



Case Study

application Subgrade Stabilization
location Vanderhoof, British Columbia, Canada
product Mirafi® HP570

job owner Canadian Forest Products
contractor Nechako Excavating

TenCate™ develops and produces materials that function to increase performance, reduce costs and deliver measurable results by working with our customers to provide advanced solutions.

THE CHALLENGE

As a result of significant upgrades completed by Canadian Forest Products (Canfor) to their Plateau Division manufacturing facility, additional storage capacity at the on-site lumber yard was required. The only area available to expand their storage area was land immediately adjacent to their property. However, this land consisted of highly saturated organic soils, which would require some form of soil reinforcement to carry the heavy wheel loads from their fork lifts and delivery trucks. Canadian Forest Products (Canfor) approached Armtec for recommendations on what products they recommended for their application.

THE DESIGN

Canfor had previously used a heavy weight nonwoven geotextile on past projects where the subgrade soils were relatively firm and the only requirement was separation and filtration. They asked Armtec what additional products could be used in this application. Two proposals were submitted: a Biaxial Geogrid and Mirafi® 160N geotextile option, and a high strength woven geotextile Mirafi® HP570 option. As part of the selection criteria the type and size of base course material and subgrade strength had to be considered, along with the project location in Northern BC. The proposed base material was to be a 300mm (12in) blast rock.

Ultimately, after careful review of the stress strain characteristics and the installation damage values for both products, Canfor selected the Mirafi® HP570 geotextile option.

Mirafi® HP570 provided nearly twice the strength at 2% and 5% strain as compared to the biaxial geogrids/geotextile combination. (14.0kN/m (960 lb/ft) compared to 8.68kN/m (lb/ft) at 2% and 35.0kN/m (4800 lb/ft) compared to 19.5 kN/m 1320lb/ft at 5%). This strength enabled the contractor to use 33% less base material with the end result of a 15% savings in material cost alone.

Additionally Mirafi® HP570's high flow capacity and filtration help to enhance drainage of saturated, unstable subgrades and alleviate excess pore pressures in them. The uniform openings of the Mirafi® HP-Series woven geotextile provide the same filtration and flow characteristics as that of a fine to coarse sand layer.



Completed road and yard area.



Blast rock placement and grading.

THE CONSTRUCTION

The new storage area was first stripped of vegetation and its topsoil layer. Attention was also paid to the subgrade grading to ensure proper drainage. Rolls of Mirafi® HP570 were then rolled out with a 600mm (2ft) overlap between adjacent rolls. Having to place only one layer of reinforcing geosynthetic greatly decreased the installation to construct the new yard. Once the geotextile was placed, the 300mm (12in) rock base course was end dumped onto existing base material and graded and compacted to a depth of 600mm (2ft).

Armtec is proud of TenCate's diverse line of geosynthetics and continues the tradition of offering the best value to their customers.

THE PERFORMANCE

Since being installed in 2004, the project has been performing as designed. In 2008, after four years of use with minimal maintenance, Canfor paved the entire yard with asphalt. The success of the project has lead Canfor to use these high strength geotextiles on subsequent problem areas.



Proof rolled subgrade and rock placement.



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