

BURLINGTON NORTHERN SANTA FE RAILROAD,
CAJON SUBDIVISION , STRUCTURE NO. 57.3X
Between Cajon Summit and Keenbrook
Devore vicinity
San Bernardino County
California

HAER CA-2259-A
CA-2259-A

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
PACIFIC WEST REGIONAL OFFICE
National Park Service
U.S. Department of the Interior
1111 Jackson Street, Suite 700
Oakland, CA 94607

HISTORIC AMERICAN ENGINEERING RECORD

Burlington Northern Santa Fe Railroad, Cajon Subdivision,
Structure No. 57.3X

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Location: BNSF Railway Company (BNSF) Railroad Structure No. 57.3X, a reinforced-concrete arch culvert, is located at Milepost 57.3X on Main Track 1, Devore vicinity, San Bernardino County, California. The culvert is bounded by the Union Pacific Railroad to the north and Main Track 2 to the south.

The culvert lies within the SW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 19, Township 3 North, Range 5 West, on the 1956 Cajon, California (photorevised 1988), 7.5-minute U.S. Geological Survey quadrangle. Universal Transverse Mercator Coordinates: Zone 11, NAD83, Geodetic Reference System 1980 ellipsoid, mN 3799588, mE 459472 (inlet); mN 3799555, mE 459462 (outlet).

Date of Construction: 1913

Architect/Engineer: unknown

Builder: Atchison, Topeka and Santa Fe Railway (AT&SF)

Present Owner: BNSF

Present Use: Culvert on Main Track 1.

Significance: The section of railroad through Cajon Pass provided a vital link between the greater Los Angeles area and distant markets. In 1998, the California State Historic Preservation Office determined the historic route of the AT&SF (now BNSF) railroad alignment through Cajon Pass to be eligible for listing in the National Register of Historic Places under Criteria a and c. By connecting Los Angeles and San Bernardino to markets throughout the United States, the railroad dramatically affected demographic, commercial, and cultural trends in southern California. Furthermore, construction of the long, winding alignment through rugged and often steep terrain represents a significant engineering feat for its time. Structure No. 57.3X contributes to the function and significance of the railroad line by mitigating the effects of erosion on the integrity of the system.

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Statistical Research, Inc.
Tucson, Arizona

Date: March 2008

I. ARCHITECTURAL AND ENGINEERING INFORMATION

Structure No. 57.3X is a reinforced-concrete arch culvert located northwest of the old Summit Station (Figure 1). A culvert is a structure designed to protect the roadbed from the erosive effects of storm runoff by carrying water safely under the track. Culverts are placed at points along the roadbed where the railroad intersects normally dry channels. The size of a culvert is determined by the anticipated rate of flow during periods of heavy rainfall (Hay 1953:282, 284; Webb 1932:249). Concrete arch culverts are usually found on major drainages under high embankments.

The structure consists of an inlet transition on the north side of the roadbed embankment that diverts and channels water under the track through an arched opening. Both the inlet and outlet transitions of this reinforced-concrete arch culvert have headwalls, wing walls, and aprons. The headwalls and wing walls hold back the roadbed fill from the culvert openings, and the aprons prevent scouring around the inlet and outlet. Each arched opening has a height of 8'-0" and bottom width of 8'-0". The distance from the floor to the top of the headwall is 11'-2". Inside the culvert, the concrete floor extends about 50', with a slight downward slope that corresponds to the slope of the channel it drains. The overall length of the culvert, from inlet transition to outlet transition, is approximately 80'. The headwalls measure 11'-2" across the top and have a width of 2'-0". On the upstream side of the structure, above the headwall, are two horizontally placed timber beams, one above the other, that serve as a retaining wall. Two angle iron brackets secure the timbers to the headwall. The wing walls, which have a width of 1'-9", are flared. They begin 16" below the top of the headwall and taper down 12'-4". The wing walls on the downstream side of the culvert are essentially the same, in terms of design and dimensions, although extensions of 7'-0" were attached to the primary wings. All of the edges of this structure are beveled with a width of 3".

II. REFERENCES CITED

Hay, William W.

1953 *Railroad Engineering, Volume One*. John Wiley & Sons, New York, and Chapman and Hall, London

Webb, Walter L.

1932 *Railroad Construction: Theory and Practice*. 9th ed. John Wiley and Sons, New York.

Burlington Northern Santa Fe Railroad, Cajon Subdivision,
 Structure No. 57.3X
 HAER No. CA-2259-A
 (page 3)

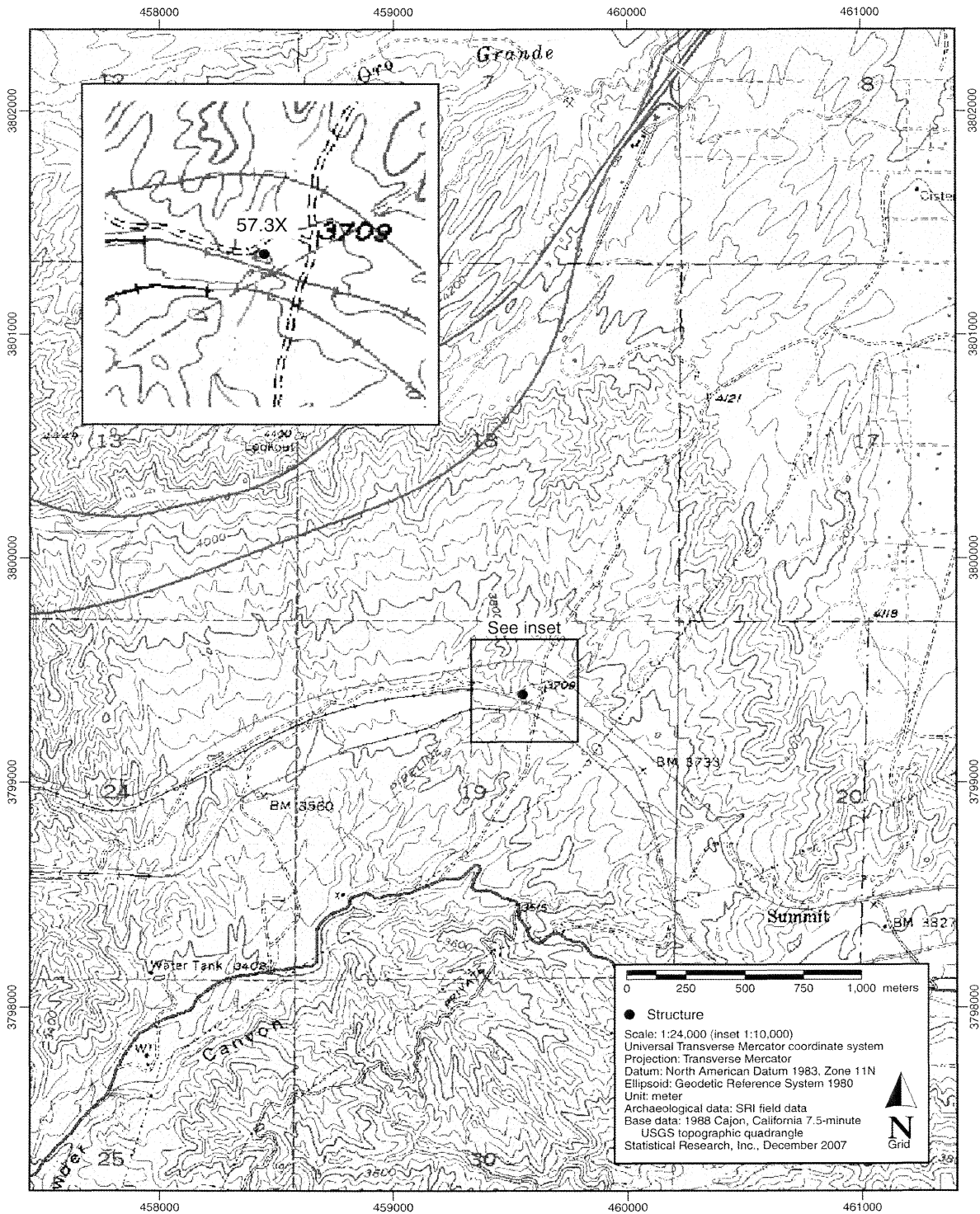


Figure 1. Project location (1956 Cajon, California, 7.5-minute U.S. Geological Survey quadrangle [photorevised 1988]).

HISTORIC AMERICAN ENGINEERING RECORD

INDEX TO PHOTOGRAPHS

Burlington Northern Santa Fe Railroad, Cajon Subdivision,
Structure No. 57.3X
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San Bernardino County
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HAER No. CA-2259-A

David G. De Vries, photographer

June 2007

- CA-2259-A-1 CONTEXT VIEW, SHOWING STRUCTURE NO. 57.3X (CULVERT) AT RIGHT AND STRUCTURE NO. 57.24X (BRIDGE) IN DISTANCE AT LEFT. MAIN TRACK 1 RUNS ALONG THE TOP OF THE FEATURES. VIEW TO THE SOUTHEAST. [12]
- CA-2259-A-2 OVERVIEW OF THE CULVERT, VIEW TO THE SOUTH. [11]
- CA-2259-A-3 NORTH ELEVATION. [122]
- CA-2259-A-4 SOUTH ELEVATION. [56]
- CA-2259-A-5 DETAIL OF FORM BOARD IMPRINTS AND CONCRETE ARCH CONSTRUCTION. [10]

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