

The Use of Bentofix® in Dams

Power Dam Sainte-Marguerite, Quebec, Canada



The following example illustrates a project using a needlepunched geosynthetic clay liner (GCL) as a stand-alone sealing barrier for a retention dam built for Sainte-Marguerite hydroelectric dam.

The construction took place during the winter and a GCL was used due to lack of natural sealing material with weak hydraulic conductivity.

The Sainte-Marguerite dam (90 km north of Sept-Iles) is a structure built up to a height of 20 m (from the riverbed) of which the imperviousness is assured by a Bentofix® Geosynthetic Clay Liner (natural sodium bentonite sandwiched between two non-woven geotextiles and needlepunched together).

The cross-section of the dam is:

- Foundation made of a 20 cm thick layer of coarse sand compacted by means of explosives and dynamic compaction.
- Water tight trench with a maximum depth of 65 m, built by means of a "jet grout" high energy injection through 20 m compacted sand, 40 m coarse sediments lying underneath and 5 m into the rock
- Sealing with Bentofix®.
- A 1 m protection backfill in two layers, comprising sand, gravel and stones covers the Bentofix®.

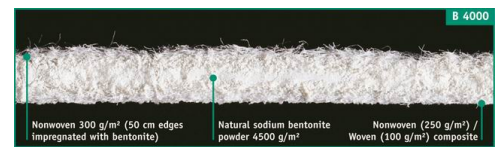
Extract from Geoglobe No. 6, 1999
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Hydro-Quebec Hydraulics and Geotechnical Division

Year of construction: 1999

City / Country: Sainte-Marguerite, Quebec, Canada

Installed products:

Bentofix® NW (B4000) 5.000 sqm



Bentofix® cross-section used in Dam Sainte-Marguerite

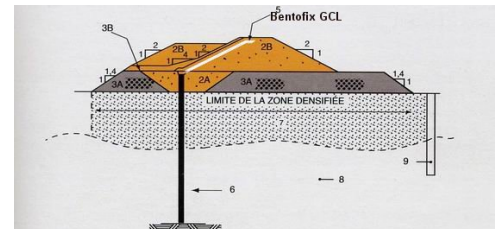


Fig. 3 : coupe-type du batardeau amont du projet Sainte-Marguerite-3

Légende

- | | |
|--|---|
| 2A Mélange Sable et gravier, déversé et densifié | 6 Coupure étanche : injection à haute énergie - jet grout - |
| 2B Mélange Sable et gravier compacté | 7 Sable fin |
| 3A Enrochement déversé | 8 Alluvions grossières |
| 3B Enrochement compacté | 9 Puits de pompage |
| 5 Géocomposite bentonitique pour l'étanchéité (GB) | |

Cross-section of dam Sainte-Marguerite



Soil placement on Bentofix®



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