



Excavation Support and Post-Tensioning for a Parking Structure Using DYWIDAG Systems

San Manuel Indian Casino, Highland, CA, USA

■ **The San Manuel Reservation inhabited by the San Manuel Band of Serrano Mission Indians was founded in 1891 and simultaneously recognized as a sovereign territory with the right to self-governance. The reservation is named after the great chief Santos Manuel. It is located at the foot of the Californian San Bernardino Mountains, slightly north of the town of Highland and about 100 km (60 miles) east of Los Angeles. With its approximately 320 hectares (791 acres), the reservation is located in a mountainous area that is not suitable for farming.**

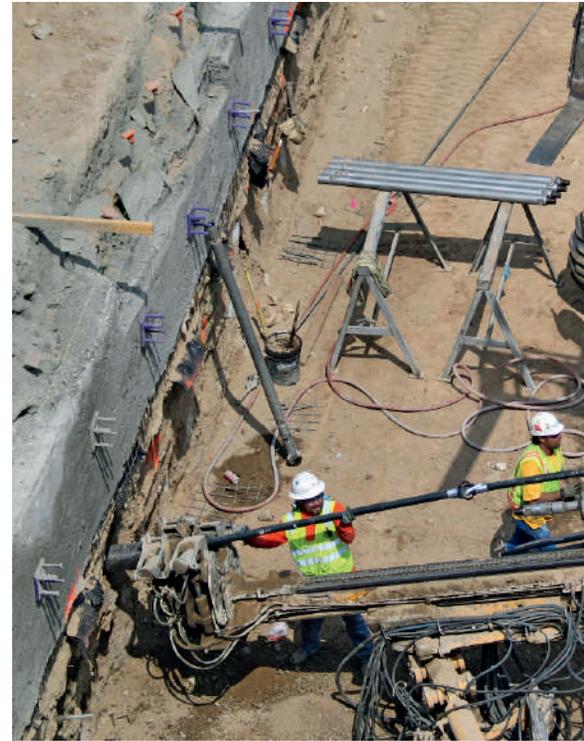
In the mid 1980s, the tribe had constructed the San Manuel Indian Bingo Center inside the reservation in order to promote its economic development. This bingo center quickly became popular. Consequently, in the mid 1990s, a 10,000m² (approx. 107600 sq ft) casino with card game rooms and gambling machines was added. Since then, the center has been called "San Manuel Indian Bingo and Casino".

In order to maintain its position as one of the leading points of amusement in Southern California, "San Manuel Indian Bingo and Casino" was renovated and its offer of games extended in the new millennium. Since January 2005, these measures have brought additional revenues of over 200 Mio. USD to the surrounding communities, simultaneously creating hundreds of new jobs.

Due to the increased popularity of this gambling hall, parking capacities had to be increased as well. From their local factory in Long Beach, DSI USA delivered various DYWIDAG products and systems for the construction of the new 7 story 2,400 space parking structure.

Permanent stabilization of the excavation was achieved using 674 double corrosion protected (DCP) DYWIDAG soil nails. The double corrosion protection insures longevity. In order to improve wall stability during excavation, vertical soil nails (V-Nails), also produced by DSI USA, were installed behind the future shotcrete wall prior to excavation.

DSI USA delivered the approved DYWIDAG Monostrand System for post-tensioning the floor slabs and the beams of the seven story building. With their small diameters of 0.5" and 0.6" respectively, DYWIDAG Monostrand Tendons are well suited for post-tensioning extremely thin reinforced concrete slabs. The new 80,000m² parking structure is to be opened at the end of 2008.





INFO

Owner San Manuel Band of Mission Indians, Highland, CA, USA +++ **General Contractor** Bomel Construction Anaheim, CA, USA +++ **Constructor** Pennhall Company, Las Vegas, NV, USA +++ **Subcontractor** Condon-Johnson & Assoc., San Diego, CA, USA +++ **Engineers** PB&A (Pirooz Barar & Assoc.), San Anselmo, CA, USA

DSI Unit DSI USA, BU Geotechnics, Long Beach, CA, USA

DSI Scope Supply of 481 double corrosion protected DYWIDAG soil nails #8 grade 75: S 520/690 N/mm², 193 double corrosion protected DYWIDAG V-Nails #8 grade 75: S 520/690 N/mm² and #8 grade 75: S 520/690 N/mm² test nails