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

364

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

RECEIVED 2280
MAR 28 2003
NAT. REGISTER OF HISTORIC PLACES
NATIONAL PARK SERVICE

1. **Name of Property**

Historic name: N/A

Other name/site number: Atchison, Topeka & Santa Fe Pratt Truss Bridge (preferred); 70-HT-06

2. **Location** On SE Pine Street (aka Fifth Street), ‹0.1 mile south of the intersection with East Emporia Street (aka E 309th Street), within the city of Melvern.

not for publication

city or town Melvern N/A vicinity

state code KS county Osage county code 139 zip code 66510

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 Faulkner 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. Edson H. 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

NPS Form 10-900
OMB No. 1024-0018
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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
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	1909	1909
TRANSPORTATION		

Cultural Affiliation

N/A

Significant Person

N/A

Architect/Builder

Atchison, Topeka & Santa Fe Railway Company

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	15	270205	4/2/6/4/9/6/0	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 City of Melvern

street & number 141 SW Main Street, P.O. Box 116 telephone 785-549-3447

city or town Melvern state KS zip code 66510

DESCRIPTION

LOCATION AND SETTING

The Atchison, Topeka & Santa Fe Pratt Truss Bridge is located within the city of Melvern in the heart of the Osage Hills region of eastern Kansas; in the NW ¼ of Section 10, Township 18S, Range 16E. The region is defined by broad hills and plains with tree-lined creek valleys. The Atchison, Topeka & Santa Fe Pratt Truss Bridge carries Southeast Pine Street across the Atchison, Topeka & Santa Fe railroad tracks. At the east edge of town the asphalt roadway travels north-south, flanked by residential neighborhoods. The steep approach grades form an overpass that aligns directly with the Atchison, Topeka & Santa Fe Pratt Truss Bridge.

TRUSS TYPE

The Atchison, Topeka & Santa Fe Pratt Truss Bridge is a railroad truss bridge historically employed as a vehicular traffic span. It consists of a single span pin-connected through truss[1] that measures 148 feet in length and 22 feet in width.[2] Standard, box-form poured concrete abutments support the bearings of the truss that rest on timber and steel pads on the abutment seats. The side walls of the abutments extend approximately 22 feet along the approach grades.

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

The web members consist of vertical posts that form seven equivalent panels and diagonal ties that intersect within the central panel. Channel stock and lacing bars compose the vertical posts; flat eye bars and tension rods compose the diagonal ties.

A riveted system of intersecting angle stock and lacing bars, including distinctive curved members, forms the portal and sway bracing; channel stock forms the sway struts that connect the top chords at each vertical post, leaving a vehicular clearance of 26 feet. Upper lateral bracing rods intersect diagonally between the top chords.

The timber deck is 15½ feet wide with tall timber curbs. It rises 26½ feet above the railroad tracks on large, steel, railroad-grade, I-beam stringers. Floor beams at the base of each vertical post are structurally integrated with the stringers.

Timber guardrails are intact along the length of the truss and modern metal guardrails extend along the approach grades. Sidewalk floor beams extend from each lower node along the east truss panels. The timber sidewalk joists are intact, however the deck planks are missing. Letters in relief read "CAMBRIA" on several structural components.

INTEGRITY

The Atchison, Topeka & Santa Fe Pratt Truss Bridge is an excellent example of this bridge type, historically the most popular in Kansas.[3] It clearly illustrates the uncommon adaptation of a standard railroad truss bridge design for

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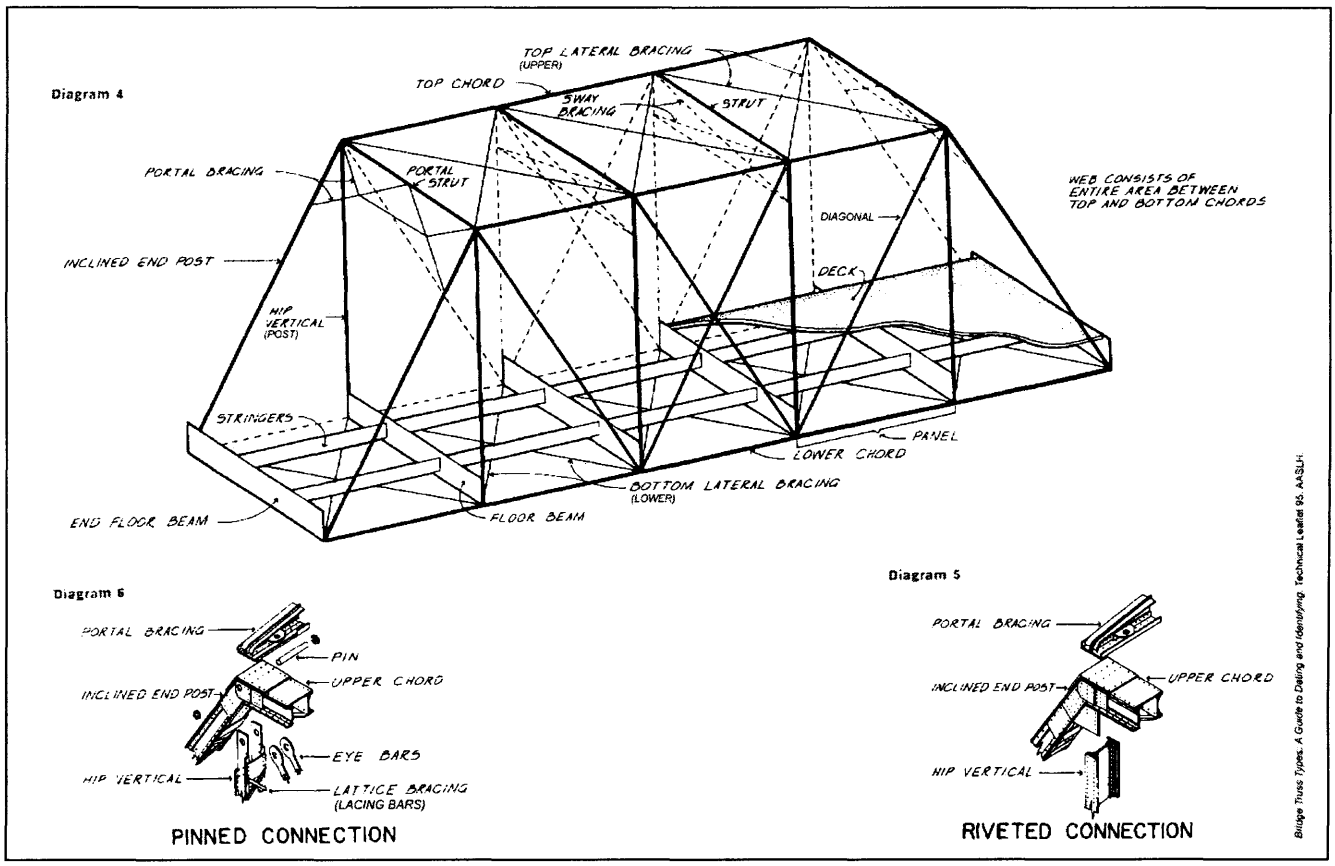
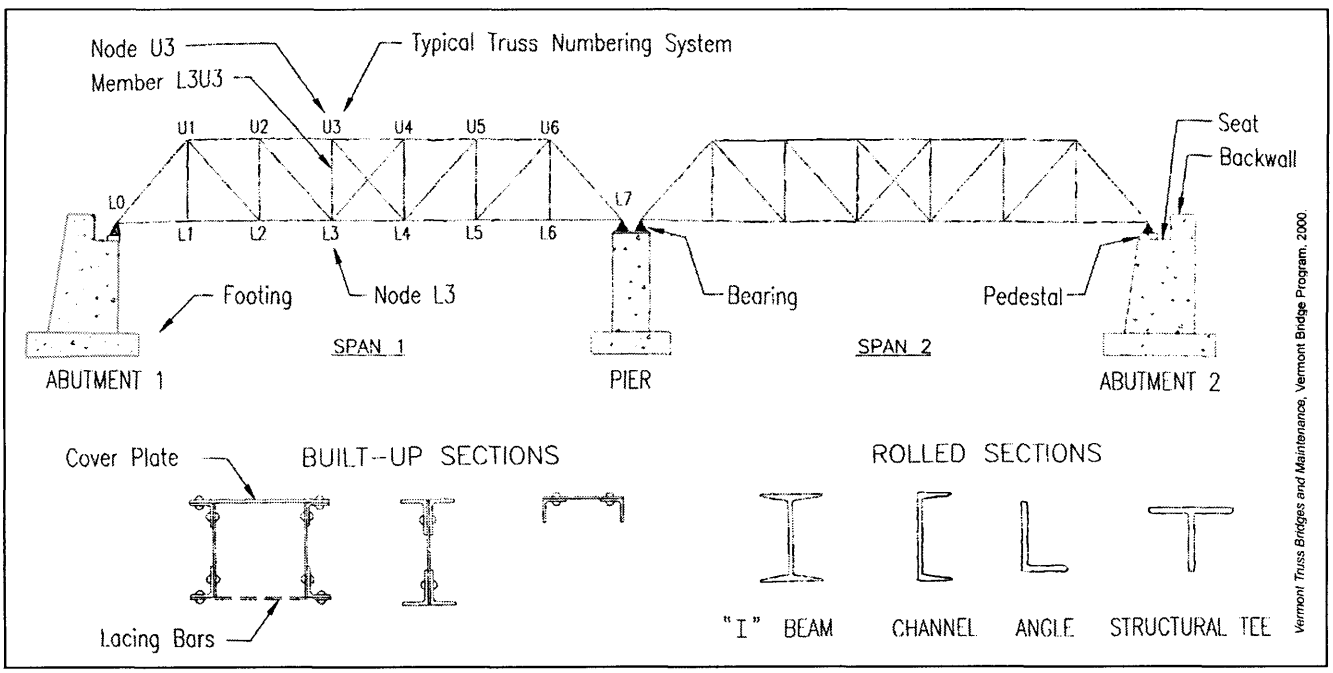
[1] A through truss is also referred to as a high truss.
[2] The length equals the distance between the abutments; the width equals the deck width plus the approximate sidewalk width.
[3] Larry Jochims, *Metal Truss Bridges in Kansas 1861-1939, National Register of Historic Places Multiple Property Documentation Form,* (Topeka: Kansas State Historical Society, 1989), E1. Jochims identified approximately 262 extant Pratt

vehicular traffic. Although the sidewalk deck planks are missing, these can be repaired and their absence does not significantly impact the overall integrity of the bridge. The Atchison, Topeka & Santa Fe Pratt Truss Bridge retains a high degree of integrity, and 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.

trusses in Kansas. Dale Nimz, *Activity III Review Initial Assessment Metal Truss Bridges.* (Topeka: Kansas State Historical Society, 1998), 6. Nimz identifies approximately 800 extant Pratt trusses in Kansas.

TRUSS TERMINOLOGY





STATEMENT OF SIGNIFICANCE

The Atchison, Topeka & Santa Fe 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 1909, the Atchison, Topeka & Santa Fe Pratt Truss Bridge is an example of a railroad truss bridge design applied to a vehicular overpass span. Its pin-connected structure and concrete abutments illustrate the technological transitions that took place during the period of significance. As no historic name identifies this bridge, the preferred name "Atchison, Topeka & Santa Fe Pratt Truss Bridge" has been assigned. This describes the 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.[1] 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.[2]

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] Jochims, E.
[2] 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.[3] 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 pin-connected structure of the Atchison, Topeka & Santa Fe Pratt Truss Bridge is a late example of this once standard construction 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 concrete abutments of the Atchison, Topeka & Santa Fe Pratt Truss Bridge mark a comparatively early use of this material.

The Atchison, Topeka & Santa Fe 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.[4] 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.[5]

In Kansas, Pratt truss bridges were constructed well into the twentieth century, suggesting the appeal of the design's strength and economical construction costs.[6] In 1998, approximately 800 Pratt truss bridges, including the Atchison, Topeka & Santa Fe Pratt Truss Bridge, existed throughout the state of Kansas.[7]

STRUCTURE HISTORY

Founded in 1870, the town of Melvern attracted early settlers by virtue of its location on a broad plateau surrounded by the fertile bottomlands of the Marais des Cygnes River and Long Creek. Within the first year, the nascent town boasted approximately 100 residents, three dry good stores, a blacksmith's shop, a drug store, and a steam-powered portable saw mill. Melvern enjoyed steady trade and doubled in size by the early 1880s, supported by the surrounding well-settled agricultural land. However, growth stagnated until the Atchison, Topeka & Santa Fe Railroad arrived in 1884. Within two years the town boomed to almost 500 residents. In response to the town's rapid growth and promising future, in 1890, the brothers Charles E. and William H. Warner established one of two woven wire manufacturing firms in Melvern, anchoring the town's economy into

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[3] Ibid, F.
[4] 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.
[5] Ibid, 8.
[6] Jochims, F2.
[7] Nimz, 6.

the early twentieth century.[8] Typical of small towns throughout Kansas, Melvern served as a trading and shipping point for the surrounding rural community. Consequently, bridges that provided area farmers with access to local markets were critical to the survival of the regional economy.

The Atchison, Topeka & Santa Fe Railroad Company constructed the Atchison, Topeka & Santa Fe Pratt Truss Bridge in 1909. Markings on the structural members indicate that the Cambria Steel Company of Johnstown, Pennsylvania produced the stock metal. The dominant freight carrier between Chicago, Texas, and California by the early twentieth century, the Atchison, Topeka & Santa Fe Railroad Company (ATSF) was chartered in 1859 under the name of the Atchison and Topeka Railroad Company. Opened in 1873, the original ATSF main line extended from Atchison, Kansas to the western boundary of the state. By 1904, the system included more than 9,000 miles.

In order to avoid a dangerous grade crossing at the busy railroad corridor through Melvern, the Atchison, Topeka & Santa Fe Railroad Company constructed the Atchison, Topeka & Santa Fe Pratt Truss Bridge as an overpass. Upon completion of the steep approach grades, construction of the truss began during May 1909. With an on-site air-compressing unit and "three or four gangs of riveters," the Atchison, Topeka and Santa Fe Pratt Truss Bridge was completed by the end of the summer.[9]

Rather than use a truss bridge typical for vehicular spans, the Atchison, Topeka & Santa Fe Railroad Company simply utilized its standard railroad truss bridge design. This design incorporated dimensions ideal for railroad traffic, but atypical for vehicular traffic, including a comparatively narrow deck width of 15 feet, large railroad-grade stringers and floor beams, and an exceptionally tall vertical clearance of 26 feet. The 1895 Old Katy Bridge in Geary County, Kansas, built for the Missouri, Kansas & Texas Railroad, features the same dimensional characteristics and further illustrates this industry-standard design during the period of significance.[10]

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[8] The other manufacturing firm was located in Waverly, Coffey County. Yemi Adeyanju, "Warner was one of first manufacturers in Ottawa," *Ottawa Herald* [article on-line]; available from http://wire.dailynews.net/ottawa/2000/warner.html; Internet; accessed 20 June 2002.

[9] *Melvern Review,* 10 June 1909, p1c3.

[10] The Old Katy Bridge is being nominated concurrently with the Atchison, Topeka & Santa Fe Pratt Truss Bridge.

BIBLIOGRAPHY

Adeyanju, Yemi. "Warner was one of first manufacturers in Ottawa," *Ottawa Herald* [article on-line]; available from **http://wire.dailynews.net/ottawa/2000/warner.html;** Internet; accessed 20 June 2002.

Blaszak, Michael W. "Santa Fe: A Chronology." *ATSF History* [article on-line]; available from **http://www.augustweb.com/~marcc/atsfhist.html;** Internet; accessed 2 May 2002.

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, 22 October 1982.

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

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.

Melvern Kansas – The Early Years.[article on-line]; available from **http://skyways.lib.ks.us/towns/Melvern/history.html;** Internet; accessed 3 July 2002.

Melvern Review. 27 May 1909, 10 June 1909, 17 June 1909.

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

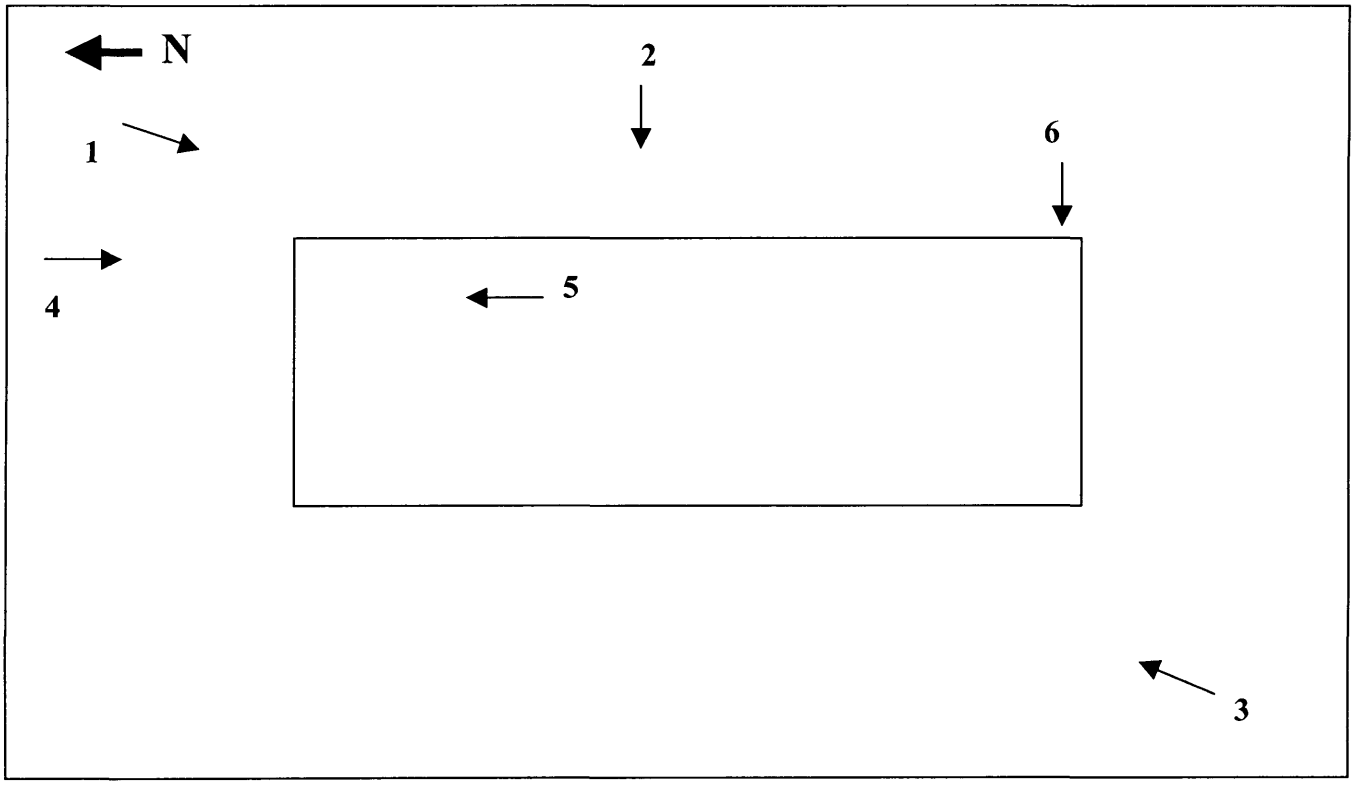
Verbal Boundary Description:
Located on the NW ¼ of Section 10, Township 18S, Range 16E, the Atchison, Topeka & Santa Fe Pratt Truss Bridge encompasses an area measuring approximately 148 feet by 22 feet. The northwest corner of this area corresponds to the northwest corner of the bridge.

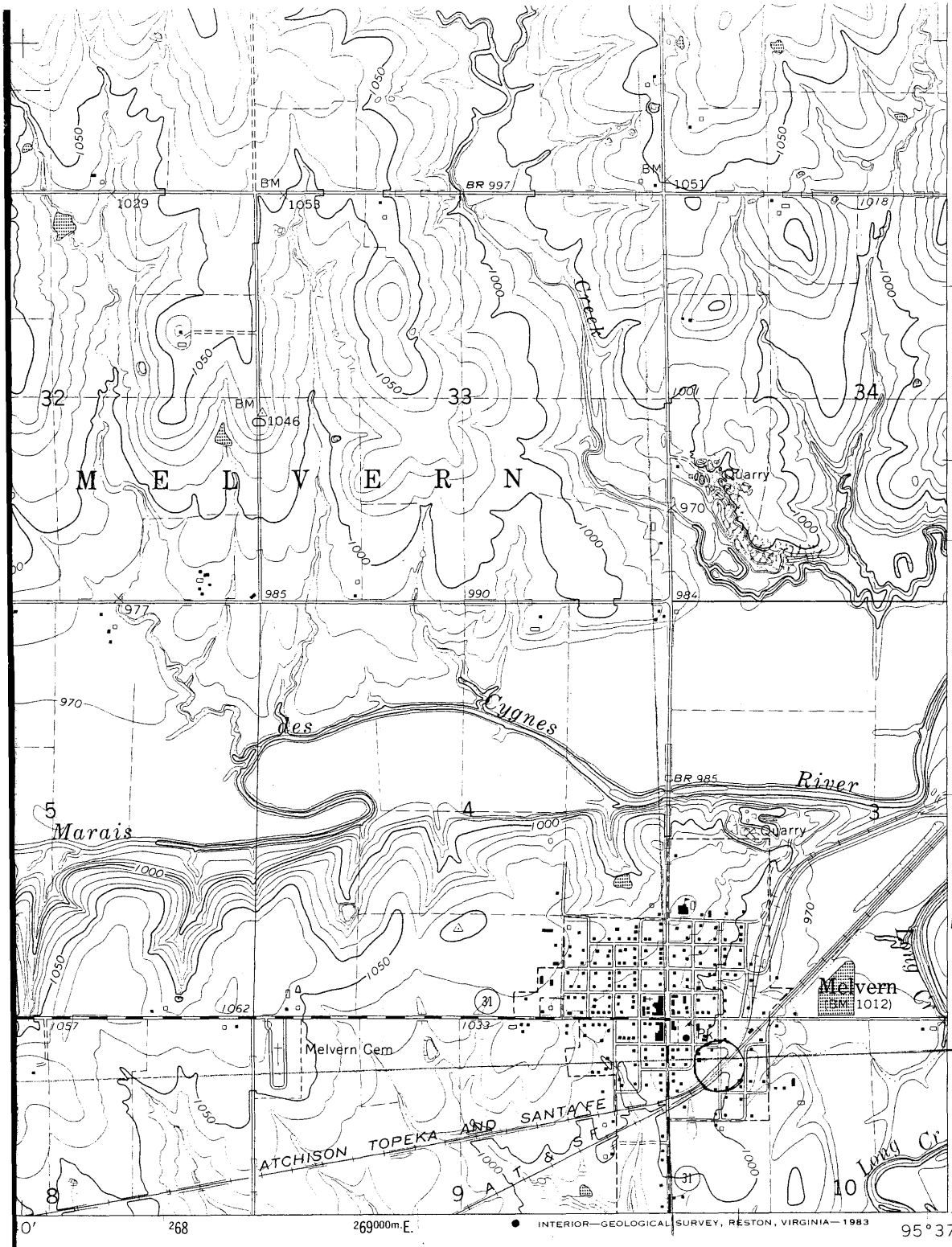
Boundary Justification:
The boundary includes the truss, deck, abutments, and associated approaches that represent the significant features associated with the bridge structure.

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 SW, bridge truss, abutments, and railroad bed
2.	View W, bridge truss and abutments
3.	View NE, bridge truss, abutments, and railroad bed
4.	View S, bridge truss and approach grade
5.	View N, detail, north portal
6.	View W, detail, southeast bearing pad and sidewalk structure





ATCHISON, TOPEKA & SANTA FE PRATT TRUSS BRIDGE OSAGE CO, KANSAS

UTM REFERENCE:
15/270 205/4264 960

(WAVERLY 6860 I NE)

ROAD CLASSIFICATION

Heavy-duty
Medium-duty
Light-duty
Unimproved dirt
U. S. Route
State Route

KANSAS

QUADRANGLE LOCATION

Revisions shown in purple compiled from aerial photographs taken 1981 and other sources
This information not field checked. Map edited 1983

LYNDON, KANS.

N3830—W9537.5/7.5

1965
PHOTOREVISED 1983
DMA 6861 II SW—SERIES V878