Township 4 South, Range 2 West, on a tract measuring 180' x 16' whose northeast corner is represented by the northeast corner of the bridge. Beginning at the northeast corner the boundary proceeds 180' southwest, 16' northwest, 180' northeast, and 16' southeast to the point of beginning.

See continuation sheet

Boundary Justification

The boundary includes only that area that is historically associated with the nominated property.

See continuation sheet

11. Form Prepared By

name/title Larry Joehms date September 20, 1989

organization KS State Historical Society telephone (913) 296-3251

street & number 120 W 10th city or town Topeka state KS zip code 66612

United States Department of the Interior
National Park Service

National Register of Historic Places Continuation Sheet

Section number 9 Page 1

"The Bridge Bids," Concordia Empire, March 10, 1876, p. 3.
"The Bridge," Concordia Empire, March 17, 1876, p. 2.
Clarence Paulson, "One River Too Wide To Cross," Cloud County Republican,
December 6, 1984, p. 1.
U.S. Patent Office, Gazette, Patent 35,582, June 17, 1862.

