



Case Study

application | City Street Hot Mix Over Portland Cement Concrete

location | Beachwood, OH

product | Mirafi® FGC100

job owner | City of Beachwood, OH

engineer | City Engineer

sub-contractor | Asphalt Fabric & Specialties, Inc.

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

Ohio is a case of extremes. Summer months can see sustained temperatures over a hundred degrees, while winters can dip well below zero. Constant freeze-thaw cycles, road salt, and heavy traffic in urban areas are very hard on asphalt, and pavement quality can deteriorate remarkably quick. As repaving costs keep rising, pavement restoration becomes more and more the solution of choice for highway departments faced with big problems and small budgets. That's one of the reasons why the city of Beachwood chose to use TenCate Mirafi® geosynthetics new paving grid product, FGC100.

THE DESIGN

In the Beachwood project, the pavement section was PCC pavement that had many failed sections. It had been overlaid several times with asphalt, and the overlays had become severely deteriorated.

The street could not be completely reconstructed because of underlying PCC pavement. This would have required substantial destruction of the Portland cement concrete, causing and created major inconveniences to the residents of the neighborhood, who would have had to park outside the community for several days. In addition, the underlying utilities would have required replacement.

The solution was to find an overlay that would withstand traffic and give lasting performance even with extreme weather conditions. The engineer decided to use Mirafi® FGC100 paving grid and a modified asphalt hot mix to correct the extremely deteriorated pavement. Mirafi® FGC100 paving grid provided an advanced solution for the Beachwood project by creating an

impermeable moisture barrier to minimize water damage and provide high strength reinforcement to retard the reflective cracking from the concrete joints and increase the fatigue life of the pavement.

THE CONSTRUCTION

A leveling course of 1in average was followed by Mirafi® FGC100 paving grid, then by 1 1/2in of compacted hot mix asphalt. The hot mix asphalt was manufactured with PG 70-22 polymer modified asphalt.

Asphalt Fabrics and Specialties, Inc. installed the Mirafi® FGC100 paving grid with a tack coat quantity of .23 gal/sy per square yard, using PG 64-22 asphalt. The installation of the composite went very smoothly despite traffic in the confined residential environment.

The fabric was supplied by TenCate Mirafi® distributor JMD Company of Macedonia, OH.



1in leveling course, Mirafi® FGC100 paving grid, 1.5in of compacted hot mix.



Installation of Mirafi® FGC100 paving grid.



Mirafi® FGC100 paving grid was selected for the project.



A tack coat of .23 gal/sy was used to form a moisture barrier.

THE PRODUCT

Mirafi® paving grid is composed of high modulus fiberglass grids bonded to a paving fabric. The paving grid product is specifically designed for use in asphalt overlays for the repair of flexible (asphalt) and rigid (concrete) pavements such as roads, parking lots, airfields, and other paved surfaces.

The open grid pattern interlocks with hot mix asphalt, providing maximum reinforcement by bonding with the new pavement layer. Grids are constructed with fiberglass yarns that are aligned in transverse and longitudinal pattern to optimize transfer loading of a moving pavement.

The high crossover junction bond strength improves structural integrity of new overlays. The paving fabric and grid composite is bonded to the leveling course with a tack of liquid asphalt, providing adhesion of the grid during construction and a moisture barrier throughout the life of the pavement.



Compaction of polymer modified asphalt.

THE PERFORMANCE

When placed with a suitable tack coat between the existing pavement and the asphalt overlay, Mirafi® FGC100 paving grid helps extend pavement life by:

- Improving the fatigue resistance of the new overlay to traffic loads by providing reinforcement.
- Retarding the propagation of an existing crack through the new overlay (reflective cracking).
- Reinforcing the system through high strength yarns.
- Extending the useful life of the overlay.
- Strengthening the entire pavement system.

“The paving grid gives us an added option for enhancing the value of pavement restoration,” said John Miner, TenCate Mirafi® Paving Products Manager.



Mirafi® FGC100 paving grid allows for heavy construction traffic



High traffic city streets with underground utilities.

TenCate™ Geosynthetics North America assumes no liability for the accuracy or completeness of this information or for the ultimate use by the purchaser. TenCate™ Geosynthetics North America disclaims any and all express, implied, or statutory standards, warranties or guarantees, including without limitation any implied warranty as to merchantability or fitness for a particular purpose or arising from a course of dealing or usage of trade as to any equipment, materials, or information furnished herewith. This document should not be construed as engineering advice.

Mirafi® is a registered trademark of Nicolon Corporation.

© 2010 TenCate Geosynthetics North America

12.06