GEO-FOUNDATIONS
Contractors Inc.

Pine Falls Generating Station

Date: 2001
Technology: Rock Anchors

Pine Falls Generating Station, owned by Manitoba Hydro, includes amongst its structures a gravity wall that connects the powerhouse to the spillway. In 2001, an upgrade repair project was designed and tendered that prescribed the installation of 39 solid bar rock anchors, each to design load 633 kN. During the tendering process, Geo-Foundations successfully tendered a design alternative: proposing rock anchors with multi-strand tendons in place of the specified solid bar tendons. Not only did the strand option prove to be a more cost-effective alternative, it turned out to be much safer to install due to challenging site conditions that included restrictions to the use of large hoisting equipment on the top of the structure and the presence of 66 kV transmission lines located just 10 metres above deck.

Site view of gravity wall during rock anchor construction

Hole depths varied from 24 to 27 metres. Five of the holes were located in the log chute where the rock anchor hole collars were 4.5 metres below the elevation of the top of the gravity wall. Drilling in this area required temporary staging across a 6-metre span to properly position the drill.

The 5-strand, Class 1 corrosion protected rock anchors were each proof stressed to 980 kN and locked off at 912 kN. Geo-Foundations assisted the owner with the installation of load cells under the heads of three pre-selected anchors. This instrumentation will enable future monitoring of residual anchor loads without having to perform cumbersome, time consuming lift-off tests.

Rock anchor drilling in progress at log chute from atop temporary bridge

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