

## MSE HEADWALL FOR HIGHWAY CULVERT PORT HOPE SIMPSON, LABRADOR, CANADA

### Reinforced Soil Walls and Slope Reinforcement

#### Problem

An Armtec Bridge-Plate® culvert was to be installed to channel Blackwater Brook beneath the Trans Labrador Highway, approximately 1km from Port Hope Simpson, Labrador. The Armtec Bridge-Plate® culvert was the largest to be built in Canada at the time. The remote location required the construction, including the wing walls, to be cost effective and that used on-site material wherever possible.

#### Solution

The culvert has a span of 15.85m, a height of 8.14m and is 18.0m long. Four wing walls were required, each 14m long with a designed height of 8.2m. Critical considerations in the design were the high water table and water flow level.

The Maccaferri Terrawall Mechanically Stabilized Earth (MSE) System provided the ideal solution as it forms flexible, free draining structures, ideal for the prevailing conditions. The geogrid reinforcement and front face are made from one continuous panel of Maccaferri PVC coated steel wire double twist mesh. The mesh geogrid 'tail' is sandwiched between compacted layers of granular backfill thereby reinforcing the fill through mechanical interlock.

Terrawall has a welded steel mesh panel immediately behind the front face of the unit. This provides rigidity to the front face and removes the need for expensive external formwork during construction. A galvanized steel cloth can be fitted behind the welded mesh panel if required. This cloth has very small apertures and can allow granular backfill to be used right up to the face of the structure.

**Client:** NEWFOUNDLAND & LABRADOR WORK SERVICES AND TRANSPORTATION

**Designer / Consultant:** NEWFOUNDLAND & LABRADOR CONSULTING ENGS.

**Contractor:** McNAMARA CONSTRUCTION Co., St. JOHN'S, NF

**Products used (Qty.)**

- Terrawall 9999

**Date of construction:** 09/2002 - 10/2002



Construction of culvert following river diversion



Unfolding and placing the Terrawall® MSE units



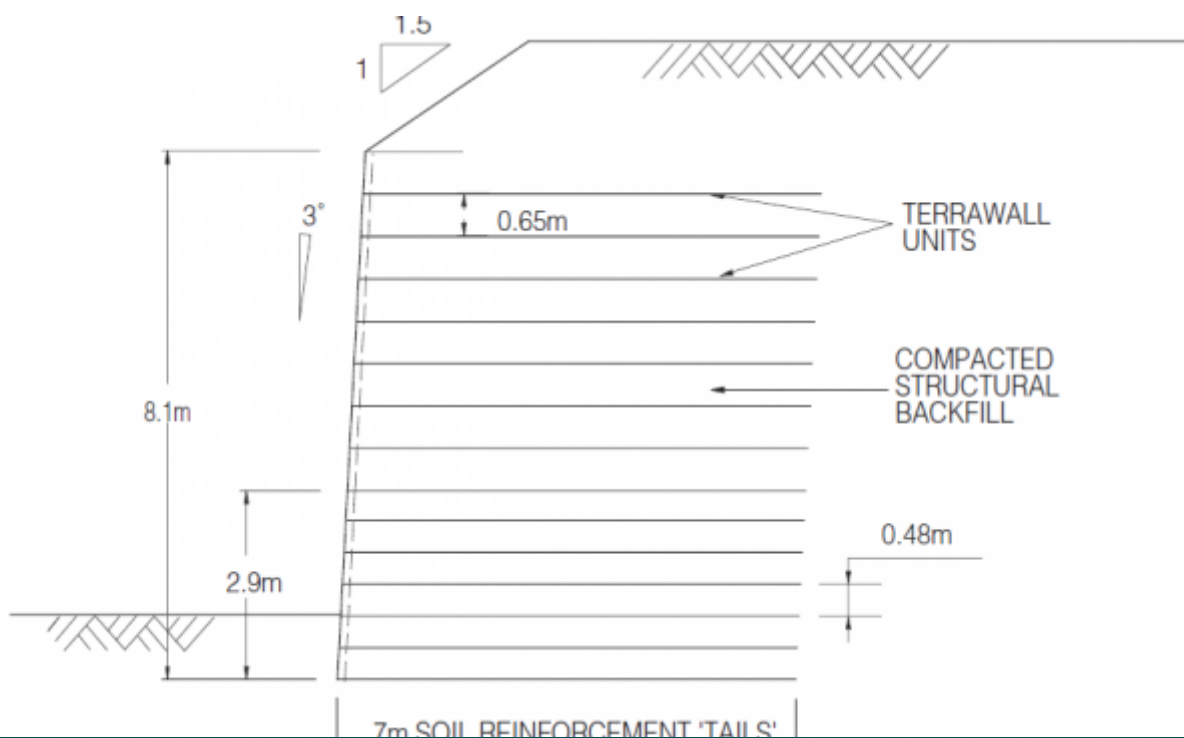
Compacting structural backfill onto the Terrawall® units



Placing next Terrawall® unit onto completed lower layer



The Terrawall® wing walls nearing completion



Typical cross section through the Terrawall® MSE structure