NPS Form 10-900
OMB No. 1024-0018
(Rev. 10/90)

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

375

1. **Name of Property**

Historic name: N/A

Other name/site number: Chapman Creek Pratt Truss Bridge (preferred); 21-HT-02; 08583.00436.6

2. **Location** On Quail Road, 1.7 miles south of the intersection with Route 18; 1.0 mile west and 2.5 miles north of the town of Chapman.

___ not for publication

city or town Chapman ___ X vicinity

state code KS county Dickinson county code 041 zip code 67431

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, 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. I recommend that this property be considered significant nationally ___statewide ___locally. (___ See continuation sheet for additional comments.)

Richard D Pankratz 3/26/03
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 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. Elsan A. Beall 5/9/03
___ 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

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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. Pankratz 4/09/03
Signature of certifying official 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

5. Classification

Ownership of Property	Category of Property	No. of Resources within Property	
		contributing	noncontributing
___ private	___ building(s)		
X public-local	___ district		___ buildings
___ public-State	___ site		___ sites
___ public-Federal	X structure	1	___ structures
	___ object		___ objects
		1	0 Total

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

Metal Truss Bridges in Kansas

No. of contributing resources previously listed in the National Register

0

6. Functions or Use

Historic Functions
(Enter categories from instructions.)

TRANSPORTATION: Road-related (vehicular)

Current Functions
(Enter categories from instructions.)

TRANSPORTATION: Road-related (vehicular)

7. Description

Architectural Classification
(Enter categories from instructions.)

OTHER: Pratt Truss

Materials
(Enter categories from instructions.)

Foundation Concrete, wood

Walls

Roof

Other Metal: Iron, steel

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

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.

_X_ 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.)	Period of Significance	Significant Dates
ENGINEERING	1905	1905
TRANSPORTATION		

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.)

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 Record # _____

Primary location of additional data:

X State Historic Preservation Office
____ Other State agency
____ Federal agency
X Local government
____ University
____ Other
Specify repository:

10. Geographical Data

Acreage of property <1 acre

UTM References

	Zone	Easting	Northing		Zone	Easting	Northing
1	1/4	6/7/0/0/0/0	4/3/1/9/3/7/0	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 Dickinson

street & number 109 East 1st Street, Courthouse, P.O. Box 248 telephone 785-263-3093

city or town Abilene state KS zip code 67410

DESCRIPTION

LOCATION AND SETTING

The Chapman Creek Pratt Truss Bridge is located 2.5 miles north and 1.0 mile west of the town of Chapman in the Flint Hills region of east-central Kansas, on the north-south line between the SE ¼ of Section 13, Township 12S, Range 3E and the SW ¼ of Section 18, Township 12S, Range 4E. The region is defined by rolling prairie hills interrupted by deep, tree-lined creek valleys and rocky bluffs. The Chapman Creek Pratt Truss Bridge carries Quail Road across Chapman Creek, a narrow, meandering tributary of the Smoky Hill River. The dirt roadway, flanked by cultivated fields, aligns directly with the Chapman Creek Pratt Truss Bridge.

TRUSS TYPE

The Chapman Creek Pratt Truss Bridge consists of a single span, pin-connected through truss[1] that measures 80 feet in length and a flat girder approach span at each end. The north approach span measures 36 feet in length and the south approach span measures 20 feet in length. The deck is 16 feet wide. Timber abutments retain the approach embankments and concrete-filled sheet metal columns form the piers that support the truss bearings.

The inclined end posts rise from the bearings and meet the horizontal top chords to form a trapezoidal shape. The top chords and inclined end posts are composed of two channels, a cover plate, and lacing bars; the bottom chords consist of paired, flat eye bars.

The web members consist of vertical posts that form five equivalent panels and diagonal ties that intersect within the central panel. Angle stock and lacing bars compose the vertical posts. Flat eye bars and tension rods compose the diagonal ties.

A system of intersecting angle stock forms the portal and upper sway struts that connect the top chords at each vertical post, leaving a vehicular clearance of 14 feet. Upper lateral bracing rods intersect diagonally between the top chords and sway struts.

The timber deck is 16 feet wide and rises 23 feet above the creek bed on steel I-beam stringers. Floor beams located at the base of each vertical web member are connected by lower lateral bracing rods.

The historic lattice guardrails are intact along the length of the bridge. Letters in relief read "JONES & LAUGHLINS" on several structural components.

INTEGRITY

The Chapman Creek Pratt Truss Bridge is an excellent example of this bridge type, historically the most popular in Kansas.[2] It retains a high degree of integrity, with no apparent alterations to the original design or materials. The original workmanship, materials, design, setting, and feeling of the property 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.

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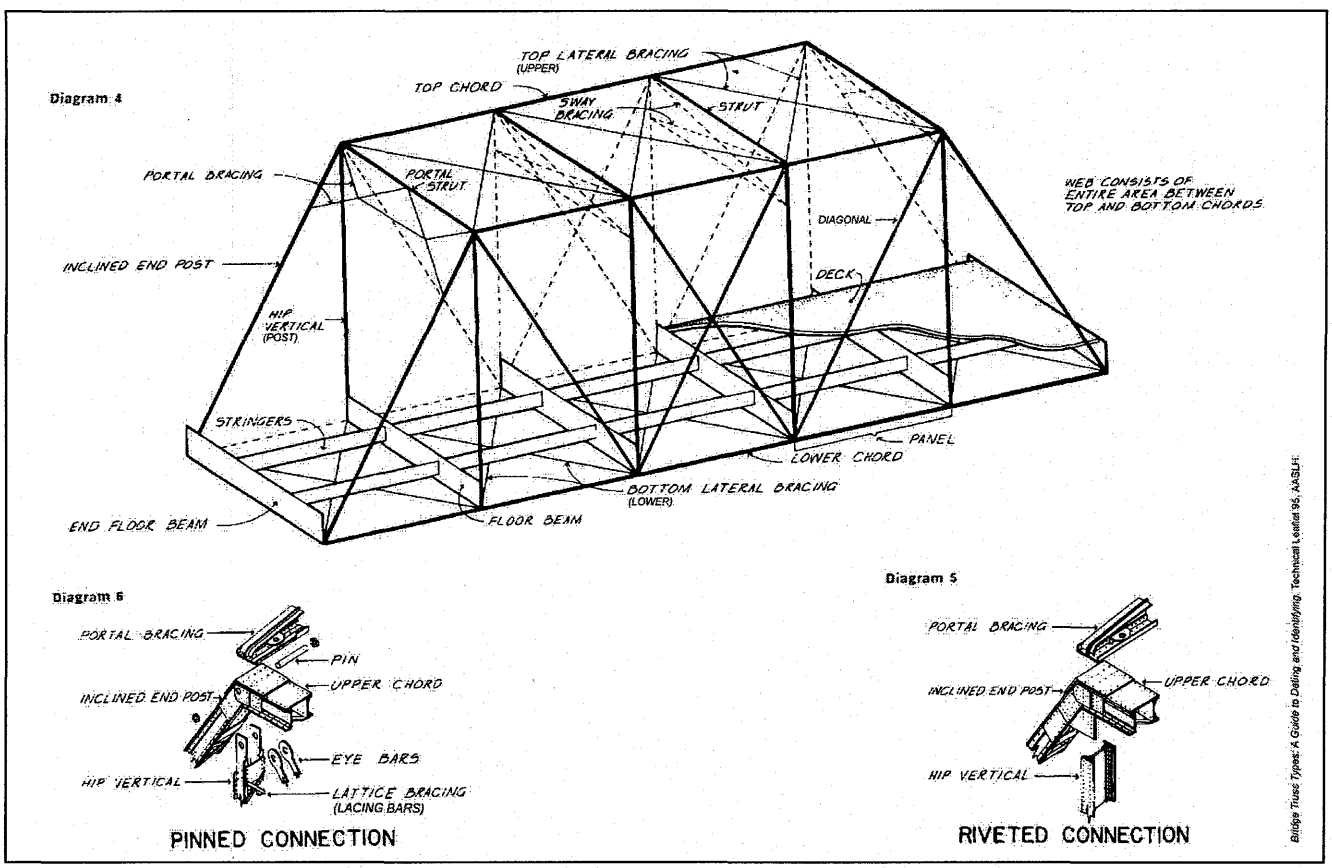
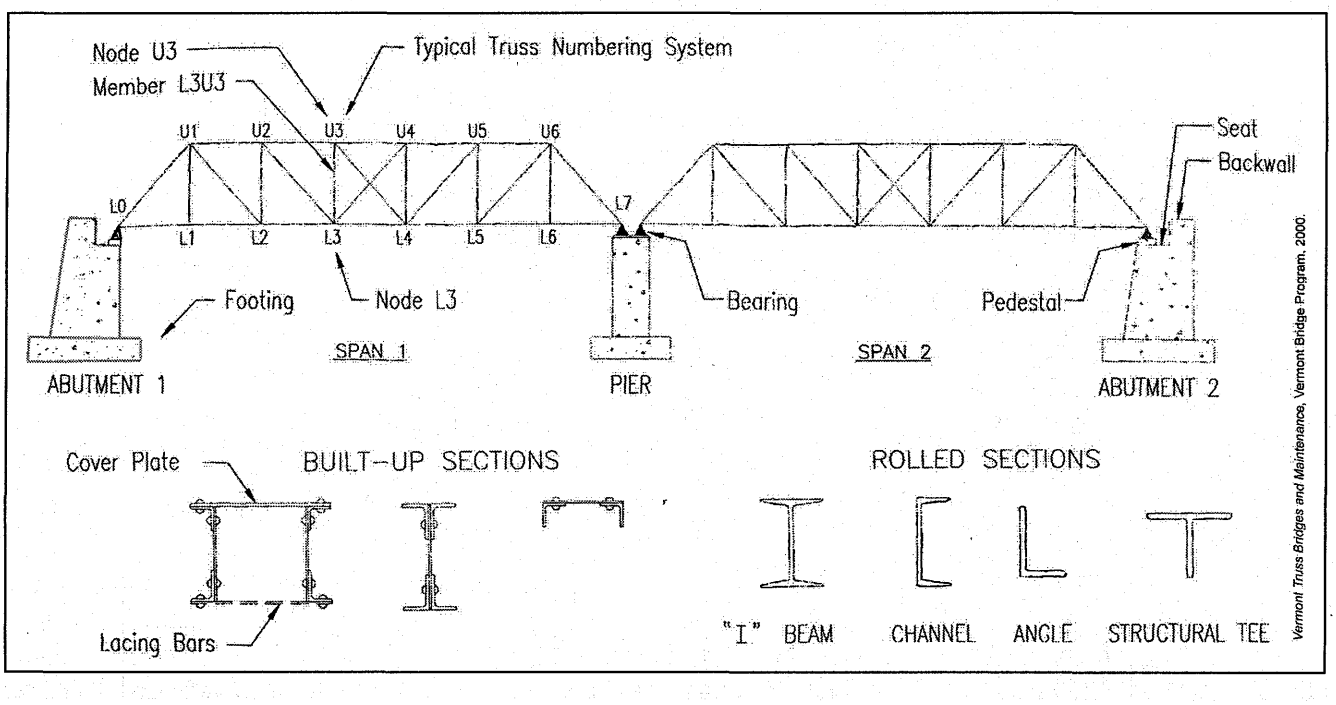
[1] A through truss is also referred to as a high truss.

[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), E1. Jochims stated there were approximately 262 extant Pratt trusses in Kansas. Dale Nimz, *Activity III Review Initial Assessment Metal Truss Bridges.* (Topeka: Kansas State Historical Society, 1998), 6. Nimz stated there were approximately 800 extant Pratt trusses in Kansas.

TRUSS TERMINOLOGY





STATEMENT OF SIGNIFICANCE

The Chapman Creek Pratt 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 Pratt truss bridge type. Built in 1905,[1] the Chapman Creek Pratt Truss Bridge represents a common bridge solution applied to a relatively long span. Its pin-connected structure, timber deck and abutments, coupled with concrete-filled sheet metal piers illustrate the technological transitions that took place during the period of significance. As no historic name identifies this bridge, the preferred name "Chapman Creek Pratt Truss Bridge" has been assigned. This describes 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 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.

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[1] Kansas Department of Transportation records.
[2] Jochims, E.
[3] Jochims, F.

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] The pin-connected construction of the Chapman Creek Pratt Truss Bridge illustrates the standardization of this technique. 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.

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 combination of timber abutments and concrete-filled sheet metal piers found on this bridge illustrates the transition in construction technology that occurred during the period of significance.

The Chapman Creek Pratt Truss Bridge is a classic example of this truss design. Patented in 1844, the Pratt truss incorporates vertical members in compression and diagonal members in tension, a design that reduces the required length of compression members, helping to prevent bending or buckling.[5] The Pratt truss became the most common bridge type of the late nineteenth and early twentieth centuries and spawned numerous variations including Parker, Camelback, Baltimore, Truss Leg Bedstead, Lenticular, and Pennsylvania trusses.[6]

In Kansas, Pratt truss bridges were constructed well into the twentieth century, suggesting the appeal of the design's strength and economical construction costs.[7] In 1998, approximately 800 Pratt truss bridges, including the Cottonwood River Pratt Truss Bridge, existed throughout the state of Kansas.[8]

STRUCTURE HISTORY

First settled in 1855, the area surrounding the Chapman Creek Pratt Truss Bridge remained sparsely populated until the construction of the Kansas Pacific Railroad along the north bank of the Solomon River in 1866. In response to increased settlement along Chapman Creek, the nearby town of Chapman was platted in 1871. The rural community supported substantial commercial development and, in 1883, the town featured four general merchandise stores, a drug store, a hardware store, a lumberyard, a hotel, a gristmill, an elevator, and a livery stable.[9] Into the 1930s, Chapman, with a population of 819, remained a trading center for the predominantly

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[4] Ibid, F.
[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), 8.
[6] Ibid, 8.
[7] Jochims, F2.
[8] Nimz, 6.
[9] William G. Cutler, *History of the State of Kansas: Dickinson County.* (Chicago: A. T. Andreas, 1883).

stock-raising rural community.[10] Typical of small towns throughout Kansas, it served as a trading and shipping point for the surrounding agricultural area. As a result, the fords and bridges that provided farmers in the area with access to local markets were critical to the survival of the regional economy.

According to Kansas Department of Transportation records, the Canton Bridge Company of Canton, Ohio, a prolific out-of-state bridge builder in Kansas, built the Chapman Creek Pratt Truss Bridge in 1905. Markings on the structural members indicate that the Canton Bridge Company purchased the stock metal from Jones & Laughlin Steel Corporation of Pittsburgh, Pennsylvania. No further construction history has presently been located.[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] The Massillion Steel Joist Company of Massillion, Ohio purchased the company in 1925 and the two companies were merged into Macomber Steel Company in 1927.

[10] *WPA Guide to 1930s Kansas.* (Lawrence: University of Kansas Press, 1984), 353.
[11] Inquiry into the Dickinson County Road and Bridge records, Kansas Department of Transportation records, Kansas State Historical Society archives, Dickinson County Historical Society, and *Western Contractor* revealed no further construction history specific to the Chapman Creek Pratt Truss Bridge.
[12] Jochims, *West Sappa Creek Lattice Bridge.*
[13] Ibid. It is likely that V. H. Hammond is a relation of D. Hammond of Wrought Iron Bridge Company in Canton, Ohio.

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 Bridge Inventory. Kansas Department of Transportation, 16 June 1982.

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

"History of Chapman, Kansas," Chapman Historical Society [article on-line]; available from **http://www.cityofchapman.org/Historical_Society/Doc/Chapman_History.htm;** Internet; accessed 12 June 2002.

"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. *Riley Creek Bridge, 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.

The Second Ohio Historic Bridge Inventory: 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.

GEOGRAPHICAL DATA

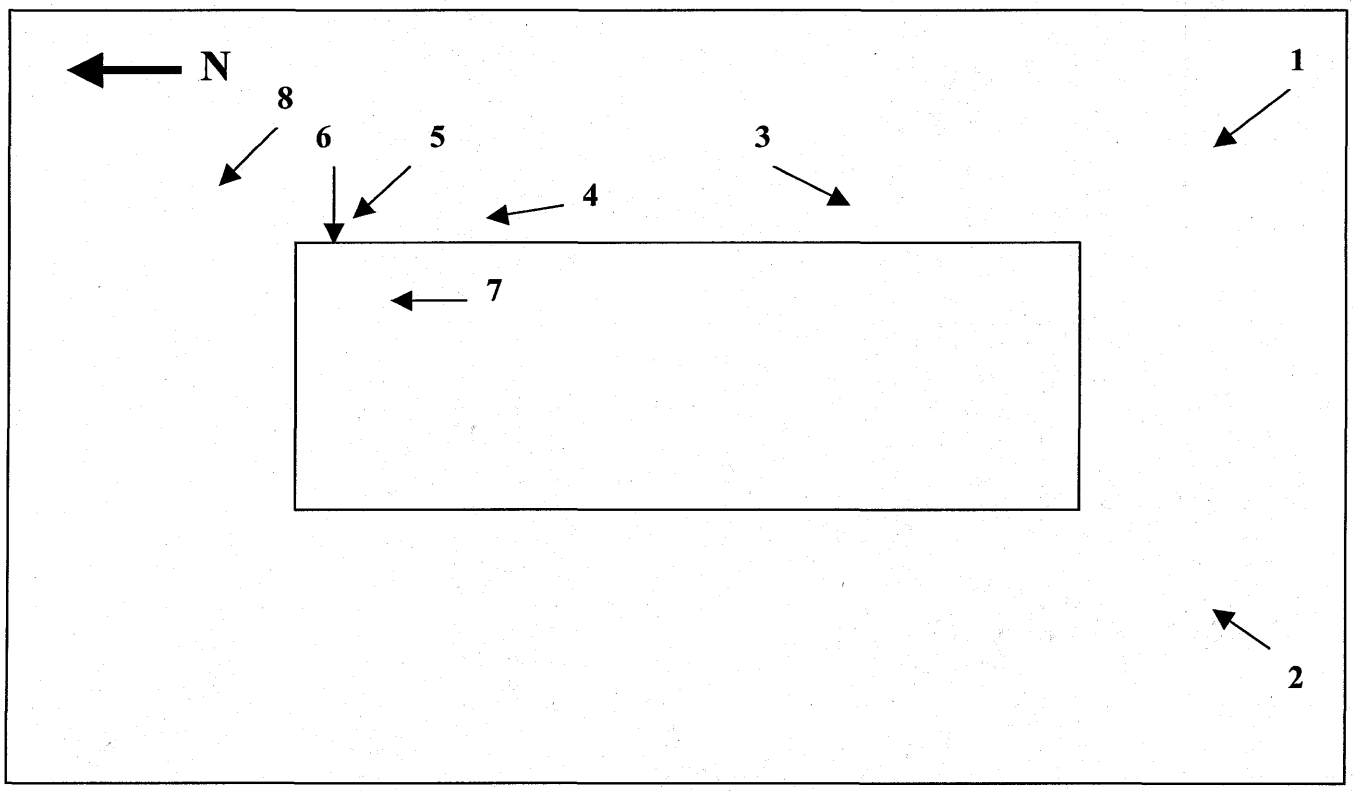
Verbal Boundary Description:
Located on the line between the SE ¼ of Section 13, Township 12S, Range 3E and the SW ¼ of Section 18, Township 12S, Range 4E, the Chapman Creek Pratt Truss Bridge encompasses an area measuring approximately 138 feet by 16 feet. The northwest corner of this area corresponds to the northwest corner of the bridge.

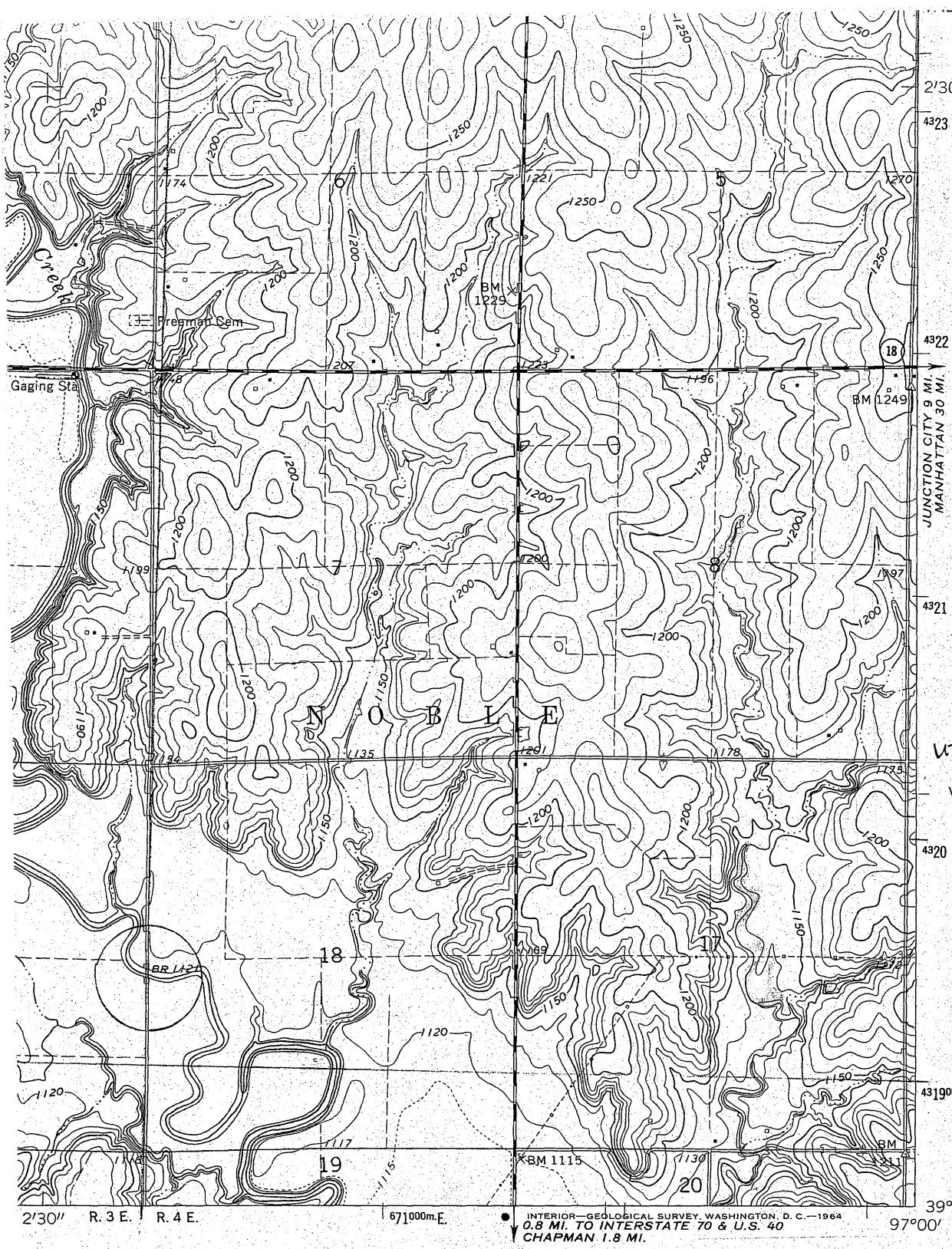
Boundary Justification:
The boundary includes the truss, deck, abutments, and associated approaches that represent the significant features associated with the bridge structure.

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 NW, bridge truss and roadway
2.	View NE, bridge truss and roadway
3.	View SW, bridge understructure, south piers, and abutment
4.	View NW, bridge understructure
5.	View NW, north bearing detail
6.	View W, maker mark detail
7.	View N, portal and upper node detail
8.	View NW, north approach span





CHAPMAN CREEK
PRATT TRUSS BRIDGE
DICKINSON CO., KANSAS

UTM REFERENCE.
14/670000/4319370

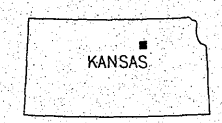
(KANSAS FALLS)
6661 IV NW

ROAD CLASSIFICATION

Medium-duty ——— Light-duty ———

Unimproved dirt = = = = = = = = =

◯ State Route



QUADRANGLE LOCATION

UPLAND, KANS.

N3900—W9700/7.5

1963

AMS 6562 II SE—SERIES V878