



GEO-FOUNDATIONS Contractors Inc.

McPhail Dam



Date: 2006
Technology: Rock Anchors

Brookfield Power owns and operates several hydroelectric generating facilities on the Montreal River near Wawa, Ontario. In the late summer of 2006, one of these structures, McPhail Dam, was the recipient of an upgrade that consisted of installation of post-tensioned rock anchors in each of its three spillway piers.

Each of the rock anchors is a different size and was drilled to a different depth relative to the rest. The shortest and smallest rock anchor, installed at Pier 3, consists of a 12-strand tendon and is 24 metres deep. It was performance tested to 2500 kN applied tension and locked off at 1969 kN.

Pier 2 was outfitted with a 24-strand rock anchor 27 metres deep, and was performance tested to 5000 kN before being locked off at 3938 kN.

The deepest and largest rock anchor, at Pier 1, is 30 metres deep and has 26 strands for its tendon. It was performance tested to 5353 kN and locked off at 4226 kN.



Drilling at Pier 2 at McPhail Dam

All of the rock anchors were supplied with Class 1 corrosion protection. Water tightness testing of the drilled holes was specified by the project's designer, Hatch Energy – consolidation grouting was required in two of the three holes in order to achieve the specified degree of water tightness prior to rock anchor installation.



Installation by boom truck of Pier 3's 12-strand rock anchor – in foreground, Pier 1 (right) and Pier 2 rock anchors installed ready for grouting



Preparing for performance stressing at Pier 2