Case Study

application | Subgrade Stabilization & Base Course Reinforcement

location | Port of Tampa, FL

product | Mirafi® RS580i & BXG12

job owner | NexLube Operating LLC

date of installation | June 2012

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
NexLube needed to expand their container yard capacity for their Port of Tampa, Florida facility. The expansion lot had existing weak dredge sludge spoils at the surface that extended to some depths that would not support the anticipated container loads. The Engineer, Golder Associates, was interested in limiting the potential for deep undercut and stabilization of these soft soils using TenCate Mirafi® geosynthetics.

THE DESIGN
Using the AASHTO 1993 flexible pavement analysis method and additional stability analysis for punching the weak foundation soils, a two layered geosynthetic reinforcement scheme was chosen to stabilize the site. Due to its high tensile modulus at low strains and excellent soil interaction and filtration & drainage capacity, TenCate Mirafi® RS580i woven geosynthetic was chosen to stabilize a compacted layer of limerock base aggregate material over the soft dredge deposit soils. A second reinforcement layer of Mirafi® BXG12 geogrid was chosen for use mid-layer of the base course aggregate to provide lateral restraint to the upper part of the gravel layer and additional load support for this flexible pavement area.

THE CONSTRUCTION
To create the new container yard area, the contractor cleared and grubbed the surface of the dredge spoils to the subgrade level. Next, Mirafi® RS580i was laid on the subgrade soil and overlapped three feet to accommodate the very soft subgrade conditions. Then, a twelve inch layer of limerock base aggregate was placed and compacted over the Mirafi® RS580i.
Next, a layer of Mirafi® BXG12 was placed over the surface of the compacted gravel using two foot overlaps. Finally, twelve inches of limerock base aggregate was placed and compacted over the geogrid layer. The final asphalt pavement surface was then placed and compacted.

The installation of TenCate Mirafi® geosynthetics went smoothly during construction and exceeded the contractor’s expectations. The contractor pointed out that the TenCate geosynthetic reinforced gravel was much more stable than it would have been otherwise.

THE PERFORMANCE
The newly created container storage area is performing well, as expected. The contractor and the owner are very happy with the ease of installation and the performance of Mirafi® RS580i and BXG12 in the new pavement area. The engineer is very pleased with the installation process, the performance of the geosynthetics to date, and is happy with the simplicity of design process using TenCate geosynthetics in roadway applications.