

United States Department of the Interior
National Park Service

National Register of Historic Places
Continuation Sheet

Section number _____ Page _____

SUPPLEMENTARY LISTING RECORD

NRIS Reference Number: 89002174

Date Listed: 1/4/90

Little Walnut Creek Bowstring
Property Name

Crawford
County

KS
State

Metal Truss Bridges in Kansas 1861--1939 MPS
Multiple Name

This property is listed in the National Register of Historic Places in accordance with the attached nomination documentation subject to the following exceptions, exclusions, or amendments, notwithstanding the National Park Service certification included in the nomination documentation.

Beth Boland
Signature of the Keeper

1/4/90
Date of Action

Amended Items in Nomination:

Item #3, Classification: The correct resource category is structure.

Item #6, Function: The current function is "Vacant/Not in Use."

Item #7, Description: Materials are 1) Metal: wrought iron; 2) Concrete; and 3) Stone.

Item #8, Significance: The applicable area of significance is engineering only.

DISTRIBUTION:

- National Register property file
- Nominating Authority (without nomination attachment)

United States Department of the Interior
National Park Service

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NOV 28 1989

National Register of Historic Places Registration Form

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 Little Walnut Creek Bowstring

other names/site number Little Walnut Creek Bowstring

2. Location

1 mile south and 1.5 miles east of intersection of E.A.S. 170 and E.A.S. 1191

street & number on unmarked county road

not for publication

city, town Walnut

vicinity

state Kansas

code KS

county Crawford

code 37

zip code 66780

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

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:)

Beth Boland

1/4/90

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 Little Walnut Creek Bowstring Truss, erected in ca. 1880, is 45 feet long and 11.3 feet wide. It is located approximately 6.5 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 Little Walnut Creek Bowstring Arch is a tubular wrought iron design patented by Zenas King on July 30, 1867. His bridges were fabricated from flat plates riveted to channel iron.

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 and 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 support a concrete deck. Lattice sway bracing completes the design.

The bridge has currently been taken out of service and the approaches are barred. It is scheduled for removal. The structural integrity has been affected by the placement of a concrete deck but there have been few other alterations.

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

Ca. 1880
Ca. 1880

Significant Dates

Ca. 1880
Ca. 1880

Cultural Affiliation
n/a

Significant Person
n/a

Architect/Builder
King Iron 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.

Although King Iron Bridge Company did not organize under that name until 1871, Zenas King was building bridges in Northern Ohio as early as 1858. By 1884 the company boasted the largest highway bridge works in the United States. In addition to his Cleveland, Ohio home base, King opened a plant in Iola, Kansas in 1871, and manufactured a number of bridges. The city voted bonds to build the plant for him as they thought it would be a significant benefit to the city. King had also been courted by the city of Topeka. This courting continued after the opening of the Iola plant. King realized that the transportation opportunities available in Topeka were better than those of Iola and moved. The city defaulted on the bonds, as would Topeka a short year later, when King moved out of Topeka and consolidated his company in Cleveland.

The flat plates and channel iron used in King bridges were less expensive than the other tubular top chords then available and he was able to underbid his competitors throughout the country. By 1874 their catalog claimed an annual number of 250-300 tubular arches built with over 2,700 in use by that year. Both pony and through trusses were manufactured.

The Little Walnut Creek bridge is one of only nine remaining bowstring arch pony trusses remaining in Kansas, and one of three remaining representing the King patent.

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Research has failed to locate any construction history for the bridge. Crawford county was erecting numerous small bridges throughout the period of 1877 to 1888 and official records often do not give exact locations. It is our judgement that the Little Walnut Creek bridge was built during this period. The addition of the concrete deck and its abandonment have affected the structure's integrity but due to its rarity, its association with a prolific out-of-state bridge builder, and because it still stands as a monument to the early settlers in the state and their striving for economic progress, it 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 bridges were located on secondary rather than 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 Schribner'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

1	5
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3	1	9	5	0	0
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4	1	6	8	2	2	0
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 Zone Easting Northing

B

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 Zone Easting Northing

C

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D

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See continuation sheet

Verbal Boundary Description

The nominated property is located on the SW 1/4, SW 1/4, SE 1/4, SW 1/4, section 31, township 27S, range 22E, on a tract measuring 45' x 11.3' whose northeast corner is represented by the northeast corner of the bridge. Beginning at the northeast corner the boundary proceeds 45' southwest, 11.3' northwest, 45' northeast, and 11.3' 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

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 organization Kansas State Historical Society date September 20, 1989
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 city or town Topeka state KS zip code 66612