The construction of an exceptionally deep cut-off wall under the main dam body of the Peribonka Dam in Canada, to create a waterproof barrier in highly permeable riverbed alluvia, was completed end of October 2002. The cut-off wall, made of plastic concrete, was exceptional by its depth, of almost 61.1 m, and by the extremely complex geotechnical surrounding. The cut-off wall was constructed with the Bauer hydraulic trench cutter system. The preliminary geotechnical investigation boreholes had revealed that at the dam location the bedrock plunged to very big depths, forming a deep glacial gully. Beside the extreme depth of the bedrock, the design was further complicated by the presence of hard rock including granite, with strength sometimes in excess of 200 MPa, quasi vertical rock cliffs, rock overhangs, and gully's filling by some coarse alluvia, including boulders. Hydro Quebec and SNC Lavalin designed a 11.5 m wide plastic concrete cut-off wall extending to the full depth of the glacial gully, with limited rock embedment of the wall, leaving open areas along the interface to the bedrock, combined with cement grouting in the areas left open. BAUER was awarded the contract on the basis of an alternative design: the plastic concrete cut-off wall was designed by Bauer to be completely embedded in the bedrock, a design which avoided any potentially hazardous area to be sealed by cement grouting. Only a decade ago, the Peribonka dam would not have been deemed feasible due to the extreme complexity of the geotechnical works.

Keywords:
Cut-off wall, trench cutter, rock socket, boulders

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