Mill and Overlays
Strategies and Solutions for Cities – Paving Fabric

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Paving Fabric
It does and can Work for your City. It did for mine.

• 2008 Examples Serving the City of St. Michael
  – Urban Neighborhood Fabric/Overlay
  – Rural Low Volume Fabric/Sealcoat
Proactive Pavement Management Evaluations (i.e. getting to it before failure)

• Typical City Treatment Solution Silos
  – Crack Sealing – **KEEP THE WATER OUT!**
  – Sealcoats (Chip, Slurry, Fog, Micro-surfacing, etc)
  – Overlays (Reclaim, Mill, Edge Mill, etc)
What happens when the evaluated roadway doesn’t quite fit into one of these silos?
What do you do when the evaluated roadway doesn’t quite fit into one of these silos?
Paving fabric can help bridge this gap.
Urban Residential Fabric/Overlay Example (Nason Parkway):

Early 1990’s development, 1st homes built in 1994.

Fall 2011 - View of CDS vs. Fabric/Overlaid Road
Close up of small cul-de-sac cracks that were bridged over with fabric/overlay
Fall 2011 - View of CDS vs. Fabric/Overlaid Road
Close up of small cul-de-sac cracks that were bridged over with fabric/overlay
Longitudinal cracks stopped at fabric/overlay
Close up of crack stopping at fabric/overlay
Curb cracks/subgrade issue still reflect through. More crack sealing needed? Keep the water out!
Whole street view – subgrade crack at curb
Large MH cracks still reflect through but water is sealed out with crack seal – keep up on crack sealing
Minimal reflective cracks
Finished product 3+ years later – Minimal cracking
Finished product 3+ years later – It works!
Observations and keys to fabric success with fabric/overlay:

1. Use heavy duty thicker 6oz. fabric
2. Edge mill (to increase crown) or full width mill work well.
3. Approximately $1.50/sq. yd. in added cost over traditional methods.
4. Use recommended asphalt binder types and rates. Added polymers work well.
5. Typical overlay thicknesses averaging 1.5” to 2” work well.
6. Consider sealing next to and at curb.
7. It works!
MYTH BUSTERS
Fabric can be milled and reclaimed
Fabric millings/reclaim can be reused – aggregate road base, etc
Rural Low Volume Fabric/Sealcoat Example (Hamlin Ave):
Thick old county section (6”+ asphalt), already crack sealed
2008 Issues: Long rural segment – 1 mile, lots of major longitudinal cracks, minimal budget, low ADT (<200)
Some plow scraping and reflective cracks showing
Large longitudinal cracks still reflect through and lose rock but water is still sealed out and protecting pavement. Polymer AC or Fog sealing after chip seal could have helped.
Cracks reflecting but holding and keeping water out
Fabric expands/contracts at cracks but keeps the water out
Finished product 3+ years later – Holding up well
**TenCate® Geosynthetics**

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.

**Techniques for Making Roads Last**

City, county and highway agencies face different challenges in applying pavement preservation treatments and establishing an effective preservation program. Preservation involves shifting from worst-first to optimum timing on selecting the right treatment for the right pavement at the right time. The use of chip seals with paving fabric has become a very effective process. Paving fabrics have been used in every climate and road condition imaginable.

Mirafi® MPV500CS is a cost effective solution.

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**Benefits**

- Doubles the life of the chip seal
- Reduces the effects of thermal expansion & contraction
- Eliminates the need for future crack filling
- Provides a continuous moisture barrier
- Reduces flushing problems
- Improves chip retention

After 15 years, fabric continues to bridge the surface of the underlying crack and eliminate the need for crack sealing.
Observations and keys to fabric success with fabric/sealcoat:

1. Use heavy duty thicker 6oz. fabric
2. Crack seal prior to fabric
3. Approximately $1.50/sq. yd. in added cost over traditional methods.
4. Use recommended asphalt binder types and rates.
5. Consider using polymer and fog sealing after to reduce rock loss.
6. Many benefits, cost effectiveness, and it works!
Overall conclusion and keys to fabric success with paving fabrics:

1. It’s ok to be scared. We were. Give it a try on the “right” section (i.e. good test section where you are in-between traditional method silos).

2. Utilize experts in specifying: Tom Wood & www.roadfabrics.com

3. Many studies pro/con. Do what is right for your City.

4. Many benefits, cost effectiveness, and it works!

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A study evaluating the cost-effectiveness of using paving fabrics in roadway maintenance projects is getting a new look.

The original work was a comprehensive study of pavement repair materials and methods. It examined maintenance treatments on 370 roads in Greenville County, S.C., in the 1997-98 maintenance year.

Released in 2005, The Study of Pavement Maintenance Techniques: Used on Greenville County Maintained Roads, was undertaken, compiled, and later presented by C. Joel Sprague, senior engineer for Texas Research Institute (TRI) Environmental Inc.

This exhaustive study compared the cost-effectiveness and performance of four road-maintenance treatments:

1. in-place, cold mill recycling and an overlay
2. patching, followed by paving fabric and an overlay
3. paving fabric and an overlay
4. overlay only

What made this study particularly compelling was its groundbreaking use of a road-condition rating system as a performance monitoring tool. The ratings were used as part of a pavement management system to evaluate the effectiveness of the four defined maintenance strategies.

The road condition rating allowed the study to take into account the condition of the pavement at the time that the maintenance work is done. Common sense suggests that different treatments fare best under different conditions, and this study confirmed that supposition.

Previous studies have shown that nonwoven paving fabrics extend the life of asphalt overlays up to 10 years,” explained John Miner, paving products market manager at Mirafi Construction Products, Ten-Cate Geosynthetics. “This analysis of pavement condition indexes lets us quantify the benefits of paving fabrics (as compared to) four specific pavement strategies. This is extremely helpful to pavement maintenance engineers around the country as they develop the most cost-effective solutions to repair their roadway systems,” Miner said.

The paving assessment was not the only new element. The study was also the first to draw broad ranging conclusions about the economic benefits of paving fabric interlayers.

In the past, some transportation departments and local contractors have chosen not to use paving fabrics, viewing them as an unnecessary and extra cost. However, this study demonstrated that incorporating a paving fabric interlayer is always a cost-competitive repair strategy. On a road in a typical “needs repair” condition, the paving fabric repair strategy clearly gives the most bang for the construction buck.

A suitable location

Greenville County S.C. was an ideal place for a study of this breadth because it has more than a decade of records that document its road maintenance techniques. The county maintains about 1,600 centerline miles of road. More mileage is being added every year because of the area’s population and economic growth.

The improvements included in the study were part of a program called “Prescription for Progress (FPF), Paving County Roads,” which Greenville County initiated in 1997.

In 2002, Greenville County’s Department of Public Works (GCDPW) called for a periodic evaluation of its current road improvement methods. It contacted Sprague about the possibility of performing an independent study. GCDPW offered its records and information for the project. The only problem was that at the time, there was no budget allocated for it. Because the county has often used paving fabric as part of its road improvement techniques, Sprague approached the Geosynthetic Materials Association (GMA) for funding.

GMA agreed to fund the study. However, because there was some uncertainty about the quality and quantity of data available, GMA suggested splitting the project and the funding into two phases.