



## Case Study

application	HMA Overlay over Concrete
location	I-25 and Missile Drive off-ramp, Cheyenne, WY
product	Mirafi® FGC100 Paving Grid

job owner	WYDOT
engineer	WYDOT
contractor	Star Aggregates 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

The project is located on the Missile Drive (Exit 10) south bound off-ramp from I-25, which is the main north south interstate in Cheyenne, Wyoming. Significant longitudinal cracking in most of the concrete slabs had developed just a few years after initial construction of the slabs. WYDOT planned to mill the existing concrete and place an HMA overlay, and they needed a reflective crack control system that had the tensile strength to effectively retard the concrete joints and longitudinal cracks.

### THE DESIGN

WYDOT has successfully used regular paving fabrics to extend the pavement life of asphalt throughout the state for many years. In 2003, they installed a test section of Mirafi® FGC100 Paving Grid on Missile Drive itself, where it is now obvious that the lane with the Mirafi® FGC100 has noticeably fewer reflective cracks than the lane with no paving reinforcement product. In fact, the reflective cracks in the lane without a reinforcement product stopped at the edge of the lane with the Mirafi® FGC100. WYDOT chose Mirafi® FGC100 for the off-ramp project based on the performance of this initial Missile Drive test section. Mirafi® FGC100 is composed of a fiberglass grid that is bonded to a nonwoven paving fabric. Paving grid products are specifically designed for use with rigid (concrete) pavements. The high strength at very low strains of the fiberglass grid is the key to retarding the propagation of concrete joints and cracks. The paving fabric, in combination with a properly applied tack coat, creates a moisture barrier that prevents surface water from seeping into the subbase below the joints and cracks and making them worse.



Longitudinal crack and sawed joints in the milled surface.



Tack coat is sprayed prior to the placement of the Mirafi® FGC100 to create a moisture barrier to protect the underlying subbase.



All wrinkles were slit, trimmed, tacked and laid flat.

### THE CONSTRUCTION

Preparation – The project specification called for milling 2 inches of the existing surface, cleaning the milled surface, and filling all cracks wider than 1/2". Once milled, the longitudinal cracks were typically less than 1/2". The joints, however, were typically greater than 1/2" at the surface, but were sloped. The contractor broomed the surface clean and patched two areas with hot mix.

Fabric Placement – Placement of the Mirafi® FGC100 began about 11:00 am with an ambient temperature of about 80° F. A TenCate™ representative and the distributor operator concluded that he would begin with a tack coat rate of 0.23-0.25 gal/sy due to the milled surface and mild temperature. The contractor placed a 25 ft test section that was checked for absorption by the WYDOT inspector and the TenCate™ Representative. It appeared to be sufficient, and they continued placement of the Mirafi® FGC100. The contractor placed the Mirafi® FGC100 by hand. Because the fabric was being placed on as tight radius, significant cutting of the PaveGrid was expected. The contractor chose to roll out a full roll at a time, forcing the outside radius of the Mirafi® FGC Paving Grid to lay in line with the tack coat. They slit, tacked, and laid the wrinkles flat as they formed. The contractor successfully placed a 2" overlay on the Mirafi® FGC Paving Grid.

### THE PERFORMANCE

The performance of the Mirafi® FGC Paving Grid met the expectations of the DOT.



The first pass of asphalt has been laid.



Final surface with Mirafi® FGC100 for tensile reinforcement and moisture protection under 2" of Hot Mix Asphalt.

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