

GULPHA GORGE BRIDGES (NOS.1-4)
Hot Springs National Park
Spanning Gulpha Creek at Gorge Road (US 70B)
Hot Springs vicinity
Garland County
Arkansas

HAER AR-104
AR-104

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240-0001

HISTORIC AMERICAN ENGINEERING RECORD
GULPHA GORGE BRIDGES (Nos. 1-4)
HAER No. AR-104

Location: Spanning Gulpha Creek at Gorge Road (US 70B), connecting AR 7 and US 70 at the eastern boundary of Hot Springs National Park, Hot Springs vicinity, Garland County, Arkansas

UTM: Bridge No. 1: 15.496837.3819835
Bridge No. 2: 15.496710.3820338
Bridge No. 3: 15.496959.3820582
Bridge No. 4: 15.497284.3821161
Hot Springs North, Arkansas Quad.

ATHD#: Bridge No. 1: M1319
Bridge No. 2: M1320
Bridge No. 3: M1321
Bridge No. 4: M1322

Structural Type: Reinforced concrete arch

Construction Date: 1936-37

Builder: Works Projects Administration (WPA)

Original Owner: Garland County, Arkansas

Present Owner: State of Arkansas

Use: Vehicular bridges

Significance: Built to access the recreational facilities in Gulpha Gorge, the four Gulpha Gorge bridges are a significant component of the transportation system in Hot Springs National Park. Built by the Works Projects Administration in 1936-37, the bridges are highly representative of 1930s-era concrete bridge design.

Project Information: The Arkansas Historic Bridges Recording Project is part of the Historic American Engineering Record (HAER), a long-range program that documents historically significant engineering sites and structures in the United States. HAER is administered by the Heritage Documentation Programs Division of the National Park Service, United States Department of the Interior, Richard O'Connor, Manager. The Arkansas State Highway and Transportation Department sponsored this project.

Lola Bennett, HAER Historian, 2007

Chronology

- 1803 Louisiana Purchase doubles size of the United States
- 1804 William Dunbar and George Hunter explore "*the Hot Springs of the Washita*"
Health-seekers begin making pilgrimages to present-day Hot Springs
- 1807 Manuel Prudhomme becomes first permanent white settler at Hot Springs
- 1819 Arkansas Territory created from part of Louisiana Purchase
- 1832 Federal Government designates "Hot Springs Reservation"
- 1838 Arkansas becomes 25th state to join the Union
- 1873 Arkansas Legislature authorizes counties to build and maintain bridges
- 1916 National Park Service created
- 1921 Hot Springs Reservation becomes America's 18th national park
- 1922 Hot Springs National Park hosts 150,000 visitors¹
- 1924 National Park Service assumes jurisdiction of tourist camp in Gulpha Gorge
- 1928 Garland County builds "*scenic drive*" through Gulpha Gorge
- 1929 U.S. stock market crash marks beginning of the Great Depression
- 1932 President Franklin D. Roosevelt proposes unemployment relief programs
- 1935 Congress passes Emergency Relief Appropriation Act; WPA created
- 1936 WPA begins reconstruction of Gorge Road along a wider, safer alignment
Hot Springs National Park hosts 213,156 visitors²
- 1937 Gulpha Gorge Road completed
- 1943 WPA program ends
- 1950s Changes in medical technologies and leisure pastimes lead to decline of hydrotherapies
Hot Springs bathhouses begin to close and fall into disrepair
- 1958 Jurisdiction of Gulpha Gorge Road conveyed to Arkansas State Highway Commission
- 1973 Gulpha Gorge Bridges rehabilitated
- 1980s National Park Service begins revitalization of Hot Springs' "Bathhouse Row"

¹ "Hot Springs National Park," *Hot Springs Directory* (Memphis: R.L. Polk & Co., 1923), 51.

² "Spa Patronage in Big Increase for First Six Months," *The Sentinel-Record*, 31 July 1936.

Description

Gulpha Creek runs north-south between Hot Springs Mountain and Indiana Mountain at the eastern boundary of Hot Springs National Park. Gorge Road winds along the valley for about two miles, crossing Gulpha Creek four times on reinforced concrete arch bridges. Bridge No. 1 (AHTD #M1319), at the south end of Gorge Road, springs from 2' above grade, rises 8' to the crown and spans 45'. Bridge No. 2 (AHTD #M1320) springs from 2' above grade, rises 12' to the crown, spans 28' and is built on a 45-degree skew. Bridge No. 3 (AHTD #M1321) springs from 1' above grade, rises 15' to the crown, spans 40' and is built on a 30-degree skew. Bridge No. 4 (AHTD #M1322) springs from 4'-6" feet above grade, rises 11' to the crown, spans 21' and is built on a 15-degree skew. Each bridge has a 25' wide roadway flanked by reinforced concrete railings and wing walls.

History

In 1804, President Thomas Jefferson sent William Dunbar and George Hunter to explore a part of Louisiana Territory known as "*The Hot Springs of the Washita*." Their widely publicized report on the area's many thermal mineral springs generated public interest, and people began making pilgrimages to bathe in and drink the therapeutic waters. By 1832, commercial exploitation of the hot springs had grown to such an extent that territorial representative Ambrose Sevier convinced Congress to set aside four sections of land as a national reservation. During the nineteenth century, "*taking the cure*" at mineral spring resorts became fashionable and Hot Springs became a popular tourist destination.

Gulpha Gorge, located two miles northeast of downtown Hot Springs, had long been a popular spot with visitors wishing to access the springs and commune with nature. From an early date, the gorge attracted charity patients, who erected "*a little camp of rude tents and huts ... where the bathers live, forming a little community drawn together by one common brotherhood of infirmity*."³ The advent of the automobile in the early twentieth century brought increasing numbers of transients to the area, accompanied by a certain level of squalor, vandalism and unlawful activities. Later, an influx of automobile tourists put an additional strain on the area's infrastructure. Local, state and federal authorities cooperatively attempted to address these problems by transferring legal jurisdiction of the Gulpha Gorge campground to the Federal Government in 1924. Over the next year, the National Park Service built facilities for a modern, safe auto camp in the gorge.

Three years later, Garland County built a "*scenic drive*" through the gorge, complete with "*rustic concrete and natural stone bridges*" over Gulpha Creek.⁴ Within just a few years, however, that road had become inadequate to handle an increasing volume of larger, faster vehicles. Accordingly, in 1936-37, Garland County sponsored a WPA project to reconstruct

³ A. Van Cleef, "The Hot Springs of Arkansas," *Harpers Monthly*, January 1878. According to Van Cleef, "*The usual stay at the springs is from one to three months, but many invalids stay a year and longer*."

⁴ "Scenic Drive Will be Complete Soon," *Hot Springs New Era*, 26 June 1928, 2.

Gorge Road along a safer alignment "*on the floor of the Gorge following the meandering creek.*"⁵ The concrete bridges presently spanning Gulpha Creek were built as part of that project.

Builder

The Works Projects Administration (WPA) was a federal agency established under President Franklin D. Roosevelt to combat unemployment during the Great Depression. Originally called the Works Progress Administration, it employed 8,500,000 people in public works projects between 1935 and 1943. In addition to projects that employed artists, actors and writers, WPA workers built schools, courthouses, parks, roads and bridges, many of which are still in use today.

Design

Concrete bridges first appeared in Europe in 1840 and in the United States in 1871, but the technology remained largely experimental until the end of the nineteenth century.⁶ Concrete has little tensile strength, so early concrete bridges were constructed as solid barrel, filled arches that worked solely in compression and relied on a substantial mass of material to carry loads. Beginning in 1854, when William Wilkinson obtained a British patent for reinforcing concrete with wire rope, European and American inventors experimented with ways of combining the compressive properties of concrete with the tensile strength of iron, to produce stronger, lighter, more cost efficient structures. In 1875, French gardener Joseph Monier (1823-1906) became the first individual to apply reinforced concrete technology to bridges.⁷

In 1889, a decade and a half after Monier's pioneering experiments, Ernest L. Ransome (1844-1917) built America's first concrete-steel span, the Alvord Lake Bridge, at Golden Gate Park in San Francisco.⁸ The modest 20' span was scored and roughened to imitate a traditional masonry bridge and even had artificial stalactites on the intrados to reinforce the illusion, but beneath the facade, was a modern concrete structure, with twisted iron rods embedded in the specific zones where tension forces occur. Though not immediately popular, Ransome's concrete reinforcing system was widely used throughout the United States in the twentieth century.

Throughout the 1890s and early 1900s, other engineers, including Joseph Melan (1853-1941), Fritz von Emperger (1862-1942), Edwin Thacher (1840-1920) and Daniel Luten (1869-1945), aggressively developed and promoted the new technology. Reinforced concrete bridges were

⁵ "WPA Expending Large Sums on Streets, Roads," *The Sentinel-Record*, 22 April 1936, 1.

⁶ The 39' Caronne Canals Bridge at Grisoles, France, is reportedly the world's first concrete bridge. Designed by landscape architect Calvert Vaux and built by the New York & Long Island Coignet Stone Company, the Cleft Ridge Span (1871-72) at Prospect Park in Brooklyn, New York, was the first concrete bridge in the United States (see HAER No. NY-336).

⁷ Monier's Pont de Chazelet (1875), a 52' reinforced concrete pedestrian bridge, reportedly still survives in France.

⁸ See HAER No. CA-33, Alvord Lake Bridge.

durable, aesthetic and cost effective. They used readily available materials, could be built by local laborers and didn't require extensive maintenance. In the early twentieth century, with the advent of the automobile and demand for improved roads, reinforced concrete became the preferred material for bridges in the United States.

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