GEO-FOUNDATIONS
Contractors Inc.

Thirsk Reservoir Expansion

Date: 2006
Technology: Rock Anchors

Thirsk Reservoir is located in the picturesque Okanagan Lakes district, near Summerland, B.C. As part of the 2006 project to expand reservoir capacity and rehabilitate the reservoir's arch dam, Geo-Foundations constructed 166 post-tensioned, multi-strand and solid bar rock anchors amidst very challenging conditions.

Ninety-nine solid bar rock anchors work to pin down seven new plinths built at the downstream base of the dam. Due to severe physical constraints at this part of the dam, the plinth rock anchor holes had to be drilled using mast-only drill set ups – requiring hoisting and holding a mast over the collar of the hole long enough to be fixed in place using a combination of temporary nuts, bolts and chains – unique at every location. The plinth rock anchors are post-tensioned, encapsulated 63.5mm diameter solid bar rock anchors alternating in depth from 11 to 15 metres. All were proof stressed to 1450 kN and locked off at 1150 kN.

In addition to the plinth rock anchors, fifty-seven solid bar rock anchors were installed at the spillway and fourteen multi-strand rock anchors were installed at the thrust block. The thrust block rock anchors required 200mm diameter holes, and were drilled alternately to 17 and 22 metres depth. All of the thrust block anchors were post-tensioned to test load 3950 kN before being locked off at transfer load 3467 kN.

Other works undertaken by Geo-Foundations for this contract included the delivery of a bedrock fissure grouting program at the gravity wall section of the control dam, complete with hole drilling and cleaning, water tightness testing and cement suspension grouting using X-Y recorder monitoring.

Rock anchor drilling at Plinth B using mast-only drill set up

Downstream face of arch dam showing Plinths D (lowest) through A (upper left of photo)

Two drills set up and drilling at Plinth E (right, foreground) and Plinth D (left, background)

302 Main Street North, Acton, Ontario, Canada L7J 1W9
Toll Free: 1-888-846-7858 Phone: (519) 853-3216 Web: www.geo-foundations.com