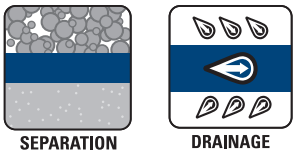
TENCATE Mirafi®



Case Study

application	Subgrade Separation/Drainage
location	Worley, ID
product	Mirafi® 170N & 180N/Polyfelt® TN70 & TN80
engineer	Idaho DOT
contractor	DeAtley Construction Company of Clarkston, Washington

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

In an effort to dramatically improve safety, reduce congestion and create jobs, the state of Idaho has made a giant steps in improving their infrastructure. Part of this infrastructure improvement plan includes the transformation of the existing two-lane US-95 highway into a major four-lane divided highway, near Worley, Idaho. The project is being fast-tracked in an attempt to reduce rising construction costs. The unfortunate presence of soft saturated wet subgrade soils threatened significantly delay construction and increase overall construction costs. The poor on-site soil conditions prompted the Idaho Department of Transportation to seek a fast and cost effective way to quickly build the new highway over these problem areas.

THE DESIGN

The massive 4-lane divided highway project required the excavation of more than 1.1 million cubic meters of rock and soil and the placement of 500,000 metric tons of fill to construct a new subgrade. The project engineer realized that repeated traffic loading would cause fines from the soft subgrade to migrate into the base course and contaminate it, which would result in decreased overall bearing capacity in the road section. To avoid contamination and loss of the newly placed aggregate material over the existing soft subgrade, engineers knew that a geotextile would be required for separation. The project engineer created a unique geotextile specification for the highway project. This specification required a 7–8 oz/SY nonwoven geotextile that was both permeable enough to dissipate pore water pressure build up during compaction efforts (stops pumping) and tough enough to resist damage during installation and compaction.

Fill being placed by pan scrapers and bulldozers over the durable Mirafi® 180N.

THE CONSTRUCTION

Mirafi® 170N and 180N met the project specifications perfectly and were chosen for use on the highway project. Each roll of geotextile was rolled out over the subgrade by hand. Each roll of nonwoven geotextile is 15 feet wide by 300 feet long, resulting in the placement of over 2,000 rolls of geotextiles. Fill was pushed out over the geotextile by bulldozer, followed by pan scrapers. Sheeps-foot and smooth drum rollers were used for additional compaction.

THE PERFORMANCE

When construction was complete, over one million square meters of Mirafi® nonwoven geotextiles and 2.5 million cubic meters of soil were placed to build the highway project.

The Mirafi® 170N and 180N geotextiles used on the project proved to be very cost effective. The geotextiles installed quickly and easily to reduce the amount of base course required to stabilize the subgrade, while maintaining separation between the muck and clean base course. TenCate's™ Mirafi® geotextiles maintained their integrity and held up to the high installation stresses that occurred during the compaction of base course over the geotextile layer. The geotextiles will continue to keep the base course clean and separated from the fine grained soils in the subgrade for the life of the roadway.

Nearly completed section of the New US-95 four-lane highway looking north of Worley, ID

Picture of the newly completed roadway subgrade, just south of Worley, ID.

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