

**DSI References**

Owner BNSF Railway, USA +++
Subcontractor Drill Tech Drilling & Shoring Inc., CA, USA
DSI Unit DSI USA, BU Geotechnics, Long Beach, CA, USA
DSI Scope Supply of approximately 12,000m of epoxy-coated type R32N & R32S DYWI[®] Drill-Hollow Bar Anchors including drill bits, couplers and additional accessories



DYWI[®] Drill Hollow Bar Anchors Stabilize Railway Line in California

Line Section over Cajon Pass near Devore, CA, USA

The 1,277m high Cajon Pass in the San Bernardino Mountains east of Los Angeles is an important connection from the Los Angeles Basin to other regions in the USA. Since the beginning of the American railroad history, a highly frequented railway line has been located in this area. Some time ago, the line was expanded to two tracks. On the rails owned by BNSF (Burlington Northern and Santa Fe Railway), approximately 90-100 trains per day cross the Cajon Pass. The trains mainly transport freight that arrives in the ports of Los Angeles and Long Beach and is then distributed across the USA, especially to Chicago. In order to traverse the slopes and curves of the Cajon Pass, trains have to slow down considerably. The slowdown poses a problem that often leads to delays throughout the system.

In order to eliminate this bottleneck, BNSF is now adding a third track to this important railway line. The new 26km long third track runs near Interstate I15 from Summit, near the top of the pass, to Keenbrook, just west of Devore. As a result of the addition, the total capacity of Cajon Pass will be increased to 150 trains per day, allowing more efficiency in transport and track maintenance. This USD 80 million project is extremely important for keeping goods flowing through the region in the future because freight traffic has doubled since 1990 and is expected to continue growing in the coming years.

To make room for the third track, hillsides had to be carved out, two small tunnels had to be demolished and some winding roads had to be realigned. Approximately 765,000m³ of dirt had to be removed.

The project constituted a great challenge for everyone involved, especially with regards to difficult geological conditions, environmental protection and the fact that interruptions to ongoing train traffic were to be minimized.

The excavated hillsides along the widened tracks were stabilized by concrete walls.

Eleven of these walls are additionally reinforced with DYWI[®] Drill Soil Nails.

The DYWI[®] Drill Hollow Bar System is especially suitable for use in limited space and soft grounds. Self-drilling DYWI[®] Drill Hollow Bar Anchors can be installed using small drill rigs without pre-drilling. In addition, self-drilling with simultaneous drilling and injection is a great advantage in soils where uncased boreholes would not be stable.

From their local distribution facility in Long Beach, DSI delivered over 12,000m of epoxycoated type R32N and R32S DYWI[®] Drill Hollow Bar Anchors including drill bits, couplers and additional accessories.

The installation of the DYWI[®] Drill Soil Nails will be completed in April 2008 and the third track is scheduled to be completed by the end of 2008.

