



## GEO-FOUNDATIONS Contractors Inc.

### Pointe du Bois East Forebay Wall



Date: 2002 - 2003

Technology: Rock Anchors

Over a 13-month period spanning most of 2002 and into 2003, Geo-Foundations completed its second large anchoring project at the 90-year-old Pointe du Bois Generating Station. This \$3.5M project involved anchoring the East Forebay Wall and Spillway Bays 121 through 133. Gaining access to this complicated and restricted job site was one of the many challenges to completing this project. Work began on site in April with the Winnipeg River still partially frozen. Landing crafts, helicopters, and specially designed mobile work platforms were mainstays throughout the project, moving equipment and materials around the site.

Before anchor installation could commence, two sets of dowels – over four hundred 30M dowels and over eight hundred inclined 55M dowels – were installed to connect the top and bottom portion of the Forebay Wall, as a means of preventing potential slippage during anchor hole drilling and anchor stressing along a highly deteriorated cold joint.

A total of 130 post-tensioned, multi-strand anchors were installed to tie down more than 300 lineal metres of wall, spillways and piers. Rock anchor hole diameters were as great as 178 mm, with depths as great as 22 metres. The majority of the rock anchors holes were drilled from the top of the wall, which is only 2.4 metres wide; the remaining holes were drilled on the downstream face of the wall using a suspended drilling arrangement. Post-tensioned rock anchor sizes ranged from 3-strands to 12-strands. Instrumentation was installed on selected anchors to monitor long-term performance.

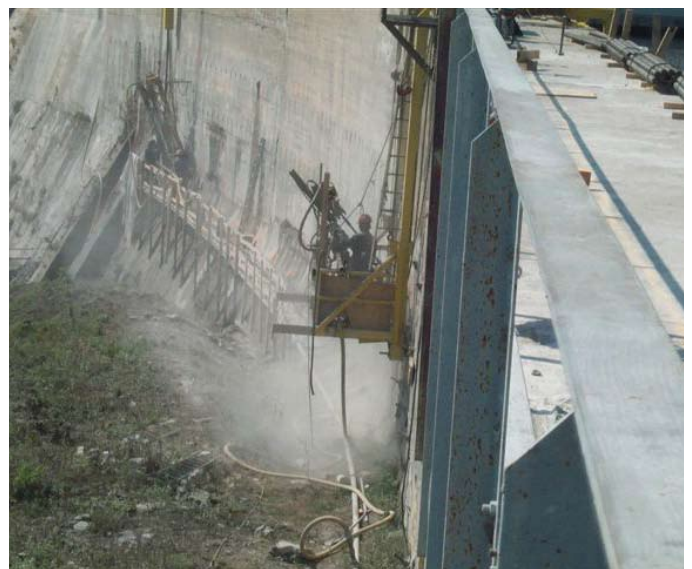
Information gained during drilling of Blocks 12, 15 and 16 led the project's engineers to abandon the anchors in these blocks prior to stressing due to the unforeseen and extremely poor quality of the concrete encountered. In place of post-tensioning, entire new reinforced concrete gravity wall sections were built downstream of these blocks for permanent stabilization. With the help of PCL Constructors Canada (Winnipeg District) as our sub-contractor, 1800 m<sup>3</sup> of concrete was pumped as far as 235 lineal metres in frigid Manitoba weather during December and January to complete this work.



*Dowel drilling from atop wall deck*



*Pointe du Bois – East Forebay Wall*



*Inclined dowel holes being drilled from suspended platform*