BURLINGTON NORTHERN SANTA FE RAILROAD,
CAJON SUBDIVISION , STRUCTURE 57.6X
Between Cajon Summit and Keenbrook
Devore vicinity
San Bernardino County
California

HAER CA-2259-B
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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. 57.6X

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Location:	BNSF Railway Company (BNSF) Railroad Structure No. 57.6X, a reinforced-concrete arch culvert, is located at Milepost 57.6X 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 ¼ of the NE ¼ of the NW ¼ 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 3799583, mE 458912 (inlet); mN 3799569, mE 458913 (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. 57.6X contributes to the function and significance of the railroad line by mitigating the effects of erosion on the integrity of the system.
Report Prepared By:	Scott Thompson, Senior Historian John Goodman, Archaeologist Tucson, Arizona
Date:	March 2008

I. ARCHITECTURAL AND ENGINEERING INFORMATION

Structure No. 57.6X is a reinforced-concrete arch culvert located on a secondary drainage that exhibits substantial down-cutting (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. Extending from the apron on the downstream side is a stepped, concrete spillway for diffusing the energy of floodwater as it discharges from the culvert and drops in elevation. Sedimentation in the culvert has mostly covered the concrete floor, which has a slight downward slope from the inlet to the outlet. The arch has a height of 7'-0" and bottom width of 12'-0". The distance from the floor to the top of the headwalls is 9'-9". The length of the culvert from inlet to outlet is 33'-0". The headwalls have a length of 15'-0" and a width of 2'-0". On the upstream side of the structure, above the headwall, are horizontally placed timber beams that serve as a retaining wall. Angle iron brackets secure the timbers to the headwall. The wing walls are flared and reach a height of 8'-2" where they intersect the headwall. They are 2'-0" wide and taper down 8'-10". On the downstream side of the culvert, the wing walls are of similar design and dimensions, although a concrete spillway with a drop of 3'-6" is incorporated in the outlet transition with wing wall extensions of about 9'. All outer edges of the headwalls and wing walls 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.

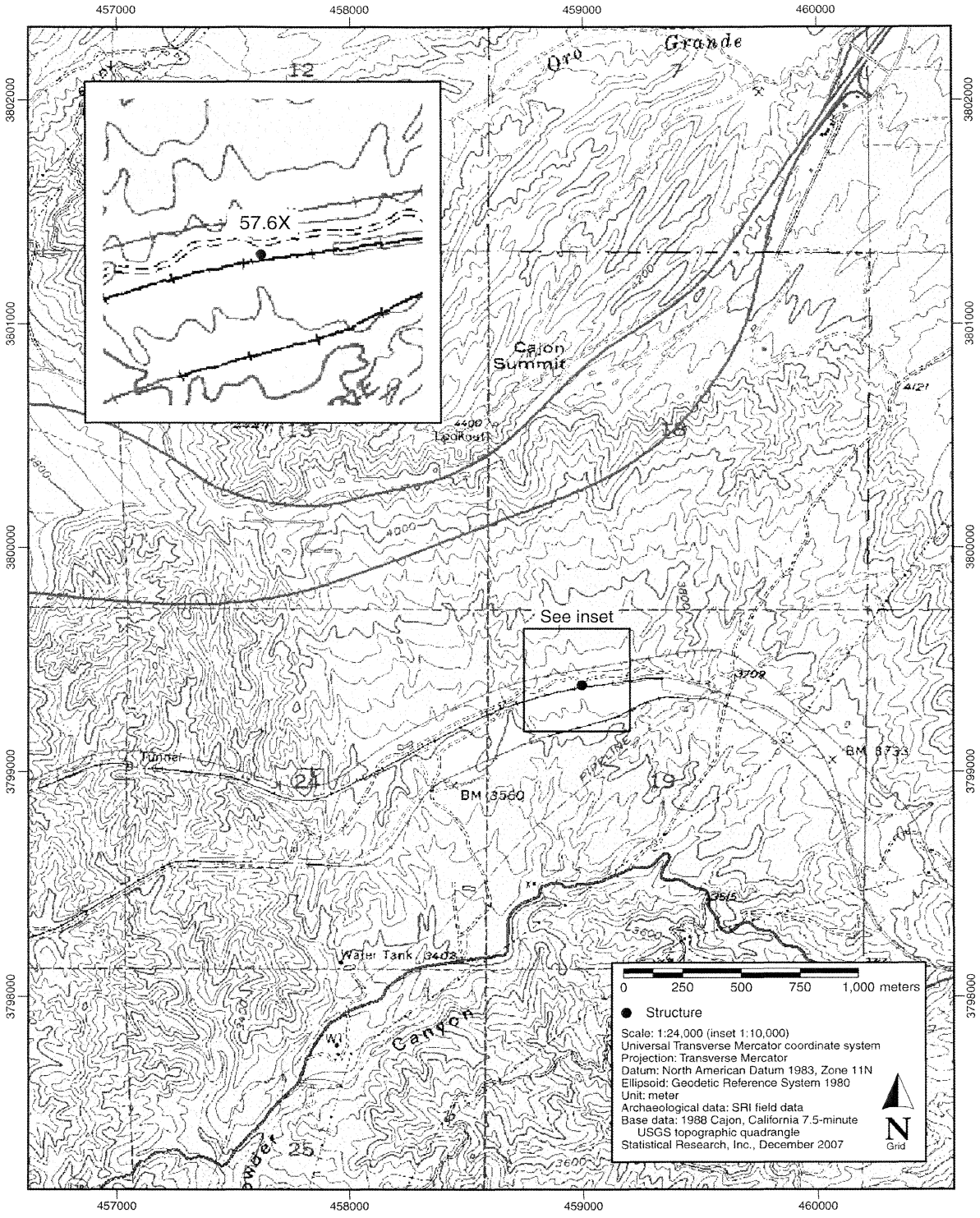

Figure 1. Project location (1956 Cajon, California, 7.5-minute U.S. Geological Survey quadrangle [photorevised 1988]).

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David G. De Vries, photographer June 2007

CA-2259-B-1 OVERALL CONTEXT VIEW, TO THE SOUTH. [17]

CA-2259-B-2 NORTH ELEVATION. [15]

CA-2259-B-3 SOUTH ELEVATION, SHOWING SPRAYED CONCRETE SPILLWAY. SLIGHT OBLIQUE TO NORTH NORTHWEST. [16]

HAER NO. CA 2259-B-1

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