



■ Slope Stabilization



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Reference Details:

Client and Owner
 California Department of Transportation, District 04, Sacramento, CA, USA +++ **General Contractor** C.C. Myers, Inc., Rancho Cordova, CA, USA +++ **Tieback Contractor** Northwest Cascade, Inc., Puyallup, WA, USA +++ **Tieback Engineer** DSI USA, Western Division, Long Beach, CA, USA

DSI Services Supply of 454 DYWIDAG Permanent Anchors 6-8/0.6" strands, lengths up to 40.8 m.



DYWIDAG Permanent Anchors for the Crockett Interchange Project

Retaining walls secured at the Crockett Interchange Project, Carquinez Bridge, Crockett, California, USA

Route 80 crosses the northern San Francisco Bay at the Carquinez Straits. Two bridges were built across the straits, one in 1927, and the other in 1958. During the late 1990's the decision was made to build a new bridge to replace the oldest of the pair.

With the tremendous traffic volumes crossing the bridge on a daily basis the California Department of Transportation, the owner of the structures, decided to sequence the project so that the new third bridge was constructed and operational before the original bridge was demolished. The

construction of the new bridge was split into two contracts, one for the south access interchange to the bridge and one for the construction of the new suspension bridge. The south access interchange, called the Crockett Interchange due to the city it is located in, consisted of the construction of new overpasses and off ramps for the new bridge.

C.C. Myers, Inc., Rancho Cordova, CA, USA won the US \$64 million contract in late 2000. The new interchange required four major retaining walls be installed in the hilly area at the bridge's south end. Retaining Walls R1 and R3 were soldier pile/tieback walls with treated lagging facing. Northwest Cascade, Inc. won the contract with C.C. Myers for the installation and testing of the tiebacks for these walls.

Wall R1 was the biggest wall on the site and one of the biggest of its kind in the world. Standing nearly 20.5 m at its tallest point and ranging 168 m in length, the wall cut a massive face into the existing hillside. As a result of the unstable soils, variable water table and extreme seismic loads, due to its proximity to the San Andreas Fault, the anchors used in this wall had to be designed to reach far into the hillside and retain sizable loads. Of the 342 anchors 200 were over 30 m in length with the longest at 40.8 m. Test loads of these 6 to 8 strand anchors ranged from 1,000 to 1,500 kN in bonded length of 10 to 28 m. The tiebacks were grouted in five stages. The wall was typical top down construction with six lifts total.

The ties were installed through drilled double WF-Section piles. The wall was faced with creosote treated timber lagging. Wall R3 was comparatively small in scale and scope. It ran along the freeway for approximately 300 m ranging from 2 m to 7.5 m height. Two rows consisting of 112 EA, 4 to 7 strand DYWIDAG Double Corrosion Protected Anchors were installed through double WF-Section soldier piles. The anchors averaged 22 m in length with 4 to 9 m bond zones, designed to withstand forces ranging from 400 to 1,200 kN. The shear magnitude of the anchors and scope of the job was the biggest challenge on this project. This challenge was overcome by pre-job planning an attention to detail and organization by the project team and suppliers.

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