

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: 89002177

Date Listed: 1/4/90

Spenser's Crossing Bridge
Property Name

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

Item #8, Significance: Applicable National Register criteria are A and C.

DISTRIBUTION:

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

2177

NOV 28 1989

United States Department of the Interior
National Park Service

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 Spencer's Crossing Bridge
other names/site number Greeley Bridge

2. Location .1 mile north, and .6 miles west of Greeley

street & number On unmarked county road not for publication
city, town Greeley vicinity
state Kansas code KS county Anderson code 3 zip code 66033

3. Classification

Ownership of Property	Category of Property	Number of Resources within Property	
<input type="checkbox"/> private	<input type="checkbox"/> building(s)	Contributing	Noncontributing
<input checked="" type="checkbox"/> public-local	<input type="checkbox"/> district	_____	_____ buildings
<input type="checkbox"/> public-State	<input type="checkbox"/> site	_____	_____ sites
<input type="checkbox"/> public-Federal	<input checked="" type="checkbox"/> structure	<u>1</u>	_____ structures
	<input type="checkbox"/> object	_____	_____ 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.

Ramon Powers Nov. 16, 1989
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:) _____

Both Roland 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: Pratt through truss

Materials (enter categories from instructions)

foundation

walls

roof

other Metal: Wrought Iron

Describe present and historic physical appearance.

Spencer's Crossing bridge, erected in 1885, is a pin connected Pratt through truss and two pin connected Pratt pony trusses. The west span consists of a 60 foot long pin connected Pratt pony truss. The center span is a 129 foot long pin connected Pratt through truss. The east span consists of a 41 foot long pin connected Pratt pony truss. All spans are 16 foot wide. The wooden bridge deck is situated 25 foot above the stream bed.

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. In the instance of the Spencer's Crossing bridge, as with all Pratt trusses, the web members are alternately vertical and inclined. The inclined members are in tension and the verticals in compression.

The end posts and top chords of both pony trusses are constructed with single bar lacing, channel and cover plates. Compression posts are fabricated from angle plate and single bar lattice. The main diagonals are threaded at the top and attached to the hip connection by the use of hex nuts and a cast iron saddle. Main members of the bridge, however, are connected at panel points by the use of a pin.

The through truss features a lattice portal strut and bracing. Vertical posts are made up of angle plate and modified non intersecting flat lattice. End posts and top chords are fabricated from channel plate, horizontal bars and a cover plate. At an undisclosed date the stone pier between the east span and the through truss was replaced with concrete. It does not adversely affect the bridge's integrity.

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

1885

1885

Significant Dates

1885

1885

Cultural Affiliation

n/a

Significant Person

n/a

Architect/Builder

Wrought Iron Bridge Builders

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. The Warren and Pratt trusses were rational designs and lent themselves readily to the system of analysis postulated by Whipple. They were, therefore, readily and rapidly accepted and formed the foundation for a greater part of American truss design.

The basic Pratt truss was patented in 1844 by Thomas and Caleb Pratt and the Warren, a design patented by two British engineers in 1848, demonstrated their versatility, durability and most important for the west, cost effectiveness.

In the Pratt design the diagonals were placed in tension and vertical members in compression, with the exception of the hip verticals. Generally, until the 20th century, all panel point connections were made with the use of a pin. This became such a widespread practice that it became one of the distinctive features of United States bridge construction. The pin was selected for several reasons. It was simple in design and it was much easier for period engineers to calculate stress at the panel points and throughout the structure than if the members were connected by the use of rivets. Although the riveted structure was much more rigid, the inability to insure that the individual rivets had not been damaged during insertion made early failure an unknown quantity. It was extremely difficult to calculate the stress throughout the joint. The pin could be considered basically as a single rivet.

Time was always a consideration in American construction. Logically labor costs would be less if the bridge went in quickly but also the falsework in the river would not have to be in place long. Flash floods were the bane of any bridge contractor. The pin connected bridge could be

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put up more quickly and with the use of less skilled employees. The portable pneumatic riveter was also in its infancy in the 1890s and without it, erection of totally riveted bridges was almost impossible. It was much easier to have the bridge members fabricated and riveted in a shop setting and pin them together on the job site.

The use of wrought iron in bridge construction was popular in 1885. By 1910 it was almost entirely replaced by steel.

The Spencers Crossing bridge is significant because it is a good example of the Pratt truss design of the late 19th century and is the work of one of the major out-of-state bridge fabrication companies, namely the Wrought Iron Bridge Company of Canton, Ohio. Out of the approximately 262 Pratt through trusses in Kansas only nine have presently been identified as having been built by Wrought Iron Bridge. These are spread throughout the state in Anderson, Bourbon, Cloud, Miami, Republic, Smith and Wilson counties. All are presently in use on the county highway systems.

Organized in 1864 by David Hammond, Wrought Iron Bridge Company was incorporated in 1871. Its major offices were located at Canton, New York City, Chicago and Kansas City, Missouri. From 1880-1900 the company was one of the major suppliers of metal truss bridges. In 1900 the company was absorbed by J. P. Morgan's American Bridge Company. Current information suggests that the company only sold Pratt truss structures in Kansas.

Bids were advertised on June 8, 1885 for the construction of four "wrought iron truss bridges." One of them was to be located at "Spencers Crossing," north of Greeley. At the same time, it was announced that bids would also be received for masonry abutments for each structure.

When the bids were opened on Saturday, July 11, 1885, problems arose. The commissioners were served with an injunction enjoining them not to let the contract for building the bridge at Gardner's Crossing of the Pottawatomie. The injunction claimed among other things that the special law passed for the county dealing with bridges had expired and the Commissioners no longer had the power to levy a special tax to finance

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building them. The board decided to wait until the courts had decided the issue before awarding contracts for all of the bridges. They did agree to award one contract, the Greeley bridge, to the Wrought Iron Bridge Company for \$3,990 and George Stump for the stone work at \$4.45 per cubic yard. This bridge, it was determined, could be built without a special levy. As the local press reported the "squally" session ended as well as could be expected due to the fact the Commissioners possessed cool heads. On July 24th, Judge Benson of Ottawa dropped the injunction.

Work was pushed on the Greeley bridges. There were setbacks such as a cave in of the banks on August 28, while the piers were being built and high water in late September and early October. By October 1, one pier was completed and the remaining work well under way. Work continued day and night to raise the stone work above the water level and attain a margin of safety. In two weeks the stone work neared completion. By December 3, the bridge itself had arrived and was being put in place.

The local press reported the completion of the bridge on December 31. The final cost approached \$7,000 but felt to be well worth the price.

The bridge would provide an all weather crossing that had been needed for many years. It would shorten the trade route for the local farmers and provide increased development possibilities for Greeley. In the past high waters forced most of the local traffic to other towns. The small town now had some leverage to entice trade from a much larger area.

Although a common truss type in Kansas, the Greeley Pratt truss is an excellent representative example due to the fact that it is in relatively good condition and is made up of both pony as well as through trusses. It is also one of the oldest remaining examples.

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

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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 evolution 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.

The Spencers Creek bridge was rated quite high in significance because of its age, because it was the work of a known prolific out-of-state builder, retained a good degree of its integrity and possesses a fair bypass potential.

9. Major Bibliographical References

Garnet Anderson County Democrat, July 24, 1885, p. 5, c. 3.
 [Local News] Greeley News, December 31, 1885, p. 2, c. 2.
 [Local News] Greeley News, December 3, 1885, p. 3, c. 3.
 [Local News] Greeley News, November 26, 1885, p. 2, c. 2.
 [Local News] Greeley News, October 15, 1885, p. 3, c. 2.
 [Local News] Greeley News, October 1, 1885, p. 3, c. 4.
 [Local News] Greeley News, September 3, 1885, p. 3, c. 2.
 "The Bridges," Garnett Republican-Plaindealer, July 17, 1885, p. 1, c. 3.
 "Notice to Bridge Builders," Garnett Republican-Plaindealer, June 12, 1885,
 p. 9, c. 5.
 "Notice to Stone Masons," Ibid.

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

Acreeage of property less than one acre

UTM References

A 15 312400 4249690
 Zone Easting Northing
 C _____

B _____
 Zone Easting Northing
 D _____

See continuation sheet

Verbal Boundary Description

The nominated property is located on the SW 1/4, NE 1/4, SW 1/4, SW 1/4, section 19, township 19S, range 21E, on a tract measuring 191' x 16' whose southeast corner represents the southeast corner of the bridge. Beginning at the southeast corner of the boundary proceed 191' northwest, 16' northeast, 191' southeast, and 16' southwest 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 Jochims
 organization Kansas State Historical Society date September 20, 1989
 street & number 120 W. 10th telephone (913) 296-3251
 city or town Topeka state KS zip code 66612

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Victor C. Darnell, American Bridge Building Companies, Washington, DC:
Society for Industrial Archeology Occasional Publication 4, 1984.
"Eight New Bridges," Belleville Freeman, May 4, 1899, p. 4, c. 3.
David Weitzman, Traces of the Past: A Field Guide to Industrial Archeology,
New York: Charles Saibner's Sons, 1980.



Greeley Bridge
Greeley, Kansas

Photos taken by Larry Jochims
on March 1, 1986,

Negatives located at the
Kansas State Historical Society

East approach looking north.

189



Greeley Bridge
Greeley, Kansas

Photos taken by Larry Jochims
on March 1, 1986.

Negatives located at the
Kansas State Historical Society.

Main span, south side looking north.

299



Greeley Bridge
Greeley, Kansas

Photos taken by Larry Jochims
on March 1, 1986.

Negatives located at the
Kansas State Historical Society

East approach looking northwest.

399



Greeley Bridge
Greeley, Kansas

Photos taken by Larry Jochims
on March 1, 1986.

Negatives located at the
Kansas State Historical Society

East end looking west.

499



Greeley Bridge
Greeley, Kansas

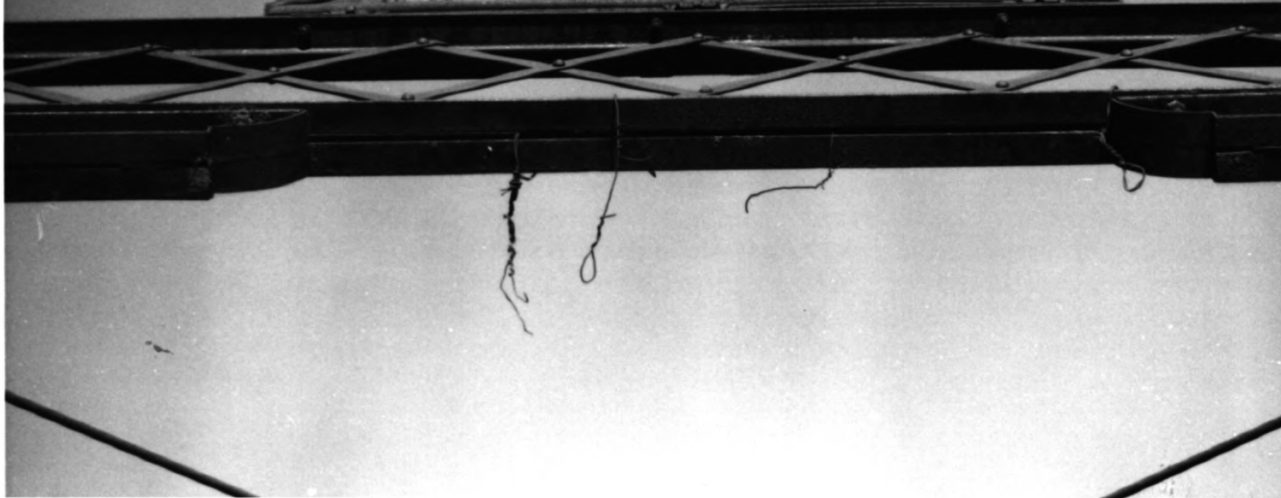
Photos taken by Larry Jochims
on March 1, 1986.

Negatives located at the
Kansas State Historical Society

East Pony Truss, south side
looking north.

5079

WROUGHT IRON BRIDGE CO.
BUILDERS
CANTON OHIO



Greeley Bridge
Greeley, Kansas

Photos taken by Larry Jochims
on March 1, 1986.

Negatives located at the
Kansas State Historical Society.

Builders plaque, east end
looking west.

6089



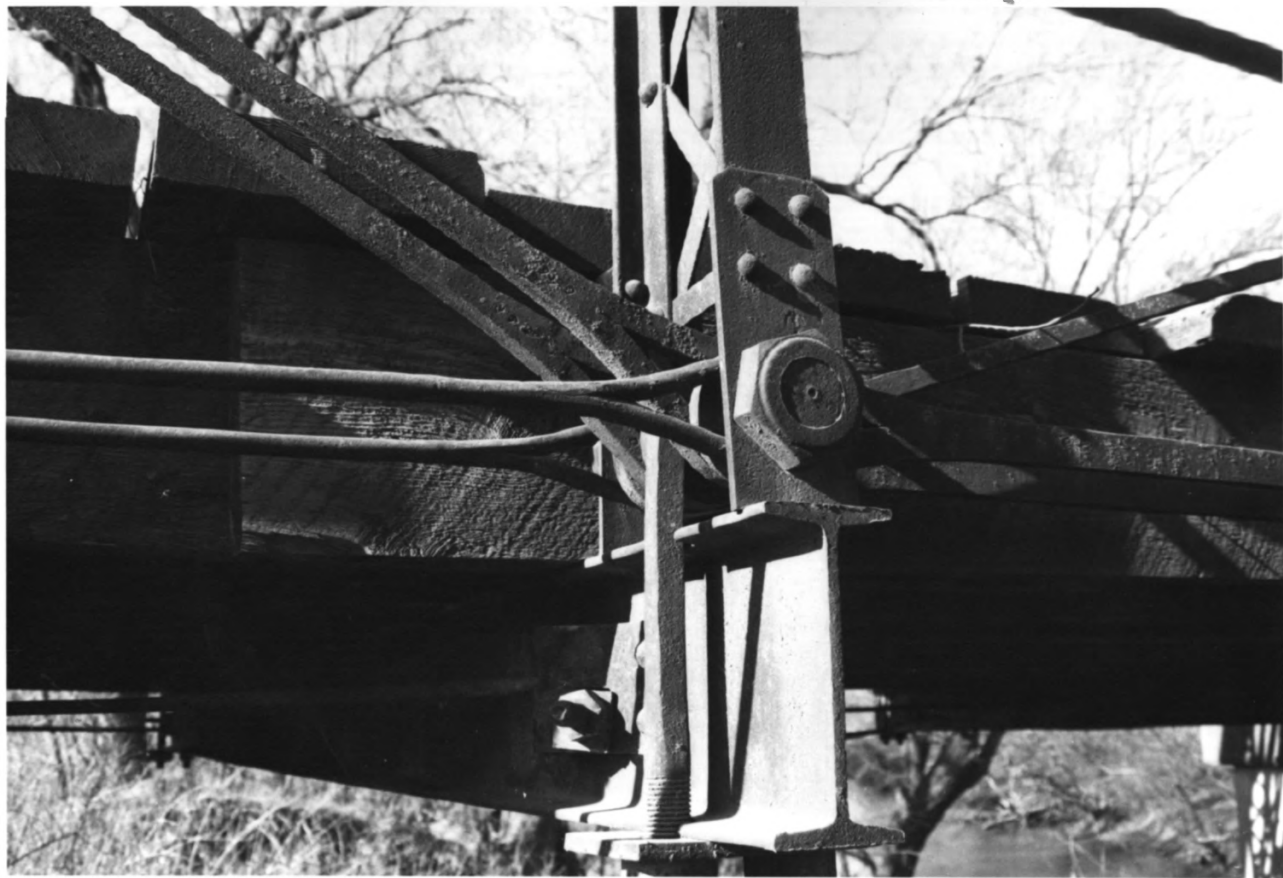
Greeley Bridge
Greeley, Kansas

Photos taken by Larry Jochims
on March 1, 1986.

Negatives located at the
Kansas State Historical Society.

Detail of portal strut with
brackets & endpost, west end
looking west.

729



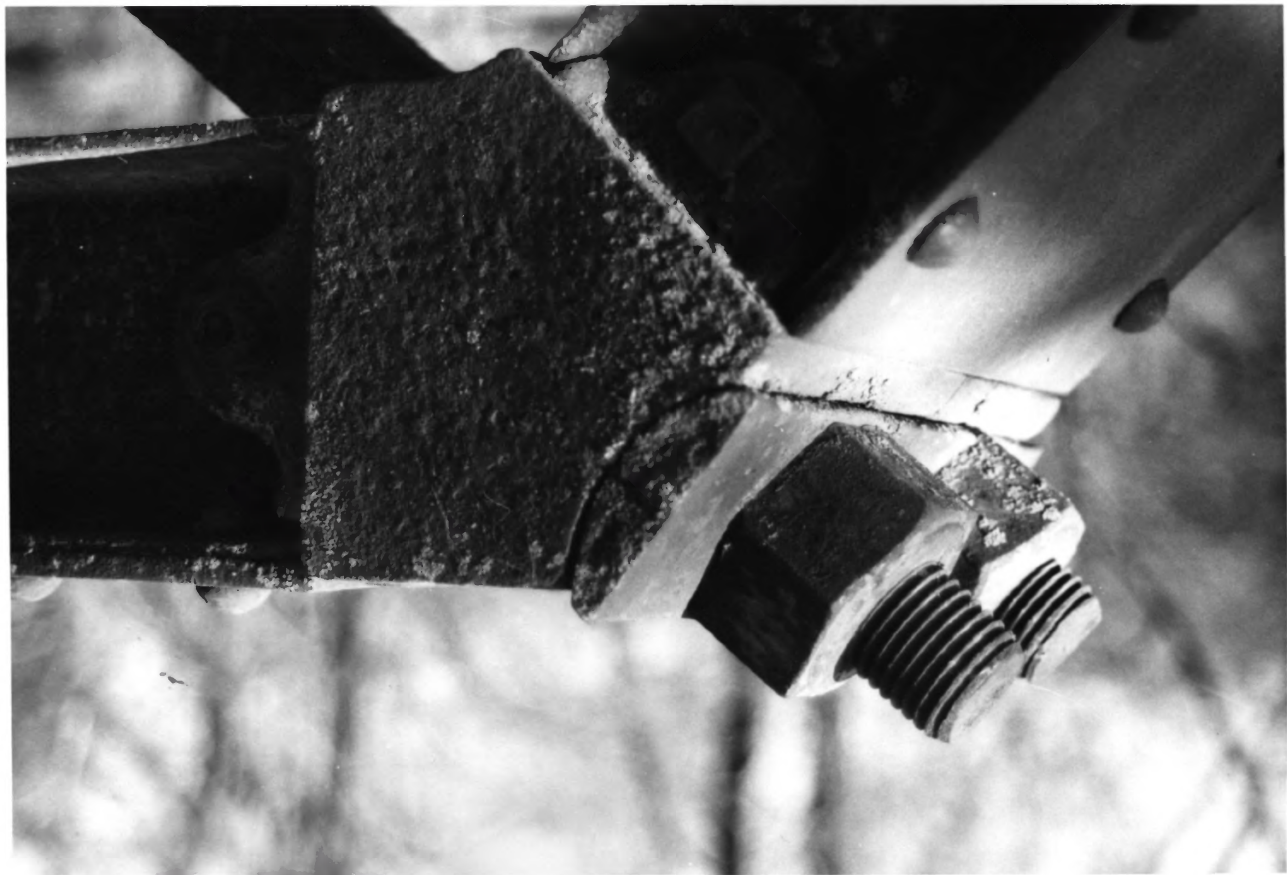
Greeley Bridge
Greeley, Kansas

Photos taken by Larry Jochims
on March 1, 1986.

Negatives located at the
Kansas State Historical Society

Detail of pin connection +
compression post on east
pony truss.

899



Greeley Bridge
Greeley, Kansas

Photos taken by Larry Jochims
on March 1, 1986.

Negatives located at the
Kansas State Historical Society

Detail of cast iron hip connection:
saddle on pony truss - west end

9079