Kansas Historic Resources Inventory

Printed: 06/28/2016



139-3620-00006 Atchison, Topeka & Santa Fe Pratt Truss Bridge -- SE PINE ST Melvern





LOCATION:

County: Osage

Address: -- SE PINE ST

Address Remarks: (Pine St. aka 5th St) 0.1 Mi S Of The Intersection w/E EMPORIA ST

City: Melvern

Zip: 66510

Parcel ID:

Legal Description: NW 1/4 of Section 10 Township 18S Range 16E

Legal Description Remarks: nw 1/4 sec 10 t18s r16e

Latitude, Longitude 1: 38.505275 -95.635468

Latitude, Longitude 2: Latitude, Longitude 3: Latitude, Longitude 4:

Datum: WGS84

DESCRIPTION:

Historic Name: Atchison, Topeka & Santa Fe Pratt Truss Bridge

Alternate Name:

Historic Function: Transportation

Subcategory: Road-Related (Vehicular)

Historic Function Remarks:

Present Function: Transportation

Subcategory: Road-Related (Vehicular)

Present Function Remarks:

Residential/Commercial/Religious Style:

Secondary Style:

Barn Type: Not Applicable

Bridge Type: Pratt Truss

Landscape Type:

Physical Description/Remarks:

Plan Form: Rectangle

Commercial Building Type: Not Applicable

Roof Form: Not Applicable

Stories: 1

Condition: Fair **Principal Material:** Metal

Condition Remarks: Concrete foundation; Iron and Steel

Architect/Designer/Builder: ATSF Railroad Company

Year of Construction: 1909

Certainty: Documented

Date Notes:

General Remarks:

Ancillary Structures: None

Ancillary Structure Remarks:

REGISTER STATUS:

Listed in State Register: Yes

Date of State Listing:

Listed in National Register: Yes

Date of National Listing: 05/09/2003

Historic District:

Demolished:

Date Demolished (if applicable):

Potentially Eligible for National Register:

Register Status Remarks:

Thematic Nomination (MPDF): Metal Truss Bridges in Kansas

National Historic Landmark:

SURVEY INFORMATION:

There is no survey information for this record.

IMAGES & DOCUMENTS



ATSF Pratt Bridge. Approach. 03/10/2010.



ATSF Pratt Bridge. Approach. 03/10/2010.



ATSF Pratt Bridge. Detail of Structure. 03/10/2010.



ATSF Pratt Bridge. Side Elev. 03/10/2010.



National Register Nomination.

National Register of Historic Places Registration Form

1. Name of Property	
Historic name: N/A	
	D. #0.77#1.07
Other name/site number: Atchison, Topeka & Santa Fe Pratt Truss Bridge (prefer	ed); 70-H1-06
2. Location On SE Pine Street (aka Fifth Street), (0.1 mile south of the intersection	on 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	not for publication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
Settle Code 120 Code 17 Code 1	
standards for registering properties in the National Register of Historic Pland professional requirements set forth in 36 CFR Part 60. In my opinion, the does not meet the National Register criteria. I recommend that this property nationally XX statewide locally. (See continuation sheet for additional 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 Comments.)	ne property XX meets be considered significant ditional 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	
removed from the National Register.	
Signature of Keeper Date of Ac	tion

Property Name Atchison,	lopeka & Santa Fe Pratt Truss	Bridge		
County and State Osage, Kar	nsas			Page $\underline{2}$
5. Classification				
Ownership of Property	Category of Property		No.of Resources	within Property
private	building(s)		contributing	noncontributing
X public-local	district		,	buildings
public-State	site			sites
public-Federal	X structure		1	structures
national supplies and the supplies are supplies and the supplies and the supplies and the supplies are supplies and the supplies and the supplies are supplies are supplies and the supplies are supplies are supplies are supplies and the supplies are supplies and the supplies are suppl	object			objects
	***************************************		1	0 Total
				IO cal
Name of related multiple pro (Enter "N/A" if property is multiple property listing.):	perty listing: not part of a		No.of contributi listed in the Na	ng resources previously
Metal Truss Bridges in Kans	26		0.	
Wetai Truss Dridges in Rans	as ·		<u> </u>	
6. Functions or Use				
o. Parcerons or ose				
Historic Functions (Enter categories from instr	uctions.)		Current Functions (Enter categories	from instructions.)
TRANSPORTATION: Road-rela	ted (vehicular)		TRANSPORTATIO	N: Road-related (vehicular
TRANSFORTATION: Road-Tela	tou (Volitourar)			
				:
			4	
7. Description				
Architectural Classification (Enter categories from instr			Materials (Enter categorie	es from instructions.)
OTHER: Pratt Truss			Foundation <u>C</u>	oncrete
		•	Walls	
			Roof	
			Other Metal:	Iron, Steel

USDI/I	NPS	NRHP	Registratic	Form
--------	-----	------	-------------	------

Property Name Atchison, Topeka & Santa Fe Pratt	Truss Bridge	
County and State Osage, Kansas		Page <u>3</u>
8. Statement of Significance Applicable National Register Criteria (Mark "x" in property for National Register listing.)	one or more boxes for the criteria qual	ifying the
A Property is associated with events that have of our history.	made a significant contribution to the	broad patterns
B Property is associated with the lives of per	sons significant in our past.	
X C Property embodies the distinctive characteri or represents the work of a master, or posse and distinguishable entity whose components	sses high artistic values, or represents	onstruction s a significant
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 structu	re.	
F a commemorative property.		· .
Gless than 50 years of age or achieved signif	icance within the past 50 years.	
Areas of Significance Enter categories from instructions.)	Period of Significance Significance	icant Dates
ENGINEERING	1909 1909	·
TRANSPORTATION		
	Cultural Affiliation	
	N/A	,
		·
Significant Person	Architect/Builder	
N/A	Atchison, Topeka & Santa Fe Railway Comp	oany

Property Name Atchison, Topeka & Santa Fe Pratt Truss Bridge	·
County and State Osage, Kansas	Page <u>4</u>
9. Major Bibliographical References	
(Cite the books, articles, and other sources used in preparing t sheets.)	this form on one or more continuation
Previous documentation on file (NPS):	Primary location of additional data:
preliminary determination of individual listing	X State Historic Preservation Office
(36 CFR 67) has been requested	Other State agency
previously listed in the National Register	Federal agency
previously determined eligible by the National Register	X Local government
designated a National Historic Landmark	University
recorded by Historic American Buildings	Other
Survey #	Specify repository:
recorded by Historic American Engineering	
Record #	
10. Geographical Data	
그는 전문 전문화장 그러워 하는데 된 것이다. 그는 그는 그는 그는 그는 그를 모르는 그 모양 사람들은	经货币 医多种皮肤 经收款 医二甲二甲二甲二甲二甲二甲二甲二甲二甲二甲二甲二甲二甲二甲二甲二甲二甲二甲二甲
Acreage of property <u><1 acre</u>	
UTM References 1 1/5 2/7/0/2/0/5 4/2/6/4/9/6/0 3 / //// Zone Easting Northing Zone Easting	///// Northing
2 / //// //// 4 / /////	<u> </u>
See con	tinuation sheet
Verbal Boundary Description (Describe the boundaries of the prop	perty on a continuation sheet.)
Boundary Justification (Explain why the boundaries were selected	d on a continuation sheet.)
11. Form Prepared By	envistas pris 10 km ta 100 km t
name/title Kerry Davis, Architectural Historian & Elizabeth Rosin, Partn	A STATE OF THE STA
organization Historic Preservation Services	date <u>August 5, 2002</u>
street & number 323 West Eighth Street, Suite 112	telephone <u>(816) 221-5133</u>
city or town Kansas City	state <u>Missouri</u> zip code <u>64105</u>
Additional Documentation	
Submit the following items with the completed form:	
Continuation Sheets Maps	
A USGS map (7.5 or 15 minute series) indicating the propert A sketch map for historic districts and properties having 1 Photographs	
Representative black-and-white photographs of the property. Additional items (Check with the SHPO or FPO for any additional	
Property Owners (Complete this item at the request of the SHPC	or FPO.)
Name City of Melvern	
street & number141 SW Main Street, P.O. Box 116	telephone <u>785-549-3447</u>
city or town Melvern	state KS zip code _66510

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section Number 7 Page 1

Atchison, Topeka & Santa Fe Pratt Truss Bridge Osage County, Kansas

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 truss¹ 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

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

NPS Form 10-900-a (8-86)

OMB No. 1024-0018

United States Department of the Interior National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section Number 7 Page 2

Atchison, Topeka & Santa Fe Pratt Truss Bridge Osage County, Kansas

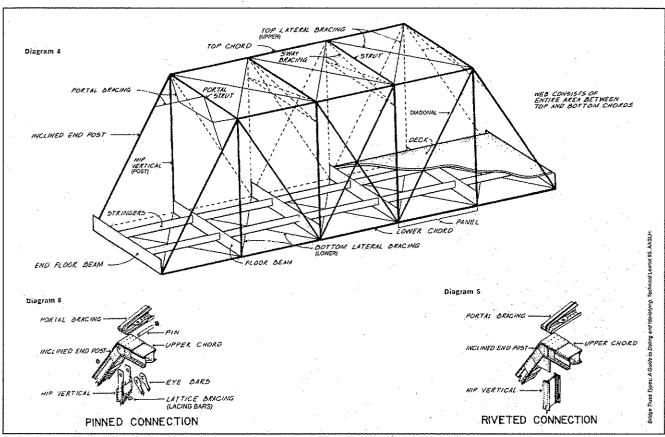
vehicular traffic. Although the sidewalk deck planks are missing, these can be repaired and their absence does not significantly impact the overall integrity of the bridge. The Atchison, Topeka & Santa Fe Pratt Truss Bridge retains a high degree of integrity, and the original workmanship, materials,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

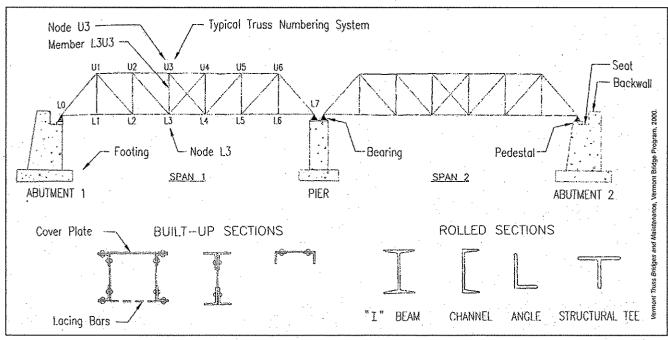
NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section Number 7 Page 3

Atchison, Topeka & Santa Fe Pratt Truss Bridge Osage County, Kansas

TRUSS TERMINOLOGY





NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section Number 8 Page 4

Atchison, Topeka & Santa Fe Pratt Truss Bridge Osage County, Kansas

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. 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.

¹ Jochims, E.

² Jochims, F.

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section Number 8 Page 5

Atchison, Topeka & Santa Fe Pratt Truss Bridge Osage 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.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. 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.

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

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

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:

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section Number 8 Page 6

Atchison, Topeka & Santa Fe Pratt Truss Bridge Osage County, Kansas

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.

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

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.

Melvern Review, 10 June 1909, p1c3.

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

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section Number 9 Page 7

Atchison, Topeka & Santa Fe Pratt Truss Bridge Osage County, Kansas

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.

NPS Form 10-900-a (8-86)

United States Department of the Interior National Park Service

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section Number 10 Page 8

Atchison, Topeka & Santa Fe Pratt Truss Bridge Osage County, Kansas

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.

NATIONAL REGISTER OF HISTORIC PLACES CONTINUATION SHEET

Section - Photographic Documentation Page 9

Atchison, Topeka & Santa Fe Pratt Truss Bridge Osage 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 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

