

Case Study

application | Hot Mix Asphalt over Portland Cement Concrete
location | City of Fredericksburg, Virginia
product | TruPave® Engineered Paving Mat

job owner | City of Fredericksburg
installer contractor | Landsaver Environmental Virginia Paving

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

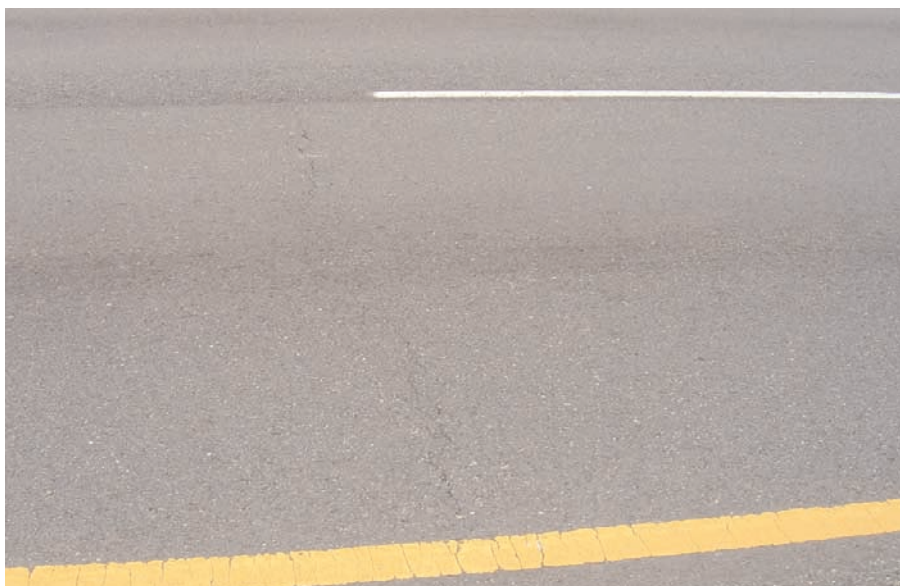
This section of Virginia State Route 1 is a heavily traveled four lane state highway in Fredericksburg, VA. The existing roadway is an old Portland Cement Concrete (PCC) pavement that has severe slab block cracking. The traditional solution by the City of Fredericksburg had been to overlay the existing roadway with hot mix asphalt (HMA). However, severe reflective cracks over the block cracking and transverse joints were propagating up through the new overlays in less than one year. This cracking created a very rough riding surface, extra maintenance issues and accelerated pavement deterioration. The City of Fredericksburg needed a solution to prevent and delay reflective cracking on new HMA overlays. The solution was the use of TruPave® Engineered Paving Mat.



1. Roadway without TruPave® Engineered Paving Mat.

THE DESIGN

TruPave® is a non-woven, fiber glass/polyester hybrid paving mat with high tensile strengths at low elongation. It is installed over an existing roadway into a liquid asphalt tack coat prior to a HMA overlay. The asphalt tack coat saturates the TruPave® creating a moisture barrier that delays reflective cracking and prevents surface water intrusion, thus extending the life of the pavement and dramatically lowering repair and maintenance costs. The City of Fredericksburg had used 60,000 yd2 of TruPave® on the Southbound lanes of Route 1 the previous year and reflective cracking was reduced dramatically. They were extremely pleased with the results and again specified TruPave® when it was time to overlay the Northbound lanes. A total of 27,500 yd2 of TruPave® were specified for use of rehabilitation of the Northbound lanes.



2. Roadway using TruPave® Engineered Paving Mat.

THE CONSTRUCTION

Construction on the Northbound Lanes of Route 1 was performed at night due to heavy daytime traffic conditions. Virginia Paving’s construction sequence started with milling the existing asphalt overlay then applying a 1” HMA leveling course over the milled surface. A leveling course is recommended over poor road surface conditions to provide a smoother platform upon which to install the paving mat, and to improve the ride quality of the final asphalt overlay.

Landsaver Environmental from Richmond, VA installed the TruPave® over the leveling course by first applying a PG 64-22 asphalt tack coat at a rate of 0.18 gal/yd². This application rate provides enough tack coat to saturate the paving mat and create a good bond between the overlay and leveling course. Next, TruPave® was installed using a fabric installation tractor. Virginia Paving followed behind the TruPave® installation with a 2” lift of VADOT graded HMA surface course.

Below: Installing with laydown tractor.



THE PERFORMANCE

The Southbound section of Route 1 that was overlaid with TruPave® has been in service for over a year. A section of the Northbound lanes was overlaid at about the same time, without TruPave®. The dramatic reduction of the severity of reflective cracking at transverse joints, seen (on page one) in photographs 1 and 2, is typical of the differences the City of Fredericksburg noted between the two sections. In the TruPave® section there has also been very little to no reflective cracking over the block cracking from the existing pavement.

These differences in reflective cracking, plus the reduction of surface water intrusion, will significantly reduce the amount and cost of road maintenance the City has to do in the TruPave® sections. It will also provide a smoother riding surface throughout the extended life of the TruPave® enhanced pavement.

It is clear that TruPave® has dramatically reduced the severity of reflective cracks in new asphalt overlays over existing PCC roadways. The new Northbound section is expected to perform as well as the Southbound section. This project will be monitored for performance on an annual basis.



Above: 2” of HMA being installed.
Below: Installation of TruPave® Engineered Paving Mat



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365 South Holland Drive Pendergrass, GA 30567
Tel 800 685 9990 Tel 706 693 2226
Fax 706 693 4400 www.mirafi.com

