BURLINGTON NORTHERN SANTA FE RAILROAD,
CAJON SUBDIVISION , STRUCTURE NO. 65.1
Between Cajon Summit and Keenbrook
Devore vicinity
San Bernardino County
California

HAER CA-2259-N
CA-2259-N

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. 65.1

HAER No. CA-2259-N

Location: BNSF Railway (BNSF) Railroad Structure No. 65.1, a reinforced-concrete arch bridge, is located on Main Tracks 1 and 2, Devore vicinity, San Bernardino County, California. The bridge crosses Lone Pine Creek and is bounded by Lone Pine Canyon and the Union Pacific Railroad to the north and Cajon Boulevard (historic U.S. Highway 66) to the south.

The bridge lies within the SE ¼ of the SE ¼ of the SW ¼ of Section 12, Township 2 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 ellipsoid 1980, 3791782 mN, 457281 mE (west approach); 3791793 mN, 457302 mE (east approach).

Date of Construction: 1902, 1913

Architect/Engineer: unknown

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

Present Owner: BNSF

Present Use: Bridge on Main Tracks 1 and 2.

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. 65.1 contributes to the function and significance of the railroad line by carrying rail traffic across Lone Pine Creek.

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Tucson, Arizona

Date: March 2008

Architectural and Engineering Information

Structure No. 651 is a reinforced-concrete skewed-arch bridge that crosses Lone Pine Creek near its confluence with Cajon Creek (Figure 1). The bridge spans a relatively deep but narrow drainage, and the spandrel walls surrounding the arch openings follow the contours of the rock slopes. In 1902, the Southern California Railway Company (formerly the California Southern Railroad) constructed the reinforced-concrete arch bridge to replace the original iron-girder span (Bridge No. 117, First District on Mile 66, 20 ft. Concrete Arch to Replace 87 ft. Iron Girder, Drawing No. 103-2573, 11 January 1902, Structures Department, BNSF Railway Company [BNSF], Kansas City, Kansas). The Atchison, Topeka and Santa Fe Railway extended the bridge on the upstream side in 1913 during construction of the second line through the pass. The bridge has an overall length of 48'-6" and a width (measured along the length of the abutment inside the arch) of 49'-4". The arch barrel has a consistent bottom width of 20'-0"; however, the height of the arch—measured from the floor of the channel to the arch center—varies from 14'-6" on the upstream side to about 34' on the downstream side because of a change in elevation (Bridge List, First District, Los Angeles Division, p. 48, Structures Department, BNSF).

The space above the arch and between the spandrels is compacted fill, on top of which rest the roadbed, ballast, ties, and rails. The vertical faces of the spandrels recede slightly as they rise from the creek bed. The downstream spandrel is capped with a beveled coping wall that extends slightly beyond the wall face to protect the masonry below from water penetration. On the upstream side of the bridge, along the deck, the spandrel incorporates a parapet topped with metal-pipe handrails. Retaining walls for holding back roadbed fill and containing the ballast are in place on the north and south sides of the east approach. The retaining wall on the north side consists of three timber planks that measure 4" x 11" x 16'-0". On the southeast side of the bridge is a retaining wall constructed of red sandstone block several courses high.

Built in the Blue Cut area of the San Andreas Fault, the bridge began failing progressively due to movements along the fault line. In January 1930, AT&SF placed eight 2"-diameter iron rods under the bridge deck to tie the spandrel walls together. The ends of the tie rods were anchored using 12" x 12" x 2" iron plates and nuts. Two years later, following further cracks due to earth movements, additional reinforcing rods were placed above the arch barrel to carry the structure indefinitely (F. D. Kinnie, district engineer, First District, Los Angeles Division, Atchison Topeka and Santa Fe Railway Company, Los Angeles, to M. B. Clark, division engineer, letter, 24 November 1931, on file, BNSF; M. B. Clark, division engineer, to F. D. Kinnie, district engineer, letter, 14 July 1931, on file, BNSF).

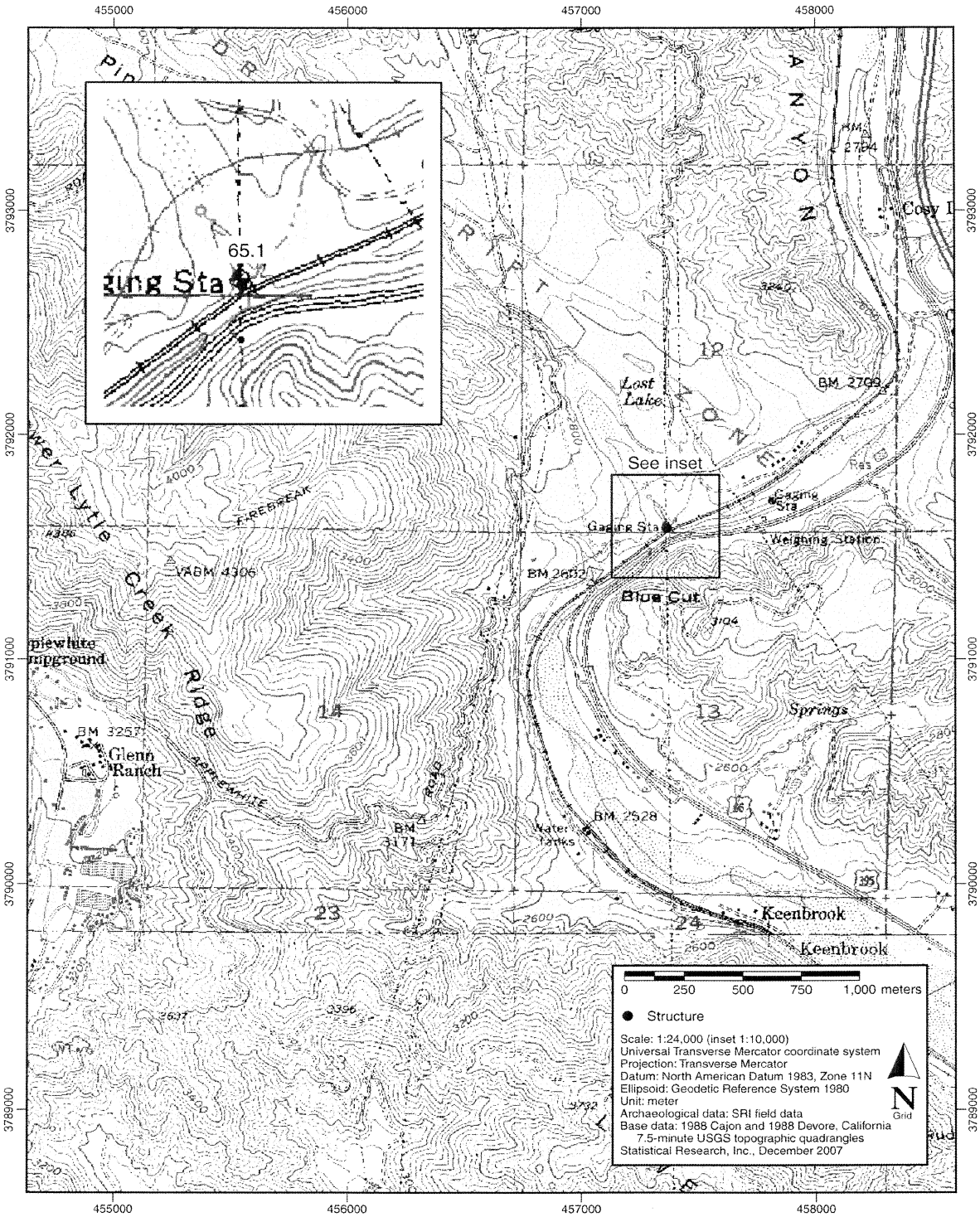

Figure 1. Project location (1956 Cajon, California, 7.5-minute U.S. Geological Survey quadrangle [photorevised 1988]).

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David G. De Vries, photographer June 2007

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