

BURLINGTON NORTHERN SANTA FE RAILROAD,
CAJON SUBDIVISION , STRUCTURE NO. 62.2X
between Cajon Summit and Keenbrook
Devore vicinity
San Bernardino County
California

HAER CA-2259-J
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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. 62.2X

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Location: BNSF Railway Company (BNSF) Railroad Structure No. 62.2X, a reinforced-concrete pipe culvert, is located at Milepost 62.2X on Main Track 1, Devore vicinity, San Bernardino County, California. The culvert is bounded by the Union Pacific Railroad to the south and BNSF Main Track 2 to the east-northeast.

The culvert lies within the NE $\frac{1}{4}$ of the NW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 35, Township 3 North, Range 6 West, on the 1956 Cajon, California, 7.5-minute U.S. Geological Survey quadrangle (photorevised 1988). Universal Transverse Mercator Coordinates: Zone 11, NAD83, Geodetic Reference System 1980 ellipsoid, 3796639 mN, 455649 mE (inlet); 3796659mN, 455660 mE (outlet).

Date of Construction: 1913

Architect/Engineer: unknown

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

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. 62.2X 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
Statistical Research, Inc.
Tucson, Arizona

Date: March 2008

I. ARCHITECTURAL AND ENGINEERING INFORMATION

Structure No. 62.2X is a reinforced-concrete pipe culvert located on a north-flowing secondary drainage (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).

This culvert consists of three 48" reinforced-concrete pipes, arranged horizontally (side-by-side), with a reinforced-concrete headwall on the upstream side and a headwall, wing walls, and apron on the downstream side. (*Note:* The use of two or more culvert pipes diverts and channels water from one side of the roadbed to the other while reducing overhead clearance. Generally, a culvert with two or more pipes is built on a major drainage when the height of the roadbed embankment prevents the construction of a culvert with a high overhead clearance [Hay 1953:283].) The approximate length of the pipes is 53' (Bridge List, First District, Los Angeles Division, p. 47, Structures Department, BNSF Railway Company, Kansas City, Kansas). The pipes were likely precast, whereas the other elements of the structure were cast in place. On the upstream side of the structure, the headwall is 30'-0" long, and the distance from the channel surface to the top of the headwall is 5'-6". The pipes are 48" in diameter and spaced 3'-10" apart. The outlet transition has a headwall and wing walls to hold back the roadbed fill from the three pipe openings. A stepped, concrete apron below the pipe openings prevents scouring around the outlet. The downstream headwall has a length of 22'-0" and a height of 6'-2". Two flared, downward-sloping wing walls extend from the headwall. Each wing has a length of 17'-8" and a width of 2'-0". The apron extends 6'-3" beyond the headwall and has a maximum width of 16'-8" before dropping 4'-4" to the lower slab. This lower section of apron extends 9'-0", where it meets the natural drainage channel.

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.

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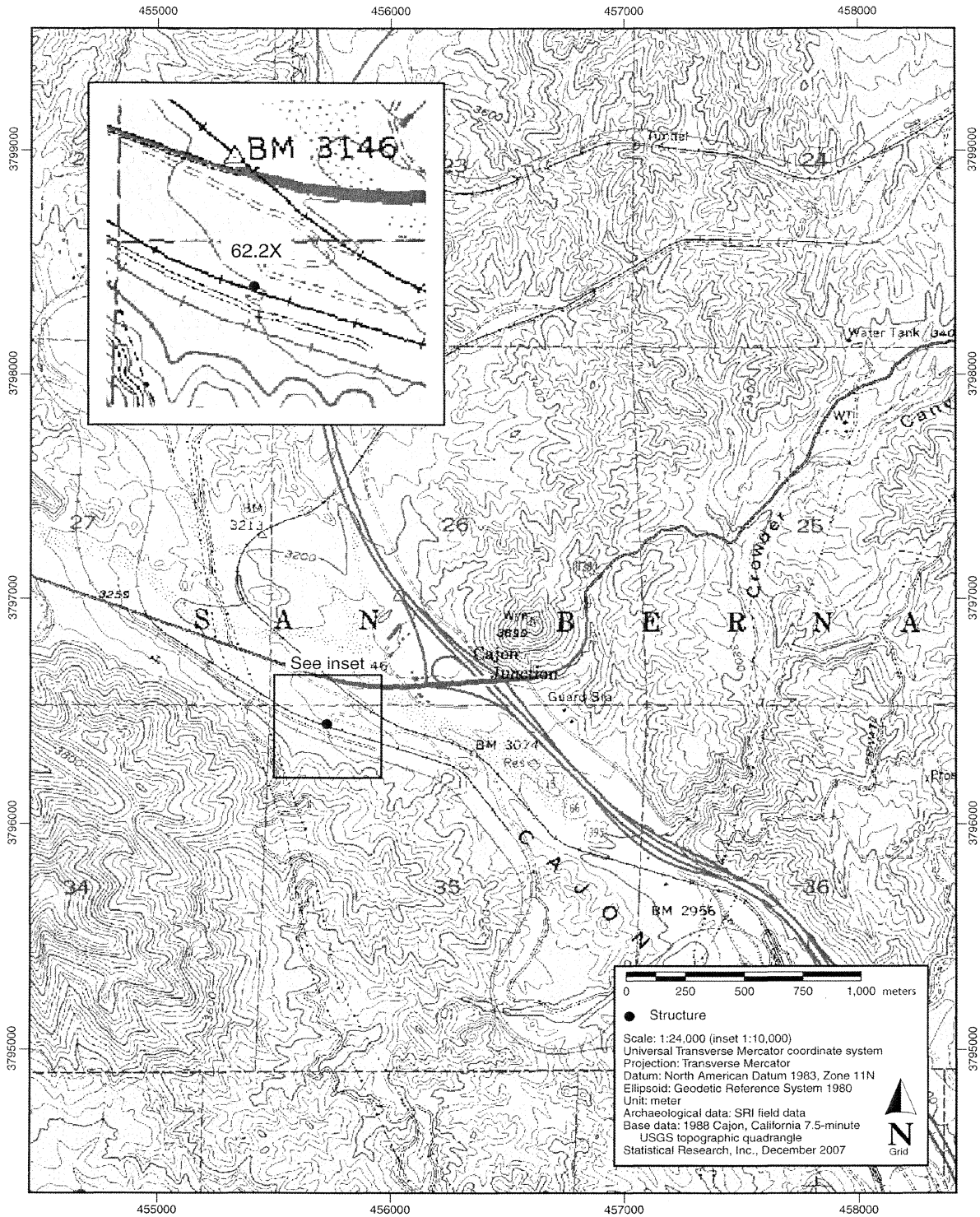


Figure 1. Project location (1956 Cajon, California, 7.5-minute U.S. Geological Survey quadrangle [photorevised 1988]).

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David G. De Vries, photographer

June 2007

- CA-2259-J-1 CONTEXT VIEW, UP THE GULLY TO THE SOUTHWEST TOWARD THE NORTH
 (OUTLET) SIDE OF CULVERT. [115]
- CA-2259-J-2 CULVERT INLET. [116]
- CA-2259-J-3 CULVERT OUTLET. [113]
- CA-2259-J-4 OBLIQUE VIEW OF THE CULVERT OUTLET DETAILING THE WING WALL AND
 THE SPILLWAY. [114]



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EVADS

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