MACCAFERRI

CASE HISTORY

Ref: INT/CH/CA/BP002 — Rev:01, Sept 12

BASAL REINFORCEMENT OF ORE STOCKPILE PAD

VAL D'OR, QUEBEC, CANADA

BASAL REINFORCEMENT

Product: PARALINK® 600

Problem:

During the design and construction of ore stockpile facilities in 2006/7 at the Goldex Mine, it was recognized that the ore stockpile pad and associated conveyer infrastructure would be situated over a deposit of soft clay. The proposed stockpile facility called for a 23m high ore stockpile situated on a 10m thick layer of engineered granular fill that contained the conveyer feed hoppers and machinery. The soft foundation clays were incapable of supporting this combined loading. Consolidation of the clay under the applied loads would result in differential and total settlements that would be detrimental to the operations of the mine.

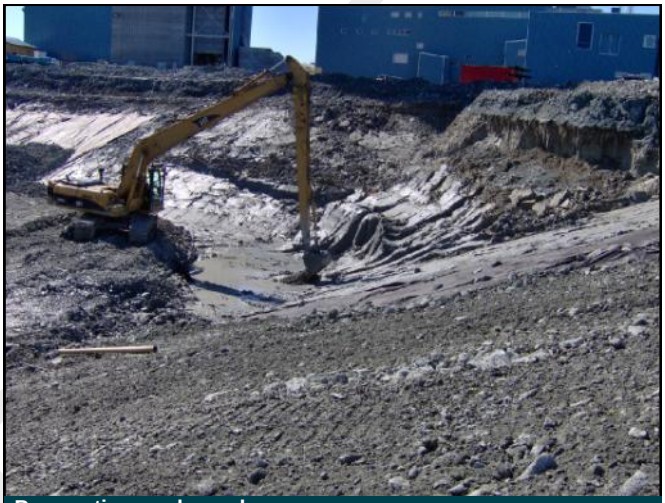
Solution:

The project geotechnical engineers determined that the loading from the stockpile could be supported on the soft clay, provided that a reinforced granular foundation was built to improve the bearing capacity of the clay. A basal reinforcement structure would also control differential settlements, thereby allowing the stockpile infrastructure to settle uniformly.

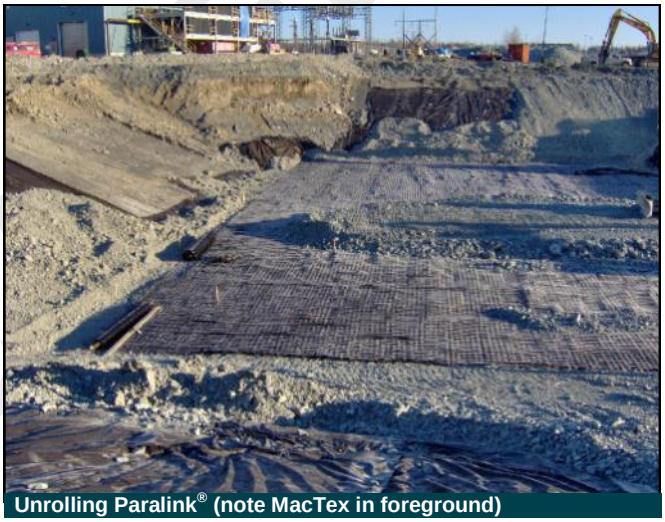
The basal platform was designed to be a minimum size of 65m x 65m. A multi-layer system was explored, which featured 6 layers of an HDPE punched and extruded geogrid. The number of layers required was based upon the low strength of the HDPE. Each layer had to be separated by a layer of compacted gravelly sand engineered fill.

Working with Maccaferri Canada Ltd, the designer also investigated the use of Paralink® soil reinforcement, Maccaferri's high performance polyester geogrid. Due to the physical performance of the grid, it was determined that two layers of Paralink® 600 laid perpendicular to each other, would provide the reinforcement needed. No engineered fill was required between the layers.

The Paralink® option resulted in a 60% reduction in the quantity of reinforcement required for the platform. The reduction in reinforcement also resulted in an increase in the speed of installation, thus reducing the overall cost of the platform. A two week schedule was allocated for the construction of the basal reinforcement platform. This was considered very tight for the multi-layer option. Using 2 layers of the Paralink® 600, the platform was built in 11 days.



Preparation works underway



Unrolling Paralink® (note MacTex in foreground)

Placement of second perpendicular layer of Paralink®

Client:

GOLDEX MINE (AGNICO-EAGLE MINES LTD.)

Engineer:

JOURNEAUX BEDARD & ASSOC. INC

Contractor:

SNC-LAVALIN

Products used:

PARALINK® 600, MACTEX GEOTEXTILES

Date of construction:

APRIL 2007

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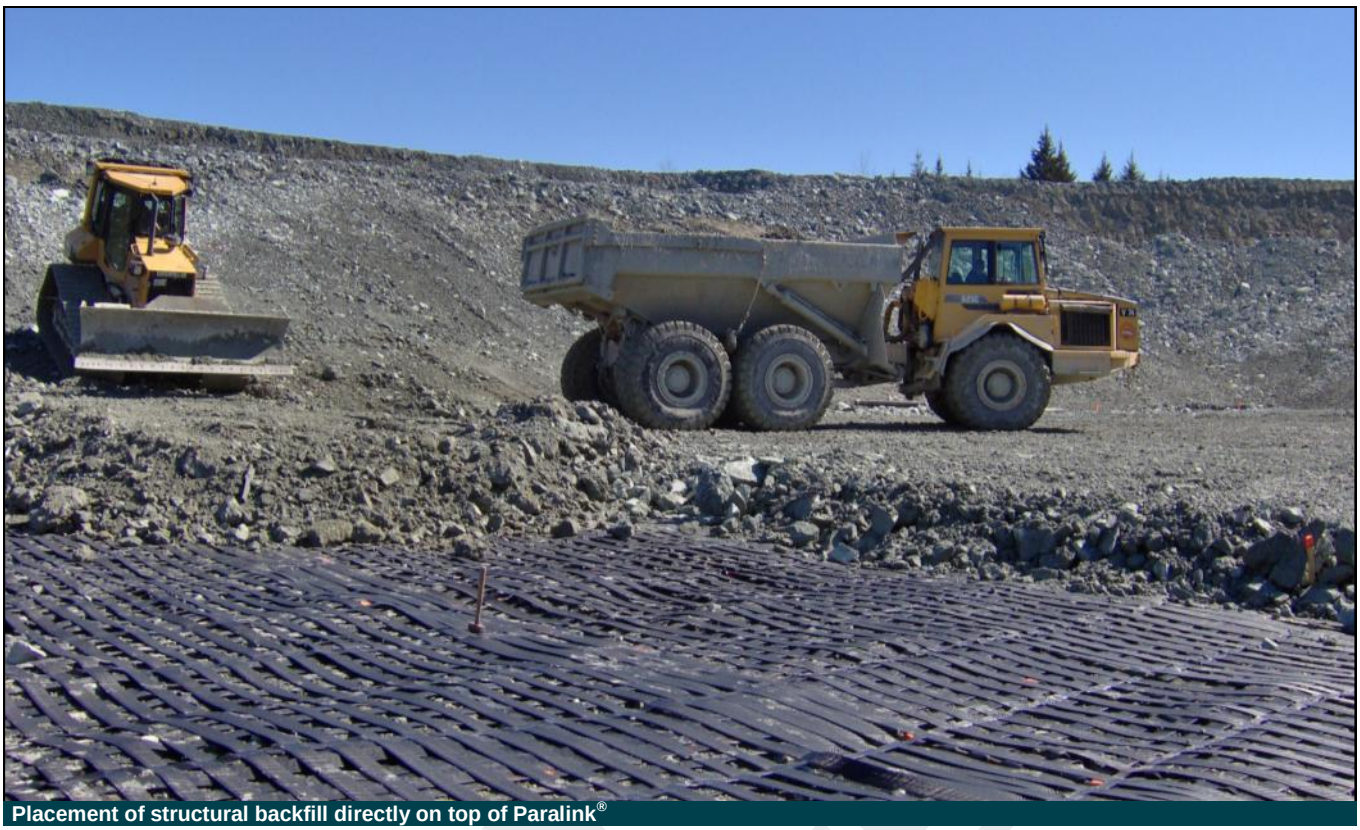
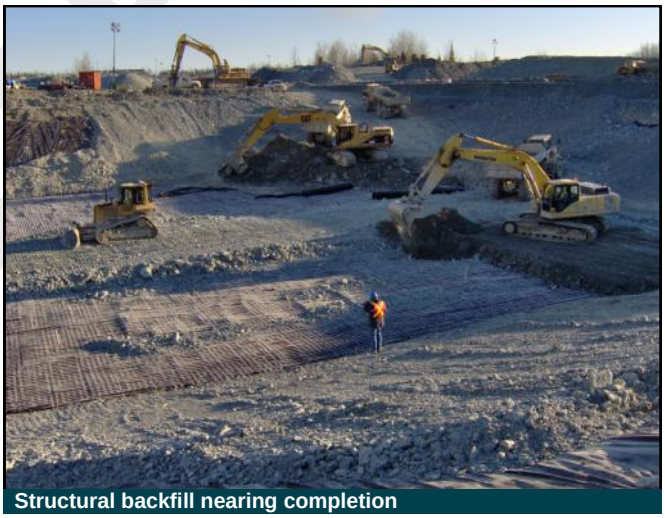


Placement of structural backfill directly on top of Paralink®

A total of 13,500m^2 of Paralink® 600 was supplied, along with 11,000m^2 of a non-woven needlepunched geotextile (MacTex MX275). The MacTex was used as a separator to prevent contamination of the high quality gravelly sand fill from the foundation clay.

Paralink® has been relied upon for over 30 years to provide high performance reinforcement for basal foundations and large retained soil walls and slopes structures. Paralink® geocomposites are planar structures consisting of a regular array of composite geosynthetic straps in polyester tendons encased in a polyethylene sheath, interconnected laterally to form soil reinforcement materials with a high unidirectional strength. It is available in strengths up to 1350kN/m and can be customised to suit large projects.



Structural backfill nearing completion

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