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Construction of the Downie Slide and Dutchman's Ridge Drainage Adits

M.R. Lewis
Geological Engineer, B.C. Hydro
D.P. Moore
Geology Section Supervisor, B. C. *Hydro*

Abstract:
Drainage adits totalling 3300 metres in length were constructed to stabilize an ancient rock slide and a potential rock slide along reservoir shorelines in British Columbia's Columbia River valley. Construction of the adits involved tunnelling through waterbearing rock masses characterized by abrupt variations in ground conditions from open debris-filled fractures, to fault zones, to sound rock. Support systems included steel sets with timber lagging, tensioned and untensioned rock bolts, steel-fibre shotcrete, steelfibre microsilica shotcrete, and both "Swellex" and "Split Set" rock anchors. Particularly effective were the use of pre-drainage holes prior to advancing the face through wet zones and percussion probe holes to provide an indication of local ground conditions. A discussion of construction methods and the effectiveness of support techniques are presented.

Keywords: Downie Slide; steep, narrow, V-shaped sections, Columbia River valley; Pre-Cambrian para-gneisses of the Shuswap Metamorphic Complex; several episodes of glaciation; Quartzite Gneiss and soft seamy Mica Schist; drill and blast; Rock bolts; Friction anchors; drainage adits; “Split Sets”.