

REGION RMR PARK/AREA NAME Zion National Park PARK NUMBER 1590

STRUCTURE NAME Virgin River Bridge STRUCTURE NUMBER 997 HS-997

LOCATION OF STRUCTURE Virgin River Bridge PARK LOCATION CODE PG

NATIONAL REGISTER \_\_\_\_\_ DATE: / / MANAGEMENT CATEGORY: (A) (B) (C) (D)

NPS LEGAL INTEREST \_\_\_\_\_ FEE \_\_\_\_\_ MANAGEMENT AGREEMENT: No Mgmt. Agreeeme

Check all of the following categories for which NPS has treatment responsibility:

Stabilization() Cyclic Maintenance() Routine Maintenance() Approved Ultimate Treatment()

(ROCKY MOUNTAIN REGION USE ONLY)

APPROVED ULTIMATE TREATMENT OR RESOURCE MANAGEMENT PLAN, CULTURAL COMPONENT DESIGNATION

Preservation	(PP)	Restoration	(RR)	Reconstruction	(CC)
Adaptive Preservation	(AP)	Adaptive Restoration	(AR)	Adaptive Reconstruction	(AC)
Neglect	(NG)	Remove	(RM)	No Approved Treatment	(NO)

Approval Document \_\_\_\_\_ ( ) Document Date: / /

Estimated Treatment Costs \_\_\_\_\_

Stabilization:	\$ _____	Date:	<u>/ /</u>	Level of Estimate:	(A) (B) (C)
Approved Treatment:	\$ _____	Date:	<u>/ /</u>	Estimator:	(Region) (DSC) (A&E)

STATEMENT OF SIGNIFICANCE: Service built highway bridge of architectural and historical significance.

Date of Construction: 07/04/1930 Date of Alterations: 19/59/1960

Architect/Designer: Thos. Vint/ Angwin Historical Theme(s): Transportation

History of Structure: In Feb. 1928, Chief Landscape Engineer, Thomas C. Vint and Bridge Engineer from the Regional Office, Mr. Angwin, made inspections of the bridge sites on the Zion-Mt. Carmel Highway which was in the process of construction. Work on the Virgin R. Bridge lagged behind due to landscape design difficulty and construction finally commenced in October 1929. Although open for the Highway Dedication Ceremony on the 4th, the Bridge was not completed until the end of July. Widened, 1960.

Evaluation of Structure: Historic Theme Contributing X Non-Contributing \_\_\_\_\_

National Register Criteria: A B CX D (Include integrity statement)

Although partially reconstructed in 1960, the Virgin River Bridge retains its structural integrity. Attractive and well executed, the bridge is a 3 span "I" beam structure which was skillfully camouflaged with 54" Redwood slabs to give it a rustic finish.

Bibliography: Scoven, E.T. "ZNP Annual Report for 1930", Scoven, E.T. "ZNP Superintendent's Monthly Reports, Feb., Oct., 1928." Jolley, D.J. "Report to Supt., 10/1929"

Representation in Other Surveys: Olivieri, Lance. "Classified Structure Inventory Report, 1978."

If structure has been removed, how? \_\_\_\_\_ Date: / /

Report prepared by: James Jurale Date: 09/26/1984

CONTINUATION FROM FRONT SHEET - STRUCTURE NAME VIRGIN RIVER BRIDGE

LOCATION: Section undetermined State Utah USE: CURRENT INTERIOR USE (NPS 28 CODE) N/A  
Township 41 S County Washington Original Use Highway bridge  
Range 10 W Intermediate Uses Highway bridge  
PERIOD OF CONSTRUCTION (NPS 28 CODE) HI  
NEGATIVE No. HAER No. UT-39-C-1

OWNERSHIP: Present Owner: NPS  
Original Owner: NPS  
Intermediate Owner(s): NPS

**\*\*\*PHYSICAL DESCRIPTION\*\*\***

(DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.)

Chief Ranger, Donal J Jolley, reported in Oct. 1929 that work commenced on the River Bridge, "which when completed will connect the New Zion Mt. Carmel highway with the present Zion road." Construction work on the Bridge had lagged behind due to a change in design and, according to Supt. Scoyen, "the difficulties in arriving at a practical solution of this problem which will also be satisfactory from the landscape standpoint." The Bridge across the Mukuntuweap (Virgin) River was completed late in July 1930.

The original River Bridge was 185 feet long, with a 20-foot driveway across the center and a five-foot sidewalk on each side, making a total width of 30 feet. Constructed as a 3 span steel "I" beam structure, it was camouflaged with 54" Redwood slabs to give it a rustic appearance. The spans were supported by two pieces of solid masonry 34 feet high.

On December 17, 1959, Park Service personnel commenced removing the sidewalks and enlarging the road surface of the bridge. The old curb was dislodged by cutting and blasting, the edge of the pavement was leveled and the debris removed. Steel reinforcing rods were placed in the 5' wide trench on each side of the bridge. Then the gaps were filled with poured concrete and the enlarged road-bed resurfaced. Renovation of the bridge, which spans the Virgin River approximately 2 miles north of the Park administration building, was completed in March 1960.

The bridge's concrete and "I" beamed roadbed is supported by pitcher-faced, ashlar, sandstone, masonry, piers and abutments. "Spanning the tops of the piers and imbedded in the masonry, are 1 1/2' x 3' (approx.) dia. beams which protrude from the piers on both sides. 1' X 4' fascia beams line the lower sides of the roadbed. 4" X 10" ballistrade, (sic) with 6" X 10" railings imbedded in spaced wood posts, form the guardrails."

**SIGNIFICANT ARCHITECTURAL FEATURES (INCLUDING INTERIOR AND SETTING) FOR PARK PLANNING PURPOSES:**



LOCATION: Section undetermined State Utah  
Township 41 S County Washington  
Range 10 W

USE: CURRENT INTERIOR USE (NPS 28 CODE) N/A  
Original Use Highway Bridge  
Intermediate Uses Highway Bridge  
PERIOD OF CONSTRUCTION (NPS 28 CODE) HI

OWNERSHIP: Present Owner: NPS  
Original Owner: NPS  
Intermediate Owner(s): NPS

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**\*\*\*PHYSICAL DESCRIPTION\*\*\***

(DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.)

The Pine Creek Bridge, a masonry arch type constructed of native sandstone, is located at the base of the 6 switch backs which wind up Pine Creek Canyon to the Tunnel on the Zion - Mt. Carmel Highway. The structure is made entirely of Navajo sandstone with a cemented rubblestone core. The crossing at Pine Creek is 120 feet in length and 30 feet in width. The predominate structural theme is represented in the key-stoned arch which spans the creek. The barrel of the arch--constructed with a massive supporting key in the upper center--is 60 feet long and 23 feet high.

The precision of the stone work is made even more impressive by the skillful blending of blocks of several different colors and shades of colors in the arch and side walls. Tan, brown, red, pink, purple and some green tones are found in the hand-hewn rock. These vary, in turn, with the intensity of light provided by the moon and sun to make this structure one of the most beautiful found in Zion.

According to L. Dewey Excell, a master stonemason and 23-year Park Service employee who worked on the bridge, narrow gauge rails for a motorized winch were built adjacent to the uncompleted bridge. "What they did was pick the rocks up over here and they'd swing it out and let it down to where ever we had a place for the rocks. We got (quarried) stone a month before we started laying."

Although the Pine Creek Bridge was opened for traffic at the Zion - Mt. Carmel Highway Dedication Ceremony on July 4, 1930, it was completed late in the month.

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**SIGNIFICANT ARCHITECTURAL FEATURES (INCLUDING INTERIOR AND SETTING) FOR PARK PLANNING PURPOSES:**

CLASSIFIED STRUCTURE FIELD INVENTORY REPORT  
(Attach 4" x 5" Black and White Photograph)

ILLS  
10720

REGION RMR PARK/AREA NAME ZION N.P. PARK NUMBER 1590

STRUCTURE NAME Zion-Mt. Carmel Tunnel STRUCTURE NUMBER RT 999

LOCATION OF STRUCTURE Zion-Mt. Carmel Tunnel PARK LOCATION CODE PG

NATIONAL REGISTER \_\_\_\_\_ DATE: / / MANAGEMENT CATEGORY: (A) (B) (C) (D)

NPS LEGAL INTEREST FEE MANAGEMENT AGREEMENT No Mgmt. Agreement

Check all of the following categories for which NPS has treatment responsibility:

Stabilization (X) Cyclic Maintenance (X) Routine Maintenance (X) Approved Ultimate Treatment (X)

(ROCKY MOUNTAIN REGION USE ONLY)

APPROVED ULTIMATE TREATMENT OR RESOURCE MANAGEMENT PLAN, CULTURAL COMPONENT DESIGNATION:

Preservation (PP)	Restoration (RR)	Reconstruction (CC)
Adaptive Preservation (AP)	Adaptive Restoration (AR)	Adaptive Reconstruction (AC)
Neglect (NG)	Remove (RM)	No Approved Treatment (NO)

Approval Document \_\_\_\_\_ ( ) Document Date: / /

Estimated Treatment Costs \_\_\_\_\_

Stabilization: \$ _____	Date: <u>/ /</u>	Level of Estimate: (A) (B) (C)
Approved Treatment: \$ _____	Date: <u>/ /</u>	Estimator: (Region) (DSC) (A&E)

STATEMENT OF SIGNIFICANCE: Zion-Mt. Carmel Highway Tunnel of architectural and historic significance.

Date of Construction: 07/04/1930 Date of Alterations: 19/51/1958

Architect/Designer: Chief, T. MacDonald Historical Theme(s): Transportation

History of Structure: The original Tunnel reconnaissance was made in 1923 by Means and Finch assisted by East Rim rancher, John Winder. Survey of Tunnel completed in 1925, Tunnel contract awarded to Nevada Construction Co. of Fallon, Nevada and work started in 1927. Completed in 1930 at a cost of \$503,000. Congressman Louis C. Cramp-ton of Michigan, chairman of the House Committee for the National Park Service, spon-sored the appropriations that construction possible. Minor alterations in 1951-58.

Evaluation of Structure: Historic Theme Contributing X Non-Contributing \_\_\_\_\_  
National Register Criteria: A B CX D (Include integrity statement)

The 5,613' long, rock faced tunnel with concrete spines was completed in 1930 and retains structural integrity. It is one of the most spectacular man-made sites at Zion N.P. and the only one of its kind in the Rocky Mountain Region.

Bibliography: Woodbury, Angus. A History of Southern Utah and its National Parks, 1950. U.S. Dept. of Interior, "Zion N.P. Dedications, 1930.", "Zion N.P. Supt's Reports, 1951, 58. Representation in Other Surveys: Olivieri, Lance." Classified Structure Inventory Report, 1978."

If structure has been removed, how? \_\_\_\_\_ Date: / /

Report prepared by: James Jurale Date: 09 / 24 / 1984

CONTINUATION FROM FRONT SHEET - STRUCTURE NAME Zion - Mt. Carmel Tunnel

LOCATION: Section undetermined State Utah USE: CURRENT INTERIOR USE (NPS 28 CODE) OT (Tunnel)  
Township 41 S County Washington Original Use Highway Tunnel  
Range 10 W Intermediate Uses Highway Tunnel  
PERIOD OF CONSTRUCTION (NPS 28 CODE) HI  
NEGATIVE No. HAER No. UT-39-A-1

OWNERSHIP: Present Owner: NPS  
Original Owner: NPS  
Intermediate Owner(s): NPS

**\*\*\*PHYSICAL DESCRIPTION\*\*\***

(DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.)

Due to the urging of Utah Parks Co. officials, the Federal Bureau of Public Roads and the Utah State Road Commission began studying ways by which the scenic points of interest in southern Utah and northern Arizona could be linked. In June, 1923, B.J. Finch, the District Engineer of the USDA Bureau of Public Roads at Ogden and Howard C. Means, a Utah State Engineer, arrived in Zion N.P. There, they met John Winder, an East Rim rancher who was a leading authority on the rugged Zion back country. After extensive exploration of the area, the 3 men concluded that a road up Pine Creek with a tunnel through the Great Arch was the most logical route to provide access into the Park from the East. The Park Service helped conduct the survey of alternative routes, including one up Paiknuweap Canyon, in 1925, but Pine Creek was ultimately selected.

The Nevada Construction Co. was the low bidder on the contract and began construction on the 6 galleries that are visible today, in 1927. Pilot tunnels were drilled and then enlarged with an Erie Air Shovel to a width of 22' and a height of 16'. Narrow gauge railcars hauled the waste material from the drillings and dumped it into the canyon below through the galleries. In 1951, Gallery #4 was reinforced with concrete after being damaged by a rock slide. A second gallery was partially sealed and that portion of the tunnel near the gallery reinforced with steel and concrete following a rockslide that occurred in 1958.

The Tunnel is 5,613' in length and cost \$503,000. The grade within the tunnel is approx. 4%, with an elevation increase of 281' from the west (5,115') to the east (5,396') end. The west entrance is faced with coursed, rock-faced, ashlar, sandstone outlining the opening with a key-stoned arch. Today, about 1/2 of the yearly visitors to Zion N.P. enter from the East Entrance via the Zion - Mt. Carmel Highway Tunnel. It is no longer possible to stop in the Tunnel and view out from the galleries, as Park officials have determined that modern automobiles presented a traffic hazard when they attempted to utilize the original narrow parking spaces built there.

**SIGNIFICANT ARCHITECTURAL FEATURES (INCLUDING INTERIOR AND SETTING) FOR PARK PLANNING PURPOSES:**



**LOCATION:** Section undetermined, 19, 20 State Utah  
Township 41 S County Washington, Kane  
Range 9 W, 10 W

**USE:** CURRENT INTERIOR USE (NPS 28 CODE) U, A  
Original Use Scenic Highway  
Intermediate Uses Scenic Highway  
**PERIOD OF CONSTRUCTION (NPS 28 CODE)** HI

**OWNERSHIP:** Present Owner: NPS  
Original Owner: NPS  
Intermediate Owner(s): NPS

NEGATIVE No. HAER No. UT-39-5

**\*\*\*PHYSICAL DESCRIPTION\*\*\***

(DESCRIPTION AND BACKGROUND HISTORY INCLUDING CONSTRUCTION DATE(S), PHYSICAL DIMENSIONS, MATERIALS, MAJOR ALTERATIONS, EXTANT EQUIPMENT, AND IMPORTANT BUILDERS, ARCHITECTS, ENGINEERS, ETC.)

After 4 years of planning, Zion - Mt. Carmel Highway construction began in 1927 for the purpose of linking up Zion National Park, Bryce Canyon National Park, Cedar Breaks and the North Rim of the Grand Canyon of the Colorado. Running east from the Virgin River Bridge, the road forms a connecting link between U.S. Highways 9 and 89, and completed the tourist loop envisioned by the Utah Parks Company in the early 1920's. The old road network from Zion measured 159 miles to Bryce, 139 miles to Cedar Breaks and 142 miles to the Grand Canyon. Upon completion in 1930, the Zion-Mt. Carmel Highway cut the distance to 88, 70 and 116 miles respectively. Ironically, this highway promoted by the UPC facilitated increased automobile traffic which eventually took the place of railroad transportation to the parks.

At the time of the dedication ceremony on July 4, 1930, 8 1/2 miles of highway, constructed at a cost of \$1,440,000 (including the tunnels) to the Federal Government, were located within the boundaries of Zion National Park. The remaining 16 1/2 miles was a Federal Aid project and had been constructed at the joint expense of the United States and the State of Utah. Presently, the Highway extends for approximately 10 miles from the Zion Lodge turnoff to the Park's eastern border, located 1/2 mile beyond the East Entrance Visitor Contact Station. In addition to the Zion-Mt. Carmel Tunnel and the Pine Creek Bridge (inventoried in separate "LCS Reports") other man-made structures located on the Park portion of the Highway include: a 1/10 mile long, rock-faced tunnel located approx. 1.2 miles to the east of the greater tunnel's east entrance; two 20 yard bridges with decorative concrete pylons; numerous galvanized pipe and sandstone culverts; and hundreds of cubic yards of random ashlar masonry retaining walls.

Six switchbacks cut into the soft sandstone of Pine Creek Canyon allow the roadway to drop 800' in its 3 1/2 mile course from the west end of the Zion-Mt. Carmel Tunnel to the floor of Zion Canyon. The maximum grade is 6 percent. Due to frequent rock falls onto the highway, CCC personnel picked loose rocks from the slopes above the Highway in

**SIGNIFICANT ARCHITECTURAL FEATURES (INCLUDING INTERIOR AND SETTING) FOR PARK PLANNING PURPOSES:**

the early 1930's. Rock falls are still a road hazard today. Several pulloffs where scenic views may be enjoyed were constructed along the Highway in 1968.