

## Using Geotextiles in Pavements



Good drainage is crucial to a road's performance. Water softens the subgrade and reduces its structural capacity. To control water infiltration into the subbase, agencies often use subsurface drainage and ditches or pavement seals. Although an overlay seals the pavement, overtime, reflective cracks will reappear. This article discusses the use of paving fabrics.

The placement of a paving fabric creates an interlayer system of a nonwoven geotextile installed over a PG Asphalt and then overlaid or chip-sealed. The system creates a water barrier and absorbs pavement stresses thereby reducing reflective and fatigue cracking. The system also restricts freeze-thaw damage due to saturation.

A pavement fabric system with an overlay is a viable alternative to an overlay or seal alone. The costs of the systems vary, so a cost-benefit analysis is necessary to decide which system agencies may use.

### The Problem

Moisture weakens the subbase and damages the pavement structure. A saturated base results in progressive pavement failure. A base saturated by as little as ten percent reduces the useful life of the pavement by 50 percent.

Water jetting from cracks or joints moves the subgrade material to the road surface. This creates voids under the pavement and eventual pavement failure.

Water enters the base through the groundwater from drainage ditches or from subsurface flow. Usually, these sources are secondary to rainwater entering through the pavement surface.

### Paving Fabric Research

Field and laboratory research evaluated the effectiveness of paving fabric interlayer systems in minimizing surface water infiltration through the pavement.

In the lab, a paving fabric interlayer provides improved moisture barrier properties compared to asphalt alone. Studies show that the pavements with paving fabric are less permeable than without a paving fabric. Research showed variations due to the amount and uniformity of the PG Asphalt. When using paving fabric ensure that the fabric is installed with sufficient PG Asphalt to become impermeable.

Caltrans performed extensive research on paving fabrics. Their findings show that fabric provides a increased service life equivalent to an extra 1.2 inches of overlay. This is due to the stress-absorbing function, which retards reflective cracking, and the waterproofing function.

Field studies are general agreement with those in the lab. Lower moisture levels in the pavement structure were seen as well as increased pavement strength.

### Construction Procedures

1. Prepare old pavement. Fill cracks larger than ¼" and potholes. Remove dirt, debris, and vegeta-



- tion. Shim or mill roads in poor condition.
2. Apply PG Asphalt. Air temperatures should be at least 50 degrees and rising. Do not apply PG asphalt in the rain, as it will not bond to the pavement.
  3. Install paving fabric over wet PG asphalt. Overlap the edges 1-3". Broom or roll to avoid air bubbles and large wrinkles.
  4. Apply an overlay or chip seal over pavement fabric.

## Conclusions

The following conclusions are based on the laboratory and field evaluations of the waterproofing effectiveness of a paving fabric interlayer system:

- ☞ Laboratory and field pavement cores indicate that a properly installed paving fabric interlayer system reduces the permeability of pavement. It reduces water infiltration and becomes an efficient moisture barrier and enhances pavement performance.
- ☞ Moisture levels beneath the pavement layers are lower with paving fabric. It maintains the strength of the subgrade, subbase, and base layers, and limit damage due to saturation.
- ☞ To provide a continuous moisture barrier, use sufficient PG Asphalt to saturate the paving fabric and bond the interlayer system. Lesser amounts of asphalt cement diminish the waterproofing effect. Evenly apply the PG Asphalt. Inspections and quality control are important.
- ☞ Consider using a paving fabric as a moisture barrier when drainage installation is not an option. ❖

### Sources:

Marienfeld, Mark, and Baker, Thomas, [Paving Fabric Interlayer As A Pavement Moisture Barrier](http://onlinepubs.trb.org/onlinepubs/circulars/ec006.html) <http://onlinepubs.trb.org/onlinepubs/circulars/ec006.html> June 1, 2006

Petromat Intallation Guide  
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## Mutual Aid Update

New Hampshire  
Public Works



Mutual Aid  
Program

May 2006 flooding affected all but one NH county. Some areas broke long-standing records with rainfall in excess of 13 inches. Mutual aid was enacted

by five municipalities and 12 responded. Towns that were helped in October 2005, reciprocated during this recent storm.

In addition to public works personnel and equipment, building inspectors were requested in Allenstown, Goffstown, and Hillsborough.

Currently, 94 municipalities are members of the New Hampshire Public Works Mutual Aid program. There are over 700 trucks, 50 graders, and 1,100 people available. To enact mutual aid, one may page a board member for assistance (376-4453), broadcast their need on [pw.net](http://pw.net), or contact municipalities themselves using the database maintained by the UNH T<sup>2</sup> and published on the web [www.t2.unh.edu/ma](http://www.t2.unh.edu/ma)

At the Mutual Aid orientation held May 25, 2006 during the Mountain of Demonstrations, people came as far away as Worcester County, Massachusetts to learn about the program. Massachusetts requires enabling legislation to begin a program. Other states have seen the benefit of NH's program and many are interested in adopting a program. ❖



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