NPS Form 10-900
(7-81)

United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

See instructions in *How to Complete National Register Forms*
Type all entries—complete applicable sections

For NPS use only
received
date entered

1. Name

historic Blacksmith Creek Bridge

and/or common Blacksmith Creek Bridge

2. Location

street & number 5 miles west of Topeka N/A not for publication

city, town Topeka x vicinity of [redacted]

state Kansas code 20 county Shawnee code 177

3. Classification

Category	Ownership	Status	Present Use	
___ district	x public	x occupied	___ agriculture	___ museum
___ building(s)	___ private	___ unoccupied	___ commercial	___ park
x structure	___ both	___ work in progress	___ educational	___ private residence
___ site	**Public Acquisition**	**Accessible**	___ entertainment	___ religious
___ object	___ in process	___ yes: restricted	___ government	___ scientific
	___ being considered	x yes: unrestricted	___ industrial	x transportation
	N/A	___ no	___ military	___ other:

4. Owner of Property

name Shawnee County

street & number Courthouse

city, town Topeka N/A vicinity of state Kansas

5. Location of Legal Description

courthouse, registry of deeds, etc. Register of Deeds

street & number Shawnee County Courthouse

city, town Topeka state Kansas

6. Representation in Existing Surveys

title Inventory of Marsh Arch Bridges--Kansas Department of Transportation has this property been determined eligible? ___ yes x no

date 1980 ___ federal x state ___ county ___ local

depository for survey records Kansas State Historical Society

city, town Topeka state Kansas

7. Description

Condition		Check one	Check one
___ excellent	___ deteriorated	___ unaltered	_x_ original site
_x_ good	___ ruins	_x_ altered	___ moved date _____
___ fair	___ unexposed		

Describe the present and original (if known) physical appearance

The Blacksmith Creek "rainbow arch" (or "Marsh arch") bridge situated five miles west of Topeka on a county road measures 100 feet out to out with a clear span of 60 feet. The bridge has been resurfaced periodically but this has not significantly compromised its integrity as Marsh's plans called for whatever filling material, between the bridge deck curbs, that locality might desire. The bridge has been painted white at some time in its history.

The bridge's abutments rest on bedrock approximately 25 feet below grade. The low water level is 18 feet below grade.

The best description of a rainbow arch span is contained in James Marsh's 1911 patent application. The bridge consists of ". . . two abutments (which could be piers), a pair of arches disposed between and springing from the abutments, the floor carried by and between the arches and reaching from one abutment to the other where it alines with the parapets or rails along opposite sides of the floor line." The original patents called for slideable wear plates to be moulded into the concrete where the bridge floor came into contact with the beams and abutments. This is of importance as one of the main benefits of this design was to allow for the expansion and contraction of the reinforced concrete bridge under varying conditions of temperature and moisture.

There were two basic rainbow arch designs, fixed and tied. The original patent application describes the fixed typed such as the Blacksmith Creek bridge in which case the arch flowed below the bridge deck and was "fixed" directly into the abutment. This massive abutment (or pier) resisted both the horizontal and the vertical thrust of the arch. In a tied design the arch did not flow below the deck line and was not fixed directly into the abutment. It was secured atop the abutment or pier by the use of steel rocker or expansion rocker bearings. Veritcal thrust was resisted by the pier and bearing, while horizontal thrust was resisted by the addition of a lower chord.

8. Significance

Period	Areas of Significance—Check and justify below				
___ prehistoric	___ archeology-prehistoric	___ community planning	___ landscape architecture	___ religion	
___ 1400–1499	___ archeology-historic	___ conservation	___ law	___ science	
___ 1500–1599	___ agriculture	___ economics	___ literature	___ sculpture	
___ 1600–1699	___ architecture	___ education	___ military	___ social/ humanitarian	
___ 1700–1799	___ art	X engineering	___ music	___ theater	
___ 1800–1899	___ commerce	___ exploration/settlement	___ philosophy	X transportation	
X 1900–	___ communications	___ industry	___ politics/government	___ other (specify)	
		___ invention			

Specific dates 1930 **Builder/Architect** James B. Marsh, Engineer

Statement of Significance (in one paragraph)

The Blacksmith Creek "rainbow arch" (or "Marsh arch") bridge west of Topeka, Kansas retains its integrity of location, design, setting, materials, feeling, and association. It is associated with the life of James B. Marsh, pioneer in steel and concrete bridge construction. It embodies the distinctive characteristics of a type and method of construction that is no longer being used, and, as such may yield information important to the history of engineering. Although 72 rainbow arch bridges are currently known to exist in Kansas. The ever-changing needs of modern transportation have made them an endangered species. This particular bridge, however, has a good chance for survival due to the fact that most of its original traffic now travels interstate 70.

James Barney Marsh was born in 1856 at North Lake, Wisconsin. He went to Iowa at the age of 18 to enter preparatory school at Fredericksburg. Marsh graduated in 1882 from Iowa State College of Agriculture and Mechanical Arts in Ames, with a B.M.E. degree. In March of 1883 he began his professional career in the Des Moines office of the King Bridge Company of Cleveland, Ohio. With King, Marsh was involved in the design, sales and actual erection of metal bridges. While he continued to work with the King Company, he also became head of the Northern Agency for the Kansas City Bridge and Iron Company. In this capacity, he both designed and superintended the actual construction work done by the company. By March of 1889, Marsh had become general western agent and contracting engineer for the King Bridge Company and was placed in charge of the general western office in Des Moines. In the spring of 1896, he formed his own company, the Marsh Bridge Company, and was its sole proprietor. In private practice as a contracting engineer, Marsh was able to more fully develop his own designs. He also constructed the designs he developed, usually using steel as a medium. At the turn of the century, Marsh initiated the use of both concrete and steel in his bridge design. In April of 1904, the Marsh Bridge Company was incorporated with Marsh as president and chief engineer. In 1909, the company was reorganized as the Marsh Engineering Company.

It was not until the introduction of the "rainbow arch" by Marsh, that Kansas made widespread use of reinforced concrete spans for major stream crossings. Marsh canvassed the midwest, selling his arches in direct competition with the steel trusses at that time.

The history of the Blacksmith Creek bridge is quite sketchy. All that can be found to date is the advertising for bids on December 26, 1928, and again on January 2, 1929 in the Topeka Daily Capital and the letting of the contract to the Maxwell Construction Company of Columbus, Kansas on January 17, 1929. The bid was $40,042.92 (this included another rainbow arch and a concrete slab bridge also part of the project). The master construction record shows a completion date of March, 1930.

Form No 10-300a
(Rev 10 74)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

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DATE ENTERED

9. Bibliography

"Notice to Road Contractors," Topeka Daily Capital, January 2, 1929, p. 14, c. 5.

"County Lets Contract for West Tenth Road," Topeka Daily Capital, January 17, 1929, p. 1, c. 6.

Nichols, C.S., Comp. Directory of Graduates of Division of Engineering, Iowa State College of Agriculture and Mechanical Arts, Ames, Iowa.

The Alumnus of Iowa State. Alumni Association of Iowa State College, Ames, Volume XXXII, #1, July 1936.

Marsh, James B., Specification of Letters Patent, Number 1,035,026, patented August 6, 1912, United States Patent Office, Washington, D.C.

Plans and files. Design Department, Kansas Department of Transportation, Topeka, Kansas Microfilm Roll #127, frame #57+.

9. Major Bibliographical References

See Continuation Sheet, Item #9.

10. Geographical Data

Acreage of nominated property .5

Quadrangle name Silver Lake Quadrangle scale 1:24,000

UMT References

	Zone	Easting	Northing
A	15	253940	4326040
B			
C			
D			
E			
F			
G			
H			

Verbal boundary description and justification

That property on and over which the bridge is built west of Topeka, Kansas S34, T11S, R14E. Includes bridge superstructure and supporting abutments.

List all states and counties for properties overlapping state or county boundaries

state N/A	code	county	code
state	code	county	code

11. Form Prepared By

name/title Larry Jochims, Research Historian and Michael Snell

organization Kansas State Historical Society date

street & number 10th and Jackson Streets telephone (913) 296-2973

city or town Topeka state Kansas

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

___ national _x_ state ___ local

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

State Historic Preservation Officer signature

title date

For NPS use only

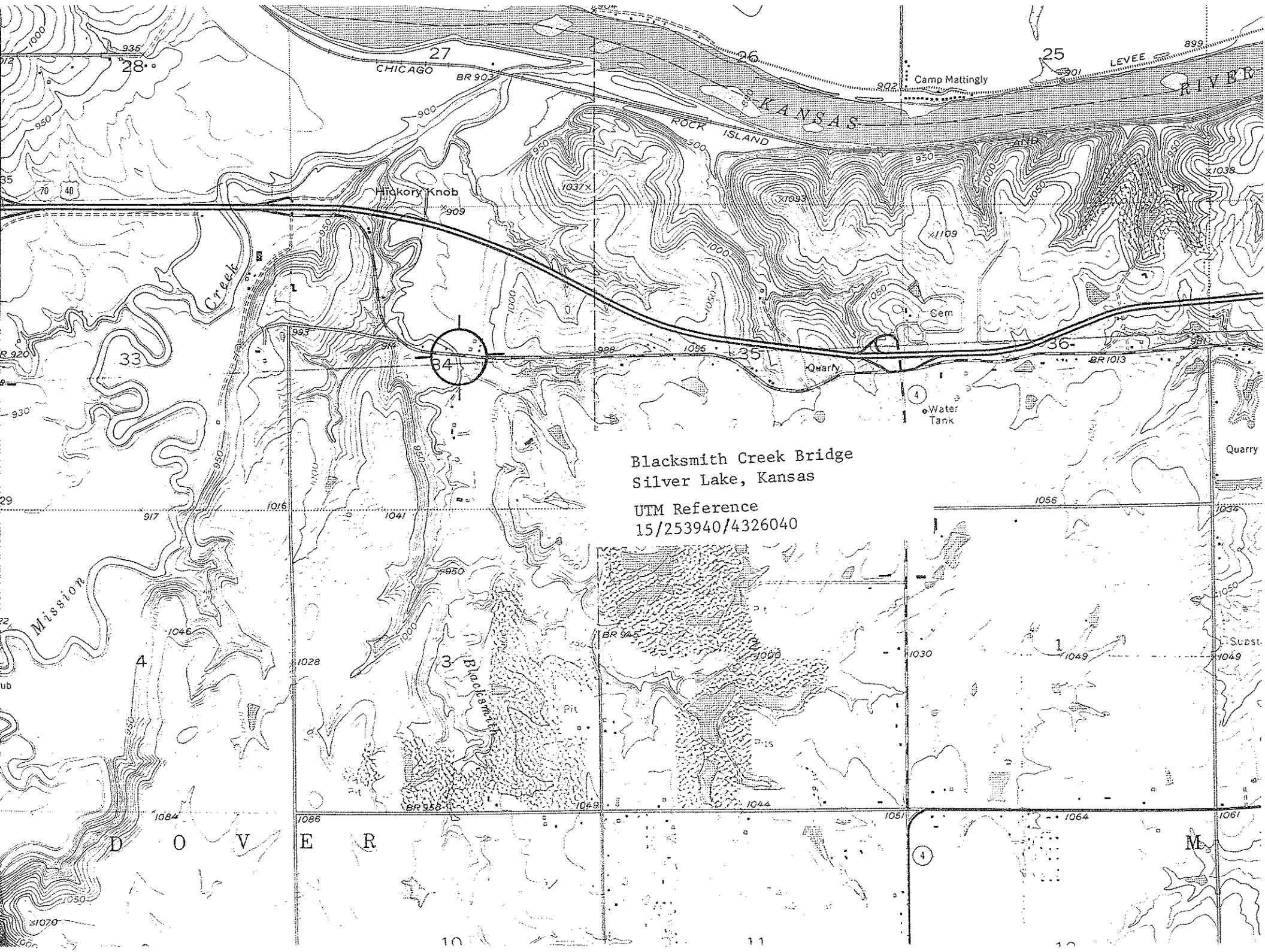
I hereby certify that this property is included in the National Register

date

Keeper of the National Register

Attest: date

Chief of Registration


Blacksmith Creek Bridge
Silver Lake, Kansas
UTM Reference
15/253940/4326040
CHICAGO
BR 903
ROCK ISLAND
KANSAS
RIVER
LEVEE
Camp Mattingly
Hickory Knob
Creek
Cem
Quarry
Water Tank
BR 1013
Mission
BR 945
Blacksmith
Pit
BR 958
DOVER
Quarry