

## Case Study

application	Asphalt Reinforcement Trial
location	Boyce Street- Greenville, SC
product	Mirafi® FGC Paving Grid

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

Boyce Street was originally constructed of Portland Cement Concrete. It was subsequently overlaid with hot mix asphalt. Most of the transverse joints had reflected through the asphalt overlay and many of the longitudinal cracks had also reappeared. The pavement condition index (PCI) at the time of maintenance was less than 10 (100 scale).

### THE DESIGN

Over the years, many utility cuts had been made in the road resulting in numerous patches. Since the initial overlay had cracked extensively, another overlay was expected to experience similar reflective cracking relatively quickly. A trial section was evaluated using Mirafi® FGC Paving Grid, a woven grid bonded to a nonwoven paving fabric. This product was developed to retard reflective cracking and reinforcing the hot mix pavement overlays, while at the same time waterproofing the old road surface. A field survey measured 272.2 m (893 ft) of longitudinal cracking and 107 m (351 ft) of transverse cracking in the test section at the time of this project.

### THE CONSTRUCTION

The test section design included milling the asphalt surface and placing a 2.5cm (1 inch) thick asphalt leveling course prior to the installation of the fabric/grid composite. A tack coat of asphalt cement (0.25 gal/sy) followed by the paving composite was then placed over the leveling course. Finally, a 5cm (2 in) compacted layer of hot mix asphalt was placed over the composite. A control section was constructed using a 0.05 gal/sy asphalt cement tack coat and a 5 cm (2 in) compacted layer of asphalt.

### THE PERFORMANCE

Evaluations 5 years after installation show that the asphalt reinforcement fabric/grid composite provided a significant reduction of reflective cracking when compared to the control section. Nearly all (95%) of the cracks in the old road under the control section reflected through in the 5 year period. Seventy five per-

cent (75%) of the control section cracks reflected in the first year. In the Mirafi® FGC Paving Grid sections, there was no cracking in the first year, while after 5 years 23% and 28% of transverse cracks have reflected for the 50kN/m and 100 kN/m products, respectively. In longitudinal direction 45% and 57% of cracks have reflected for the 50kN/m and 100



Evaluation of the Boyce Street trial proved paving grid composites can significantly delay reflective cracking.



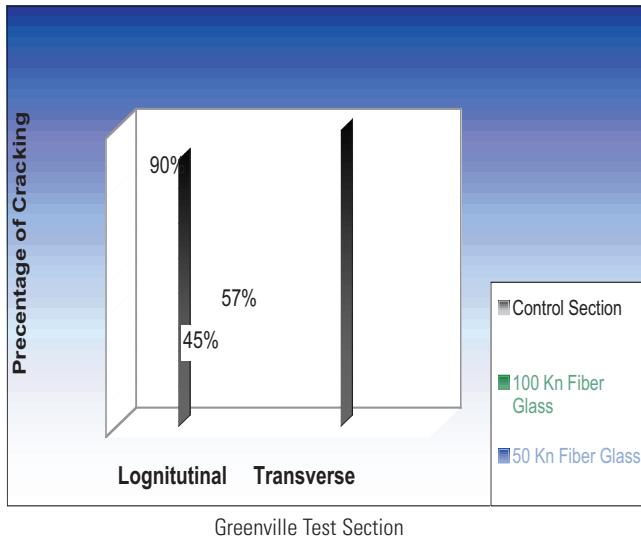
Road after milling, exposing the original cement pavement.

respectively.

Fabric/grid composites comprised of a non-woven geotextile and a grid of fiberglass yarns can significantly delay reflective cracking. This street is expected to retain its integrity for many more years in the areas where the fabric/grid composite has been placed. The control section may need to be replaced or patched within the next few years. There is some evidence that the 50 kN/m products may perform nearly as well or better than the higher strength product on a life cycle cost basis.



After 5 years: Top half of photo shows the control section with longitudinal cracking. The bottom half, with no cracks, is the Mirafi® FGC Pave Grid 50 test section.



Although the control section may need to be replaced or patched soon, the test area with Mirafi® Pave Grids are expected to retain its integrity for many years.

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