

## Case Study Soldier Piles Drilled in Solid Rock

**Date:** May 2007

**Owner:** Washington State Department of Transportation

**Job:** SR 508 Bear Canyon Slope Repair

**Location:** Morton, Washington

**General Contractor:** Scarsella Brothers Construction

The technical difficulties on this project were numerous. The hardness of the rock, the angle of the rock slope, and the lack of overburden all contributed to the difficulty of this project.



SR 508 is a two lane highway hung on the side of the mountain as it curves thru Bear Canyon. The overburden, saturated with rain water from the November storm, slid down the 20 degree rock slope leaving the residents with a 25 mile detour.

The Washington State Department of Transportation engineers designed a soldier pile wall embedded in the rock slope with up to five rows of tiebacks holding the overburden onto the hillside.

Pile Contractors drilled and placed the 12 x 74 # X 60' steel beams using a LoDrill HTFB-60 mounted on a Hitachi EX400LC-3 carrier. The steep slope and lack of overburden made drilling difficult (the LoDrill wanted to slide down the ravine) and placing the pile difficult as the wall is on a radius and the top of the pile was 36' above placement elevation. Due to limited access the piles were placed with a Komatsu 400 Excavator and then Grove 50 ton Rough Terrain crane. As the "belly" or deep section of the wall was built out, the tiebacks and lagging were installed from above and below.

Scarsella Brothers Construction was the general contractor for the excavation and backfill and the tiebacks were subcontracted to Northwest Cascade Construction. Concrete was supplied by Glacier Northwest and beams by Skyline Steel.

