

BURLINGTON NORTHERN SANTA FE RAILROAD,
CAJON SUBDIVISION , TUNNEL NO. 2
Between Cajon Summit and Keenbrook
Devore vicinity
San Bernardino County
California

HAER CA-2259-E
CA-2259-E

HAER
CA-2259-E

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
Tunnel No. 2

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Location: BNSF Railway Company (BNSF) Railroad Tunnel No. 2 is located on Main Track 1, Devore vicinity, San Bernardino County, California. The tunnel is bounded by the Union Pacific Railroad to the north and the Main Track 2 to the south.

The reinforced-concrete tunnel lies within the NE $\frac{1}{4}$ of the NW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 23, Township 3 North, Range 6 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 3799081, mE 456454 (west portal); mN 3799133, mE 456596 (east portal).

Date of Construction: 1913, 1923

Architect/Engineer: unknown

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

Present Owner: BNSF

Present Use: Tunnel 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. Tunnel No. 2 contributes to the function and significance of the railroad line by providing a passage under higher ground in the rugged pass.

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Tucson, Arizona

Date: March 2008

I. ARCHITECTURAL AND ENGINEERING INFORMATION

Tunnel No. 2 is located at Milepost 59.18X, west of Tunnel No. 1 and about 1/2 mile east of the now-abandoned Alray Station (Figure 1). This area has been subjected to considerable geological activities and has many steep hills and ravines. Instead of cutting down the tops of the hills to maintain the grade—as was done to the east and west—the tunnel was built through one of the largest hills in this area. The hills are composed mostly of uplifted sand and rock layers, and, therefore, excavating through these hills was relatively easy for the railroad crews compared to excavating through solid rock.

Tunnel No. 2 is 467'-6" long. As originally constructed, the tunnel had a timber lining, framed as an arch, and reinforced-concrete headwalls at the portals. However, repeated fires caused by embers from passing locomotives prompted Atchison, Topeka and Santa Fe Railway (AT&SF) to line the tunnel with concrete (Duke 1995:74–75). The date on which the tunnel was lined with concrete is not known. The reinforced-concrete lining varies in thickness, from 1'-0" along the curve of the arch to 2'-0" at the base. The floor is poured concrete, reinforced by 61-pound standard rails spaced 30' center to center. Atop the concrete floor is the roadbed, which consists of ballast, ties, and rails. The height of the tunnel from the top of the rail to the arch centerline is 24'-0", and the width at the base is 16'-0". Following heavy rains in February 1922, the hillside above the tunnel's east portal washed away, inundating the tracks with mud. To prevent future landslides from interfering with train operations, AT&SF extended the original 388'-0"-long tunnel by 79'-6" on the east end. Construction of the tunnel extension followed the same specifications as the original tunnel and was completed in 1923 (Cajon Tunnel No. 2, Sheet 2 of 2 Sheets, C.E.C.L.-191-17243, drawing, Structures Department, BNSF Railway Company, Kansas City, Kansas; Walker 1978:129–130). The west portal of Tunnel No. 2 has a reinforced-concrete headwall that is part of the original construction. A date of 1913 is inscribed in the upper-central area of the headwall. The headwalls associated with the east and west portals are identical in terms of their design and dimensions. Each headwall is approximately 31' high with a top width of 30'. Lateral buttresses are bonded to either side of the headwalls to provide support. The lateral buttresses taper toward the top, have a bottom width of 4'-6", and project outward from the headwall base for a distance of 3'-0". A date of 1923 is inscribed in the north buttress on the east portal.

On the west side of the tunnel, dry-laid concrete block walls extend from the lateral buttresses on both sides of the track for a distance of approximately 40'. The walls, which are not part of the original construction, are three courses high and prevent soil from the hillsides from spilling onto the rails (David Miller, personal communication 2007).

II. REFERENCES CITED

Duke, Donald

- 1995 *Chicago-Los Angeles-San Diego*. Santa Fe: The Railroad Gateway to the American West, vol. 1. Golden West Books, San Marino, California.

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Walker, Chard L.

1978 *Railroading through Cajon Pass*. Prototype Modeler, Danvers, Massachusetts.

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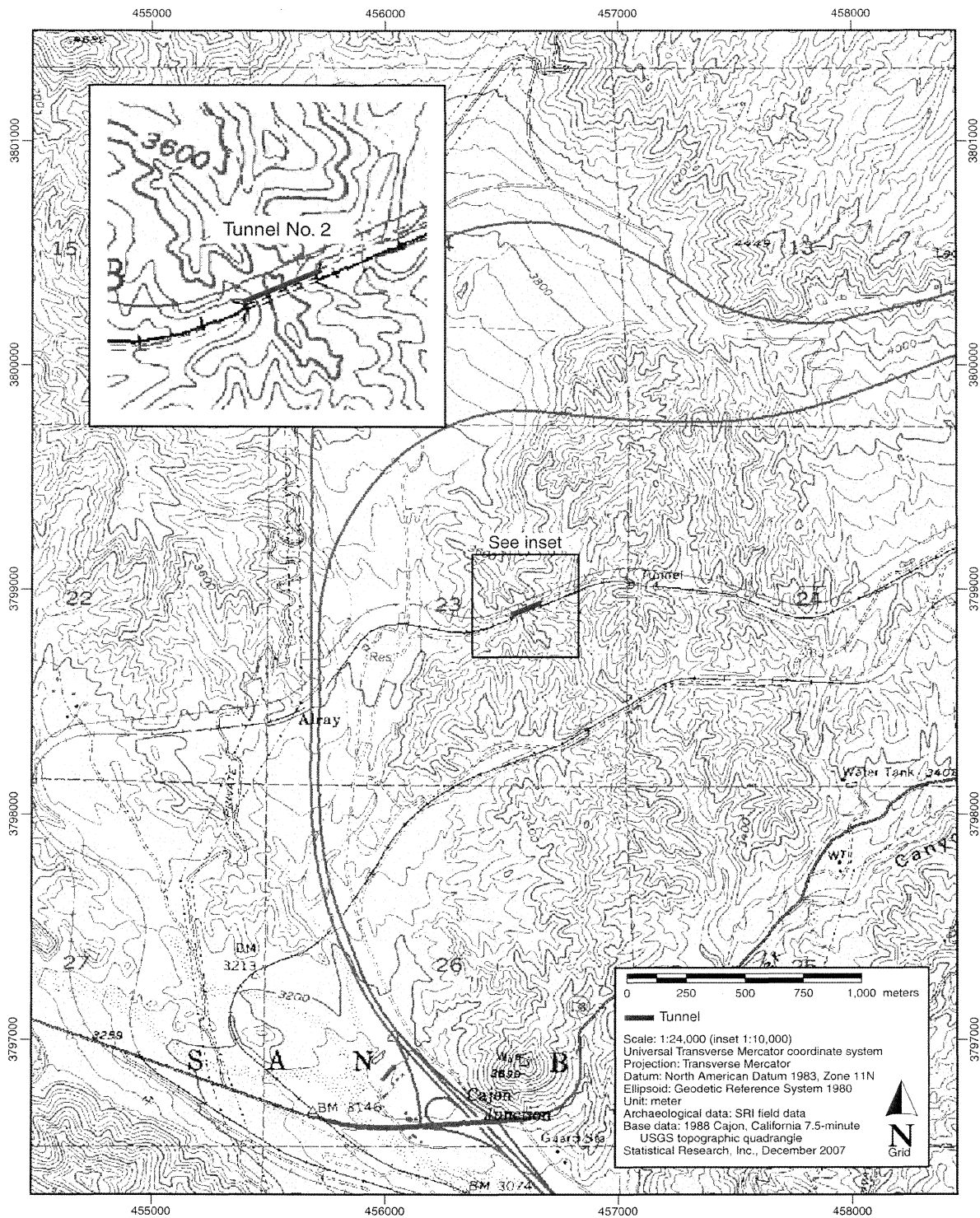


Figure 1. Project location (1956 Cajon, California, 7.5-minute U.S. Geological Survey quadrangle [photorevised 1988]).

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David G. De Vries, photographer

June 2007

CA-2259-E-1 OVERALL VIEW OF APPROACH TO EAST PORTAL OF TUNNEL, SHOWING
ACCESS ROAD AND UNION PACIFIC TRACK AT RIGHT. [5]

CA-2259-E-2 EAST PORTAL. [3]

CA-2259-E-3 VIEW TO THE EAST, TOWARD TUNNEL EXTENSION AND REAR SIDE OF
EAST PORTAL, FROM THE HILL THROUGH WHICH THE TUNNEL PASSES. [4]

CA-2259-E-4 OVERALL VIEW OF APPROACH TO WEST PORTAL. [42]

CA-2259-E-5 WEST PORTAL. [43]

CA-2259-E-6 WEST PORTAL, OBLIQUE TO THE SOUTHEAST FROM UNION PACIFIC TRACK,
SHOWING "1913" STAMP IMPRINTED IN CONCRETE. [44]



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