NPS Form 10-900
(Rev. 8-86)

NR listed 4/9/90

OMB No. 1024-0018

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 of eligibility for individual properties or districts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, styles, materials, and areas of significance, enter only the categories and subcategories listed in the instructions. For additional space use continuation sheets (Form 10-900a). Type all entries.

1. Name of Property

historic name South Fork Bridge

other names/site number HAER No. AR-27

2. Location

street & number Adjacent to State Highway 128, spanning South Fork ☐ not for publication N/A

city, town Fountain Lake ☒ vicinity

state Arkansas code 05 county Garland code 051 zip code 71901

3. Classification

Ownership of Property	Category of Property	Number of Resources within Property	
		Contributing	Noncontributing
☐ private	☐ building(s)		buildings
☐ public-local	☐ district		sites
☒ public-State	☐ site	1	structures
☐ public-Federal	☒ structure		objects
	☐ object	1	Total

Name of related multiple property listing:
Historic Bridges of Arkansas

Number of contributing resources previously listed in the National Register N/A

4. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this ☒ 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 ☒ meets ☐ does not meet the National Register criteria. ☐ See continuation sheet.

Signature of certifying official — Date

Arkansas Historic Preservation Program
State or Federal agency and bureau

In my opinion, the property ☐ meets ☐ does not meet the National Register criteria. ☐ See continuation sheet.

Signature of commenting or other official — Date

State or Federal agency and bureau

5. National Park Service Certification

I, hereby, certify that this property is:

☐ entered in the National Register.
☐ See continuation sheet.
☐ determined eligible for the National Register. ☐ See continuation sheet.
☐ determined not eligible for the National Register.
☐ removed from the National Register.
☐ other, (explain:) _____

Signature of the Keeper — Date of Action

6. Function or Use

Historic Functions (enter categories from instructions)

Transportation/Road-Related

Current Functions (enter categories from instructions)

Transportation/Road-Related

7. Description

Architectural Classification
(enter categories from instructions)

Other: Closed Spandrel, Deck Arch

Materials (enter categories from instructions)

foundation concrete
walls steel
concrete
roof
other

Describe present and historic physical appearance.

[X] See continuation sheet

8. Statement of Significance

Certifying official has considered the significance of this property in relation to other properties:

☐ nationally ☒ statewide ☐ locally

Applicable National Register Criteria ☒ A ☐ B ☒ C ☐ D

Criteria Considerations (Exceptions) ☐ A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G

Areas of Significance (enter categories from instructions)	Period of Significance	Significant Dates
Transportation	1928-1939	1928
Engineering		

Cultural Affiliation
N/A

Significant Person
N/A

Architect/Builder
Architect: Moreland, H.S.
Builder: Kelley, F.M.

State significance of property, and justify criteria, criteria considerations, and areas and periods of significance noted above.

☒ See continuation sheet

9. Major Bibliographical References

See Historic Bridges of Arkansas, Multiple Property Nomination, Section H.

☐ See continuation sheet

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 # HAER No. AR-27

Primary location of additional data:
- ☒ State historic preservation office
- ☐ Other State agency
- ☒ Federal agency
- ☐ Local government
- ☐ University
- ☐ Other

Specify repository: U.S. Library of Congress

10. Geographical Data

Acreage of property Less than one acre

UTM References

	Zone	Easting	Northing		Zone	Easting	Northing
A	15	507120	3828845	B			
C				D			

☐ See continuation sheet

Verbal Boundary Description

Beginning at a point on Mill Creek Road approximately 1,650 feet east of the intersection of State Highway 5 and Mill Creek Road, the boundary of the South Fork Bridge starts here at the west end of the main span, continues east across the South Fork of the Saline River for approximately 114 feet, where it terminates at the east end of the main span.

☐ See continuation sheet

Boundary Justification

The boundary includes the main spans and abutments that are historically associated with this property.

☐ See continuation sheet

11. Form Prepared By

name/title Text by Sean O'Reilly & Corinne Smith; edited by Michael Swanda, Survey Coordinator
organization Arkansas Historic Preservation Program date February 5, 1990
street & number 225 East Markham Street telephone (501) 371-2763
city or town Little Rock state Arkansas zip code 72201

SUMMARY

The South Fork Bridge is a concrete spandrel filled arch bridge that crosses the South Fork of the Saline River on State Highway 128 in south-eastern Garland County. Its main spans and abutments are unaltered and in good condition.

ELABORATION

This bridge has two arches each 57 feet long, and a road width of 16 feet. The bridge may be classified as a deck arch because the main structural support element, the arch barrel, is completely beneath the roadway. A parapet wall is formed by an upper arch line which flattens at the crown and at the ends of the span, thus not forming a true arch. This flattening makes the bridge appear thinner at the crown and thicker at the spring line, alluding to the unseen actual thickening, for strength, of the arch barrel.

Concrete is an ideal material for an arch, which is theoretically a compression structure. Concrete is strong in compression, but cannot support tension forces of any great magnitude. In practice, tension is introduced in an arch bridge by the uneven loading produced by a traveling vehicle. When steel reinforcement is not used to carry tensile forces, extra weight on the bridge creates excess compression forces which can counterbalance tension forces. The South Fork Bridge is not reinforced, so its parapet walls and piers are massive and the spandrels are filled to contribute considerable weight.

The spandrels of the arches are filled with a sand and gravel mixture. Similarly, the road surface is formed by this gravel. At present the crowns of each arch barrel are exposed at road level, contributing two areas of concrete to the road surface. It is not known if the gravel originally covered the arch barrel completely or left it partially exposed. The infill is convenient for drainage of the deck. Water flows from the crowns to the ends or center of the bridge. At the center the draining water seeps through the gravel down to drain spouts set in the concrete piers.

The piers and abutments are rectangular concrete blocks. The upstream side of the central pier is triangular shaped to direct the water around the pier and prevent blockage from debris in the river. The low rise-to-length ratio of the arch creates large horizontal thrust at the piers. This force is resisted by wing walls at each abutment, which also retain the bank.

Possibly in an attempt to dress up the simplistic structural design, the unique shape of the parapet wall is enhanced by a recessed circular pattern at the crown of the wall. The edges of the caps and corners of the rail posts and the parapet walls are chamfered. Conversely, plain steel pipe serves as a rough handrail where the parapet wall follows the arch line down to the haunches.

The crude handrail suggests that the experience of the builders may have been limited, despite the decorative panels on the parapet walls. All the formwork was laid horizontally except for the arch panels. Here planks were placed radially to the arch curve. The formwork for the bridge is easily seen because the surface was never finished off. Normally, a concrete bridge is sanded or a finish layer of concrete is applied to create a smooth surface. The rough surface of the South Fork Bridge is strange since the trouble was taken to erect formwork that would leave the circle pattern. Thin, flexible metal rods protrude from the wing walls and the end posts. Research has shown that steel may have been used in the piers and retaining walls. If so, then the rods were used to anchor the steel, and the workmen failed to snip them off properly. These rods were not present anywhere else on the bridge. Their presence is fairly easy to see because they have rusted, leaving trails down the side of the walls.

The South Fork Bridge has been taken out of service and is only accessible to pedestrian traffic. It is in good condition.

SUMMARY

Characterized by its unique closed spandrel deck arch design, the significance of the South Fork Bridge is further enhanced by its original status as a county constructed bridge. Designed by H. S. Moreland and constructed in 1928 by the Garland County bridge crew under the direction of F. M. Kelley, the the South Fork Bridge forms a uniquely personal interpretation of an already idiosyncratic design. The historic context of this property is the Arkansas Highway and Transportation Department Era: 1923-1939 and is nominated under Criteria A and C with statewide significance.

ELABORATION

"Greatest Flood in History sweeps down River" was the headline greeting the readers of the Hot Springs newspaper, The Sentinel Record, on Saturday morning, April 16, 1927.[1] The Mississippi River and its tributaries were breaking their banks and causing havoc throughout the river basin. These record-breaking floods of 1927, described as "the worst national disaster in modern Arkansan history," devastated the roads and bridges of the State.[2] "It inundated 1242 miles of road and washed out 293 bridges on state highways."[3]

Though one of the less ravaged counties in Arkansas, Garland County, in west central Arkansas, was suffering greatly from these floods. Among the rivers flooding the county was the South Fork of the Saline River, which passed through the eastern part of the county. It was the flooding of this river which prompted the erection of the South Fork bridge and its approaches.

The flooding of the South Fork of the Saline River severely damaged the road linking Lonsdale, a small town on the east side of the county, with Highway 70, now Highway 5.[4] This connecting road, now Highway 128 and part of the Arkansas State Highway System, was a minor route in the county in the 1920's. As such, the precise character of the route across the river before the flooding is uncertain. There was no suggestion of a pre-existing bridge across the river immediately prior to the building of the new bridge and access across the river may well have been gained via a ford.[5]

The flooding also damaged the nearby farm of one William Dodson. His farm, "washed out by the floods," was to contain the site of the new bridge and its approaches.[6] In November of 1928, when the payments for many of the costs of the South Fork bridge were being made, Dodson was given $750 by the county as "part payment of South Fork bridge."[7] This was probably compensation for a new routing of the road and its bridge.

BRIDGE FINANCE

The financing and intended construction of a bridge over the South Fork of the Saline River was first recorded in the county court records for November 14, 1927. The Quorum Court for that day had County Judge Charles H. Davis presiding over a record attendance of fifty County Justices.[8] The Quorum or Levying Court, sitting each November in the Garland County courthouse in Hot Springs, was the administrator of county finances. Each year it appropriated and dispensed funds required in the execution of the financial responsibilities of the county. The 1927 Quorum Court sitting was particularly important because much work needed to be done to organize the finances for the repair of roads and bridges after the spring floods.

The court procedure commenced in the morning session of the sitting with the levying of a 3 mill (3 x 1/10 cent) tax "for road and bridge purposes for the ensuing year".[9] This funding was significant, as the tax was levied against "all taxable property in Garland County".[10] Together with the income from car registrations it provided sufficient funding for the allotment, later that morning, of "$65,000 out of the road and bridge revenue of this county for road and bridge purposes".[11]

The afternoon session primarily was devoted to the specific distribution of the appropriated funds. It was in this session that the financial allocation for the South Fork bridge, among other bridges, was made. It was recorded in the county court records as follows:

> "In the matter of the appropriation of $3500.00 for Bridge over South Fork Saline: A motion is now made by Justice Lynch that this court appropriate the sum of $3500 for the purpose of building a bridge over the South Fork of the Saline, and said motion being duly seconded by Justice Burrough, the motion was put with the result that all Justices present voted Aye, and the motion was unanimously adopted."[12]

On November 15 the Sentinel Record recorded the allocation, giving a more precise location for the site of the bridge: "Other appropriations were $3500 for a bridge on the South Fork of the Saline River, just near the Dodson farm which was washed out by the spring floods."[13]

BRIDGE CONSTRUCTION

The South Fork bridge and its approaches were built during the summer and fall of 1928 by the county crew under the supervision of Francis Marion Kelley, the county's bridge specialist.[14] The bridge was completed by November and Judge Davis, in his assessment of the year's work in the county made at the Quorum Court of 1928, noted that:

> "The county has just finished a very fine concrete bridge over the South Fork Creek in the eastern part of the county, which is 100 feet in length, of two 50 ft. arch spans, and the county is at present building the approaches to it."[15]

Records of the precise structural material used in the construction of the bridge have been conflicting. Judge Davis has described the South Fork bridge as "being of solid concrete."[16] F. M. Kelleys wife, Maidy, who was in attendance during the construction of the bridge, remembered Kelley saying he "put a lot of steel into that bridge."[17] While Judge Davis certainly would have been familiar with the plans of the bridge (his close involvement with county roads has been documented below), F. M. Kelley was an experienced bridge builder and may well have made an on-site decision to use steel in the piers or the retaining walls. It is almost certain, however, that the arch construction was mass concrete rather than reinforced concrete.[18]

Included in the work on the bridge was the construction of the approaches, still incomplete by November 1928. The approach road, consisting of a new gravel surface, was laid to provide a suitable passage to the bridge.

The South Fork bridge consists of two spans of concrete arch barrels with closed spandrels which rise to form the parapet walls. The flat deck consists of a sand and gravel infill-the material of the approach road-contained within the side walls. Splayed retaining walls set at angels of 45 degrees from the bridge axis hold the loose road material at the rivers edge.

The elements of this bridge provide powerful visual contrasts that are essential to the success of the bridge design. The parapet walls, decorated with recessed roundels flanked by curving panels, rise with the arch, echoing but not following its structural curve. As the walls spring from a line too low relative to the deck to form a protective barrier, they are supplemented by plain steel handrails. These handrails run horizontally from each rail-post and into the rising parapet walls. The curves of arch and wall contrast vividly with the horizontals of handrail and deck, creating a strikingly original and idiosyncratic bridge design that remains completely coherent.

The date for the completion of the South Fork bridge is recorded on a commemorative bronze plaque, removed from the south west end of the bridge in 1985.[19] This plaque, cast by The Egyptian Iron Works of Murphysboro, Illinois, dates the bridge to October 1928 and credits County Judge Davis, F. M. Kelley, builder, and H. S. Moreland, engineer.

CHARLES H. DAVIS, COUNTY JUDGE

Born on December 11, 1875, Charles Davis began his career as a reporter for the Hot Springs newspaper, The Sentinel Record, in 1893. For fifteen years he was involved with the newspaper and in 1908, at the age of thirty three, he began his career in the courthouse as deputy County Clerk. His career developed steadily until 1920 when he was elected judge of the county and probate courts. The greatest tribute paid to him was made by Dallas T. Herndon in his classic, "The Centennial History of Arkansas" (1922) when he spoke of Davis' public career: "Over the record of his public career there falls no shadow of wrong nor suspicion of evil... and the many times he has been re-elected to office is unmistakable proof of his capability and fidelity in discharging the duties that have developed upon him."[20]

Judge Davis was a frugal director of county finances. By 1927 he had reduced an incumbent debt of $154,000 to $15,000.[21] Yet despite his careful bookkeeping he fully understood the importance of maintaining roads and routes. He supervised the restoration of the county road system after the devastation of the 1927 spring floods, a task described as "a big job" by The Sentinel Record.[22] Furthermore, he was involved with the development of U.S. 70, now Highway 5, "The first paved Spa-Little Rock highway."[23]

F. M. KELLEY, BUILDER

Born in March 1891, Francis Marion Kelley was the fourth and youngest son in a family of six.[24] His father, James M. Kelley, came from Alabama and settled in Garland County after the civil war. A carpenter by trade, James Kelley was also a successful farmer and music teacher. His multi-talented abilities persisted in his youngest son, Francis Marion.

Francis Marion Kelley served in the First World War as a diesel mechanic. He returned to his home county to open a garage, but soon joined the county road crew. His technical expertise was welcomed by the county and he served as supervisor in the construction of a number of county bridges in the 1920's.[25]

Under Kelley's direction the South Fork bridge was erected by the county bridge crew, an unusual fact for a bridge of this scale and this date. Typically such bridges would have been erected either by the State Highway Department, if the route lay within the State Highway System, or the bridge construction would have been contracted to a bridge-building company. However, Garland County, under the direction of Judge Davis, consistently entrusted its bridge building to Kelley and his crew. This was a significant gesture of confidence in the abilities of F. M. Kelley.

H. S. MORELAND, ENGINEER

The plaque commemorating the completion of the South Fork bridge attributes its design to H. S. Moreland. However, Moreland remains an essentially anonymous figure. His practice is not known beyond its association with a number of contemporary bridges in the county.[26] Bridge plans with Moreland's name are in the possession of the Kelley Family, but no address is given. Nor can Moreland be associated with the erection of any of the bridges.[27] While Kelley certainly directed the entire construction of the South Fork bridge, and undoubtedly played a significant role in the details of its erection, the precise roles played by Moreland and Kelley cannot be determined from the information available on the bridge.

ENDNOTES

1. "Greatest Flood in History sweeps down River." The Sentinel Record, April 16, 1927, p. 1.

2. Ferguson, John L., "Highways and Hope." The Record, 1967, p. 78.

3. Hume, John. "The Automobile Age in Arkansas." Part VI, Arkansas Highways, Summer 1978, p. 11.

4. Highway 70 today is south of old Highway 70.

5. In conversation with Buster Coleman. At low water the river would have been crossed without difficulty, consequently a ferry crossing was unlikely.

6. "Appropriation for Bridge Made." The Sentinel Record, November 15, 1927, p. 7.

7. Garland County Court Records, Book P, p. 493.

8. "Appropriation for Bridge Made." loc. cit.

9. Garland County Court Records. Book P, p. 493.

10. ibid.

11. ibid., p. 126.

12. ibid., p. 130.

13. "Appropriation for Bridge Made." loc. cit.

14. In conversation with Maidy Kelly-Byers and Buster Coleman.

15. "Quorum Court Recognizes Need for New County Jail." The Sentinel Record, November 13, 1928, p. 6.

16. "New Jail is Given $60,000." The Sentinel Record, November 13, 1929, page 10? (incomplete copy).

17. In conversation with Maidy Kelley-Byers.

18. See description below.

19. Now in possession of Kelley Family. It reads: "South Fork; Chas. H. Davis, Co. Judge: H.S. Moreland Eng'r; F.M. Kelly, Builder; Oct 1928".

20. Herdon, Dallas T., The Centennial History of Arkansas, Chicago-Little Rock, 1922, Vol. II, p. 488.

21. "County Roads are Given Attention." The Sentinel Record, May 1, 1927, p. 7.

22. ibid.

23. Moore, M., "First Paved Spa-Little Rock Highway." The Record, Hot Springs-Garland County Historical Society Yearbook, 1967, pp. 82.

24. Kelley, G.A., "James M. Kelly Family." The Record, Hot Springs-Garland County Historical Society Yearbook, 1987, pp. 190-192.

25. In conversation with Gene Aalton Kelly.

26. Gene Aalton Kelly holds drawings by Moreland for other Garland County bridges, including Gulfa Gorge Bridge and Cedar Creek Bridge.

27. Neither Buster Colemand or Maidy Kelly-Byers recollect Moreland's attendance during construction of the South Fork Bridge. In fact, Coleman stated that he was unaware of an engineer's involvement until he saw the plate.

South Fork Bridge
Fountain Lake Vic., Arkansas
Garland County
A) 15/507120/3828850
Fountain Lake Quadrangle
1:24,000

ARKANSAS
COMMISSION
E ROCK
III NW
D MOUNTAIN)

FOUNTAIN LAKE QUADRANGLE
ARKANSAS
7.5 MINUTE SERIES (TOPOGRAPHIC)

7453 III NE
(LONSDALE NE)