



**FIBERMAT**

**The Ultimate Stress Absorbing Membrane**



# FIBERMAT® TEAM



- **Nelson Wesenberg** – Manager New Product Development & Marketing  
Midland Asphalt
- **Dave Fittante** – National Sales Engineer, Midland Asphalt
- **Quint Davis** – Pavement Preservation Manager, Simon Contractors






Today's DOT Professionals  
have an enormous  
responsibility

3.95 million miles of public  
road valued at \$1.75 trillion.

About - National Center for Pavement Preservation Page 1 of 1

 **The National Center for Pavement Preservation**  
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MSU Civil and Environmental Engineering • MSU College of Engineering

Home :: ABOUT THE NCPP ::

**NCPP - National Center for Pavement Preservation**

The National Center for Pavement Preservation (NCPP) was established by **Michigan State University** and the **Foundation for Pavement Preservation** to lead collaborative efforts among government, industry, and academia in the advancement of pavement preservation.

Founded July 11, 2003, the NCPP is the realization of a collective national vision of pavement practitioners, policy-makers and industry. Its purpose is to advance and improve pavement preservation practices through education, research and outreach.

There are nearly 3.95 million miles of public roads in the United States, valued at more than \$1.75 trillion. The NCPP will provide a valuable resource to help educate others about the benefits of pavement preservation. It can enhance pavement preservation knowledge through research and assist owner agencies to establish effective programs. These programs extend pavement life and improve motorist safety and satisfaction while saving public tax dollars.

October 2007 Meeting of the MPPP held in Missoula

SEARCH

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<http://www.pavementpreservation.org/about/> 10/21/2008

SEARCH

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It is clear that they are making Business decisions when it comes to Investing Public Funds

## ***ASSET MANAGEMENT***

***What is it and why should you care?  
Or "Experiences from the Highway Side"***

**Asset Management for Ports - Workshop**

**January 21, 2007**

**Sue McNeil**

**Professor, University of Delaware  
Chair, TRB Asset Management Committee**



New and innovative thinking is required to stretch the limited dollars available

### The Old Approach

- Limited Preservation
- Underestimated Traffic, Loads, Costs
- Use Locally Available Materials
- Repaired Worst First
- Design for Lowest Initial Cost
- Limited Design Life
- Limited Economic Analysis
- Insufficient Funds

### *Asset Management The New Approach*

- Transportation Networks Viewed as Utilities
- Investments in Assets Rather than the Traditional Public Idea of Mere Expenditures of Funds





# Pavement Preservation

www.zealsoft.com  
Pavement preservation is a cost-effective set of practices that extend pavement life and improve safety and motorist satisfaction while saving public tax dollars.

Smart  
business  
decision!

www.zealsoft.com

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MSU Civil and Environmental Engineering • MSU College of Engineering

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**TSP-2** [Click to Visit!](#)

**CLICK TO VIEW**  
FHWA & FP<sup>2</sup>  
FOG SEAL STUDY

路面保护中文资源

**Smart business decision!**

Pavement preservation is a cost-effective set of practices that extend pavement life and improve safety and motorist satisfaction while saving public tax dollars.

The National Center for Pavement Preservation (NCPP) seeks to advance and promote sound preservation practices through education, research management, outreach, and hands-on technical assistance.

What is Pavement Preservation? [Read more about it.](#)

**TSP-2** [CLICK HERE TO VISIT NOW!](#)

**AASHTO**  
THE VOICE OF TRANSPORTATION

- Pavement & Bridge Preservation
- Preservation Help Desk
- Free Technical Assistance
- Research Roadmap





QUICK LINKS  
[Class Schedule](#)



# THE FIBERMAT® PROCESS



FiberMat® was designed to:

-  Enhance tensile strength and reduce reflective cracking.
-  Quickly applied and more easily shaped.
-  Has great wearing as well as tensile properties.
-  Used at various levels in the pavement structure.





# FiberMat HISTORY



Developed and used in the UK for over 20 years



Used as a **SAMI** and **Wearing Course**



Used in traditional chip seal, decorative finishes, bridge decks, textile and grid markets

**FIBRE-DEC**







# WHAT IS FIBERMAT®



Emulsion



Glass Fibers



Emulsion



Aggregate





# FIBER GLASS



Asphalt emulsions are applied through a split spray bar - *the waterproof membrane.*

Fiber glass strands are introduced between the spraybars - *the ability to withstand stresses and give enhanced tensile properties.*





# EMULSION



A uniform, consistent binder layer is produced.

A *special* emulsion is applied @ typically 0.4 -0.5 Gal/SY. (*Split 50:50*)  
Fiber glass is cut in-situ between the layers at 2-4oz/SY





# AGGREGATES



- VARIOUS STONE SIZES USED
- ¼ TO ½ INCH MOST COMMON
- LOCAL SPECIFICATIONS FOR CHIP SEALS
- CARE WITH P200





# THE FIBERMAT® PROCESS



Rolling and sweeping completes the treatment.

The surface can normally be opened to traffic within 15 minutes.

The finish produced is a skid-resistant wearing surface - **SAM**. (Type A)

Or can be used as a **SAMI (Type B)**, overlaid with a different wearing course such as Hot Mix Asphalt or NovaChip.





# FiberMat® Type A & B

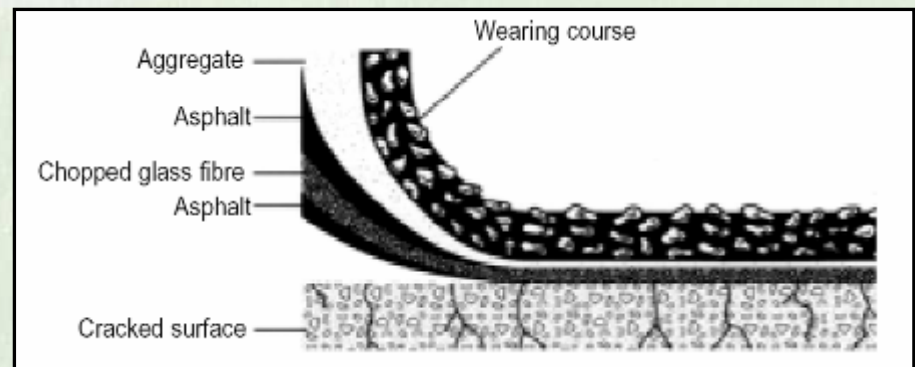
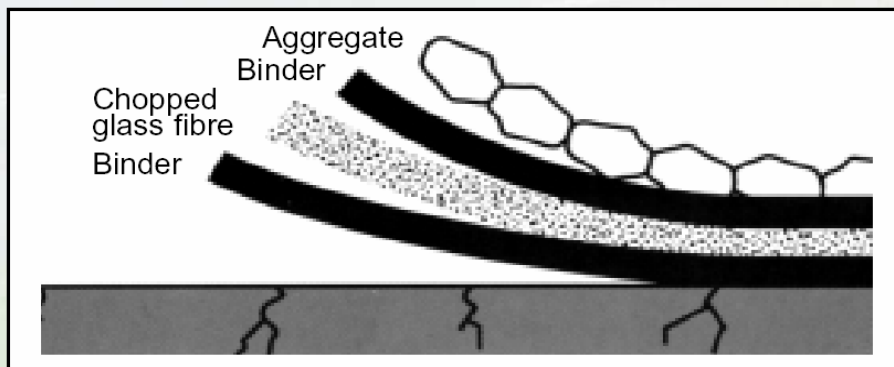


## Type A

- Polymer Modified Asphalt Emulsion
  - **0.4 – 0.8 gal/sy**
- Fiberglass
  - **2 - 3 oz/sy**
- Aggregate
  - **17 – 25 lbs/sy**
  - **1/2", 3/8" or 1/4" and combination there of**

## Type B

- Polymer Modified Asphalt Emulsion
  - **0.35 – 0.45 gal/sy**
- Fiberglass
  - **3 - 4 oz/sy**
- Aggregate
  - **10 – 15 lbs/sy**
  - **1/4" blinding aggregate**





# Machine History



Mini-Machine

4 foot wide unit  
used in the UK.



Then they  
developed a truck  
mounted 8 foot wide  
unit





# FIBERMAT® MACHINE



Trailer mounted 13 foot wide unit

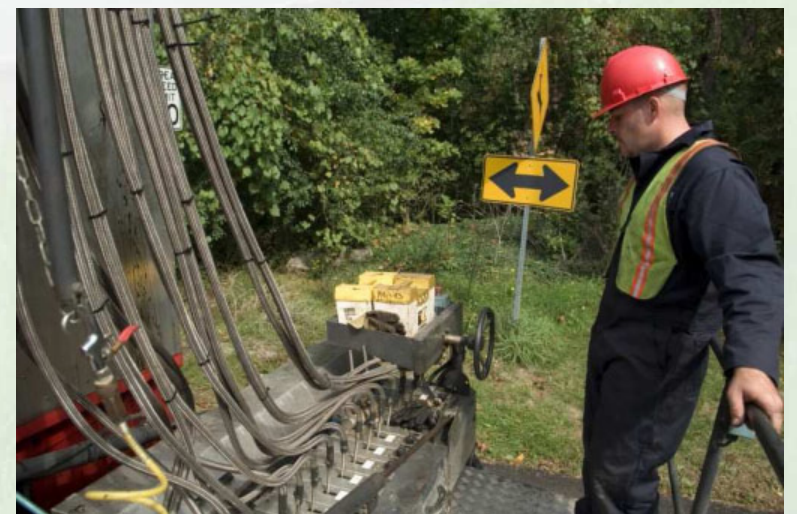




Steerable trailer

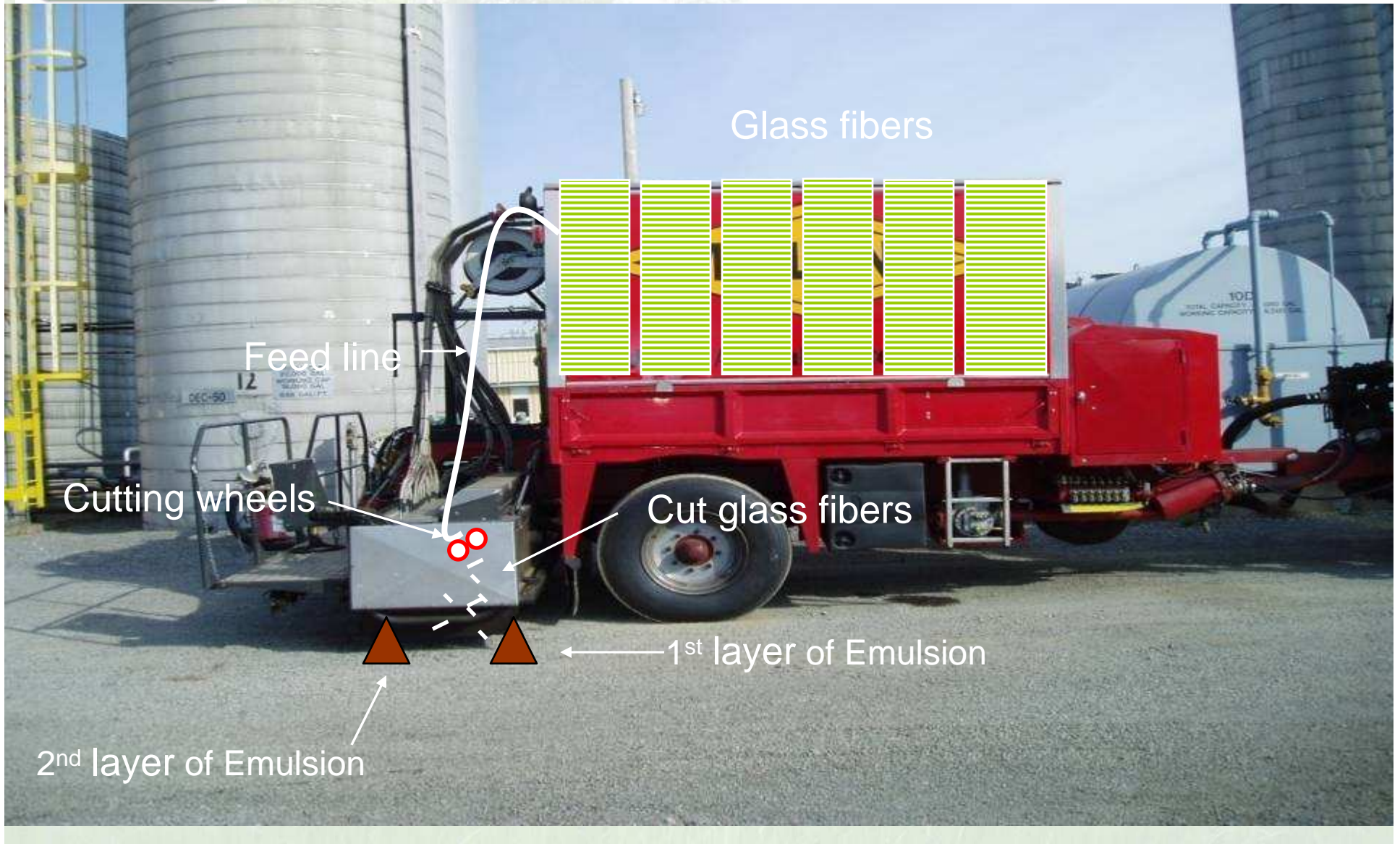


Computer Controls





# HOW IS IT APPLIED?





# FIBER STORAGE



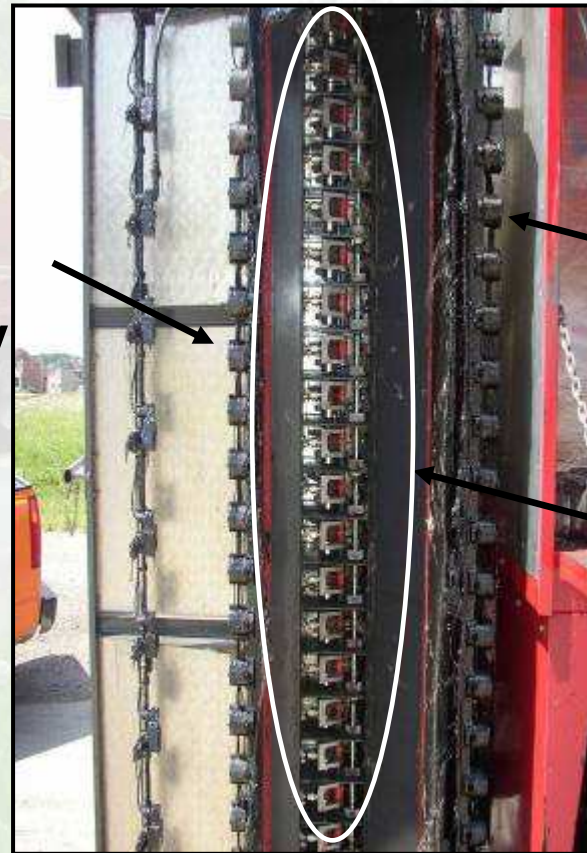


# FIBERMAT® MACHINE



**Easy to work on with folding bars**

**2nd  
Spray  
bar**



**1st  
Spray  
bar**

**Cutting  
Units**

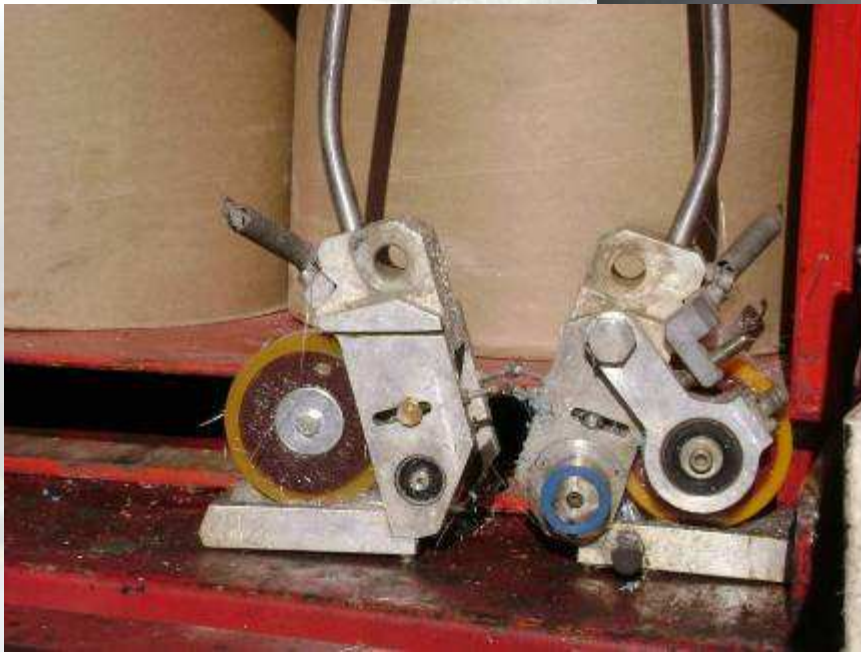
**Underside of application unit**

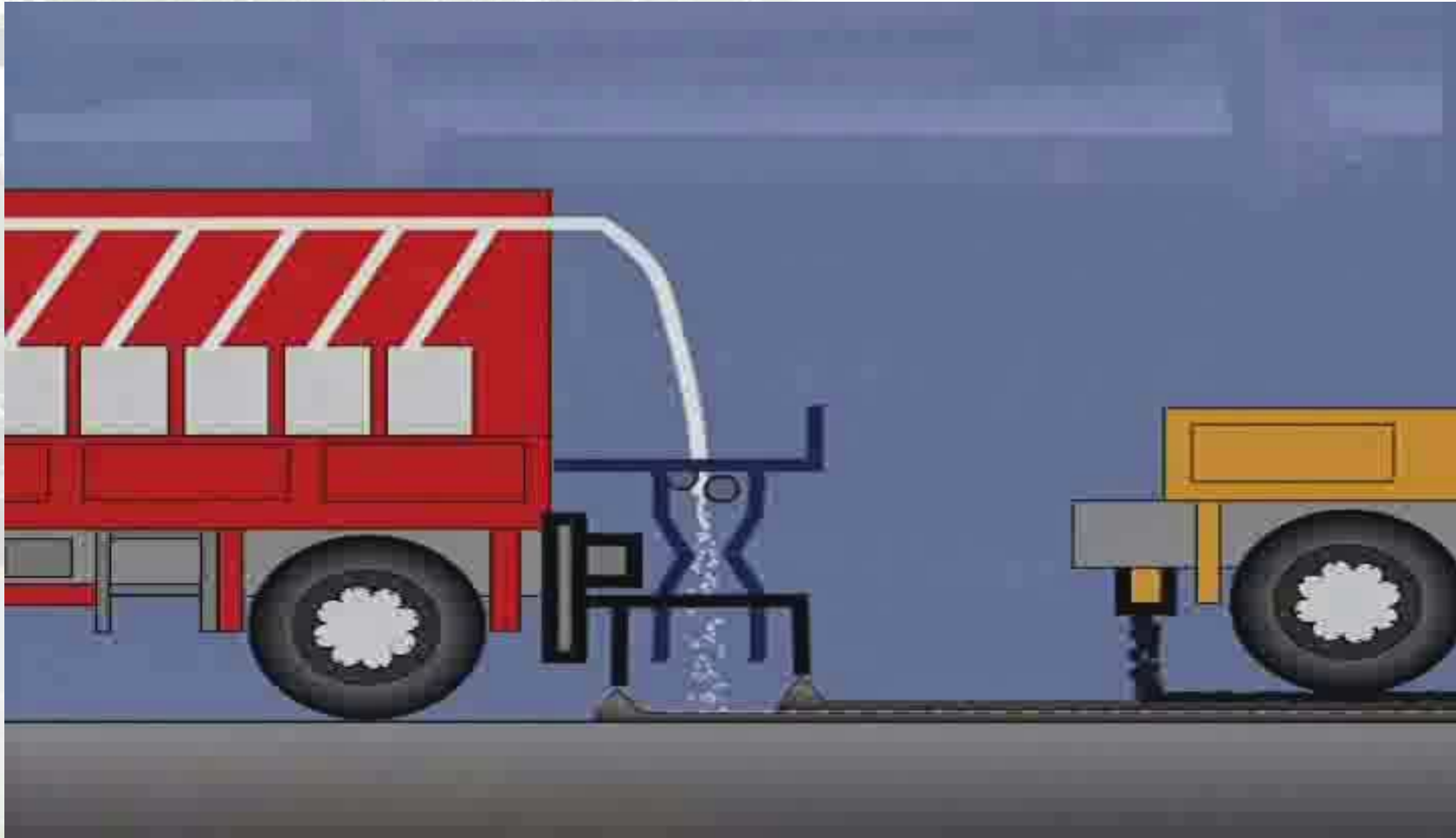


# FIBERMAT® MACHINE



- Chopping Unit Close Up







# TECHNICAL REPORTS



- Nottingham university, UK
- Ulster university, Ireland
- Lcpc, Autun, France
- New South Wales road transportation authority, Australia
- Rilem - 1996
- World congress on emulsions October 2006
- Penn State – PTI report on Fiberbat type b March 2007
- Texas A&M – TTI report on Fiberbat type b Oct 2007
- Ctaa – Niagara Falls, on November 2007
- Rilem Chicago, IL June 2008



# EXECUTIVE SUMMARY



## United States

M.Thompson October 2007 Page 1 of 14

**Evaluation of FiberMat® Type B as a Stress Absorbing Membrane Interlayer to Minimize Reflective Cracking in Asphalt Pavements**



by

Anif Chowdhury, P.E.  
Assistant Research Engineer  
Texas Transportation Institute


And

Joe W. Button, P.E.  
Senior Research Fellow  
Texas Transportation Institute

Texas Transportation Institute  
Texas A&M University  
College Station, Texas  
September 2007

**Texas A & M Report**

Thompson 7-11-2007 Page 1 of 7



**EVALUATION STUDY OF FIBERMAT® TYPEB INTERLAYER SYSTEM FOR ROADWAY PAVEMENT REHABILITATION**

*Original report prepared by*  
**Ghassan R. Chehab, Ph.D.**  
Assistant Professor  
&  
**Carlos J. Palacios**  
Graduate Research Assistant

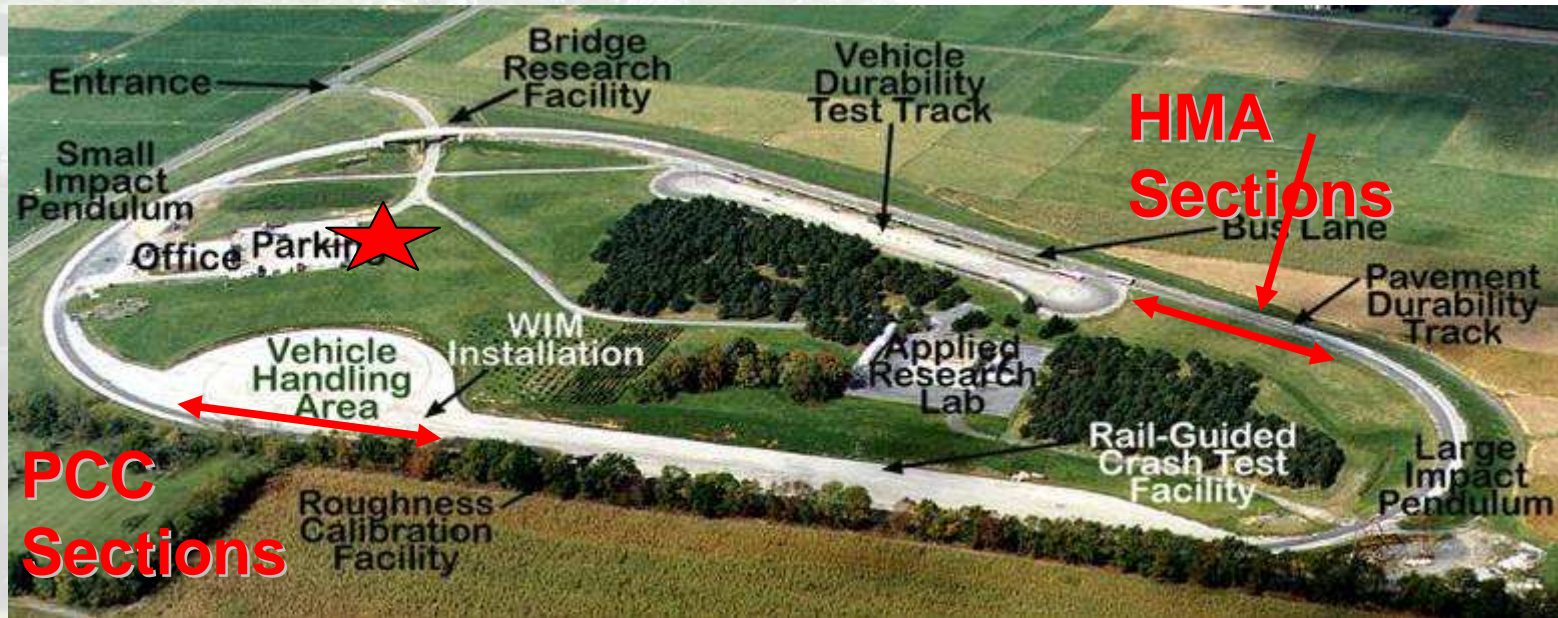
Pennsylvania Transportation Institute  
The Pennsylvania State University

**Pennsylvania State Report**

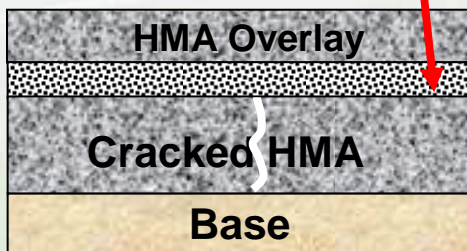




# PENNSYLVANIA TRANS. INST. TEST SECTIONS PENN STATE

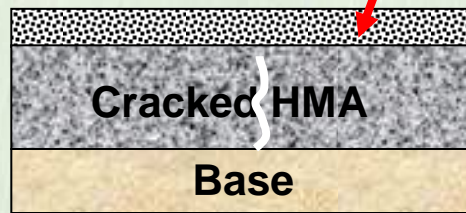


**FiberMat® Type B**

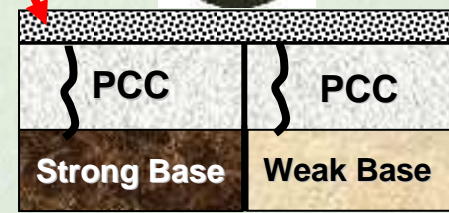


**A**

**FiberMat® Type A**



**B**



**C**



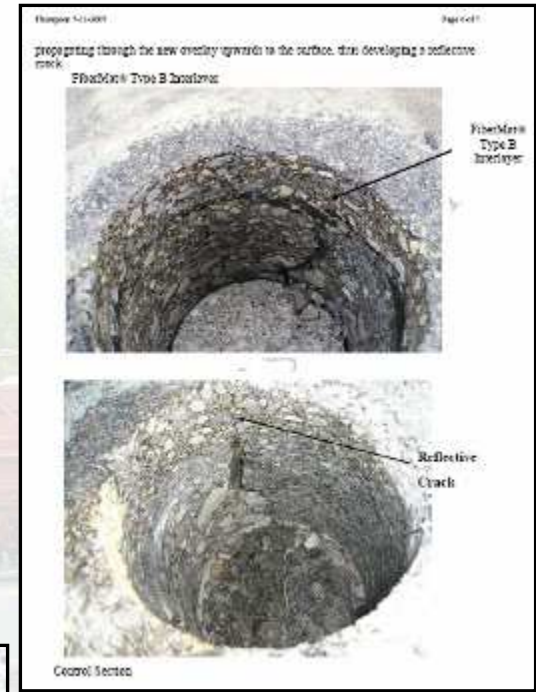
# EXECUTIVE SUMMARY



**FiberMat®  
Type B  
Interlayer  
(crack stops)**



**Control  
Core Sample  
(Crack continues)**



Page 6 of Penn State Report



# TEXAS TRANS. INSTITUTE TEXAS A&M

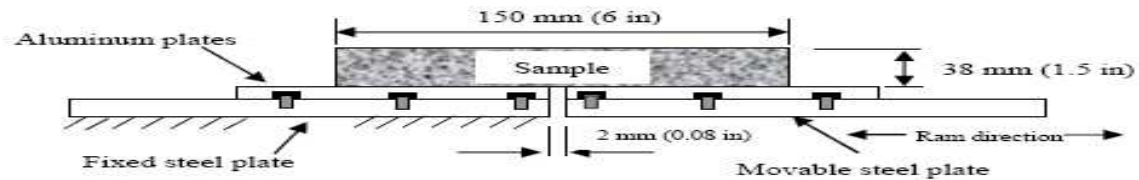


Figure 2-8. Schematic Diagram of TTI Overlay Tester System.

- Horizontal crack propagation along the FiberMat® interface rather than by cracking vertically above as in control samples.
- Generally, specimens containing FiberMat® improved cracking resistance in the small overlay testers 3 to 4 times more than control samples. The large overlay FiberMat® samples survived 14 times more compared to the control.



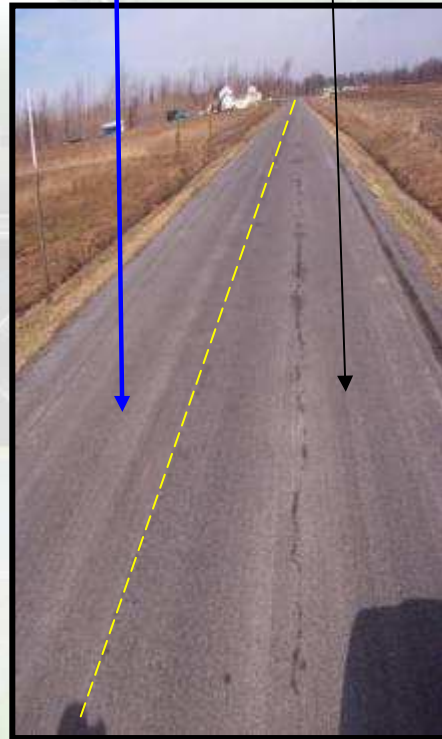


# FIBERMAT® TYPE A – FIELD TEST

## Groth Road in Murray, New York



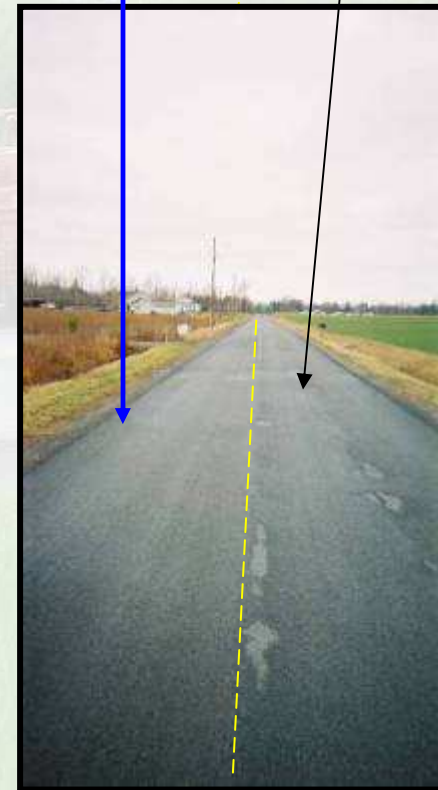
**FIBERMAT® TYPE A** CRS-2p



March 2004

**LONGITUDINAL CRACKS REAPPEARED AFTER 6 MONTHS**

**FIBERMAT® TYPE A** CRS-2p



January 2005

**SNOW PLOW DAMAGE AFTER 2ND WINTER**



# FIBERMAT® TYPE A – FIELD TEST

## Groth Road in Murray, New York



FIBERMAT® TYPE A



January 2006

FURTHER SNOW PLOW  
DAMAGE & WATER PUMPING  
AFTER 3RD WINTER

FIBERMAT® TYPE A



January 2007

DAMAGE CONTINUED NOW  
WATER IS PUMPING FROM  
SUBBASE

FIBERMAT® TYPE A



June 2008

REPAIRS NEEDED INORDER TO  
MAINTAIN PUBLIC SAFETY



# PROJECTS NEAR YOU

New York  
Pennsylvania  
Ohio  
Michigan  
Wisconsin  
N & S Carolina  
Massachusetts

Alberta  
Ontario





# BENEFIT TO CUSTOMER



## Public Safety

### Speed and efficiency of application

Initial construction speed minimizes disruption to the public

Open to traffic quickly minimizing disruption to the public

### Improved surface friction characteristics

Safer driving conditions in good and bad weather

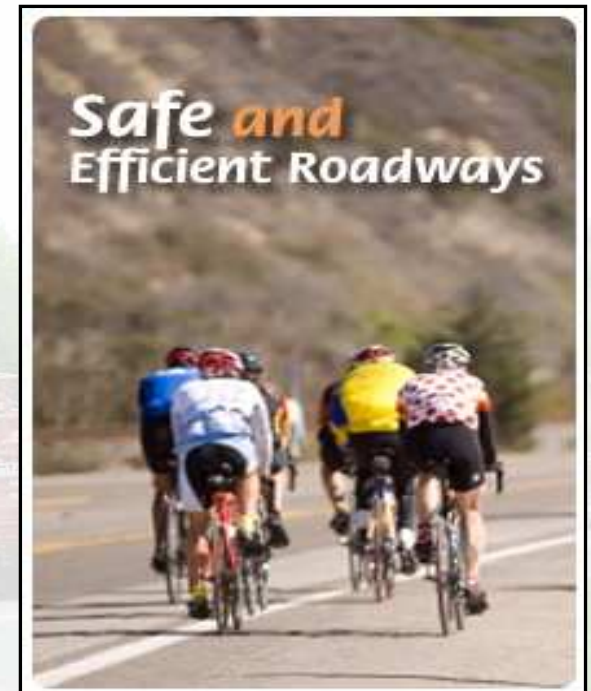
### Waterproofs surface preventing damage to sub base

Maintains ride quality longer

Maintains safe driving surface (slow pothole development)

### Improves Customer relations

Reduces public complaints due to poor road conditions





# BENEFIT TO THE CUSTOMER

**FIBERMAT**

## **Cost Effectiveness**

### **Speed and efficiency of application**

- Lower labor costs vs. competitive products
- Speed of process reduces crew & equipment costs on road
- Reduces exposure to potential liability

### **Waterproof surface preventing damage to sub base**

- Extends pavement life
- Maintains ride quality longer
- Maintains safe driving surface (slow pothole development)

### **Slows propagation of reflective cracks**

- Extends pavement life
- Extends life of overlay surface treatment
- Maintains waterproofing characteristics for longer life







# PERFORMANCE SUMMARY



**Increased tensile strength. (+30%)**

**Good fatigue performance. (+30%).**

**Site monitoring has provided practical evidence of pavement longevity.**

**The system can be used throughout the construction layers.**

**FiberMat® is manufactured on-site and to size.**

**FiberMat® can be opened to traffic quickly.**

**The binder layer provides waterproofing properties.**

**FiberMat® provides a good surface on which to apply other asphalt layers.**



# CONCLUSION

- » **Quantifiable & validated benefits in terms of a reduction in reflective and sealing alligator cracking.**
- » **A variation on a known system.**
- » **Used as a SAMI or a Wearing Course - new tool for the Pavement Engineer to Preserve the Pavement.**





**The Ultimate Stress Absorbing Membrane**

The **R**ight treatment, to the **R**ight road at the **R**ight time