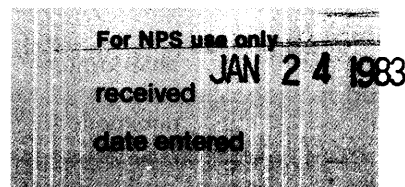


United States Department of the Interior
National Park Service

National Register of Historic Places
Inventory—Nomination Form



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

1. Name

historic Blacksmith Creek Bridge (Rainbow)

and/or common Blacksmith Creek Bridge

2. Location

street & number 5 miles west of Topeka N/A not for publication

city, town Topeka city vicinity of ~~Shawnee County Courthouse~~

state Kansas code 20 county Shawnee code 177

3. Classification

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

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

date 1980 federal state county local

depository for survey records Kansas State Historical Society

city, town Topeka state Kansas

7. Description

Condition		Check one	Check one
<input type="checkbox"/> excellent	<input type="checkbox"/> deteriorated	<input type="checkbox"/> unaltered	<input checked="" type="checkbox"/> original site
<input checked="" type="checkbox"/> good	<input type="checkbox"/> ruins	<input checked="" type="checkbox"/> altered	<input type="checkbox"/> moved date _____
<input type="checkbox"/> fair	<input type="checkbox"/> 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 aligns 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 type 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. Vertical 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			
<input type="checkbox"/> prehistoric	<input type="checkbox"/> archeology-prehistoric	<input type="checkbox"/> community planning	<input type="checkbox"/> landscape architecture	<input type="checkbox"/> religion
<input type="checkbox"/> 1400-1499	<input type="checkbox"/> archeology-historic	<input type="checkbox"/> conservation	<input type="checkbox"/> law	<input type="checkbox"/> science
<input type="checkbox"/> 1500-1599	<input type="checkbox"/> agriculture	<input type="checkbox"/> economics	<input type="checkbox"/> literature	<input type="checkbox"/> sculpture
<input type="checkbox"/> 1600-1699	<input type="checkbox"/> architecture	<input type="checkbox"/> education	<input type="checkbox"/> military	<input type="checkbox"/> social/ humanitarian
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> art	<input checked="" type="checkbox"/> engineering	<input type="checkbox"/> music	<input type="checkbox"/> theater
<input type="checkbox"/> 1800-1899	<input type="checkbox"/> commerce	<input type="checkbox"/> exploration/settlement	<input type="checkbox"/> philosophy	<input checked="" type="checkbox"/> transportation
<input checked="" type="checkbox"/> 1900-	<input type="checkbox"/> communications	<input type="checkbox"/> industry	<input type="checkbox"/> politics/government	<input type="checkbox"/> other (specify)
		<input type="checkbox"/> 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.

9. Major Bibliographical References

See Continuation Sheet, Item #9.

10. Geographical Data

Acreege of nominated property .5

Quadrangle name Silver Lake

Quadrangle scale 1:24,000

UMT References

A	<u>1</u> <u>5</u>	<u>2</u> <u>5</u> <u>13</u> <u>9</u> <u>14</u> <u>10</u>	<u>4</u> <u>13</u> <u>2</u> <u>16</u> <u>0</u> <u>14</u> <u>10</u>
	Zone	Easting	Northing

B						
	Zone	Easting	Northing			

C						
	Zone	Easting	Northing			

D						
	Zone	Easting	Northing			

E						
	Zone	Easting	Northing			

F						
	Zone	Easting	Northing			

G						
	Zone	Easting	Northing			

H						
	Zone	Easting	Northing			

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	code	county	code
<u>N/A</u>			

state	code	county	code

11. Form Prepared By

name/title Larry Jochims, Research Historian and Michael Snell

organization Kansas State Historical Society date 7/22/82

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 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 Executive Director, Ks. State Historical Society date January 4, 1983

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

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

FOR NPS USE ONLY

RECEIVED

DATE ENTERED

**NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY -- NOMINATION FORM**

CONTINUATION SHEET

ITEM NUMBER 9 PAGE 1

9. Bibliography

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