

United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form*. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. **Place additional certification comments, entries, and narrative items on continuation sheets if needed (NPS Form 10-900a).**

1. Name of Property

historic name Squirrel Creek Bridge
other names/site number Structure # 60N3410E1180003

2. Location

street & number Carries Rangeline Road over Squirrel Creek not for publication
city or town Shawnee Vicinity
state Oklahoma code OK county Pottawatomie code 125 zip code 74802

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,
I hereby certify that this X nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.
In my opinion, the property X meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:
___ national X statewide ___ local

Signature of certifying official/Title Date

State or Federal agency/bureau or Tribal Government

In my opinion, the property ___ meets ___ does not meet the National Register criteria.

Signature of commenting official Date

Title State or Federal agency/bureau or Tribal Government

4. National Park Service Certification

I hereby certify that this property is:
___ entered in the National Register ___ determined eligible for the National Register
___ determined not eligible for the National Register ___ removed from the National Register
___ other (explain:) _____

Signature of the Keeper Date of Action

Squirrel Creek Bridge
Name of Property

Pottawatomie County, Oklahoma
County and State

5. Classification

Ownership of Property
(Check as many boxes as apply.)

Category of Property
(Check only **one** box.)

Number of Resources within Property
(Do not include previously listed resources in the count.)

- private
- public - Local
- public - State
- public - Federal

- building(s)
- district
- site
- structure
- object

Contributing	Noncontributing	
0	0	buildings
0	0	district
0	0	site
1	0	structure
0	0	object
1	0	Total

Name of related multiple property listing
(Enter "N/A" if property is not part of a multiple property listing)

Number of contributing resources previously listed in the National Register

N/A

0

6. Function or Use

Historic Functions
(Enter categories from instructions.)

Current Functions
(Enter categories from instructions.)

Transportation: Road Related

Transportation: Road Related

7. Description

Architectural Classification
(Enter categories from instructions.)

Materials
(Enter categories from instructions.)

Other: Rainbow Arch Bridge

foundation: Concrete
walls: _____

roof: _____
other: Concrete

Squirrel Creek Bridge

Name of Property

Pottawatomie County, Oklahoma

County and State

Narrative Description

(Describe the historic and current physical appearance of the property. Explain contributing and noncontributing resources if necessary. Begin with a **summary paragraph** that briefly describes the general characteristics of the property, such as its location, setting, size, and significant features.)

Summary Paragraph

Constructed in 1917, the Squirrel Creek Bridge is a single span concrete rainbow arch bridge located on the west edge of Shawnee in Pottawatomie County. The structure carries a county road over Squirrel Creek, a tributary of the Canadian River. Owned by Pottawatomie County, it is in good condition.

Narrative Description

The bridge consists of two parallel reinforced concrete semi-circular arches, from which the floor system is suspended by four pairs of reinforced concrete hangers. These arches are attached to the front of the concrete abutments below the level of the floor. Dimensions of the structure are 67 feet in length and 20 feet in width. Vertical concrete members extend from the deck to the arch. Two horizontal bars serve as railings through the vertical members.

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8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- B Property is associated with the lives of persons significant in our past.
- C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- 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.)

Property is:

- A Owned by a religious institution or used for religious purposes.
- B removed from its original location.
- C a birthplace or grave.
- D a cemetery.
- E a reconstructed building, object, or structure.
- F a commemorative property.
- G less than 50 years old or achieving significance within the past 50 years.

Areas of Significance

(Enter categories from instructions.)

Engineering

Transportation

Period of Significance

1916-1917

Significant Dates

1916

1917

Significant Person

(Complete only if Criterion B is marked above.)

N/A

Cultural Affiliation

N/A

Architect/Builder

Gus Pecore and Joe Jarvis, supervisors

Period of Significance (justification)

The period of significance is associated with the date of construction of 1916-1917.

Criteria Considerations (explanation, if necessary)

N/A

Squirrel Creek Bridge

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Statement of Significance Summary Paragraph (Provide a summary paragraph that includes level of significance and applicable criteria.)

The Squirrel Creek Bridge is eligible for the National Register of Historic Places at the state level under Criterion A for its association with transportation and Criterion C for its engineering design. The Squirrel Creek Bridge embodies the distinctive characteristics of bridge engineering; specifically the rainbow arch bridge design. It is the only extant example of this type in Oklahoma.

Narrative Statement of Significance (Provide at least **one** paragraph for each area of significance.)

The Squirrel Creek Bridge is in its original configuration including the connections and the configuration of the arches. Because the superstructure is the most important feature of the bridge, the replacement of the deck does not impact the integrity or eligibility of the bridge. The Squirrel Creek Bridge embodies the distinctive characteristics of bridge engineering; specifically the rainbow arch bridge design.

Developmental history/additional historic context information (if appropriate)

Concrete bridges were first in use as early as 1871 in Brooklyn, New York. Evolution in concrete bridge construction included different uses of I-beams, steel bars, rods and reinforced concrete. By the 1910s concrete was being used for longer arch spans but these used significantly more steel than a barrel arch, slab or girder bridge.

John Marsh, of Des Moines, developed and patented the design known as the Rainbow Arch or Marsh Arch. He formed his own company in 1896 and began investigating the use of steel and concrete together, and became a leader in the technological studies that resulted in the general acceptance of reinforced concrete for bridge construction.ⁱ In 1911, Marsh made a patent application for the Rainbow Arch design. His design was a two-ribbed concrete through arch. The cores of the arches were a steel arch consisting of lattice work similar to the chords of a truss bridge. The first step in construction was to assemble and erect the steel much like a steel truss. The lattice work forms two parallel four angle arches that are covered with concrete. The angles of the arches are hidden in the concrete which is formed into two semi-elliptical arches. The floor of the bridge is suspended from the arches by reinforced concrete hangers riveted to the arches and the floor stringers.

Once the steel ribs were set on the abutments or piers and the vertical steel hangers, the steel floor beams, and the reinforcing for the deck were put in place, concrete was encased around them in a specific order. The arch ribs were encased in concrete first, followed by the floor beams and floor slab, the bridge railing and finally the vertical hangers.ⁱⁱ

A characteristic of the Rainbow Arch Bridge is that temperature changes are allowed to cause movements in the arches and floor system independent of each other. This is accomplished by providing expansion plates between the floor slab and the arches. The floor slab is also allowed to move freely over the abutments.

Arch bridges may be designed as single-arch spans, multiple single-arch spans, or continuous arch spans. The fundamental difference is that single spans in any arrangement are independent and can stand alone. Continuous spans are dependent upon each other and can not stand alone. Most arches in Oklahoma are "deck arches" meaning that the arch is below the floor. The only other version in Oklahoma is the rainbow arch of which the Squirrel Creek Bridge is the only extant example in Oklahoma.

The Squirrel Creek Bridge is also significant for its association with transportation in Pottawatomie County. Squirrel Creek Bridge is located along the Williams Highway and provided an important link between Shawnee and Tecumseh, Oklahoma. The Williams Highway, as it traveled through Pottawatomie County was constructed by convict laborers from

ⁱ Larry Jochims, "Rainbow Arch Bridges Add Variety to Kansas Highways," *Kansas Preservation* 2 (September-October 1980): 1-2; Clay County Commissioners Record, 13 May 1911.

ⁱⁱ Jochims, "Rainbow Arch Bridges," p. 2.

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the state penitentiary at McAlester.ⁱⁱⁱ The construction of Squirrel Creek Bridge was supervised by Gus Pecore and Joe Jarvis.^{iv}

Rainbow Arch bridges generally cost more than steel-truss bridges of like span, but because they were located at major crossings in cities, local governments were willing to accept the extra cost because of the aesthetic dimension the arches offered.

The Squirrel Creek Bridge is eligible at the state level for its role in transportation in Pottawatomie County and as the only extant example of the Rainbow Arch Bridge type in Oklahoma. The bridge embodies the distinctive characteristics of bridge engineering and construction.

ⁱⁱⁱ McLoud Observer, September 1916.

^{iv} *Pottawatomie County Oklahoma History*, (Country Lane Press, Claremore Oklahoma, 1987), pg. 122.

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9. Major Bibliographical References

Bibliography (Cite the books, articles, and other sources used in preparing this form.)

Jochims, Larry. "Rainbow Arch Bridges Add Variety to Kansas Highways," *Kansas Preservation* 2. September-October 1980.

King, Joseph E. *Spans of Time: Oklahoma's Historic Highway Bridges*. Oklahoma City, OK: Oklahoma Department of Transportation, 1993.

McCloud Observer, September 1916.

Oklahoma Department of Highways. Annual Report. 1916.

Pottawatomie County Oklahoma History. Country Lane Press, Claremore Oklahoma, 1987.

Previous documentation on file (NPS):

- preliminary determination of individual listing (36 CFR 67 has been requested)
- previously listed in the National Register
- previously determined eligible by the National Register
- designated a National Historic Landmark
- recorded by Historic American Buildings Survey # _____
- recorded by Historic American Engineering Record # _____
- recorded by Historic American Landscape Survey # _____

Primary location of additional data:

- State Historic Preservation Office
- Other State agency
- Federal agency
- Local government
- University
- Other
- Name of repository: _____

Historic Resources Survey Number (if assigned): _____

10. Geographical Data

Acreage of Property Less than 1 acre
(Do not include previously listed resource acreage.)

UTM References

(Place additional UTM references on a continuation sheet.)

1	<u>14</u> Zone	<u>688201</u> Easting	<u>3908292</u> Northing	3	_____	_____	_____	Northing
2	<u>14</u> Zone	<u>688199</u> Easting	<u>3908316</u> Northing	4	_____	_____	_____	Northing

Verbal Boundary Description (describe the boundaries of the property)

The bridge carries Rangeline Road over Squirrel Creek approximately 2000 feet south from the Hardesty and Rangeline Road intersection in Pottawatomie County. The property boundary extends fifteen feet on either side of the centerline of the road as it crosses the bridge, and fifteen feet from each end (abutment) of the bridge.

Boundary Justification (explain why the boundaries were selected)

Includes the area historically associated with the bridge.

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11. Form Prepared By

name/title Lynda B. Schwan, National Register Program Coordinator
organization OK SHPO date March 23, 2010
street & number 2401 N Laird telephone 405-522-4478
city or town Oklahoma City state OK zip code 73105
e-mail lschwan@okhistory.org

Additional Documentation

Submit the following items with the completed form:

- **Maps:** A **USGS map** (7.5 or 15 minute series) indicating the property's location.
A **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.
- **Continuation Sheets**
- **Additional items:** (Check with the SHPO or FPO for any additional items.)

Photographs:

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map.

Name of Property: Squirrel Creek Bridge
City or Vicinity: Shawnee
County: Pottawatomie **State:** Oklahoma
Photographer: Lynda Schwan
Date Photographed: November 6, 2009

Description of Photograph(s) and number:

1 of 2.

No.	Subject	Dir.
0001	Squirrel Creek Bridge	N
0002	Squirrel Creek Bridge	W

Squirrel Creek Bridge
Name of Property

Pottawatomie County, Oklahoma
County and State

Property Owner:

(Complete this item at the request of the SHPO or FPO.)

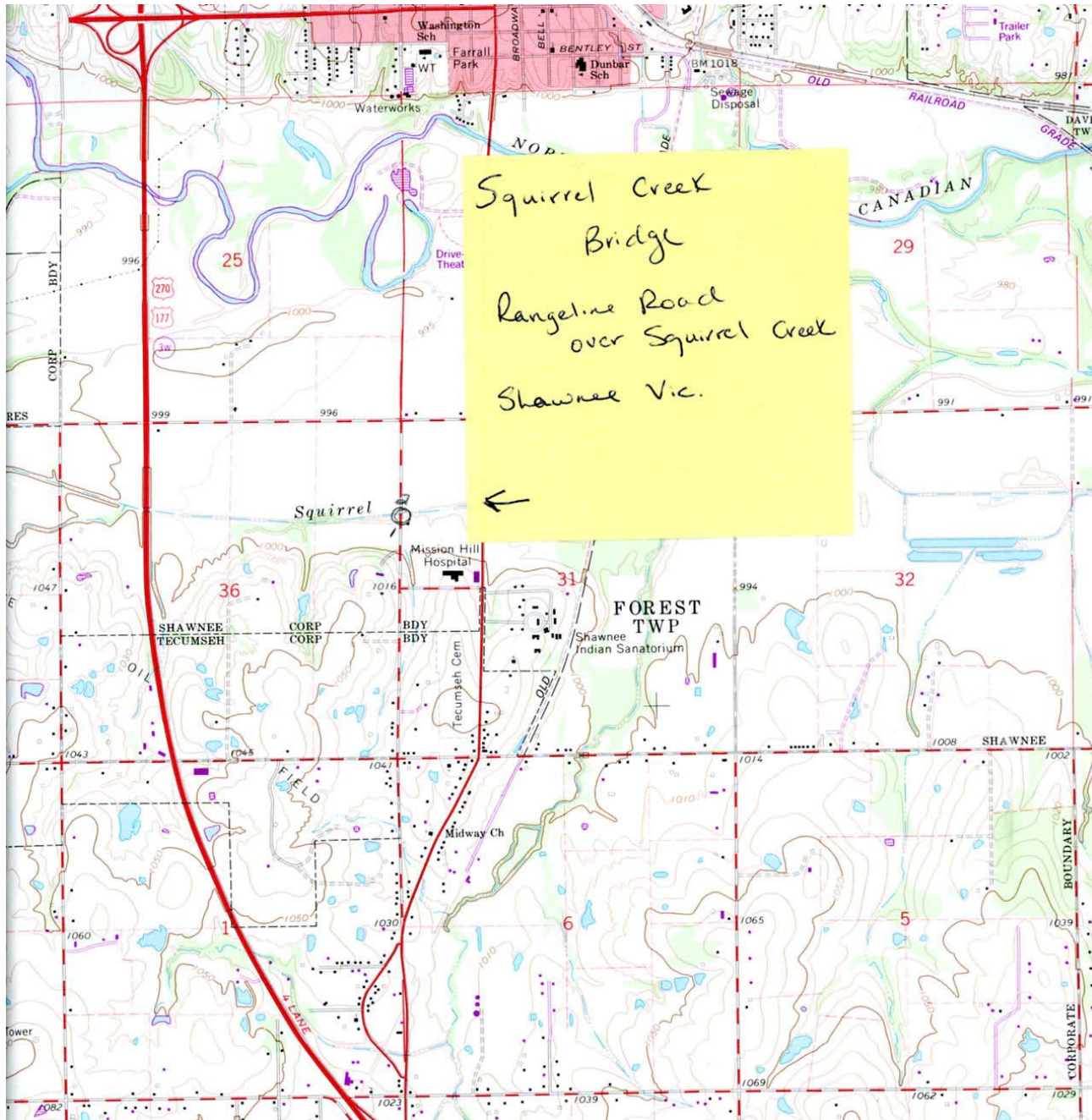
name Pottawatomie County
street & number 14101 Acme Road telephone _____
city or town Shawnee state OK zip code 74804-9250

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C.460 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Office of Planning and Performance Management, U.S. Dept. of the Interior, 1849 C. Street, NW, Washington, DC.

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