



GEO-FOUNDATIONS
Contractors Inc.

Ruskin Dam Crest Block Anchoring Project



Date: 2007

Technology: Rock Anchors

BC Hydro's Ruskin Hydroelectric Generating Station is located in Mission, British Columbia. Constructed in 1930, the 105-megawatt station is part of the Alouette-Stave-Ruskin hydroelectric system. The first phase of the Ruskin Dam Seismic Upgrade and Powerhouse Improvement Project – seismic anchoring of the crest block – was completed by Geo-Foundations in the autumn of 2007.

Rock anchors were installed across the entire length of the dam to depths as great as 18 metres. The anchors' tendons consist of three 63.5 mm diameter threaded bars bundled together with unbonded lengths ranging from 11 to 13 metres. Select anchors were proof-tensioned to 3150 kN.

An elaborate scaffolding system was engineered and assembled to enable access to each of the dam's seven bays. Equipment and materials were lowered into each bay via a mobile crane stationed on the deck of the dam. Drilling of the anchor holes required custom-fabricated drilling masts in order to work in and around the existing structural steel gate works.

Detailed preparations were required at each hole to achieve 100% containment of all drill flush. In order to meet the strict alignment tolerances necessary to avoid the existing drainage gallery embedded within the dam, full depth, 89mm



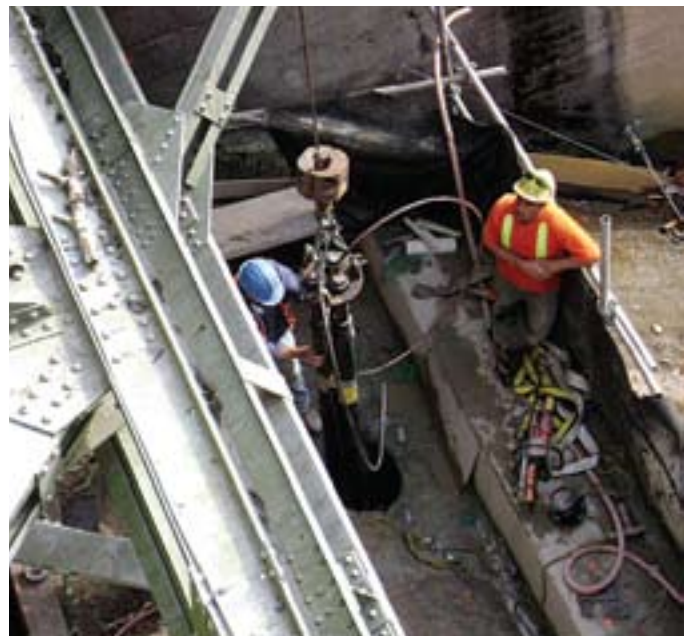
Drilling atop crest block directly beneath gates

diameter pilot holes were pre-drilled and surveyed during drilling using the BoreTrak MK2 down-hole surveying system prior to percussion drilling of the rock anchor holes to their full diameter of 305mm.

A comprehensive safety and environmental management plan was implemented prior to the work commencing. At the conclusion of the project, Geo-Foundations received special recognition jointly from BC Hydro and WorkSafe BC for exemplary safety and environmental practice.



View of Ruskin Dam with temporary access installed at Bays 1, 2 and 3



Installation of 18-metre long rock anchor by hoisting from deck above