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

and/or common  Blacksmith Creek Bridge

2. Location

street & number  5 miles west of Topeka

city, town  Topeka  vicinity of

state  Kansas  code 20  county  Shawnee  code 177

3. Classification

<table>
<thead>
<tr>
<th>Category</th>
<th>Ownership</th>
<th>Status</th>
<th>Present Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>district</td>
<td>public</td>
<td>occupied</td>
<td>museum</td>
</tr>
<tr>
<td>building(s)</td>
<td>private</td>
<td>unoccupied</td>
<td>commercial</td>
</tr>
<tr>
<td>structure</td>
<td>both</td>
<td>work in progress</td>
<td>educational</td>
</tr>
<tr>
<td></td>
<td>Public Acquisition</td>
<td>accessible</td>
<td>entertainment</td>
</tr>
<tr>
<td>site</td>
<td>in process</td>
<td>yes: restricted</td>
<td>government</td>
</tr>
<tr>
<td>object</td>
<td>being considered</td>
<td>yes: unrestricted</td>
<td>industrial</td>
</tr>
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</table>

4. Owner of Property

name  Shawnee County

street & number  Courthouse

city, town  Topeka  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  x  no
date  1980  federal  x  state  county  local

depository for survey records  Kansas State Historical Society

city, town  Topeka  state  Kansas
7. Description

<table>
<thead>
<tr>
<th>Condition</th>
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<th>Check one</th>
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</thead>
<tbody>
<tr>
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<td>unaltered</td>
<td>original site</td>
</tr>
<tr>
<td>good</td>
<td>ruined</td>
<td>moved date</td>
</tr>
<tr>
<td>fair</td>
<td>unexposed</td>
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</tr>
</tbody>
</table>

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 cut to cut 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 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. Vertical thrust was resisted by the pier and bearing, while horizontal thrust was resisted by the addition of a lower chord.
8. Significance

<table>
<thead>
<tr>
<th>Period</th>
<th>Areas of Significance—Check and justify below</th>
<th>Specific dates</th>
<th>Builder/Architect</th>
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<tbody>
<tr>
<td>___ prehistoric ___</td>
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<td>1930</td>
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<tr>
<td>___ 1400-1499 ___</td>
<td>archeology-historic</td>
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<td>___ 1800-1899 ___</td>
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<tr>
<td>___ 1900- ___</td>
<td>communications</td>
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</table>

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. Bibliography


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

A 1
Zone 15
Easting 2539
Northing 1410

B
Zone 1
Easting 412
Northing 160

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

<table>
<thead>
<tr>
<th>state</th>
<th>code</th>
<th>county</th>
<th>code</th>
</tr>
</thead>
</table>

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<tr>
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<th>code</th>
</tr>
</thead>
</table>

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  _ 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:  

Chief of Registration