

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

1. Name of Property

Historic name: N/A

Other name/site number: North Fork Solomon River Lattice Truss Bridge (preferred); 69-LT-21;

000690533503541

2. Location On Road W7, 0.1 miles south of the intersection with Road BB (aka 15 S); 1.5 miles west of the town of Lenora.

not for publication

city or town Lenora

vicinity

state code KS

county Norton

county code 137

zip code 67645

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this XX 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 XX meets does not meet the National Register criteria. I recommend that this property be considered significant nationally XX statewide locally. (See continuation sheet for additional comments.)

Richard D. Parkutz
Signature of certifying official

4-09-03
Date

KANSAS STATE HISTORICAL SOCIETY

State or Federal agency and bureau

In my opinion, the property meets does not meet the National Register criteria.
(See continuation sheet for additional comments.)

Signature of commenting or other official

Date

State or Federal agency and bureau

4. 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 Keeper

Date of Action

Property Name North Fork Solomon River Lattice Truss Bridge

County and State Norton, Kansas

5. Classification

Ownership of Property	Category of Property	No. of Resources within Property	
		contributing	noncontributing
<input type="checkbox"/> private	<input type="checkbox"/> building(s)	_____	_____ buildings
<input checked="" type="checkbox"/> public-local	<input type="checkbox"/> district	_____	_____ sites
<input type="checkbox"/> public-State	<input type="checkbox"/> site	_____	_____ structures
<input type="checkbox"/> public-Federal	<input checked="" type="checkbox"/> structure	<u>1</u>	_____ objects
	<input type="checkbox"/> object	_____	_____ Total
		<u>1</u>	<u>0</u>

Name of related multiple property listing:
(Enter "N/A" if property is not part of a
multiple property listing.):

No. of contributing resources previously
listed in the National Register

Metal Truss Bridges in Kansas

0

6. Functions or Use

Historic Functions
(Enter categories from instructions.)

Current Functions
(Enter categories from instructions.)

TRANSPORTATION: Road-related (vehicular)

TRANSPORTATION: Road-related (vehicular)

7. Description

Architectural Classification
(Enter categories from instructions.)

Materials
(Enter categories from instructions.)

OTHER: Lattice Truss

Foundation Concrete

Walls _____

Roof _____

Other Metal: Iron, Steel

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

Property Name North Fork Solomon River Lattice Truss Bridge

County and State Norton, Kansas

8. Statement of Significance

Applicable National Register Criteria (Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

A Property is associated with events that have made a significant contribution to the broad patterns of our history.

B Property is associated with the lives of persons significant in our past.

C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations (Mark "x" in all the boxes that apply.)

A owned by a religious institution or used for religious purposes.

B removed from its original location.

C a birthplace or a grave.

D a cemetery.

E a reconstructed building, object, or structure.

F a commemorative property.

G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance

Enter categories from instructions.)

ENGINEERING

TRANSPORTATION

Period of Significance

1925

Significant Dates

1925

Cultural Affiliation

N/A

Significant Person

N/A

Architect/Builder

Canton Bridge Company (Canton, Ohio)

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

Property Name North Fork Solomon River Lattice Truss Bridge

County and State Norton, Kansas

Page 4

9. Major Bibliographical References

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

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

Primary location of additional data:

- State Historic Preservation Office
- Other State agency
- Federal agency
- Local government
- University
- Other

Specify repository:

Record # _____

10. Geographical Data

Acreage of property <1 acre

UTM References

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

See continuation sheet

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet.)

Boundary Justification (Explain why the boundaries were selected on a continuation sheet.)

11. Form Prepared By

name/title Kerry Davis, Architectural Historian & Elizabeth Rosin, Partner

organization Historic Preservation Services date August 5, 2002

street & number 323 West Eighth Street, Suite 112 telephone (816) 221-5133

city or town Kansas City state Missouri zip code 64105

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps

A USGS map (7.5 or 15 minute series) indicating the property's location.

A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs

Representative black-and-white photographs of the property.

Additional items (Check with the SHPO or FPO for any additional items.)

Property Owners (Complete this item at the request of the SHPO or FPO.)

Name County of Norton

street & number 105 S. Kansas, P.O. Box 70 telephone 785-877-5740

city or town Norton state KS zip code 67654

United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section Number 7 Page 1

North Fork Solomon River Lattice Truss Bridge
Norton County, Kansas

DESCRIPTION

LOCATION AND SETTING

The North Fork Solomon River Lattice Truss Bridge is located 1.5 miles west and 0.1 miles south of the town of Lenora in north central Kansas, on the line between the NE ¼ and the NW ¼ of Section 21, Township 5S, Range 24W. The region is defined by rolling prairie hills with tree-lined creeks. The North Fork Solomon River Lattice Truss Bridge carries Road W7 across the North Fork of the Solomon River, a shallow, meandering branch that flows east to join the South Fork in Waconda Lake. The dirt roadway, flanked by cultivated fields, aligns directly with the North Fork Solomon River Lattice Truss Bridge.

TRUSS TYPE

The North Fork Solomon River Lattice Truss Bridge is a single span, riveted pony truss¹ that measures 40 feet in length and 16 feet in width.² Historic, standard, box-form poured concrete abutments support the end floor beams of the truss, which rest directly on the abutment seat. The side walls of the abutments extend approximately 15 feet along the approach grade. Metal sheet and piles form the north abutment's east side wall.

The short end posts and top chord curve into one another to form the distinctive, wide and shallow "basket handle" shape of this bridge type; two angles with cover plates form the top chord and end posts. The web members include a system of thin crosshatched diagonal lacing bars. Two, heavy, parallel angle bars extend diagonally down from each of the upper end nodes and meet at a centered, angle buttress post to help support the single, central floor beam. Lower lateral bracing rods connect the central floor beam with the end floor beams. The timber deck is 16 feet wide and rises 12 feet above the creek bed on steel I-beam stringers. Approximately 18 inches of dirt covers the decking.

Distinctive cast iron florets decorate each of the central intersections of the diagonal lacing bars. A series of numbers, "15319 081," are repeatedly stamped into the cover plate of the top chord. The central floor beam is stamped "J & L."³

INTEGRITY

The North Fork Solomon River Lattice Truss Bridge is an excellent example of this bridge type, which is increasingly rare in Kansas.⁴ The non-historic repair of the north abutment side wall and the heavy accumulation of dirt obscuring the decking do not significantly impact the overall integrity of the bridge. The North Fork Solomon River Lattice Truss Bridge retains a good degree of integrity, with no significant alterations to the original design or materials. In addition, the original workmanship, setting, and feeling of the structure are readily apparent. Furthermore, the potential for preservation of the bridge is high. Located on a lightly traveled road, it is unlikely that traffic requirements will necessitate alteration or replacement.

¹ A pony truss is also referred to as a low truss.

² The length equals the distance between the abutments; the width equals the deck width.

³ Likely shorthand for Jones & Laughlins Steel Corporation, Pittsburgh, Pennsylvania.

⁴ Dale Nimz, *Activity III Review Initial Assessment Metal Truss Bridges*. (Topeka: Kansas State Historical Society, 1998), 6. Nimz indicates only three surviving in Kansas.

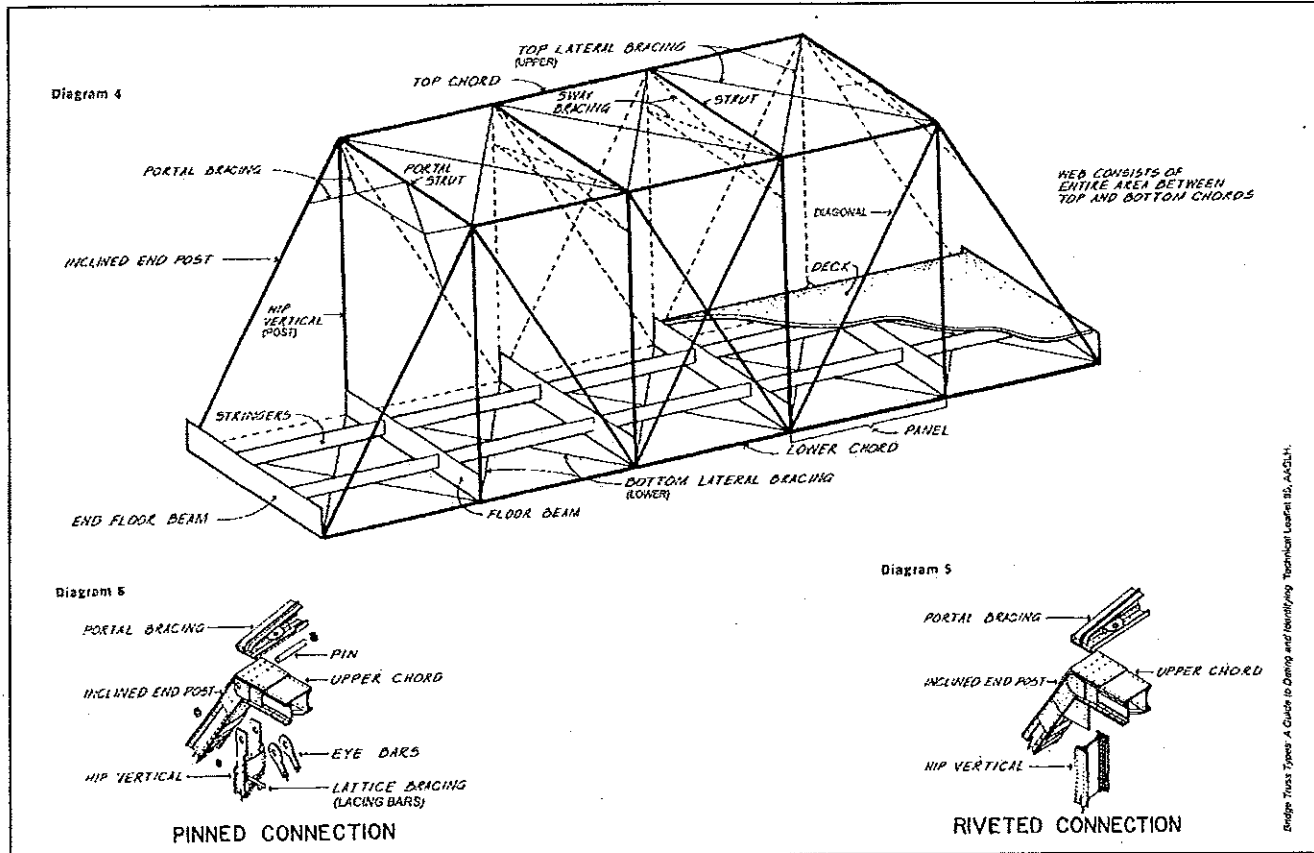
United States Department of the Interior
National Park Service

NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET

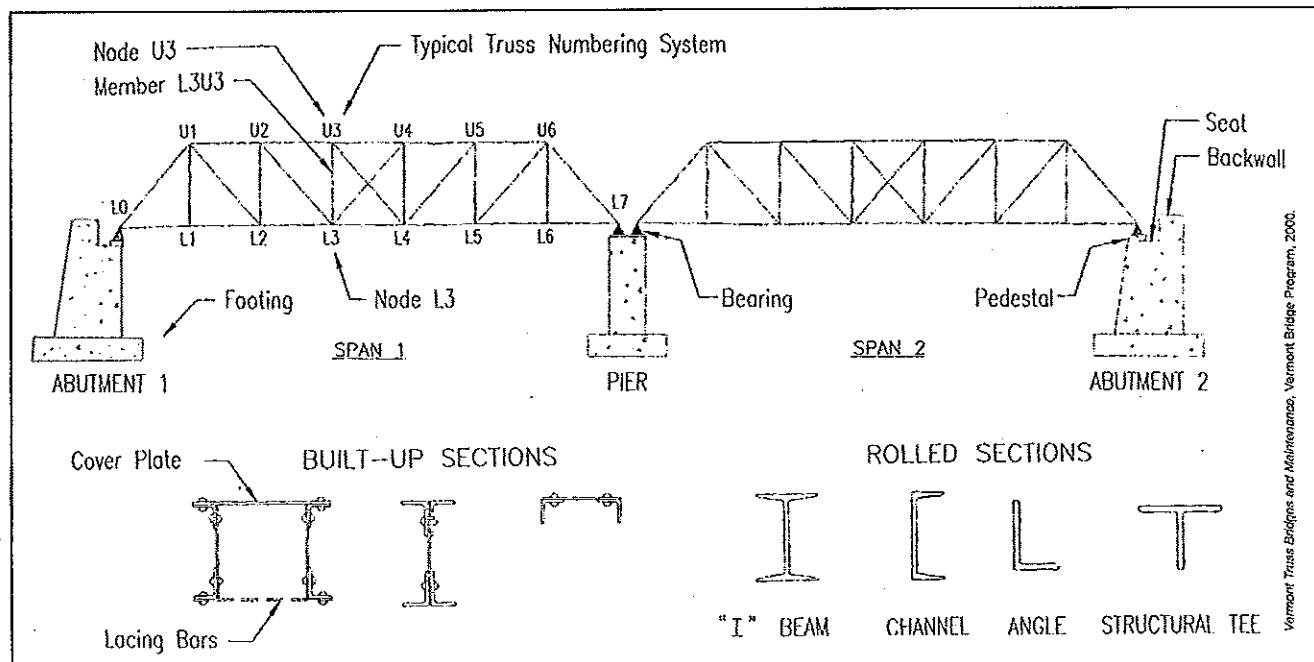
Section Number 7 Page 2

North Fork Solomon River Lattice Truss Bridge
Norton County, Kansas

TRUSS TERMINOLOGY



Bridge Truss Types: A Guide to Drawing and Identifying Technical Leaflet 11, ASDC.



Vermont Truss Bridges and Maintenance, Vermont Bridge Program, 2000.

United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section Number 8 Page 3

North Fork Solomon River Lattice Truss Bridge
Norton County, Kansas

STATEMENT OF SIGNIFICANCE

The North Fork Solomon River Lattice Truss Bridge is significant under National Register Criterion C in the areas of Engineering and Transportation. As defined by the *Multiple Property Documentation Form for Metal Truss Bridges in Kansas*, it is an excellent example of the Lattice truss bridge type. Built in 1925,¹ the North Fork Solomon River Lattice Truss Bridge is a rare example of a relatively uncommon bridge solution for a short span. Its riveted structure and concrete abutments illustrate the standardization of these construction techniques and materials during the period of significance. As no historic name identifies this bridge, the preferred name "North Fork Solomon River Lattice Truss Bridge" has been assigned. This describes and identifies the location, design, and function of the structure.

ELABORATION

The need for all-weather crossings of rivers and streams corresponded to the growth of the market economy across Kansas during the late nineteenth and early twentieth centuries. Bridges provided farmers easy access to markets and could make the difference between growth and stagnation for the many small, young communities across the state.² Proximity to a bridge often secured a town's economic stability, and it contributed to a local sense of modernity.

Prior to the 1930s, the railroad was the primary means of long-distance travel and there was little need for roads to extend more than a few dozen miles. With little stimulus for improving roads that would cross multiple jurisdictions, road construction and maintenance remained local concerns. County commissioners often carried the burden of selecting bridge locations, over which much contention was common.

The range of choices for bridge designs and companies was vast. Many of the larger bridge companies sold metal truss bridges through mail order catalogues. County commissioners could simply specify the span, clearance needs, and truss type (if there was a preference), then choose the lowest bidder from the numerous competing companies that had salesmen in the field.

By the late nineteenth century, fabrication of iron and steel was widespread. The speed of construction and the relatively low cost of metal truss bridge parts ensured their popularity over labor-intensive masonry bridges and short-lived timber bridges. Toward the end of the nineteenth century the quality, quantity, and cost of steel improved to such a degree that it virtually replaced wrought iron for bridge construction by 1910.³

Most metal trusses were constructed of built-up members composed of mass-produced, standard-shaped channel, plate, and angle stock purchased from one or more of the numerous steel companies nationwide. The bridge companies preassembled trusses in their factories then simply shipped them to the bridge site for installation. Installation involved grading approaches, constructing abutments and piers, erecting preassembled floor and truss members, and placing deck material.

¹ Norton County Road and Bridge records, Norton, Kansas.

² Larry Jochims, *Metal Truss Bridges in Kansas 1861-1939, National Register of Historic Places Multiple Property Documentation Form*, (Topeka: Kansas State Historical Society, 1989), E.

³ *Ibid*, F.

United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section Number 8 Page 4

North Fork Solomon River Lattice Truss Bridge
Norton County, Kansas

Before 1900, generally all panel point connections – the locations at which structural bridge elements intersect – were made with the use of a pin. This technique was so widespread that it became one of the distinctive features of American bridge construction in the nineteenth century.⁴ However, subsequent advancements in pneumatic riveting techniques greatly improved rivet installation quality, enabling more reliable panel point connections. With the increased portability of this construction technology, the more rigid riveting technique rapidly surpassed pin-connected bridge construction during the first years of the twentieth century. The riveted construction of the North Fork Solomon River Lattice Truss Bridge illustrates the standardization of this technique.

In addition, the contemporary development of economic cement production promoted the widespread combination of steel and concrete in bridge construction. It was not uncommon for older metal truss bridges to receive new reinforced concrete decks or poured concrete reinforcements for older stone abutments. By the 1920s, reinforced concrete was the standard material for abutments, piers, and decks of steel truss bridges. The poured concrete abutments of the North Fork Solomon River Lattice Truss Bridge are typical of bridges built during this period.

The North Fork Solomon River Lattice Truss Bridge is a classic example of this truss design. The lattice truss is derived from a design patented by Ithiel Town in 1820. This design was originally intended for wooden truss bridges and consisted of closely spaced diagonal timbers that created a stiff web of great strength. A variation of this design, patented as the Howe Truss in 1840, employed a combination of both wood and wrought iron members. By the late nineteenth century, wood members were abandoned and the Lattice truss design was executed using the cheap, standardized iron and/or steel parts being mass-produced at the time.⁵

In Kansas, communities primarily in the north-central and northwestern regions of the state continued to construct lattice truss bridges into the early part of the twentieth century.⁶ In 1998, only three lattice truss bridges, including the North Fork Solomon River Lattice Truss Bridge, existed throughout the state of Kansas.⁷

STRUCTURE HISTORY

First settled in 1873, the nearby town of Lenora was the thriving western terminus of the Central Branch of the Union Pacific Railroad. Named in honor of Mrs. Lenora Hauser, the town featured both a post office and a store by 1875. Lenora had only 125 residents in 1880, but as a regional trading center supported three general merchandise stores, three physicians, two hotels, two mills, two shoemakers, two livery stables, a barber shop, a billiard hall, a lumberyard, a meat market, a restaurant, a blacksmith, a hardware store, a drug store, a wagon

⁴ Ibid.

⁵ T. Allan Comp and Donald Jackson, *Bridge Truss Types: A guide to dating and identifying*. (Nashville, Tennessee: American Association for State and Local History, Technical Leaflet 95), 3.

⁶ Jochims, El. Of the 10 identified by Jochims as extant in 1989, eight were located in Norton County, including the North Fork Solomon River Lattice Truss Bridge, and one in neighboring Phillips County.

⁷ Nimz, 6. Of the three Lattice truss bridges identified by Nimz as extant in 1998, two are standing in Norton County, including the North Fork Solomon River Lattice Truss Bridge and the West Sappa Creek Lattice Bridge, which is listed in the National Register. Six additional lattice trusses, which have been replaced since 1989, are currently in storage with the Norton County Engineer.

United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section Number 8 Page 5

North Fork Solomon River Lattice Truss Bridge
Norton County, Kansas

maker, a lawyer, a flour store, and a newspaper office.⁸ Typical of small towns throughout Kansas, it served as a trading and shipping point for the surrounding rural community. As a result, fords and bridges that provided area farmers with access to local markets were critical to the survival of the regional economy.

According to Norton County Road and Bridge records, the North Fork Solomon River Lattice Truss Bridge was constructed in 1925. No further construction history has been located at this time.⁹ However, identical Lattice truss bridges located in Norton County, including the West Sappa Creek Lattice Bridge,¹⁰ retain cast-iron identification plaques that read "THE CANTON / BRIDGE CO. / CANTON, OHIO," suggesting the strong likelihood that the North Fork Solomon River Lattice Truss Bridge is a product of the same builder. Markings on the structural members indicate that the Jones & Laughlins Steel Corporation of Pittsburgh, Pennsylvania, produced the stock metal. A prolific out-of-state bridge builder in Kansas, the Canton Bridge Company heavily marketed short span truss bridges, including the Lattice design, in this region at the turn of the century.¹¹

The Canton Bridge Company of Canton, Ohio advertised in *Engineering Record* as early as 1876 and was incorporated in 1891.¹² The executives in 1891 included W. E. Sherlock, President; V. H. Hammond, Vice President; and C. E. Timkler, Chief Engineer.¹³ Massillion Steel Joist Company of Massillion, Ohio purchased the company in 1925 and the two companies were merged into Macomber Steel Company in 1927.

⁸ William G. Cutler, *History of the State of Kansas: Norton County*. (Chicago: A. T. Andreas, 1883).

⁹ Inquiry into the Norton County Road and Bridge records, Kansas Department of Transportation records, Kansas State Historical Society archives, Norton County Historical Society archives, and *Western Contractor* revealed no further construction history specific to the North Fork Solomon River Lattice Truss Bridge.

¹⁰ This bridge was listed on the National Register of Historic Places in 1989. Six identical Lattice truss bridges are in storage with the Norton County Engineer.

¹¹ Larry Jochims, *West Sappa Creek Lattice National Register of Historic Places Registration Form*, (Topeka: Kansas State Historical Society, 1989).

¹² *Ibid.*

¹³ *Ibid.* It is likely that V. H. Hammond is a relation of D. Hammond of Wrought Iron Bridge Company in Canton, Ohio.

United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section Number 9 Page 6

North Fork Solomon River Lattice Truss Bridge
Norton County, Kansas

BIBLIOGRAPHY

Comp, T. Allan and Donald Jackson. *Bridge Truss Types: A guide to dating and identifying*. Nashville, Tennessee: American Association for State and Local History, Technical Leaflet 95.

Cutler, William G. *History of the State of Kansas*. Chicago: A. T. Andreas, 1883.

Delaware Historic Bridges, Survey and Evaluation. Historic Architecture and Engineering Series, No. 89. Dover: Delaware Department of Transportation, Division of Highways, 1991.

Historic Highway Bridges in Pennsylvania. Harrisburg: Pennsylvania Department of Transportation and Pennsylvania Historical and Museum Commission, 1986.

Historic Bridge Inventory. Kansas Department of Transportation, March 1993.

"Industrial Images from the Library of Congress," *Illustrated Pittsburgh Retrospective* [article on-line]; available from <http://www.andrew.cmu.edu/user/vck/pghretro.htm>; Internet; accessed 18 March 2002.

Jochims, Larry. *Metal Truss Bridges in Kansas 1861-1939, National Register of Historic Places Multiple Property Documentation Form*. Topeka: Kansas State Historical Society, 1989.

Jochims, Larry. *Washington County Kingpost, National Register of Historic Places Registration Form*. Topeka: Kansas State Historical Society, 1989.

Jochims, Larry. *West Sappa Creek Lattice, National Register of Historic Places Registration Form*. Topeka: Kansas State Historical Society, 1989.

Kansas Historic Bridge Rating System, Kansas Department of Transportation, 1980-1983.

Nimz, Dale E. *Activity III Review Initial Assessment Metal Truss Bridges*. Topeka: Kansas State Historical Society, 1998.

Second Ohio Historic Bridge Inventory, The; Evaluation and Preservation Plan. Columbus: Ohio Department of Transportation, 1990.

Vermont Truss Bridges and Maintenance. Vermont Bridge Program, 2000.

WPA Guide to 1930s Kansas. Lawrence: University of Kansas Press, 1984.

United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

Section Number 10 Page 7

North Fork Solomon River Lattice Truss Bridge
Norton County, Kansas

GEOGRAPHICAL DATA

Verbal Boundary Description:

Located on the line between the NE $\frac{1}{4}$ and the NW $\frac{1}{4}$ of Section 21, Township 5S, Range 24W, the North Fork Solomon River Lattice Truss Bridge encompasses an area measuring approximately 40 feet by 16 feet. The northwest corner of this area corresponds to the northwest corner of the bridge.

Boundary Justification:

The boundary includes the truss, deck, abutments, and associated approaches that represent the significant features associated with the bridge structure.

United States Department of the Interior
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES
CONTINUATION SHEET**

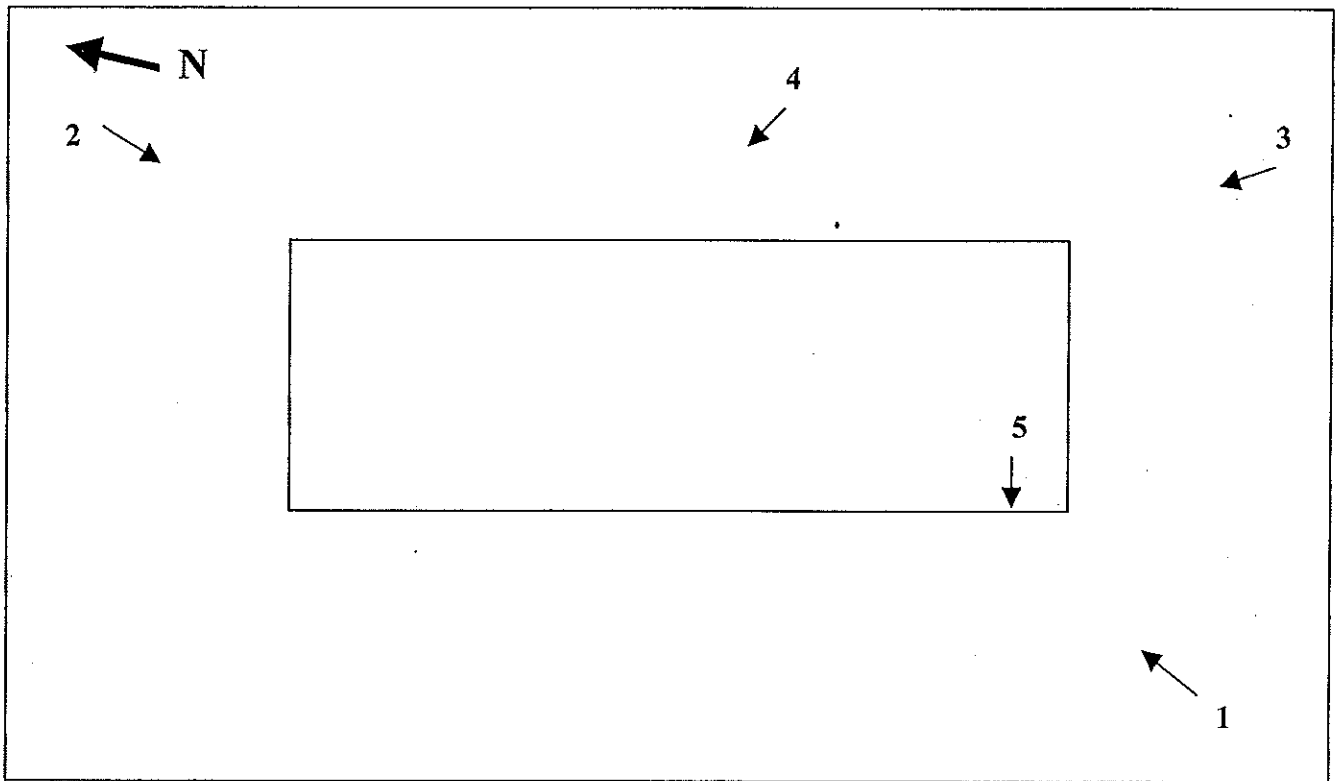
Section - Photographic Documentation Page 8

North Fork Solomon River Lattice Truss Bridge
Norton County, Kansas

PHOTO LOG

Photographer: Kerry Davis
Date of Photographs: February 2002
Location of Original Negative: Kansas State Historical Society, Topeka, Kansas

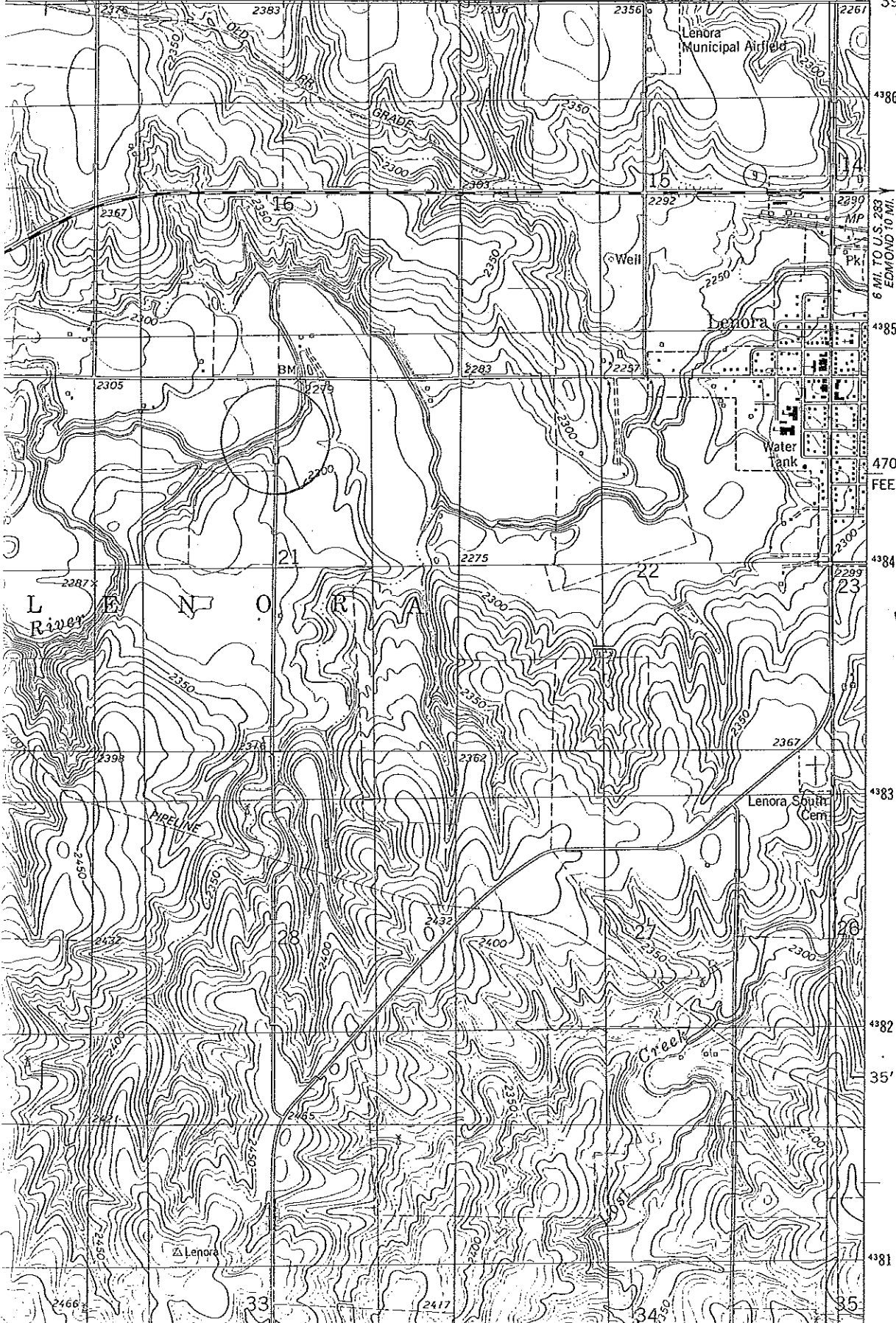
Photograph Number	Camera View
1.	View NE, bridge truss and abutments
2.	View SW, bridge truss and abutments
3.	View NW, along roadway
4.	View NW, truss under structure and abutments
5.	View SW, lattice detail



LENORA WEST QUADRANGLE
KANSAS
7.5 MINUTE SERIES (TOPOGRAPHIC)

6083 III NW
EDMOND NW1

2'30" 11 12 13 1430 000 FEET 13 11 MI. TO U.S. 383 100°00' 39°37'30"



6 MI. TO U.S. 283
EDMOND TO MI.

NORTH FORK
SOLOMON RIVER
LATTICE TRUSS BRIDGE
470 000
FEET
NORTON CO., KANSAS

UTM REFERENCE:
14/411580/4384590