FIBERMAT

The Ultimate Stress Absorbing Membrane
presented by

BRANSCOME INCORPORATED

Jack Kowalski

432 McLaws Circle
Williamsburg, Virginia 23185

Cell: 757 592-1628

BRANSCOME INCORPORATED

FIBERMAT

Utilize the Best properties of both products

Combine 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 Ultimate Stress Absorbing Membrane"***

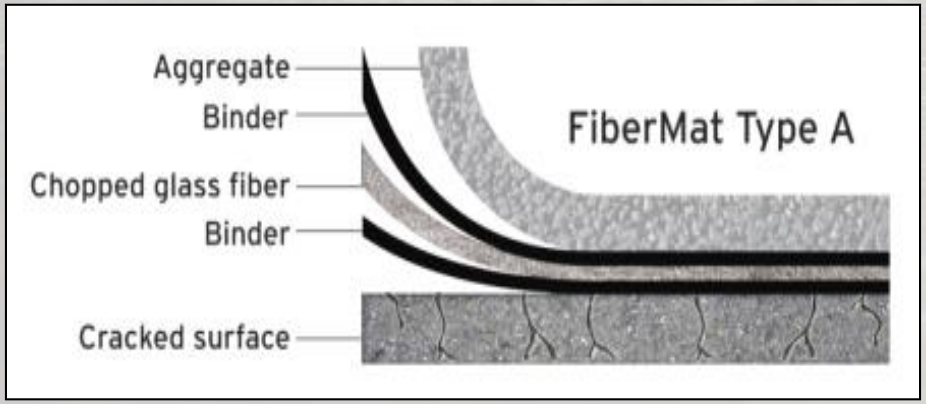
FiberMat® Types A & B

Type A – Fiber Reinforced Membrane – Wearing Surface

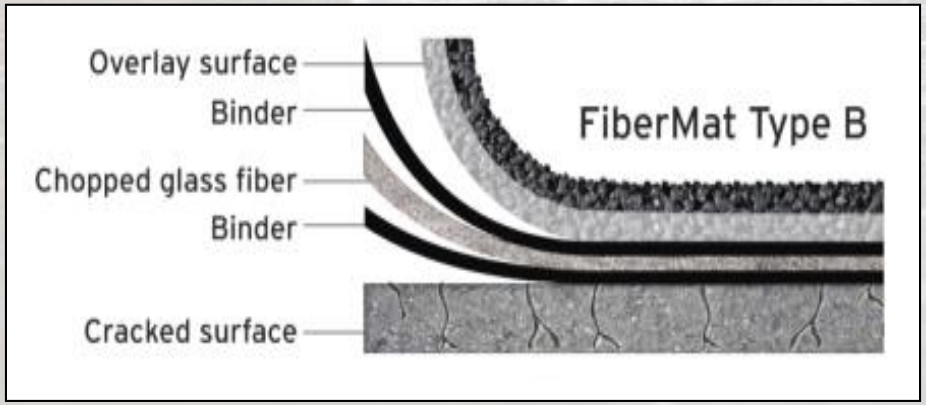
- Polymer Modified FiberMat ® Asphalt Emulsion
  - ***0.4 – 0.6 gal/sy***
- Fiberglass
  - ***2 - 3 oz/sy***
- Aggregate
  - ***17 – 25 lbs/sy***
  - *½", 3/8" or ¼"* ***and combination***

Type B - Fiber Reinforced Membrane - 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***



Fiber Reinforced Membrane – Wearing Surface



Fiber Reinforced Membrane – Interlayer

Machine History

Mini-Machine
4 foot wide unit

Truck mounted
8 foot wide unit

Performance Review

FiberMat® Type A – Field Test
Groad Road in Murray, New York

FIBERMAT® TYPE A (Left Side of Roadway)

CRS-2p (Right Side of Roadway)

March 2004
FIBERMAT® TYPE A
LONGITUDINAL CRACKS REAPPEARED AFTER 6 MONTHS

January 2005
FIBERMAT® TYPE A
CRS-2p
SNOW PLOW DAMAGE AFTER 2ND WINTER

Performance Review

FiberMat® Type A – Field Test
Groth Road in Murray, New York

FIBERMAT® TYPE A (Left Side of Roadway) **CRS-2p (Right Side of Roadway)**

January 2006
FURTHER SNOW PLOW DAMAGE & WATER PUMPING AFTER 3RD WINTER

January 2007
DAMAGE CONTINUED NOW WATER IS PUMPING FROM SUBBASE

June 2008
REPAIRS NEEDED IN ORDER TO MAINTAIN PUBLIC SAFETY

Performance Review

FiberMat® Type A – Field Test
Groth Road in Murray, New York

FIBERMAT® TYPE A (Left Side of Roadway) **CRS-2p (Right Side of Roadway)**

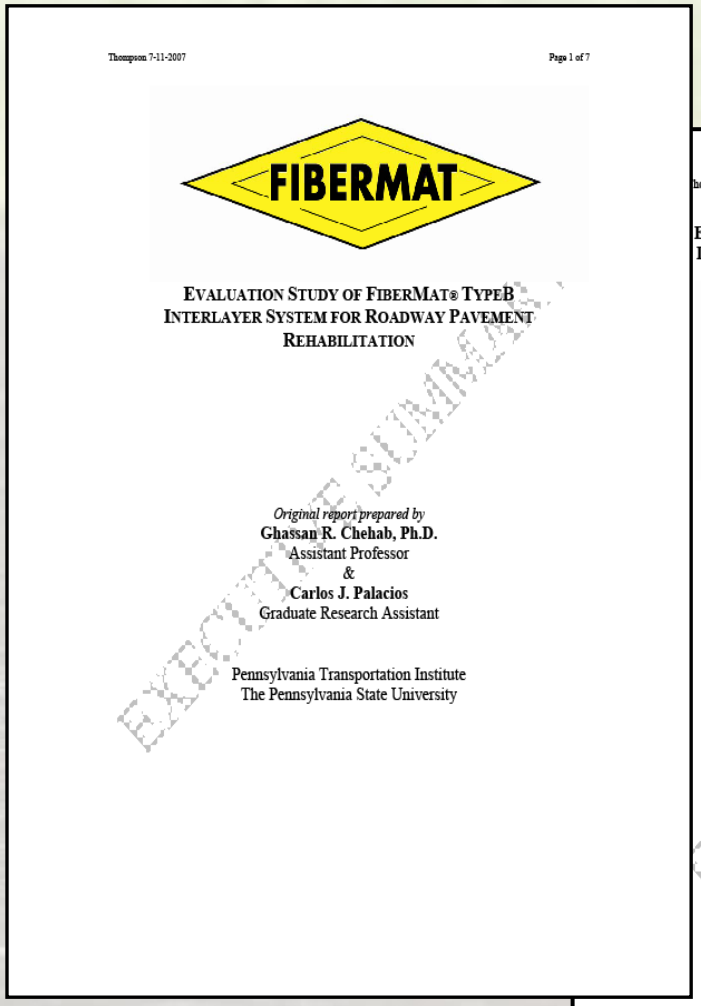
October 2009

Performance Review

FiberMat® Type A – Field Test
Groth Road in Murray, New York

FIBERMAT® TYPE A (Left Side of Roadway) **CRS-2p (Right Side of Roadway)**

Case Studies



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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

Penn State University Report

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

FIBERMAT

by

Arif 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

Texas Transportation Institute & Texas A & M University Findings

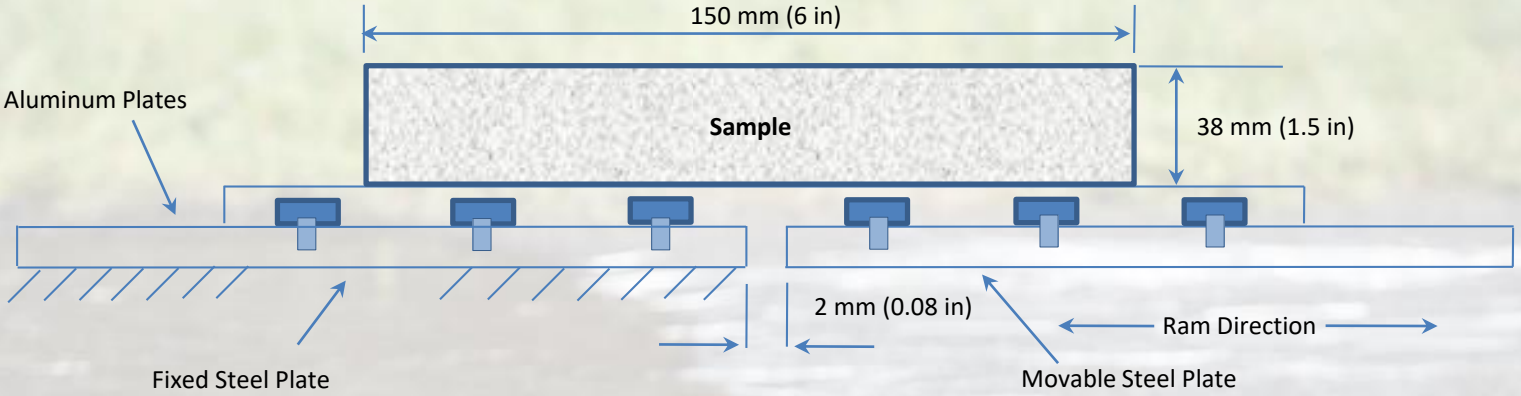
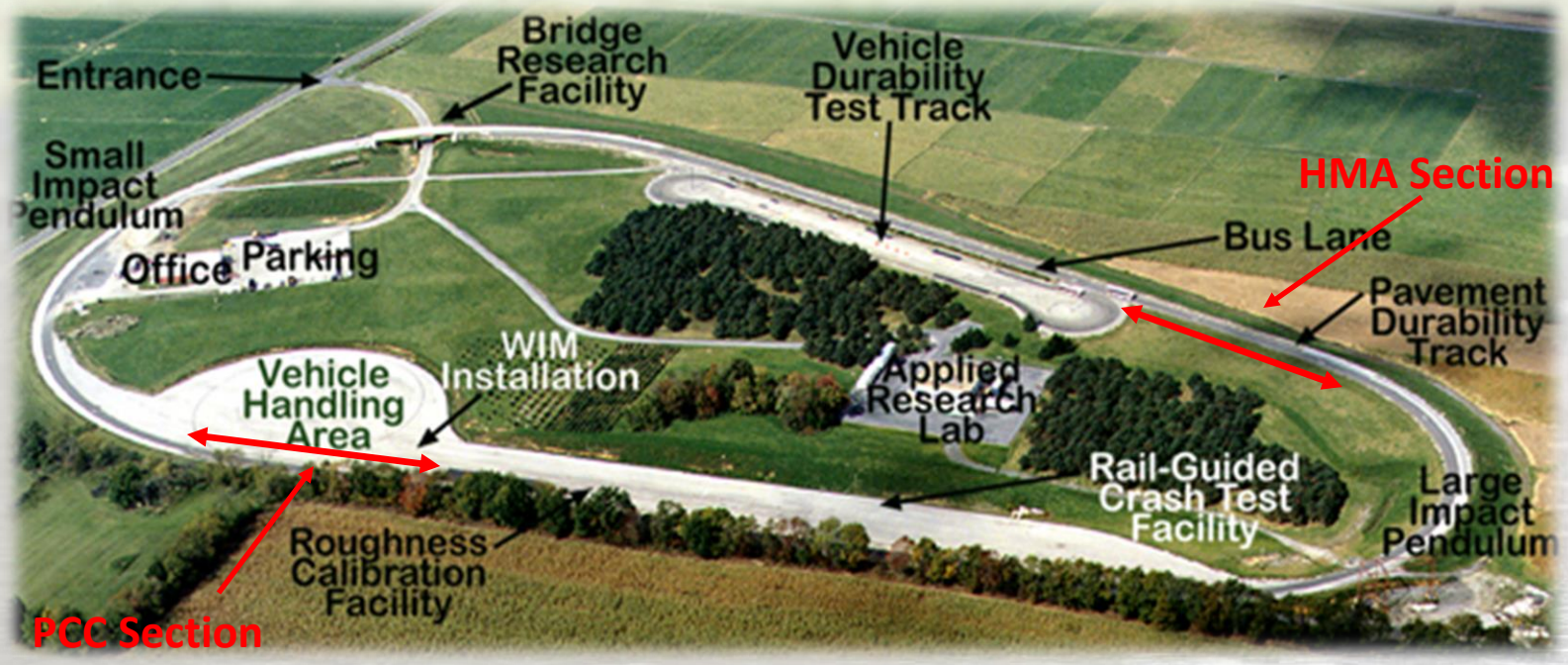


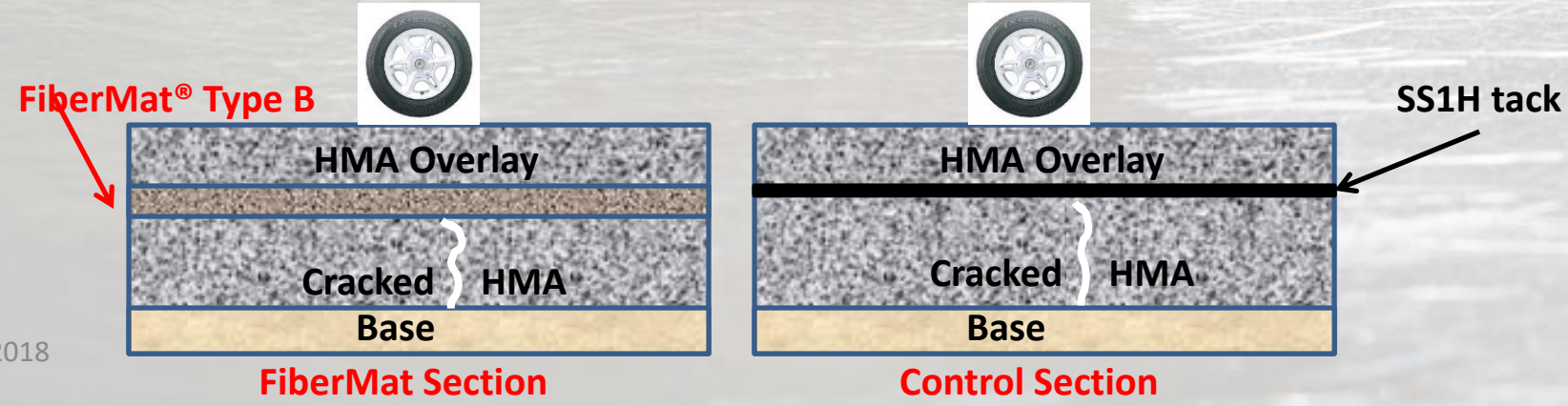
Figure 2-8 Schematic Diagram of TTI Overlay Tester System

Control

FiberMat

Pennsylvania Transportation Institute & Penn State University Findings





Penn State Study Field Cores

Crack Terminates

FiberMat Interlayer

Crack Propagates Through Overlay

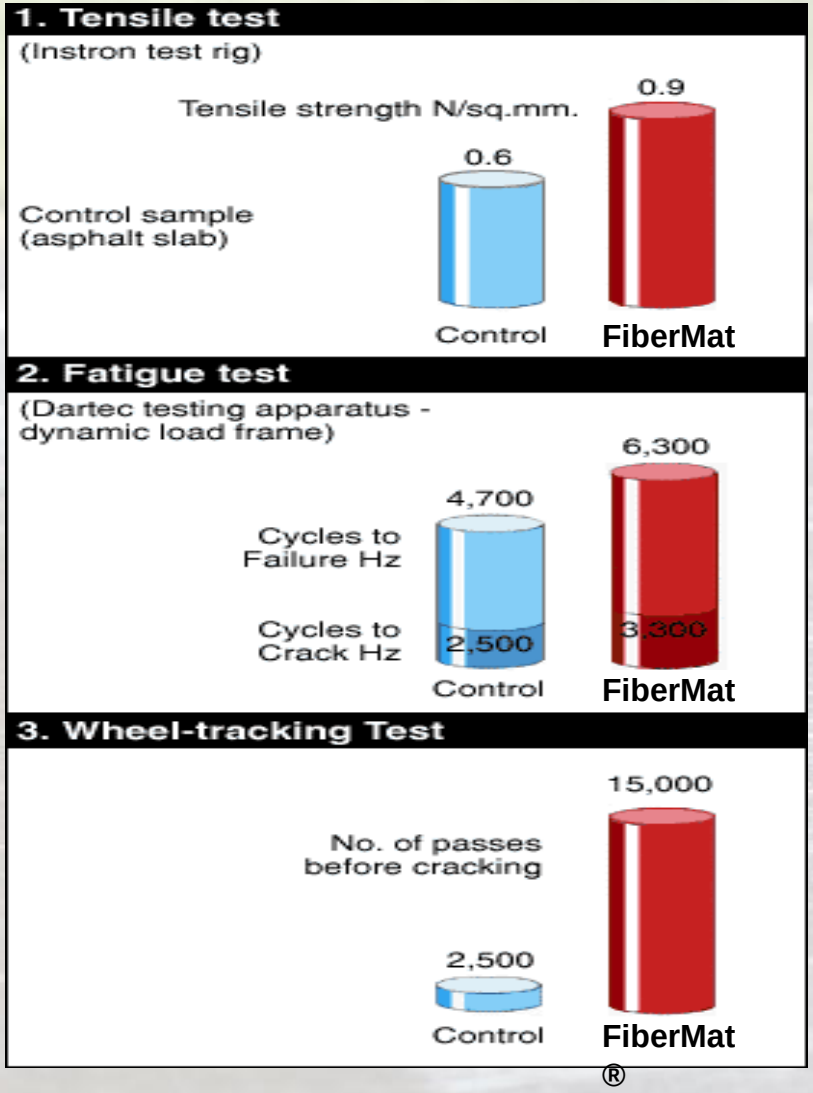
No Treatment

Laboratory Evaluation

FiberMat® has shown to enhance the performance of an overlay by 30%

(due to it's improved fatigue and tensile stress characteristics)

FiberMat® has shown to reduce wheel-track cracking by a rate of 300%



FiberMat® on the NCAT Test Track, Lee Road - Rt. 159 & US-280

NCAT FiberMat® Activity

FiberMat® has been placed on three locations at NCAT

1. NCAT Test Track- Summer of 2012
    1. Section W2-FiberMat® type A
2. NCAT Lee Rd 159- Summer of 2012
    1. Section L2- FiberMat® type A
    2. Section L14 – FiberMat® type B (Cape seal – FiberMat® /Micro)
    3. Section L17 – FiberMat® type A
    4. Section L18 – FiberMat® type B – (Interlayer – FiberMat® /Thin lift HMA)
3. NCAT US-280 - Summer of 2015
    1. Section U24- FiberMat® type A
    2. Section U25 – FiberMat® type B (Cape seal – FiberMat® / Micro)
    3. Section U36 – FiberMat® type B (Interlayer _ FiberMat / Thin Lift HMA)
4. MnROADS – Starting the Summer of 2016

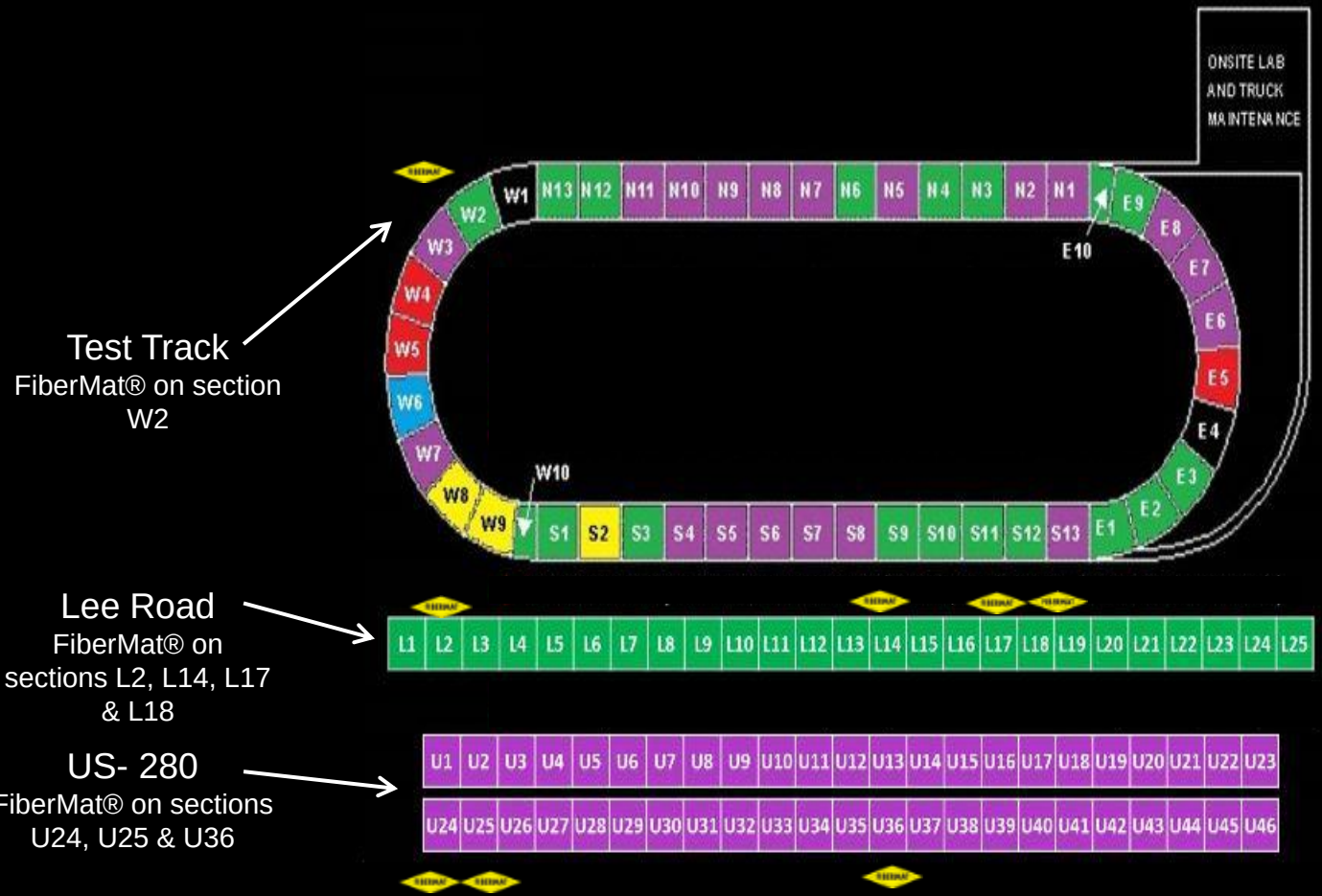
NCAT Test Track Section W2 - FiberMat® type A

Photos taken summer of 2015 after 10M easls

W2 is located in the west turn of the track

Still performing after 10,000,000 esals

NCAT Website - www.pavetrack.com/performance



The FiberMat® Trailer

FiberMat® Operation

Trailer mounted 13 foot wide unit

FiberMat® Storage Area

Fiber Storage

Enough fiber for 40,000 + sq. yds. without refilling

4 Pallets of fiberglass packaged in 48 sonotubes

FiberMat® Operation

Computer Controlled

Steerable trailer

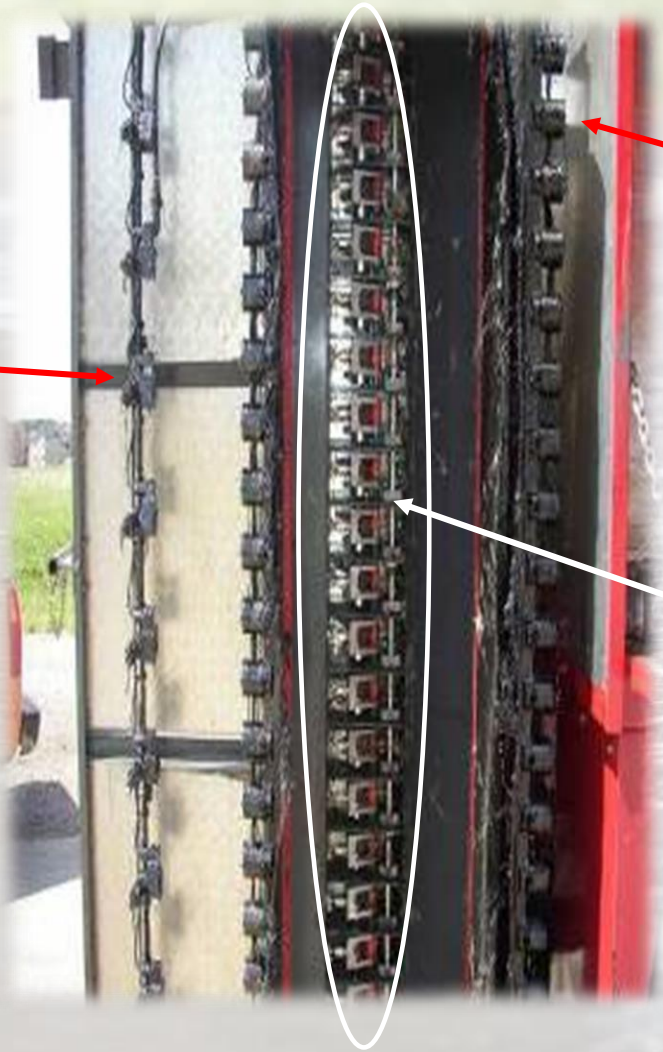
Regulate production on the fly

Manage width in one foot increments

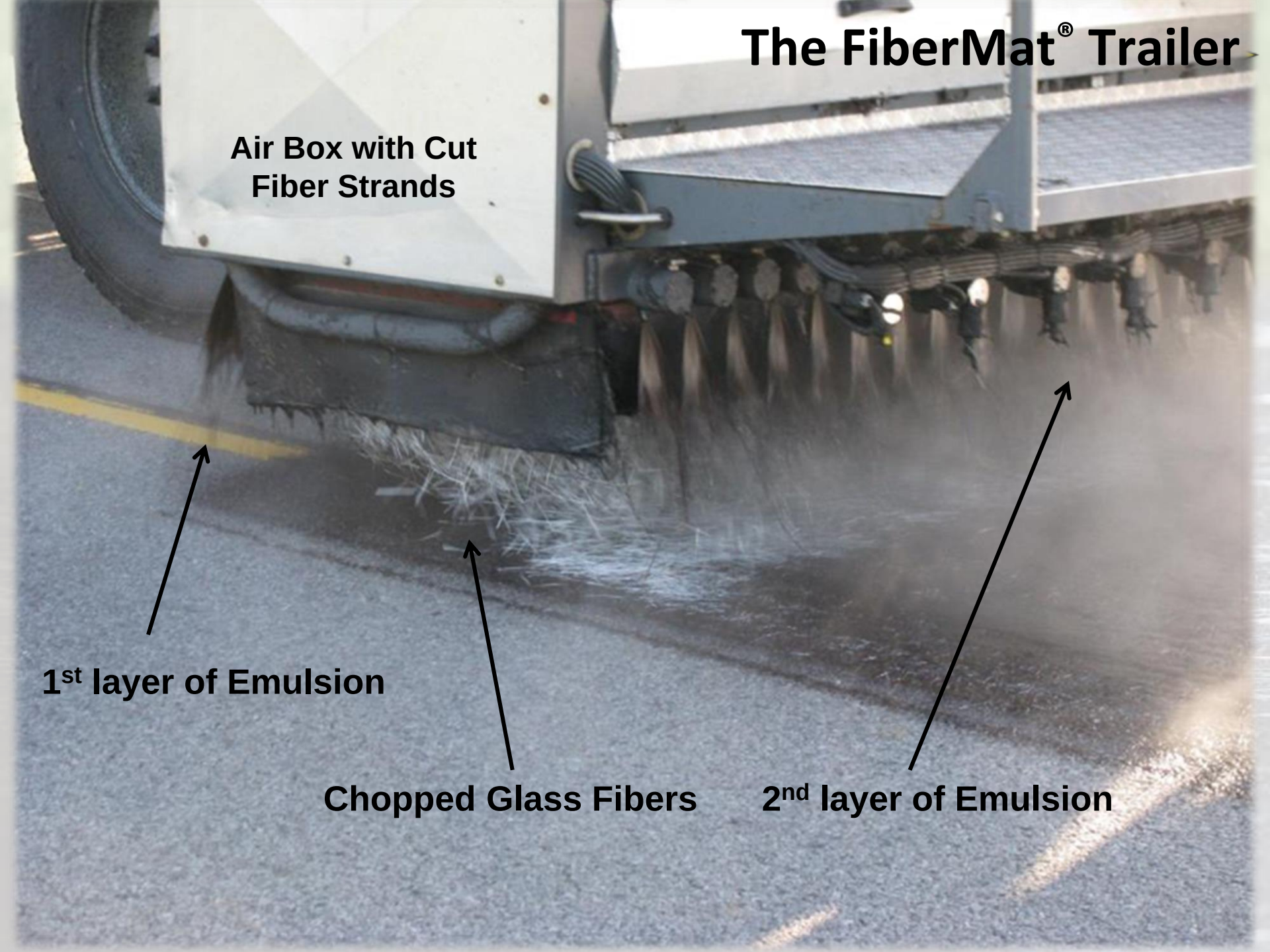
from 13’ wide to 2’ wide

FiberMat® Cutter Assemblies

Easy to work on with folding bars



Underside of application unit


The FiberMat® Trailer
Air Box with Cut Fiber Strands
1st layer of Emulsion
Chopped Glass Fibers
2nd layer of Emulsion

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FIBERMAT

Cut Fiberglass strands are placed between two layers of Emulsion

An aggregate is placed on to protect the layers of Mat

Aggregate

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FIBERMAT

FIBERMAT

The Ultimate Crack Inhibiting Membrane

The Right treatment, to the Right road at the Right time.

FiberMat Process video 10-8-15.mp4

When should FiberMat® be used?

- **When existing surface is showing signs of distress such as . . .**
  - Alligator, fatigue and reflective cracking

- **FiberMat is used…**
  - As a stress Absorbing Membrane
  - As a Stress Absorbing Membrane Interlayer - (SAMI) with a Wearing Course
  - As a replacement for the textile and grid markets (paving fabrics)

What's a Good Candidate?


FIBERMAT
Drainage should be good
Ruts should be filled prior to commencement of work


FIBERMAT
Cracks larger than ¼” should be filled before FiberMat® is applied
Crack filling and pothole repair should be done in the fall the previous year


FIBERMAT
The surface should be structurally sound


FIBERMAT
Surface should be swept to remove all debris
(leaves, loose stone, dirt, etc.)

FiberMat® vs Paving Fabrics

FiberMat® vs Paving Fabrics

FiberMat® wins head-to-head comparison with Paving Fabric

COLAS

FiberMat® Update

September 2013

Solutions™

We're all in this together™

FiberMat® wins head-to-head comparison with Paving Fabric on Michigan Interstate 75

FiberMat® was recently placed in the State of Michigan on seven miles of interstate 75 and it all came about because FiberMat® out-performed paving fabric in a head-to-head comparison conducted by the Michigan Department of Transportation (MDOT).

In 2012 MDOT compared FiberMat® Type B to a paving fabric on a 1 mile section of an HMA overlay project on Interstate I-75 in Chippewa Co. The paving fabric was placed on the north- bound passing lane and the FiberMat® was placed by Strawser Construction and Terry Materials on the south-bound passing lane, just north of the M-28 interchange. According to MDOT personnel, FiberMat® far out -performed the paving fabric in ease of installation and they found that the use of FiberMat® had resulted in little to none of the reflective cracks coming back through the resulting HMA overlay. Due to these results , MDOT let a new project in 2013 for seven miles of FiberMat® Type B on I-75 just north of St. Ignace, MI.

Strawser Construction placing FiberMat® on I-75 in Michigan's Upper Peninsula

FiberMat® visible at center joint was exposed to 4th of July holiday weekend traffic with no reported issues

Reports indicate that during the 2012 job the competition experienced many of the typical installation issues associated with paving fabrics: crack fill material bleeding through prior to the placement of the HMA and fabric edges lifting when driven on by paving equipment (resulting in the fabric wrapping itself around the tires). Delamination was witnessed between the fabric and existing pavement resulting in movement of the HMA mat during the rolling process, which produced a very irregular centerline. FiberMat® on the other hand did not experience any of these problems and was installed and performed as promised.

MDOT's results confirm that FiberMat® is a cost-effective, easily-installed crack inhibiting membrane which will greatly delay the propagation of reflective cracks. Once again FiberMat® beats the competition from head to toe.

For more information contact Nelson Wesenberg at nwesenberg@colassolutions.com

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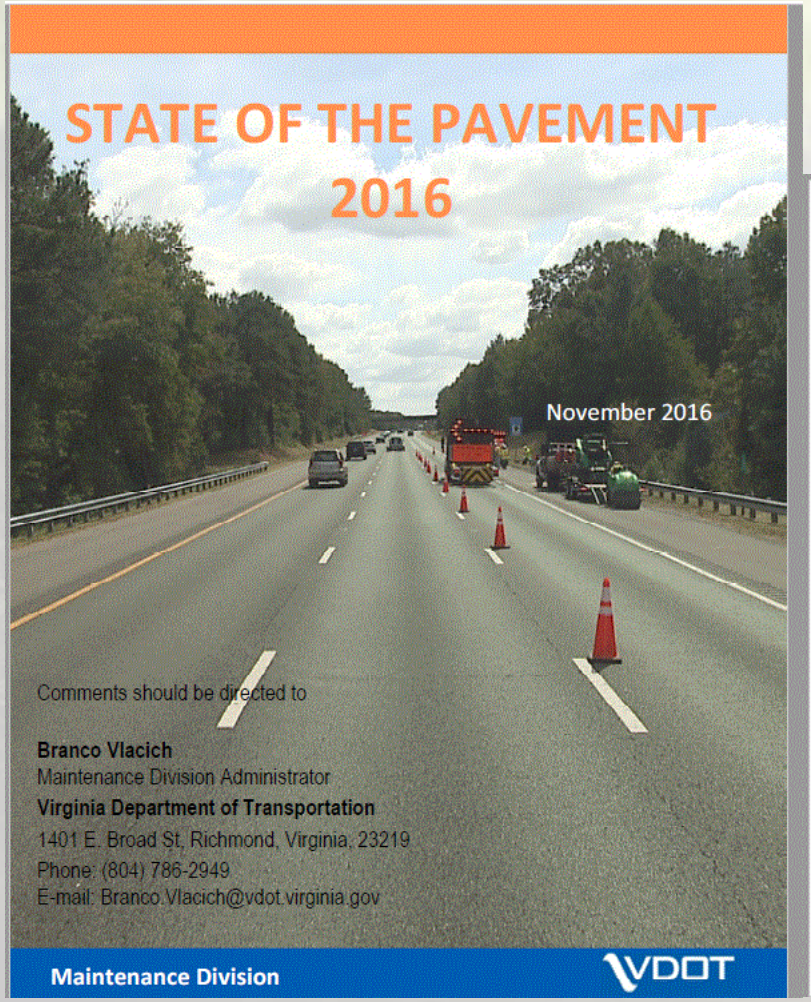
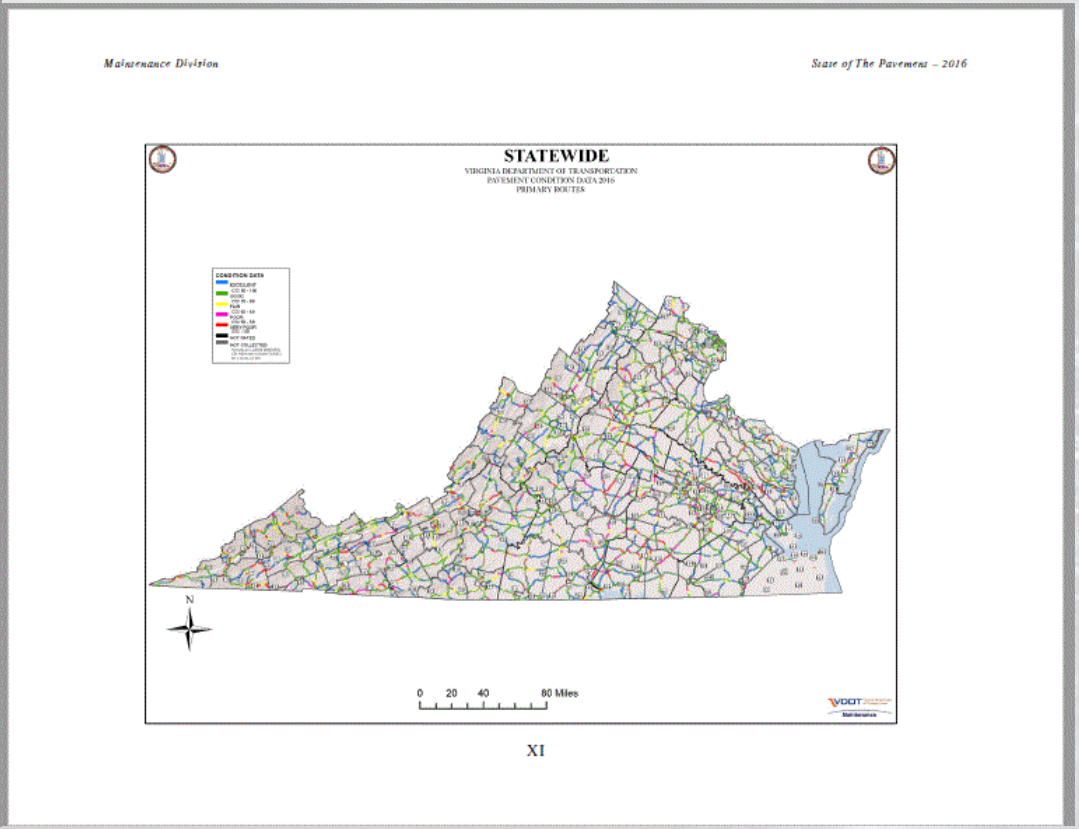
VDOT State of The Pavement 2016





Route 609 Hopewell, VA

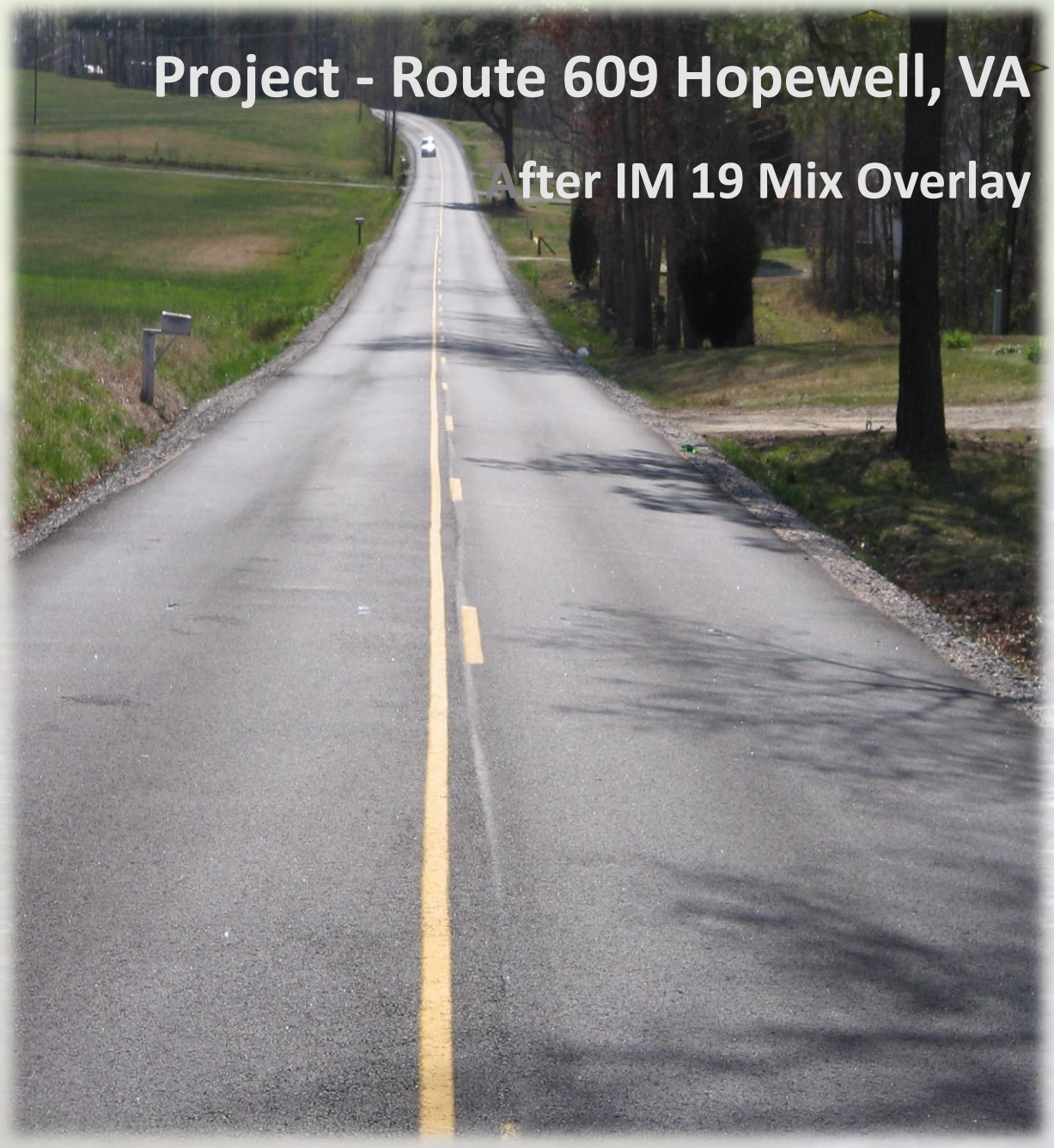
Prior to the FiberMat® Process

Route 609 Hopewell, VA

During the FiberMat® Process

Project - Route 609 Hopewell, VA

After IM 19 Mix Overlay



Virginia Beach Boulevard
Virginia Beach, VA

Virginia Beach Boulevard
Virginia Beach, VA

Defense Supply Center Richmond, VA - 2011

Defense Supply Center Richmond, VA - 2011

Recyclability

FiberMat® has been proven to be 100% Recyclable

COLAS

Solutions™

We're all in this together™

FiberMat Update

FiberMat®- Recycled After 7 Years of Outstanding Performance

Norjohn Contracting and Paving placed a FiberMat® Type A wearing surface at the entrance to one of their many aggregate locations in 2007. The FiberMat® which utilized 2 oz./sy of fiberglass was then subjected to daily heavy truck traffic in and out of the facility. Finally, after seven years of exceptional performance Norjohn decided it was time to replace the pavement.

A standard milling machine removed the FiberMat® and 4 inches of HMA in one pass, the milled material was then placed in a RAP pile located at their hot mix asphalt facility. Later the recycled FiberMat® and RAP material was processed with conventional crushing and screening equipment to be reused in another quality HMA pavement produced and placed by Norjohn Contracting and Paving.

For further information contact Nelson Wesenberg – nwesenberg@colassolutions.com

Conventional Milling

FiberMat® still in place after 7 years

FiberMat® - The Ultimate Crack Inhibiting Membrane

Easy to Install - Easy to Recycle

FiberMat® was designed to . . .

- enhance tensile strength and reduce reflective cracking.
- be quickly applied and easily shaped.
- have great wearing as well as tensile properties.
- be used at various levels in the pavement structure.

BRANSCOME INCORPORATED

FIBERMAT

FiberMat®

Seal cracks and waterproof the pavement

Improve tensile strength and delay reflective cracking

Improve friction characteristics of existing pavement

Used anywhere within the various levels of the pavement structure

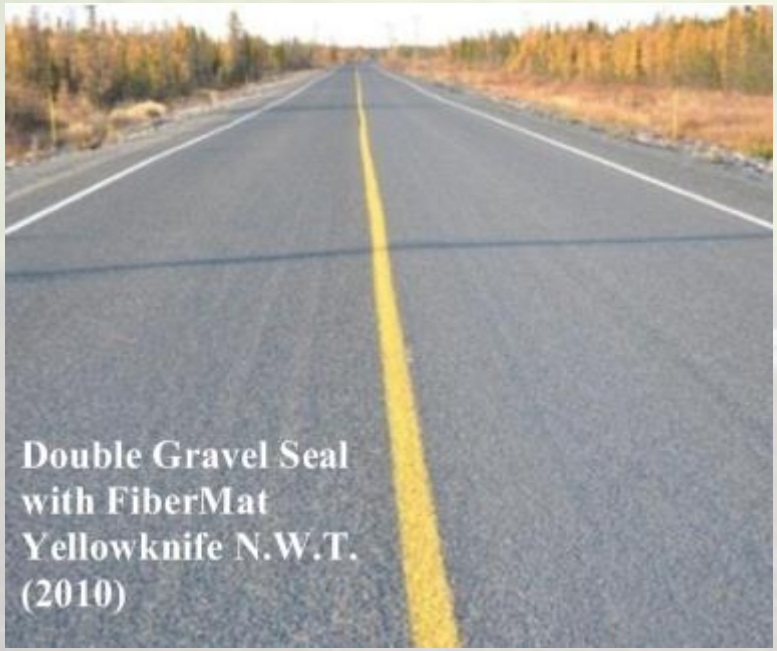
Quickly & Easily placed and shaped

100% Recyclable

How does FiberMat® add value to your new pavement?

- Slows reflective cracking
- Improved Chip Retention
- Extended Life of the surface treated road
- Extended Life of the HMA Surface
- Prevents water intrusion into sub-base

FiberMat® placed on Compacted Road Gravel



TECH-NEWS

December 5, 2013 – N°18

Low Volume Road Solution - FiberMat Gravel Seal

The typical Canadian low volume road pavement is composed of a untreated granular base covered with a thin surfacing bituminous membrane. For over fifty years or so, the prefered thin surfacing membrane for low volume roads is a "Gravel Seal" known in other part of the world as "Otta Seal". The Canadian gravel seals were first used in prairie provinces in the early 60's due to the huge land mass and low population resulting in a need for access roads to get grains to railways.

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

Typical Fibreglass Strands

Originally and it remains the same to this day, the guiding principles in the development of gravel seals was that this type of surfacing membrane needed to be economical, use readily available aggregate, be easy to apply anywhere, be impervious to protect the road structure and have a flexible membrane like behaviour to adapt to roadway movement. Accordingly, the gravel seals are installed with common equipment: distributors, chip spreaders and pneumatic rollers; the aggregate is an unwashed graded-aggregate; and the binder is a tall oil based "High Float" type emulsion.

In 2010, ACP Applied Products a Division of Canadian Road Builders Inc. started proposing to smaller rural municipalities in Western Canada the addition of fibres to gravel seals. The concept was to add a fabric like reinforcement within the surfacing membrane to provide tensile strength and consequently retard and potentially prevent all together typical potholing break-up of this type of surfacing membrane. The added benefits of the fibre-reinforcement are substantial compare to conventional gravel seals, while keeping the costing of this new ACP Applied Products solution substantially lower than an asphalt mix solution.

Gravel Seal Installation, Alberta (2012)

The first project in 2010 consisted of a 50,000 m² double gravel seal placed on the ring road around Yellowknife in the N.W.T. In 2013, with active promotional work, ACP Applied Products placed over 650,000 m² of FiberMat gravel seals.

For further information, please contact:

ACP Applied Products	*DECHKOFF Ch.*	*+ (1) 780 960 1690*	*cdechkoff@acpapplied.com*
ACP Applied Products	*BUCYK N.*	*+ (1) 780 960 1690*	*nbucyk@acpapplied.com*
ColasCanada Inc.	*CROTEAU J.-M.*	*+ (1) 780 989 1112*	*jmcroteau@colascanada.ca*

Distributed by: documentation@campus.colas.fr

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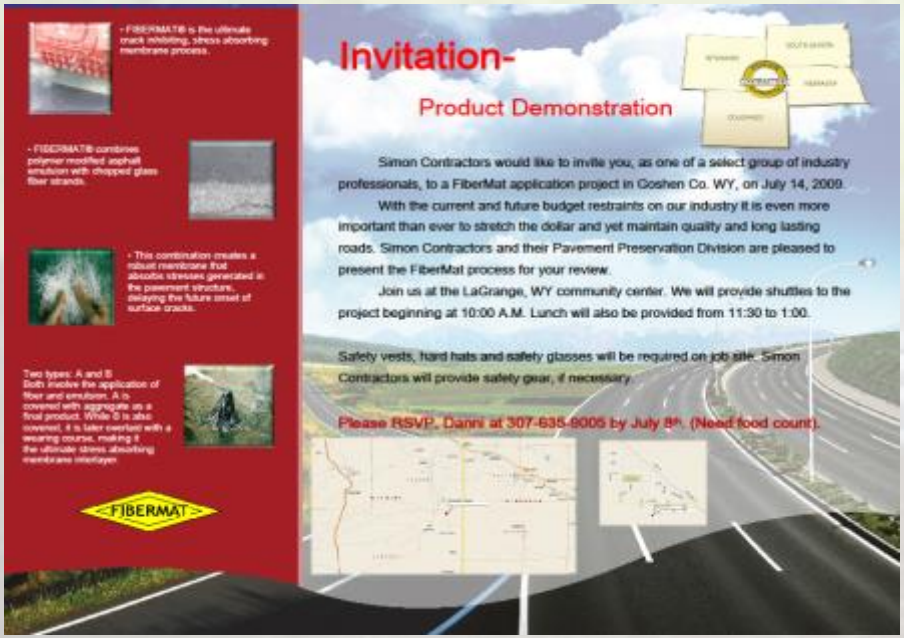
Around the World it's called – Otta Seal

FiberMat® placed on FDR



Any Questions?