The Ultimate Stress Absorbing Membrane

presented by

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Road Fabrics Inc.

30 Plus Years of Pavement Interlayer Installation & Distribution

Capturing international attention for over 30 years, Road Fabrics, Inc. has provided service from coast to coast, including the UK, Scotland, N. Ireland, and England. Experienced in working in any climate condition across the country is what separates Road Fabrics from the rest. To work with an experienced industry leader, contact Road Fabrics at 800.325.5747.
Outline

- What is FiberMat®
- What is a Good Candidate
- Studies & Test Sections
- FiberMat® Projects
HOW IS IT APPLIED?
Glass Fibers

1st layer of Emulsion

Cutting Wheels

2nd layer of Emulsion

Glass Fibers
Utilize the Best properties of both products

Combine Polymer modified Emulsion with Glass Fiber’s

Asphalt Emulsions = the waterproofing membrane
Glass Fiber Strands = ability to withstand stresses and enhance tensile properties
Together they create = “The Stress Absorbing Membrane”
FiberMat®

Seal cracks and waterproof the pavement
Improve tensile strength and delay reflective cracking
Improve friction characteristics of existing pavement
Used under, in or over the pavement structure
Quickly & Easily Placed and Shaped
100% Recyclable
FIBERMAT

The Ultimate Stress Absorbing Membrane
Fiber Reinforced Membrane – Wearing Surface

Type A – Wearing Surface
- Polymer Modified FiberMat® Asphalt Emulsion
  - 0.4 – 0.6 gal/sy
- Fiberglass
  - 2 - 3 oz/sy
- Aggregate
  - 17 – 25 lbs/sy
  - ½”, 3/8” or ¼” and combination

Fiber Reinforced Membrane – Interlayer

Type B - Interlayer
- Polymer Modified FiberMat® Asphalt Emulsion
  - 0.35 – 0.45 gal/sy
- Fiberglass
  - 3 - 4 oz./sy
- Aggregate
  - 10 – 15 lbs/sy
  - ¼” blinding aggregate
FiberMat® Machine

Trailer mounted 13 foot wide unit
Fiber Storage

Pallets of fiberglass packaged in sona tubes

FiberMat® Machine

Enough for 40,000 sq. yds. without recharging
Regulate production on the fly
Manage width in one foot increments
from 2’ to 13’ wide
FiberMat® Machine

Chopping Unit Close Up

Red roller knife cuts fiberglass strands
Quickly applied and easily shaped

Adjusts to your job site
Outline

- What is FiberMat®
- What is a Good Candidate
- Studies & Test Sections
- FiberMat® Projects
What’s a Good Candidate?
Drainage should be good
Ruts should be filled prior to commencement of work
The surface should be structurally sound
Cracks larger than ¼” should be filled before FiberMat® is applied.
Surface should be swept to remove all debris (leaves, loose stone, dirt, etc.)
Outline

- What is FiberMat®
- What is a Good Candidate
- Studies & Test Sections
- FiberMat® Projects
EVALUATION STUDY OF FIBERMAT TYPE B INTERLAYER SYSTEM FOR ROADWAY PAVEMENT REHABILITATION

Original report prepared by
Ghavami, K. Chehab, Ph.D.
Assistant Professor
&
Carlos J. Palacios
Graduate Research Assistant

Pennsylvania Transportation Institute
The Pennsylvania State University

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

by

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

Azif

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

Pennsylvania State Report
Texas A & M Report
Pennsylvania Transportation Inst. & Penn State test track

HMA Overlay

Base

Cracked HMA

FiberMat® Type B

HMA Overlay

Cracked HMA

Base

FiberMat Section

PCC Sections

HMA Sections

SS1H tack

Control Section
Penn State Study Field Cores

FiberMat Interlayer

Crack Terminates

No Treatment

Crack Propagates through overlay
Texas Transportation Institute Study
Overlay Tester

![Diagram of TTI Overlay Tester System]

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

**Control**

**FiberMat**
NCAT Preservation Findings
NCAT Test Locations near Auburn, AL
NCAT Test Track – Section W2 - Fiber Reinforced Membrane – Wearing Surface

NCAT Website - www.pavetrack.com/performance
NCAT Test Track Section W2 - FiberMat® type A
Photos taken summer of 2015 after 10M easls
Lee Road - 159

NCAT Website - www.pavetrack.com/performance
PG Sections on Lee Road 159

- Low ADT roadway
- Very high % trucks
- Load data provided by quarry and asphalt plant
- No traffic control needed for data collection
**Lee Road Final Layout**

1. Rejuvenating Fog Seal
2. Fibermat Chip Seal
3. Control
4. Control
5. Crack Seal (CS)
6. Single Layer Chip Seal
7. CS + Single Layer Chip Seal
8. Triple Layer Chip Seal
9. Double Layer Chip Seal
10. Single Chip + Microsurfacing (Cape)
11. Microsurfacing
12. CS + Microsurfacing
13. Double Layer Microsurfacing
14. Fibermat Chip + Microsurfacing (Cape)
15. Scrub Seal + Microsurfacing (Cape)
16. Scrub Seal
17. Distress Demo Section
18. Fibermat Chip + HMA thinlay (HMA Cape)
19. HMA Thinlay (PG 67-22)
20. HMA + 100% Foamed Recycle Inlay
21. HMA Thinlay (PG 76-22)
22. Ultra Thin Bonded Wearing Course
23. HMA Thinlay (50% RAP)
24. HMA Thinlay (5% PCRAS)
25. HMA Thinlay (High Polymer)
LR 159 Testing Overview

- Weekly
  - Inertial Profiler (roughness, texture, rutting)
  - Visual inspections with notes/pictures
- Monthly
  - Video for crack mapping
  - Rut depth
  - Wet ribbed surface friction
  - Subgrade moisture readings
  - Falling weight deflectometer (FWD)
- Other
  - Ground penetrating radar (GPR)
Lee Rd – 159 Pre-Treatment Conditions
Low, Medium & High Severity Conditions

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Each test section is divided by in & out bound traffic and Severity.
CR-159 Low Traffic Preservation

600k ESALS

50k ESALS

Lee Road 159
Pavement Preservation Experiment
To Reduce the Cost to Maintain Your Roads
Funding Provided by: Alabama, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, and TPC via Auburn University and the Lee County Commission

nppc16 National Pavement Preservation Conference 2016
Cape seals
NCAT Website - www.pavetrack.com/performance

Test Track
FiberMat® on section W2

Lee Road
FiberMat® on sections L2, L14, L17 & L18

US- 280
FiberMat® on sections U24, U25 & U36
FiberMat® at the NCAT US-280 project

![Graph showing rut depth comparison between preconstruction and postconstruction](image)

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FiberMat® at the NCAT US-280 project
FiberMat® Type A at the NCAT US-280 project
National Partnership
NCAT and MnROAD Pavement Test Tracks

MnRoads
County Road 8 – Low ADT
US-169 – High ADT
Location of the two New MnROAD Test Sections

Construction to start early August, 2016

US-169
High Volume Road
4 Mile Section

County Road 8
Low Volume Road
2-3 Mile Section

End
Rum River Bridge
RP 189.9

Start
County Road 146
RP 185.3
National Pavement Preservation Study (Northern Test Sections)
Minnesota DOT Road Research Project (MnROAD)
National Center for Asphalt Technology (NCAT)

US-169 NB Lane
CSA-8 EB and WB Lanes
5 miles South of Milaca - Just East of Pease - Mille Lacs County

1/10 mile Test Sections

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CSA-8

Layers | Traffic
---|---
7" HMA | 700 AFT
6" Granular Base
Sand and Gravel Subgrade
Last Constructed: 2006
Treatments: August 2018

US-169

Layers | Traffic
---|---
6.5" HMA | 16,000 AFT
17" Gravel Base
Sand Gravel Subgrade
2008 2" Mill and 4" Overlay
Treatments: August 2018

ABR - Asphalt Binder Replacement

Updated 10/20/2018
US - 169

Photos taken Nov. 30, 2016 after two snow plowing

Single Chip Seal (FA2.5)
Micro Surfacing (Type II) over Single Chip Seal (FA2.5)

Photos taken Nov. 30, 2016 after two snow plowing

CELL 169-006
US - 169
Photos taken Nov. 30, 2016 after two snow plowing
Outline

- What is FiberMat®
- What is a Good Candidate
- Studies & Test Sections
- FiberMat® Projects
Road Fabrics
Kankakee Rd & CR 750 FiberMat® Project
La Porte Co, IN
On September 7th through the 14th Road Fabrics completed a 62,000 square yard project of FiberMat® Type A - Fiber Reinforced Membrane - Surface Treatment on Kankakee Road and CR 750 for La Porte, Co., IN
La Porte Co. FiberMat® Project
La Porte Co. FiberMat® Project

Road Fabrics placed the FiberMat® emulsion and fiberglass,
La Porte Co placed the aggregate

Aggregate surface of the FiberMat®
La Porte Co. FiberMat® Project
Results of FiberMat® Type B Interlayer

Main Street
Overlay w/out FiberMat®

6th Street
Overlay w/FiberMat®

City of Marysville, OH
Both completed in 2006: images are from 2012
FIBERMAT® TYPE A – FIELD TEST
Groth Road in Murray, New York

March 2004
LONGITUDINAL CRACKS REAPPEARED AFTER 6 MONTHS

January 2005
SNOW PLOW DAMAGE AFTER 2ND WINTER
January 2006
FIBER MAT® TYPE A
CRS-2p
FURTHER SNOW PLOW DAMAGE & WATER PUMPING AFTER 3RD WINTER

January 2007
FIBER MAT® TYPE A
CRS-2p
DAMAGE CONTINUED NOW WATER IS PUMPING FROM SUBBASE

June 2008
FIBER MAT® TYPE A
CRS-2p
REPAIRS NEEDED IN ORDER TO MAINTAIN PUBLIC SAFETY
FIBERMAT® TYPE A – FIELD TEST
Groth Road in Murray, New York

October 2009
FIBERMAT® TYPE A – FIELD TEST
Groth Road in Murray, New York
Groveton, TX
June 9, 2010 - prior to construction

TX DOT Groveton (Lufkin District) 06/08/10 (Tuesday)

Rt. 287 Groveton
Located in TX DOT District 11 (Lufkin) in Trinity County.
2 lane road - has very heavy truck traffic, especially log trucks
10 feet wide – they wanted us to stay in between the paint lines so they didn’t have to re-stripe.
Job started @ Vickery Street (Dollar Stone on corner) and went west 1 mile to almost DOT maintenance
Groveton, TX
June 9, 2010 - prior to construction

TX DOT Groveton (Lufkin District) 06/08/10 (Tuesday)

Rt. 287 Groveton

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Job started @ Vickery Street (Dollar Stone on corner) and went west 1 mile to almost DOT maintenance
Groveton, TX

June 9, 2010 - during construction

March 20, 2012 - 21 months after construction

Same location on the roadway
Applications of FiberMat® Type B on I-75 Interstate Hwy
State of Michigan - Interstate 75 in the Upper Peninsula

MDOT Project # 1303 063 49025-116383 NH 49025 116383A NH 1349(009) HH8473

7.30 mi of hot mix asphalt cold milling and resurfacing, fiber reinforced bituminous membrane, joint repairs, and pavement marking on I-75 from north of M-123 northeasterly to north of M-134, Mackinac County. This project includes a 3 year materials and workmanship pavement warranty. A 2013 highway preventive maintenance project.
Milling to sound Concrete & HMA Patch
FiberMat® North I-75
North bound passing lane was open to traffic for the Independence Day Holiday weekend with NO reported windshield damage.
FiberMat® over PC Roadways

Harbor Creek Subdivision
New Baltimore, MI
Project Completed in 2015

The new design reduced the disruption to the residence during construction and cost the City 1/3 of the original PC reconstruction estimate.

The City went with FiberMat®.
FiberMat® over PC Roadways

3” of the broken and tipped concrete surface was milled off

Worst joints repaired using the MI detail 7 process, some areas also required a scratch course
FiberMat® over PC Roadways

FiberMat® was placed on scratch course and milled surface

Placement of FiberMat® prior to 3” HMA overlay
FiberMat® over PC Roadways

3” HMA Overlay on FiberMat®
FiberMat® over PC Roadways

After two years

Photos taken January 18, 2017

Photos taken January 18, 2017
FiberMat® placed on FDR
Goshen Co. WY
FiberMat® placed on Compacted Road Gravel

Double Gravel Seal with FiberMat Yellowknife N.W.T. (2010)

Gravel Seal Installation, Alberta (2012)

Around the World it’s called – Otta Seal
Recyclability

FiberMat® has been proven to be 100% Recyclable
FiberMat®

Seal cracks and waterproof the pavement
Improve tensile strength and delay reflective cracking
Improve friction characteristics of existing pavement
Used under, in or over the pavement structure
Quickly & Easily placed and shaped
100% Recyclable
Associations
Website Information

NCAT – National Center for Asphalt Technology (Test Track)
   www.pavetrack.com

FP2 – For Pavement Preservation
   www.fp2.org

NCPP – National Center for Pavement Preservation
   www.pavementpreservation.org

MWPPP – Midwest Pavement Preservation Partnership
   www.tsp2pavement.pavementpreservation.org/midwestern-mppp

AEMA – Asphalt Emulsion Manufacturers Association
   www.aema.org

ISSA – International Slurry Surfacing Association
   www.slurry.org

ARRA – Asphalt Recycling and Reclaiming Association
   www.arra.org

TSP2 - Transportation System Preservation Technical Services Program
   www.tsp2.org
The Ultimate Stress Absorbing Membrane