OMB NO. 1024-0018
EXP. 12/31/84

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 MAY 30 1985
date entered

1. Name

historic Cottonwood River Bridge (Masonry Arch Bridges of KS TR)

and/or common Cottonwood River Bridge

2. Location

street & number KS 177 North edge of Cottonwood Falls ___ **not for publication**

city, town Cottonwood Falls ___ **vicinity of** [redacted]

state Kansas **code** 20 **county** Chase **code** 17

3. Classification

Category	Ownership	Status	Present Use	
___ district	_x_ public	___ occupied	___ agriculture	___ museum
___ building(s)	___ private	_x_ unoccupied	___ commercial	_x_ 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	___ transportation
	N/A	___ no	___ military	___ other:

4. Owner of Property

name Chase County

street & number Chase County Courthouse

city, town Cottonwood Falls N/A_ **vicinity of** **state** Kansas

5. Location of Legal Description

courthouse, registry of deeds, etc. Register of Deeds

street & number Chase County Courthouse

city, town Cottonwood Falls **state** Kansas

6. Representation in Existing Surveys

title Inventory of Historic Bridges--Kansas Department of Transportation **has this property been determined eligible?** ___ **yes** _x_ **no**

date 1980-83 ___ **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	_x_ deteriorated	___ unaltered	_x_ original site
___ good	___ ruins	___ altered	___ moved date _____
___ fair	___ unexposed		

Describe the present and original (if known) physical appearance

The Cottonwood River Bridge in Cottonwood Falls is a triple filled spandrel arch bridge. It is 207 feet long and 34 feet wide curb to curb. The roadway is situated 25½ feet above normal water level. The bridge was initially closed to traffic and as part of a "Green Thumb project" has been converted to a park area and fishing bridge. Although this represents a good adaptive use for the structure, gates installed at each approach make it extremely difficult for machinery to get close enough to clear away the drift that collects against the piers. The concrete has deteriorated in various areas of the bridge and portions of the railing are missing. Presently the railings have become so unstable that the county commissioners have determined to fence off the bridge and post no trespassing signs.

The bridge consists of a series of reinforced concrete arch rings which spring from and are disposed between the abutments and piers. Reinforced concrete spandrel walls rise from each side of the arch ring and are used to retain the earthen fill which loads the arch. This earthen "loading" allows for even distribution of the live loads and helps to strengthen the arch. The turned balusters of the railing are located on both sides of the floor line. The roadway is cantilevered by the use of brackets over the 21' wide arch ring.

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 1914 **Builder/Architect** Missouri Valley Bridge and Iron Company

Statement of Significance (in one paragraph)

The Cottonwood River Bridge at Cottonwood Falls, Kansas retains its integrity of location, design, setting, materials, feeling, and association. It embodies the distinctive characteristics of a type and method of construction no longer being used namely the construction of a roadway supported by a reinforced concrete arch ring which is loaded by an earthen fill which, in turn, is retained by reinforced concrete spandrel walls. This bridge may yield information important to the history of engineering.

On August 6, 1914, a "Notice to Bridge Contractors" was published in the Chase County Leader "for the building of a reinforced concrete bridge across the Cottonwood river in Cottonwood Falls, Kansas." On August 13, 1914, the Leader announced the contract had been let to the Missouri Valley Bridge and Iron Company. Their bid was $13,700. The contract called for work to begin on August 15, and for completion by December 1, 1914.

F. L. Rice, who was in charge of the work, gave November 1 as his completion target according to the August 27 Leader. He was also quoted as saying the bridge would be one of the best of its size being, "neat and artistic," in appearance.

By October 15, the Leader was reporting the bridge's progress to be "moving rapidly." The piers were completed and work was underway on the arches.

The bridge was accepted by the county commissioners on December 17, 1914 according to an article in the December 24, 1914 issue of the Chase County Leader.

THIS STATEMENT REFLECTS CURRENT KNOWLEDGE AND IS SUBJECT TO CHANGE.

9. Major Bibliographical References

See continuation sheet, item #9.

10. Geographical Data

Acreage of nominated property less than one acre

Quadrangle name Cottonwood Falls, Kans. **Quadrangle scale** 1:24,000

UMT References

	Zone	Easting	Northing
A	14	714 8140	4125 10 0810
B			
C			
D			
E			
F			
G			
H			

Verbal boundary description and justification

That property on and over which the bridge is built on the north edge of Cottonwood Falls, Kansas. NE¼, S29, T19S, R8E. Includes bridge superstructure plus supporting piers and 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** 2/20/85

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 Executive Director, Kansas State Historical Society **date** 3/4/85

For NPS use only

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

See Continuation Sheet for Date **date**

Keeper of the National Register

Attest: **date**

Chief of Registration

9. BIBLIOGRAPHY

"Notice to Bridge Contractors," Chase County Leader, August 6, 1914, p. 8, c. 6.
"To Build New Bridge at Once," Chase County Leader, August 13, 1914, p. 1, c. 4.
"Construction of Bridge has Started," Chase County Leader, August 27, 1914, p. 1, c. 6.
"New Bridge Soon Finished," Chase County Leader, October 15, 1914, p. 1, c. 6.
"New Bridge Accepted," Chase County Leader, December 24, 1914, p. 1, c. 4.

NPS Form 10-900-a
(3-82)

OMB No. 1024-0018
Expires 10-31-87

United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

For NPS use only
received 5/30/85
date entered

Continuation sheet | Item number | Page 1 of 4

Multiple Resource Area
Thematic Group

dnr-11

Name Masonry Arch Bridges of Kansas Thematic Resources
State Butler County & others, KANSAS

Cover 7/2/85

Nomination/Type of Review			Date/Signature
1. Belvidere Medicine River Bridge	Entered in the National Register	for Keeper	Helen Byers 7/2/85
		Attest	
2. Morton County Bear Creek WPA Bridge	Substantive Review	Keeper	Beth Grosvenor 10/22/86
		Attest	
3. Brush Creek Bridge	Entered in the National Register	for Keeper	Helen Byers 7/2/85
		Attest	
4. Rush County Line Bridge	Substantive Review	Keeper	Beth Grosvenor 10/22/86
		Attest	
5. Bucher Bridge	Entered in the National Register	for Keeper	Helen Byers 7/2/85
		Attest	
6. Bullfoot Creek Bridge	Substantive Review	Keeper	Beth Grosvenor 7/2/85
		Attest	
7. Cottonwood River Bridge	Entered in the National Register	for Keeper	Helen Byers 7/2/85
		Attest	
8. Cut-Off Bridge	Substantive Review	Keeper	Return
		Attest	
9. Esch's Spur Bridge	Entered in the National Register	for Keeper	Helen Byers 7/2/85
		Attest	
10. Hackberry Creek Bridge	Substantive Review	Keeper	Beth Grosvenor 7/2/85
		Attest	

WASO Form - 177
("R" June 1984)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Ref # 8500142 2

NATIONAL REGISTER OF HISTORIC PLACES
EVALUATION/RETURN SHEET

Cottonwood River Bridge (Masonry Arch Bridges of Kansas TR)
Chase County
KANSAS

MAY 30 1985

Working No. _____
Fed. Reg. Date: 2/4/86
Date Due: 6/27/85 - 7/14/85
Action: ✓ ACCEPT 7-2-85
___ RETURN _____
___ REJECT _____
Agency: _____

☐ resubmission
☐ nomination by person or local government
☐ owner objection
☐ appeal

Entered in the National Register

Substantive Review: ☐ sample ☐ request ☐ appeal ☐ NR decision

Reviewer's comments:

Recom./Criteria _____
Reviewer _____
Discipline _____
Date _____
_____ see continuation sheet

Nomination returned for: _____ technical corrections cited below
_____ substantive reasons discussed below

1. Name

2. Location

3. Classification

Category	Ownership Public Acquisition	Status Accessible	Present Use

4. Owner of Property

5. Location of Legal Description

6. Representation in Existing Surveys

Has this property been determined eligible? ☐ yes ☐ no

7. Description

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

Describe the present and original (if known) physical appearance

☐ summary paragraph
☐ completeness
☐ clarity
☐ alterations/integrity
☐ dates
☐ boundary selection

8. Significance

Period Areas of Significance—Check and justify below

Specific dates Builder/Architect
Statement of Significance *(in one paragraph)*

☐ summary paragraph
☐ completeness
☐ clarity
☐ applicable criteria
☐ justification of areas checked
☐ relating significance to the resource
☐ context
☐ relationship of integrity to significance
☐ justification of exception
☐ other

9. Major Bibliographical References

10. Geographical Data

Acreage of nominated property _____
Quadrangle name _____
UTM References

Verbal boundary description and justification

11. Form Prepared By

12. State Historic Preservation Officer Certification
The evaluated significance of this property within the state is:

____ national ____ state ____ local

State Historic Preservation Officer signature

title date

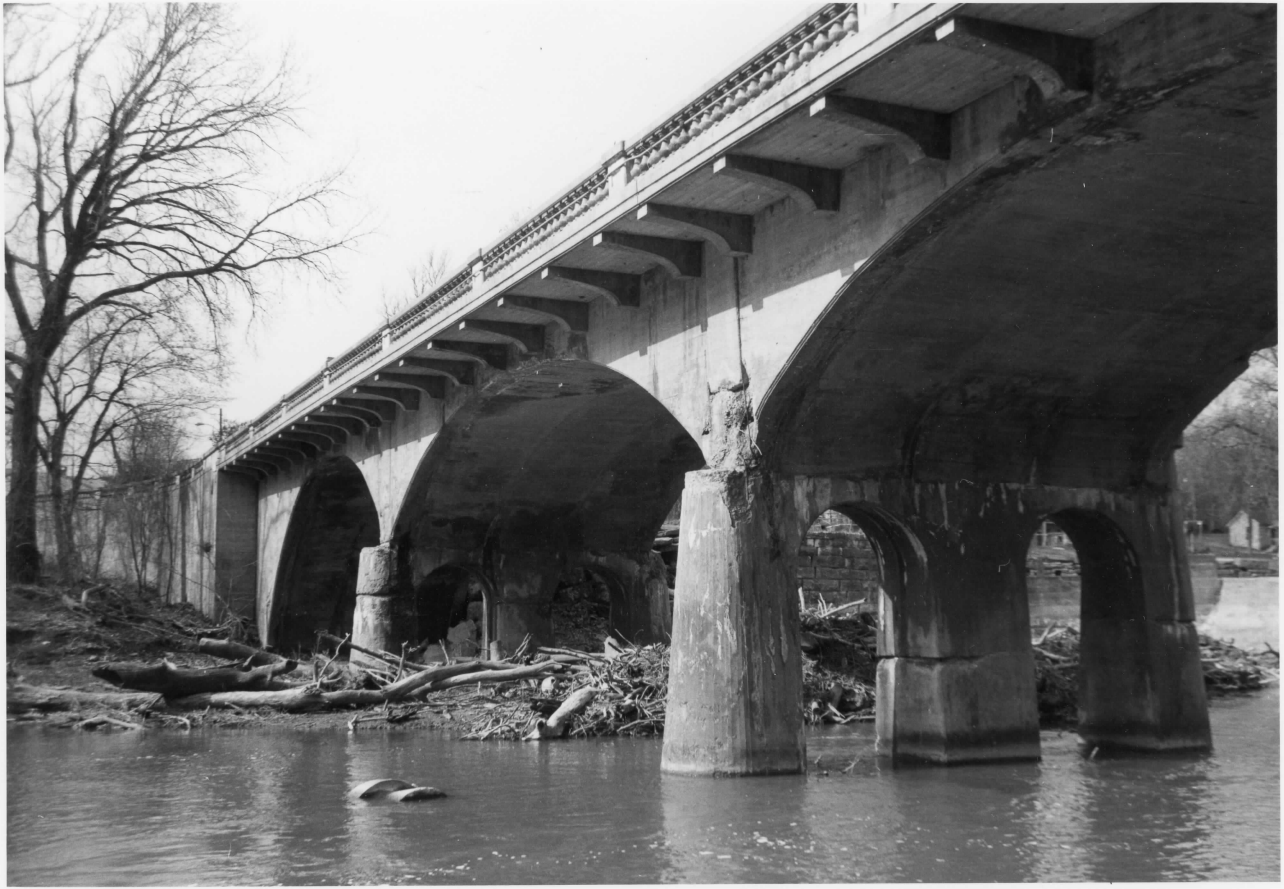
13. Other

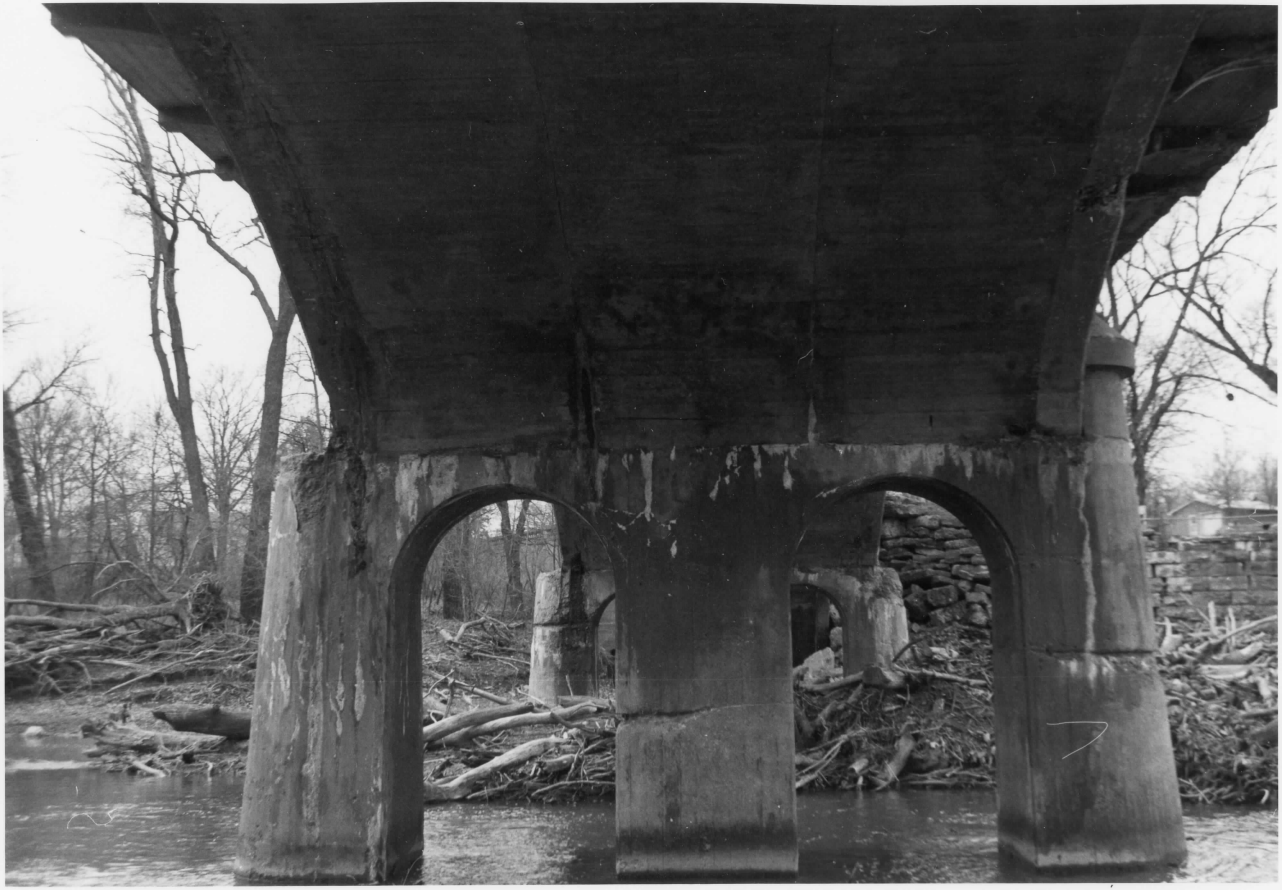
☐ Maps
☐ Photographs
☐ Other

Questions concerning this nomination may be directed to _____

Signed _____ Date _____ Phone: _____

Comments for any item may be continued on an attached sheet





Cottonwood River Bridge
Cottonwood Falls, Kansas
UTM Reference
14/714840/4250080

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

COTTONWOOD FALLS QUADRANGLE
KANSAS—CHASE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

6660 I NW (HYMER)
6760 IV NW (SAFFORDVILLE)
6660 I NE (STRONG CITY)
6660 II NE (MATFIELD GREEN)
6760 III NW (THRALL)
6660 I SW (ELMDALE)
6760 IV SW (GLADSTONE)
6660 II NW (HOMESTEAD)

96°37'30" 38°22'30" 96°30' 38°15' 32'30" 35'

7080000m E. 7090000m E. 7100000m E. 7110000m E. 7120000m E. 7140000m E. 7160000m E. 7180000m E.

2540000 FEET 2570000 FEET

4249000m N. 4248 4247 4246 4245 4244 4243 4242 4241 4240 4239 4238 4237000m N.

620000 FEET 590000 FEET

20' 17'30"

R. 7 E. R. 8 E.

T. 19 S. T. 20 S. T. 21 S.

ELMDALE 1.4 MI.
COUNCIL GROVE 20 MI.
STRONG CITY 1.4 MI.
MATFIELD GREEN 6 MI.
EL DORADO 40 MI.

Cottonwood Falls
Prairie Grove Cem
Sewage Disposal Ponds
Swope Park
Quarry
Quarries
Chase County Airport
Golf Course
Cottonwood
CHASE COUNTY STATE LAKE
DIAMOND CREEK
F A L L S
B A Z A A R
Bazaar
Bazaar Cem
Roadside Park
COTTONWOOD RIVER
OLD RAILROAD GRADE
SANTA FE AND TOPEKA ATCHISON
Prather Creek
Spring Creek
Buck Creek
Den Creek
Yeager Creek
Rock Creek
South Fork Cottonwood River
Sharpes Creek
Rolsom Cr
BM 1205
BM 1380
BM 1445
BM 1478
BM 1460
BM 1426
BM 1312
BM 1201
BM 1209
BR 1340
BR 1347
BR 1300
BR 1282
BR 1237
BR 1219

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1972. Field checked 1973

Projection and 10,000-foot grid ticks: Kansas coordinate system, south zone (Lambert conformal (conic)
1000-metre Universal Transverse Mercator grid ticks, zone 14, shown in blue. 1927 North American datum

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

MN GN 1°31' 27 MILS 8½° 151 MILS

UTM GRID AND 1973 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

1 MILE 1000 0 1000 2000 3000 4000 5000 6000 7000 FEET 1 .5 0 1 KILOMETRE

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
AND BY THE STATE GEOLOGICAL SURVEY, LAWRENCE, KANSAS 66044
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

KANSAS
QUADRANGLE LOCATION

ROAD CLASSIFICATION

Primary highway, hard surface
Secondary highway, hard surface
Light-duty road, hard or improved surface
Unimproved road
Interstate Route U. S. Route State Route

COTTONWOOD FALLS, KANS.
N3815—W9630/7.5

1973

AMS 6660 I SE—SERIES V878

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1975

NPS Form 10-900
(3-82)

OMB No. 1024-0018
Exp. 10-31-84

United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

For NPS use only
received MAY 30 1985
date entered

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

1. Name

historic Masonry Arch Bridges of Kansas

and/or common N/A

2. Location

street & number See individual nomination forms N/A ___ not for publication

city, town N/A ___ vicinity of N/A

state N/A code N/A county N/A code N/A

3. Classification

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

4. Owner of Property

name Multiple ownership -- see individual nomination forms.

street & number N/A

city, town N/A ___ vicinity of N/A state N/A

5. Location of Legal Description

courthouse, registry of deeds, etc. See individual nomination forms.

street & number N/A

city, town N/A state N/A

6. Representation in Existing Surveys

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

date 1980-1983 ___ federal x state ___ county ___ local

depository for survey records Kansas State Historical Society

city, town Topeka state KS 66612

7. Description

See individual nomination forms.

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

Describe the present and original (if known) physical appearance

The Kansas Department of Transportation (KDOT) carried out a statewide inventory of historic bridges between 1980 and 1983. The bridges to be included were identified through computer printouts developed by KDOT, from information supplied by the counties (since almost all of the historic bridges were located on secondary rather than the primary road system), and by direct observation by field personnel. All bridges were inspected by KDOT personnel, and all of the bridges included in this thematic nomination were inspected by staff of the Kansas State Historical Society (KSHS).

All of the bridges included in the four subclasses which together make up the Masonry Arch Bridges of Kansas thematic nomination were jointly evaluated by representatives of KDOT, KSHS, and the State Historic Preservation Officer.

Most of the bridges in each subclass are alike or quite similar in their methodology and techniques of construction. Little historical information is available on many of these small bridges. For example, the designer, builder, and date of construction are not known on a large number of the inventoried bridges in these classes. Often bridge plaques which may have contained that information have been removed, or the county's records are not complete or have been destroyed. Many times there is little to choose from in differentiating among individual bridges of these subclasses other than condition and the likelihood of preservation. Technology and individual historical significance are usually not factors.

The purpose of the KDOT survey and the subsequent evaluation was to identify a representative selection of bridges of each class or subclass and nominate to the National Register those candidates which meet the criteria of eligibility. Through this approach KDOT and KSHS hope to preserve for posterity some examples of each type of bridge.

* * * * * * * * * * * * * * *

The bridges included in this nomination are representatives of the arch bridge class. This class is made up of stone arches, reinforced concrete arches, filled spandrel concrete arches and open spandrel concrete arches. These categories represent 17.5% of the identified historic bridges in Kansas.

7. DESCRIPTION Continued

Listed below, by subclass, are the thirty-two bridges which make up this thematic nomination:

Stone Arch

Polecat Creek Bridge, 5 miles west and 2 miles south of Douglass, Butler County

Esch's Spur Bridge, 3 miles south and 3 miles west of Dexter, Cowley County

Middle Creek Tributary Bridge, 1½ miles south and ¼ mile east of Homewood, Franklin County

North Branch Otter Creek Bridge, 2 miles south and 8½ miles west of Climax, Greenwood County

Bullfoot Creek Bridge, 4 miles south and 1 mile east of Vesper, Lincoln County

Spring Creek Tributary Bridge, 8 miles south and 5 miles east of Lincoln, Lincoln County

Lander's Creek Bridge, south edge of Goodrich, Linn County

Morton County WPA Bridge (Bear Creek Masonry Bridge), 3 miles north and 6 miles west of Richfield, Morton County

Pawnee River Tributary Bridge, 8 miles south of Bazine, Ness County

Vermillion River Tributary Bridge, 5 miles south and 1 mile east of Onaga, Pottawatomie County

Rush-Russell County Line Bridge, 11 miles north of Otis, Rush County

Brush Creek Bridge, ½ mile south of Coyville, Wilson County

Filled Spandrel

Cottonwood River Bridge, north edge of Cottonwood Falls, Chase County

Hudgeon Bridge, 10 miles south and 3¼ miles west of Girard, Crawford County

Parsons Labette Creek Tributary Bridge, 1 mile east and 1¼ miles south of Parsons, Labette County

7. DESCRIPTION Continued

Harris Bridge, 3 miles north and 4 miles west of Americus, Lyon County

Maxwell's Slough Bridge, 1 mile south of St. Paul, Neosho County

Cut-Off Bridge, 6¼ miles south and 1 3/4 miles east of St. Paul, Neosho County

Township Line Bridge, 3 miles west of Rozel, Pawnee County

McCauley Bridge, ½ mile south of Auburn, Shawnee County

Open Spandrel

Verdigris River Bridge, ½ mile north of Madison, Greenwood County

Hackberry Creek Bridge, 12 miles west and 11 miles north of Jetmore, Hodgeman County

Reinforced Concrete Arch

Muddy Creek Bridge, 3 miles east and 1 mile north of Douglass, Butler County

Eight Mile Creek Bridge, 1½ miles north and 2 miles west of Rock, Cowley County

Walnut Creek Bridge, 1½ miles south of Wellsville, Franklin County

Belvidere Medicine River Bridge, north edge of Belvidere, Kiowa County

Labette Creek Tributary Bridge, west edge of Parsons, Labette County

Pumpkin Creek Tributary Bridge, 2 miles west of Mound Valley, Labette County

Jake's Branch Bridge, 6 miles south and 1 mile west of Louisburg, Miami County

Pennsylvania Avenue Rock Creek Bridge, south edge of Independence, Montgomery County

State Street Bridge, east edge of Erie, Neosho County

Old Maid's Fork Bridge, 2 miles west and ½ mile north of Nekoma, Rush County

7. DESCRIPTION Continued

The stone arch bridges included in this nomination consist of limestone arch rings which spring from and are disposed between abutments or piers. Limestone spandrel walls rest on these arch rings and are used to retain the earthen fill which loads the arch. This earth loading allows for even distribution of the live loads and helps to strengthen the arch. The structural design of the filled spandrel concrete arch bridge is similar. Instead of limestone arch rings, spandrel walls, piers, and abutments, reinforced concrete is substituted. The earthen fill remains the same. In some instances, reinforcement was increased and concrete was utilized as the fill. We refer to these bridge simply as reinforced concrete arches. In the case of an open spandrel arch, the reinforced concrete arch ring or rings spring from and are disposed between the abutments or piers. The roadway deck is supported by reinforced concrete cross-spandrel walls or columns that rest on the arch ring or rings. No spandrel walls are used.

The nominated bridges include examples of variations and combinations of the above types. The North Branch Otter Creek bridge features limestone ring stones and spandrel walls with a concrete arch ring. The Landers Creek bridge consists of a limestone arch ring with concrete spandrel walls. The Brush Creek and Jake's Branch bridges combine the use of corrugated metal and concrete to form the arch ring, while limestone is used to form the spandrel walls and ringstones.

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	___ engineering	___ music	___ theater
_x_ 1800–1899	___ commerce	___ exploration/settlement	___ philosophy	_x_ transportation
_x_ 1900–	___ communications	___ industry	___ politics/government	___ other (specify)
		___ invention		

Specific dates See individual forms **Builder/Architect** See individual forms

Statement of Significance (in one paragraph)

The individual components of the thematic nomination "Masonry Arch Bridges of Kansas" possess integrity of location, design, setting, workmanship, feeling, and association and meet criterion C of the National Register eligibility requirement: "that embody the distinctive characteristics of a type, period, or method of construction, ..."

Stone arch bridges were popular in Kansas for many reasons, a major one being that the stone was often available locally. Thus a larger amount of the money expended for the construction could be retained within the area than would be true with the purchase of a metal structure. It was also often possible to use local workers on the project. This approach sometimes had its drawbacks as the quality of local stone and workers would vary widely. Generally speaking, stone bridges were more expensive initially to construct than metal bridges. Walter Sharp, a major stone arch contractor in Kansas, estimated the cost differential at 10% in 1904, although this too was somewhat misleading. Those contractors proposing steel bridges would often lower their bids $100-$500 when they found themselves as competitors to stone contractors. An additional selling point for stone bridges was their strength. There was ample evidence that they were far better able to withstand the periodic floods than were their metal counterparts.

The relatively low cost and widespread fabrication of iron and steel bridges in the 19th century and their overrated permanence put them slightly ahead in sales. By the first decade of the twentieth century, however, the combination of steel and masonry and the economic production of cement in Kansas promoted a rapid return to masonry construction.

Many claims were made for concrete and the positive aspects of its use in bridge building. It was said to be a permanent material, far more durable than stone, and one which actually increased in strength with age. A concrete bridge was said to be frostproof, fireproof and floodproof. The concrete, it was thought, would permanently protect the steel. In the arch bridge the support for the roadway is below, and it was felt that the roadway could be widened without destruction of the original investment, with the possible exception of the railing.

Although concrete, in itself, is far from an aesthetically pleasing compound, it can be moulded into intricate designs. Decorative ornamental features, which would have been prohibitive costwise for a community planning a bridge in any other medium, now became possible.

9. Major Bibliographical References

See continuation sheet.

10. Geographical Data

Acreage of nominated property See individual forms

Quadrangle name See individual forms **Quadrangle scale** See individual forms

UTM References See individual forms

	Zone	Easting	Northing		Zone	Easting	Northing
A				B			
C				D			
E				F			
G				H			

Verbal boundary description and justification

See individual forms

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

organization Kansas State Historical Society **date** 4-4-85

street & number 120 West Tenth **telephone** 913-296-3251

city or town Topeka **state** KS 66612

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 Joseph W. Snell

title Executive Director, Kansas State Historical Society **date** April 23, 1985

For NPS use only

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

Beth Grosvenor **date** 7/2/85

for **Keeper of the National Register**

Attest: See Continuation sheet for Attestation

Chief of Registration

8. SIGNIFICANCE Continued

Local labor gangs were often employed by contractors so again much of the construction expense remained within the community. The use of local aggregates could also significantly reduce the cost of a structure as did the availability of Kansas produced cement. Some contractors, such as Walter Sharp, even purchased rock crushers and used local fence stone. It is not surprising that the quality of the final product bore a direct relationship to the quality of the cement and aggregate used in the construction.

The vast majority of the early reinforced concrete structures were built from patented designs. These patents actually related more to the placement and type of reinforcement than to the outside appearance of the bridge.

The person with the largest number of such patents was Daniel B. Luten of Indianapolis, Indiana. His company, the National Bridge Company, and its Kansas agent, Topeka Bridge and Iron Company, were responsible for the greatest number of filled spandrel and reinforced concrete bridges in the state.

Luten was granted many patents dealing with various aspects of reinforced concrete arch bridge construction. He was granted so many patents in fact that he was able to tell the Kansas Engineering Society in 1914 that "A safe and durable concrete bridge can undoubtedly be erected without infringing any patent. But it is a serious question whether a reinforced concrete arch can be erected without infringement." Although the royalty figures varied, the Luten Engineering Company usually claimed 10% of the contract if any of their patents were used.

Because it was virtually impossible to build a reinforced concrete arch bridge without using one of his patents, the royalty costs for bridge companies, states, counties and municipalities became burdensome. The company was continuously involved in litigation throughout the midwest. A number of lawsuits charging patent infringement were filed in Kansas by Luten's attorneys against local units of government. The issue was not settled until 1918 when the state attorney general successfully argued that Luten's patents were invalid, and the cases were dismissed.

No attempt will be made to discuss all of the intricacies of Luten's patents and construction details as modifications were made over the years. One of his first was patent #649,643, granted May 15, 1900. It consisted of uniting the abutments of an arch bridge by means of a tie or ties placed beneath the water line of the structure. This relieved the abutments of some horizontal strain and provided a foundation for the bridge. At the same time the ties were concealed from view, offered no obstruction to flow, and prevented stream bed scouring. Luten initially recommended the use of timber as he felt this was practically permanent if placed under water. In later refinements the ties were steel and covered with concrete. This "floodproofing pavement" allowed the bridge to be constructed without pilings or even soil foundations. This enabled a saving in initial construction as one could decrease the amount of material in the abutments.

8. SIGNIFICANCE Continued

It also gave a solid support for centering and the aprons along the edge of the pavement extending several feet into the stream bed rendered the bridge virtually "floodproof."

A patent filed May 17, 1902 [818,386] gives the basic reinforcement theory of Luten Arches. It was an arch having "embedded therein a plurality of tension members passing alternately across the rib, said members being low at the crown and high at the haunches, and each of said members passing alternately across the rib at different longitudinal points from the others." The theory was that the tension would occur at alternately opposite edges of the arch in limited regions only. The steel was located in those regions and extended continuously from one end to the other for convenience of placement.

Topeka Bridge and Iron was responsible for the construction of a great number of the filled spandrel and reinforced concrete bridges in Kansas. The company used both the Luten designs as well as a patent obtained by Lloyd B. Smith of Topeka. Without the destruction of a bridge it would be impossible to determine whose reinforcement design was employed.

Smith had worked for four years as assistant engineer with Missouri Valley Bridge and Iron Works in Leavenworth before coming to Topeka in 1904 as chief engineer of Topeka Bridge and Iron. That company initially manufactured steel bridges at its shops in Topeka, but that fabrication was discontinued in 1914 due to unsatisfactory freight rates and the increased demand for concrete bridges. Adapting to the changes, the company continued as a construction company chiefly involved in concrete bridges and deep foundations. In addition to his bridge patent, Smith received four others for river bank protection.

The final type of construction being presented is the open spandrel type. It is difficult at this time to determine why this particular style might have been selected over the filled arch design. Several considerations often went into its selection. The solid earth fill was generally used for small spans and flat arches. If, however, the arch was large and especially semicircular, the open construction was found to be less expensive. In other instances it was selected, even when it was more expensive, to reduce the load on the foundations. It is also possible by selecting either the solid or open spandrel type to adjust the imposed loads on the arch to the type desired. The loads on the arch rings with open cross spandrel chambers or arcades are concentrated loads. The distribution of loads in earth filled arches was uncertain in most cases. In addition to preventing this uncertainty the open spandrel construction also prevented water from collecting and soaking into the arch masonry. The style could also be used as an aesthetic feature. By building open chambers crosswise and having the openings appear on the spandrel faces, the design presented a lighter appearance and at the same time showed plainly the plan of construction. When a heavier and more massive appearance was desired sidewalls were used and all the spandrel openings closed. These curtain walls could be thinner and hence less expensive than the retaining walls of the earthen filled structures. Because both the colonnade and arcade styles left major portions of the bridge's substructure exposed more finishing and architectural treatment was often deemed necessary.

8. SIGNIFICANCE Continued

Although an arch is merely a means of transforming generally vertical, or nearly vertical, loads into diagonal thrusts, the masonry-concrete arch bridge is more than a strictly utilitarian structure. The remaining examples exhibit construction techniques no longer utilized. They are the physical remains of experiments in the evolution of concrete reinforcement and patented theories, as well as the legal battles involved in protecting those patents. They were constructed using local funds and when possible local labor and natural resources. They are also major remnants of the "good roads" movement within the state. By the turn of the century the ever expanding needs for readily available markets impressed upon Kansans the necessity of all-weather roads as well as safe and secure river crossings.

Henry Tyrrell, the author of Artistic Bridge Design, concluded that "the bridges and structures erected by a people or nation reveal their degree of aesthetic taste and are a measure of their culture and civilization. Bridges should be strong enough to last and beautiful enough to be worth preserving." The nominated bridges are worth preserving.

THIS STATEMENT REFLECTS CURRENT KNOWLEDGE AND IS SUBJECT TO AMENDMENT

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NPS Form 10-900-a
(3-82)

OMB No. 1024-0018
Expires 10-31-87

United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

For NPS use only
received 5/30/85
date entered

Continuation sheet | Item number | Page 10 of 4

Multiple Resource Area
Thematic Group

dnr-11

Name Masonry Arch Bridges of Kansas Thematic Resources
State Butler County & others, KANSAS

Cover 7/2/85

Nomination/Type of Review			Date/Signature
1. Belvidere Medicine River Bridge	Entered in the National Register	for Keeper	Helen Byers 7/2/85
		Attest	
2. Morton County Bear Creek WPA Bridge	Substantive Review	Keeper	Beth Grosvenor 10/22/86
		Attest	
3. Brush Creek Bridge	Entered in the National Register	for Keeper	Helen Byers 7/2/85
		Attest	
4. Rush County Line Bridge	Substantive Review	Keeper	Beth Grosvenor 10/22/86
		Attest	
5. Bucher Bridge	Entered in the National Register	for Keeper	Helen Byers 7/2/85
		Attest	
6. Bullfoot Creek Bridge	Substantive Review	Keeper	Beth Grosvenor 7/2/85
		Attest	
7. Cottonwood River Bridge	Entered in the National Register	for Keeper	Helen Byers 7/2/85
		Attest	
8. Cut-Off Bridge	Substantive Review	Keeper	Return
		Attest	
9. Esch's Spur Bridge	Entered in the National Register	for Keeper	Helen Byers 7/2/85
		Attest	
10. Hackberry Creek Bridge	Substantive Review	Keeper	Beth Grosvenor 7/2/85
		Attest	

Multiple Resource Area
Thematic Group

Name Masonary Arch Bridges of Kansas Thematic Resources
State Kansas

Nomination/Type of Review			Date/Signature
11. Harris Bridge	Entered in the National Register	for Keeper	Delores Byers 7/2/85
		Attest	
12. Hudgepn Bridge	Substantive Review	Keeper	Beth Grosvenor 7/2/85
		Attest	
13. Jake's Branch of Middle Creek Bridge	Entered in the National Register	for Keeper	Delores Byers 7/2/85
		Attest	
14. Labette Creek Tributary Bridge	Substantive Review	Keeper	Beth Grosvenor 7/2/85
		Attest	
15. Landers Creek Bridge	Entered in the National Register	for Keeper	Delores Byers 7/2/85
		Attest	
16. Maxwell's Slough Bridge	Substantive Review	Keeper	Beth Grosvenor 7/2/85
		Attest	
17. Middle Creek Tributary Bridge	Entered in the National Register	for Keeper	Delores Byers 7/2/85
		Attest	
18. McCauley Bridge	Substantive Review	Keeper	Beth Grosvenor 7/2/85
		Attest	
19. North Branch Otter Creek Bridge	Entered in the National Register	for Keeper	Delores Byers 7/2/85
		Attest	
20. Muddy Creek Bridge	Substantive Review	Keeper	Beth Grosvenor 7/2/85
		Attest	

NPS Form 10-900-a
(3-82)

OMB No. 1024-0018
Exp. 10-31-84

United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

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date entered

Continuation sheet | Item number | Page 3 of 4

Multiple Resource Area
Thematic Group

Name Masonary Arch Bridges of Kansas Thematic Resources
State KANSAS

	Nomination/Type of Review			Date/Signature
21.	Old Maids Fork Bridge	Entered in the National Register	for Keeper	Deloris Byers 7/2/85
			Attest	
22.	Parsons Filled Arch Bridge	Substantive Review	Keeper	Beth Grosvenor 7/2/85
			Attest	
23.	Pennsylvania Avenue Rock Creek Bridge	Entered in the National Register	for Keeper	Deloris Byers 7/2/85
			Attest	
24.	Polecat Creek Bridge	Substantive Review	Keeper	Beth Grosvenor 7/2/85
			Attest	
25.	Pumpkin Creek Tributary Bridge	Entered in the National Register	for Keeper	Deloris Byers 7/2/85
			Attest	
26.	Spring Creek Tributary Bridge	Substantive Review	Keeper	Beth Grosvenor 7/2/85
			Attest	
27.	State Street Bridge	Entered in the National Register	for Keeper	Deloris Byers 7/2/85
			Attest	
28.	Township Line Bridge	Substantive Review	Keeper	Beth Grosvenor 7/2/85
			Attest	
29.	Verdigris River Bridge	Entered in the National Register	for Keeper	Deloris Byers 7/2/85
			Attest	
30.	Vermillion Creek Tributary Stone Arch Bridge	Substantive Review	Keeper	Beth Grosvenor 10/23/86
			Attest	

NPS Form 10-900-a
(7-81)

United States Department of the Interior
National Park Service

National Register of Historic Places Inventory—Nomination Form

[redacted]

Continuation sheet | Item number | Page 4 of 4

Multiple Resource Area
Thematic Group

Name Masonary Arch Bridges of Kansas Thematic Resources
State KANSAS Butler Co others

Nomination/Type of Review			Date/Signature
31. Walnut Creek Bridge	Entered in the National Register	Keeper	Delores Byers 7/2/85
		Attest	
32. Pawnee River Tributary Bridge	Substantive Review	Keeper	Beth Grosvenor 7/2/85
		Attest	
33. Silver Creek Bridge	Substantive Review	Keeper	Beth Grosvenor 1/30/87
		Attest	
34. Chicken Creek Bridge	Substantive Review	Keeper	Beth Boland 3/5/90
		Attest	
35. Thomas Arch Bridge	Entered in the National Register	Keeper	5/10/90
		Attest	
36.		Keeper	
		Attest	
37.		Keeper	
		Attest	
38.		Keeper	
		Attest	
39.		Keeper	
		Attest	
40.		Keeper	
		Attest	

WASO Form - 177
("R" June 1984)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES EVALUATION/RETURN SHEET

Cover

Masonry Arch Bridges of Kansas TR Substantive Review
Butler County + others
KANSAS

Working No. MAY 30 1985
Fed. Reg. Date: 2/4/86
Date Due: 6/27/85 - 7/14/85
Action: ✓ ACCEPT 7-2-85
___ RETURN
___ REJECT
Federal Agency: ___

☐ resubmission
☐ nomination by person or local government
☐ owner objection
☐ appeal

Substantive Review: ☐ sample ☐ request ☐ appeal ☐ NR decision

Reviewer's comments: Some important pieces of information have been omitted (see comments below), but other aspects are good: the approach of surveying bridges through systematic stages of subclasses seems to be a good one, and the explanation of various construction techniques for different types of masonry arch bridges is good! Overall, an acceptable, but somewhat weak (individual justifications) submission.

Recom./Criteria Accept Theme
Reviewer Gradoville
Discipline Historian
Date 7/2/85
___ see continuation sheet

Nomination returned for: ___ technical corrections cited below
___ substantive reasons discussed below

1. Name

2. Location

3. Classification

Category	Ownership Public Acquisition	Status Accessible	Present Use

4. Owner of Property

5. Location of Legal Description

6. Representation in Existing Surveys

Has this property been determined eligible? ☐ yes ☐ no

7. Description

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

Describe the present and original (if known) physical appearance

Note: the information in the cover letter regarding the selection of the theme would have been useful within the body of the cover nomination form.

☐ summary paragraph
☒ completeness — The explanation of the survey methodology should have included an explanation
☐ clarity of the "weeding-out" process of eligible from non-eligible bridges. How
☐ alterations/integrity many were initially identified (from which these 32 nominations were
☐ dates selected)? What differentiated the eligible from the non-eligible ones?
☐ boundary selection

8. Significance

Engineering should have been checked.

Period X Areas of Significance—Check and justify below

in addition to the specific construction dates

X Specific dates Builder/Architect For each bridge, there ought to be an indication of the date range for the theme: that is, during what period of time (ex: 1880-1930?) were masonry arch bridges a prevalent and significant aspect of Kansas' transportation system?

Statement of Significance *(in one paragraph)*

- ☐ summary paragraph
- ☐ completeness
- ☐ clarity
- ☐ applicable criteria
- ☐ justification of areas checked
- ☐ relating significance to the resource
- ☐ context
- ☐ relationship of integrity to significance
- ☐ justification of exception
- ☒ other - individual justifications for each bridge tend to be very general, almost identical in their wording, and weak, but most are acceptable within the context provided in the cover.

9. Major Bibliographical References

10. Geographical Data

Acreage of nominated property _____
Quadrangle name _____
UTM References

Verbal boundary description and justification

11. Form Prepared By

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

____national ____state ____local

State Historic Preservation Officer signature

title date

13. Other

- ☐ Maps
- ☐ Photographs
- ☐ Other

Questions concerning this nomination may be directed to _____

Signed _____ Date _____ Phone: _____

Comments for any item may be continued on an attached sheet

Post Initial Nomination Entries

See individual property file within **Masonry Arch Bridges of Kansas TR** for any entries completed after the original nomination.

Resource Name	County, State	Reference Number
Beaver Creek Native Stone Bridge	Barton, KS	08000296
Hitschmann Cattle Underpass Bridge	Barton, KS	08000298
Hitschmann Double Arch Bridge	Barton, KS	08000299
Fox Creek Stone Arch Bridge	Chase, KS	06001164
Fort Fletcher Stone Arch Bridge	Ellis, KS	01000385
East Stone Arch Bridge-Lake Wabaunsee	Wabaunsee, KS	09001170
Southeast Stone Arch Bridge-Lake Wabaunsee	Wabaunsee, KS	09001171

KANSAS STATE HISTORICAL SOCIETY

CENTER FOR HISTORICAL RESEARCH
120 West Tenth • Topeka, Kansas 66612 • 913/296-3251
KANSAS MUSEUM OF HISTORY
6425 South West Sixth • Topeka, Kansas 66615 • 913/272-8681

May 9, 1985

Ms. Carol Shull
National Park Service
National Register of Historic Places
U.S. Department of the Interior
440 G. St., N.W.
Washington, D.C. 20240

Dear Ms. Shull:

Enclosed is a thematic nomination for the "Masonry Arch Bridges of Kansas." It includes 32 structures for the subclasses of bridges covered by the nomination.

After extensive research and evaluation these structures were selected from the Kansas Department of Transportation's statewide inventory of historic bridges. This represents the second thematic nomination of bridges for Kansas--two years ago we submitted a thematic nomination of Marsh Arch bridges. We expect to continue to deal with our historic bridges in that manner; in fact, a researcher is now at work on a thematic nomination for high (through) truss bridges. Should additional information be received which identifies other masonry bridges as meeting the National Regsiter criteria, this thematic nomination could be expanded.

Sincerely,

Joseph W. Snell

Joseph W. Snell
State Historic Preservation Officer

caf

Recd 5-30-85

85001425 Muddy Creek Bridge
KS0015 Masonry Arch Bridges of Kansas TR
85001438 Polecat Creek Bridge
KS0015 Masonry Arch Bridges of Kansas TR
85001422 Cottonwood River Bridge
KS0017 Masonry Arch Bridges of Kansas TR
85001420 Bucher Bridge
KS0035 Masonry Arch Bridges of Kansas TR
85001423 Esch's Spur Bridge
KS0035 Masonry Arch Bridges of Kansas TR
85001433 Hudgeon Bridge
KS0037 Masonry Arch Bridges of Kansas TR
85001428 Middle Creek Tributary Bridge
KS0059 Masonry Arch Bridges of Kansas TR
85001445 Walnut Creek Bridge
KS0059 Masonry Arch Bridges of Kansas TR
85001444 Verdigris River Bridge
KS0073 Masonry Arch Bridges of Kansas TR
85001426 North Branch Otter Creek Bridge
KS0073 Masonry Arch Bridges of Kansas TR
85001424 Hackberry Creek Bridge
KS0083 Masonry Arch Bridges of Kansas TR
85001418 Belvidere Medicine River Bridge
KS0097 Masonry Arch Bridges of Kansas TR
85001439 Pumpkin Creek Tributary Bridge
KS0099 Masonry Arch Bridges of Kansas TR
85001431 Labette Creek Tributary Bridge
KS0099 Masonry Arch Bridges of Kansas TR
85001436 Parsons Filled Arch Bridge
KS0099 Masonry Arch Bridges of Kansas TR
85001440 Spring Creek Tributary Bridge
KS0105 Masonry Arch Bridges of Kansas TR
85001421 Bullfoot Creek Bridge
KS0105 Masonry Arch Bridges of Kansas TR
85001430 Landers Creek Bridge
KS0107 Masonry Arch Bridges of Kansas TR
85001434 Harris Bridge
KS0111 Masonry Arch Bridges of Kansas TR
85001432 Jake's Branch of Middle Creek Bridge
KS0121 Masonry Arch Bridges of Kansas TR
85001437 Pennsylvania Avenue Rock Creek Bridge
KS0125 Masonry Arch Bridges of Kansas TR
85001441 State Steet Bridge
KS0133 Masonry Arch Bridges of Kansas TR
85001429 Maxwell's Slough Bridge
KS0133 Masonry Arch Bridges of Kansas TR
85001446 Pawnee River Tributary Bridge
KS0135 Masonry Arch Bridges of Kansas TR
85001442 Township Line Bridge
KS0145 Masonry Arch Bridges of Kansas TR
85001435 Walnut Creek Tributary Bridge
KS0165 Masonry Arch Bridges of Kansas TR
85001427 McCauley Bridge
KS0177 Masonry Arch Bridges of Kansas TR
85001419 Brush Creek Bridge
KS0205 Masonry Arch Bridges of Kansas TR