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 Creamery Bridge
and/or common Creamery Bridge

2. Location

street & number FAS 456 north city limits of Osawatomie n/a not for publication

city, town Osawatomie n/a vicinity of congressional district

state Kansas code 20 county Miami code 121

3. Classification

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

4. Owner of Property

name Miami County
street & number Courthouse

city, town Paola n/a vicinity of state Kansas

5. Location of Legal Description

courthouse, registry of deeds, etc. Register of Deeds
street & number Miami County Courthouse

city, town Paola 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

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<tr>
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<td>__ altered</td>
<td>__ moved</td>
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<tr>
<td>___ fair</td>
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Describe the present and original (if known) physical appearance

The Creamery bridge in Osawatomie, Kansas spans the Marais Des Cygnes river on FAS 456. The structure is composed of a central 140 foot "rainbow arch" (or "Marsh arch") span with an 80 foot rainbow arch span on each end.

With piers and approach decks the total length is 346 feet 6 inches.

The bridge's piers rest on solid rock approximately 50 feet below grade. Its abutments rest approximately 15 feet below grade on creosoted piles. Low water level is 36 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 Creamery 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.

The Creamery bridge's 20 foot wide roadway has been resurfaced periodically but this has not significantly compromised its integrity. Marsh's plans allowed for whatever filling material, between the bridge deck curbs, that locality might desire. The bridge's light fixtures (two on each approach and one on each overhead thru strut) are no longer in operation.
8. Significance

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**Statement of Significance (in one paragraph)**

The Creamery "rainbow arch" (or "Marsh arch") bridge in Osawatomie 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. The bridge embodies the distinctive characteristics of a type and method of construction that is no longer used, and, as such may yield information important to the history of engineering. Although 72 rainbow arches are currently known to exist in Kansas they are quickly becoming a thing of the past due to the ever-changing needs of modern transportation. Of these 72, only eight have three spans.

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.

On December 12, 1930 the Osawatomie Graphic reported that the town was to have a new bridge. The contract for a rainbow arch bridge over the Marais Des Cygnes had been let to the Maxwell Construction Company on December 8, 1930 for a bid of $36,087.84. The existing bridge had been condemned several times.

The last mention of the bridge was in the May 21, 1931 issue of the Graphic when county engineer Harold J. Abbey predicted seven more working days were needed to complete the structure.
9. Major Bibliographical References

See Continuation Sheet, Item #9.

10. Geographical Data

Acreage of nominated property: 0.5
Quadrangle name: Paola West
UMT References

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Quadrangle scale: 1:24,000

Verbal boundary description and justification:
That property on and over which the bridge is built in Osawatomie, Kansas. S10, T18S, R22E. Includes bridge superstructure plus supporting piers and abutments.

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

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| 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  ___ 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
9. Bibliography

"To Have New Bridge," Osawatomie Graphic, December 12, 1930, p. 1, c. 2.

"New Water Mains Are Ready For Use," Osawatomie Graphic, January 4, 1931, p. 3, c. 2.

"To Finish New Bridge Soon," Osawatomie Graphic, May 21, 1931, p. 1, c. 5.


Plans and files. Design Department, Kansas Department of Transportation, Topeka, Kansas Microfilm Roll #29, frame #359+.