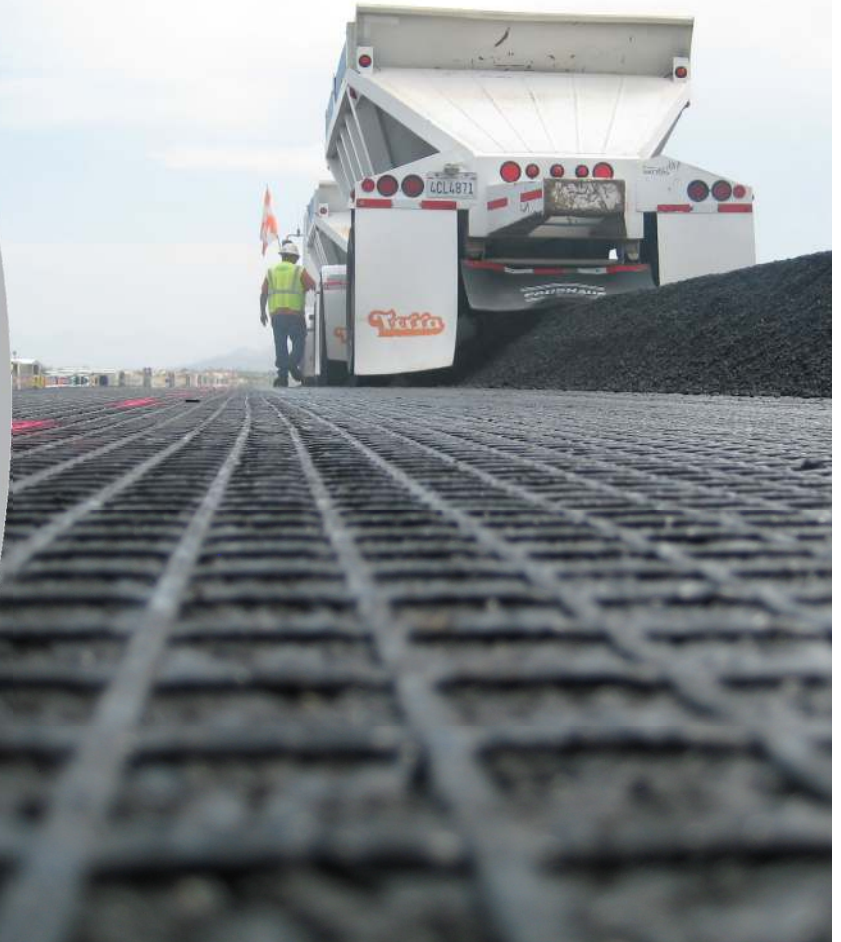


Stump The Instructor

Sustainable, Cost-Effective Roadways



Presenter: Kim Jordan
Tensar Region Manager





Four Improvements:

- *Build new inventory to last longer and fail less expensively*
- *Extend life of existing inventory*
- *Stretch maintenance cycles*
- *Walk on water! "Tensor Bubba Video"*

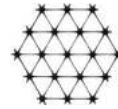
Cost savings, life extension, or both



Overview

Tensor®

- Pavement Optimization
 - AASHTO 93
- Subgrade Stabilization
 - Giroud-Han
- Pavement Overlays
 - GlasGrids

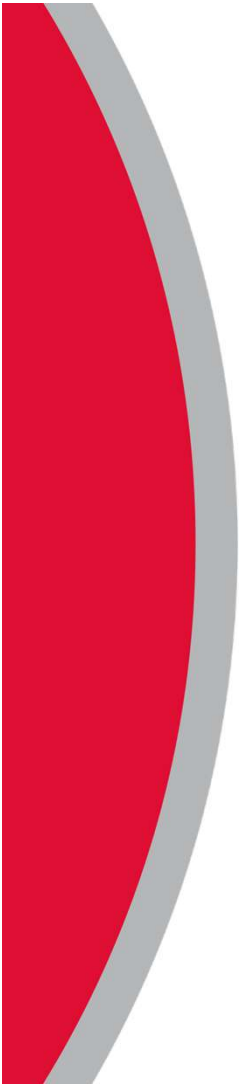


Tensor®
TriAx & InterAx



GLASGRID®
ASPHALT REINFORCEMENT SYSTEM





**“Roads wear out from the top
down, but they fall apart from
the bottom up.”**

National Association of County Engineers



Do You Have Roads Like This? Tensor Can Help!



Colrain DPW - Base Stabilization

What is the benefit?

CBR 0.5%
Colrain Trial Runs | Subgrade Stabilization

Design Cost Results

Geosynthetic: NX750

Unstabilized

32 in
0.5% CBR

Stabilized

15 in + NX750
0.5% CBR

Initial Construction Costs	Unstabilized	Stabilized
Aggregate	\$18,716	\$8,773
Geosynthetics		\$3,004
Excavation	\$2,568	\$1,204
Total cost	\$21,284	\$12,981
Unit cost	\$36.84/yd ²	\$22.47/yd ²
Savings		\$8,302 (39%)

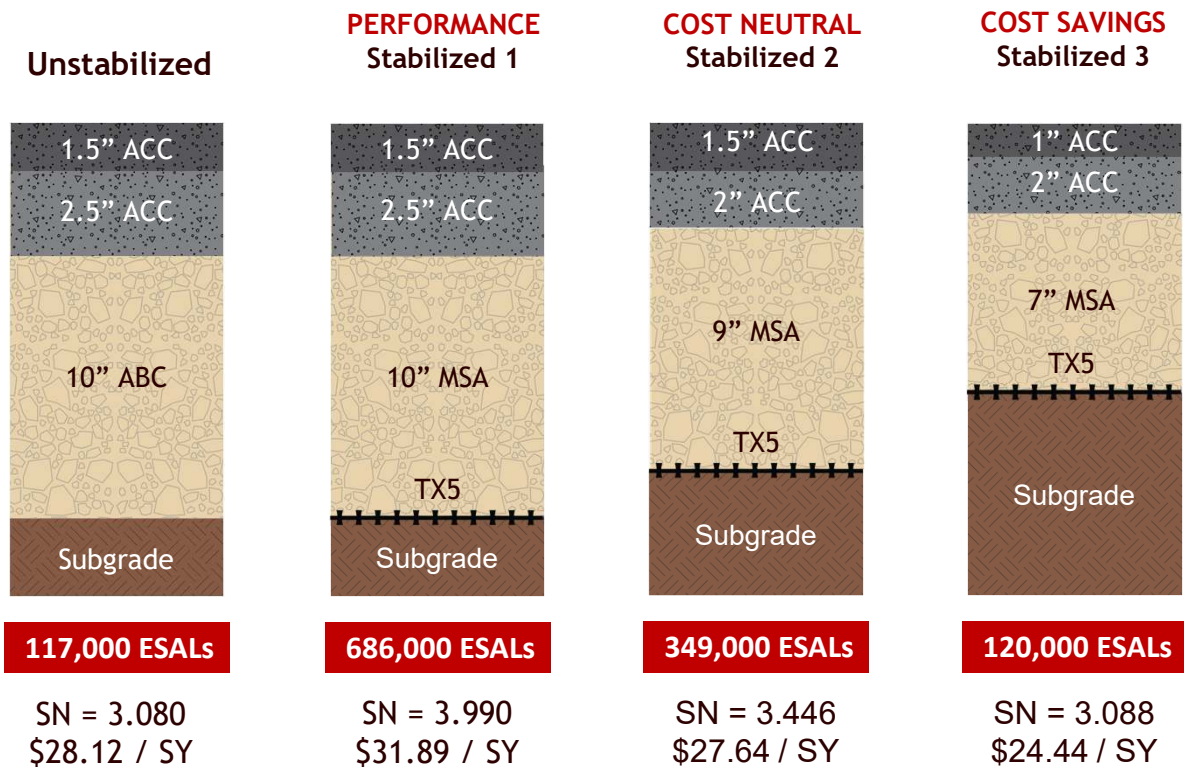
Additional Considerations	Unstabilized	Stabilized
Construction time	4 days	2 days
Dump truck trips	112	54
Fuel required	597 gal	288 gal
Water required	12,842 gal	6,020 gal

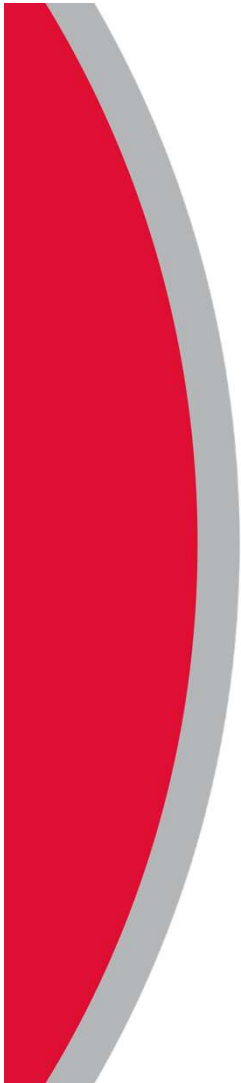


Pavement Optimization - What Is The Benefit?

Estimated Unit Prices:

Excavation - \$5 / CY
 HMA Wearing - \$80/t
 HMA Leveling - \$70/t
 ABC Aggr. - \$18/t
 TX5 geogrid - \$3.5/SY





Why Tensar Geogrids Work

- 1) Aggregate Confinement
- 2) Improved Bearing Capacity
- 3) Tension Membrane Effect

Google: Tensar Bubba Video



MAKE STONE PERFORM BETTER

These mechanisms were identified and defined by
ACE USACOE, Tngle & Webster (2003)



Installation - Simple

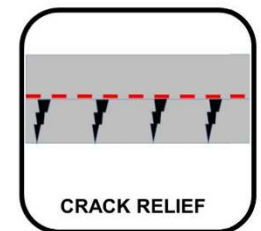


Sustainable, Cost Effective Roadway Maintenance



Cracks

Ride / Aesthetics / Fuel Economy / Vehicle Damage ...



Solution is GlasGrid



GlasGrid® is to asphalt what rebar is to concrete

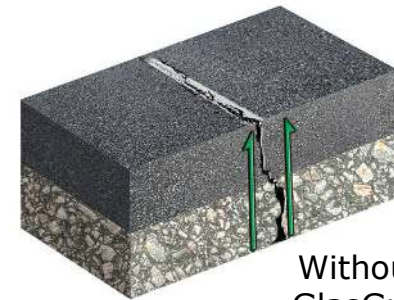
- Stronger than steel
- No separation between courses



GlasGrid

How Does GlasGrid Work?

- Creates a composite material combining:
 - compressive strength of the asphalt
 - tensile strength of the glass fibers
- Cracks propagating upwards are intercepted and redirected horizontally

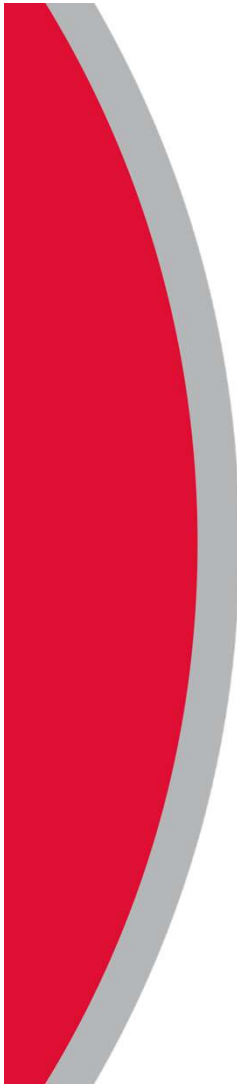


Without
GlasGrid



With
GlasGrid





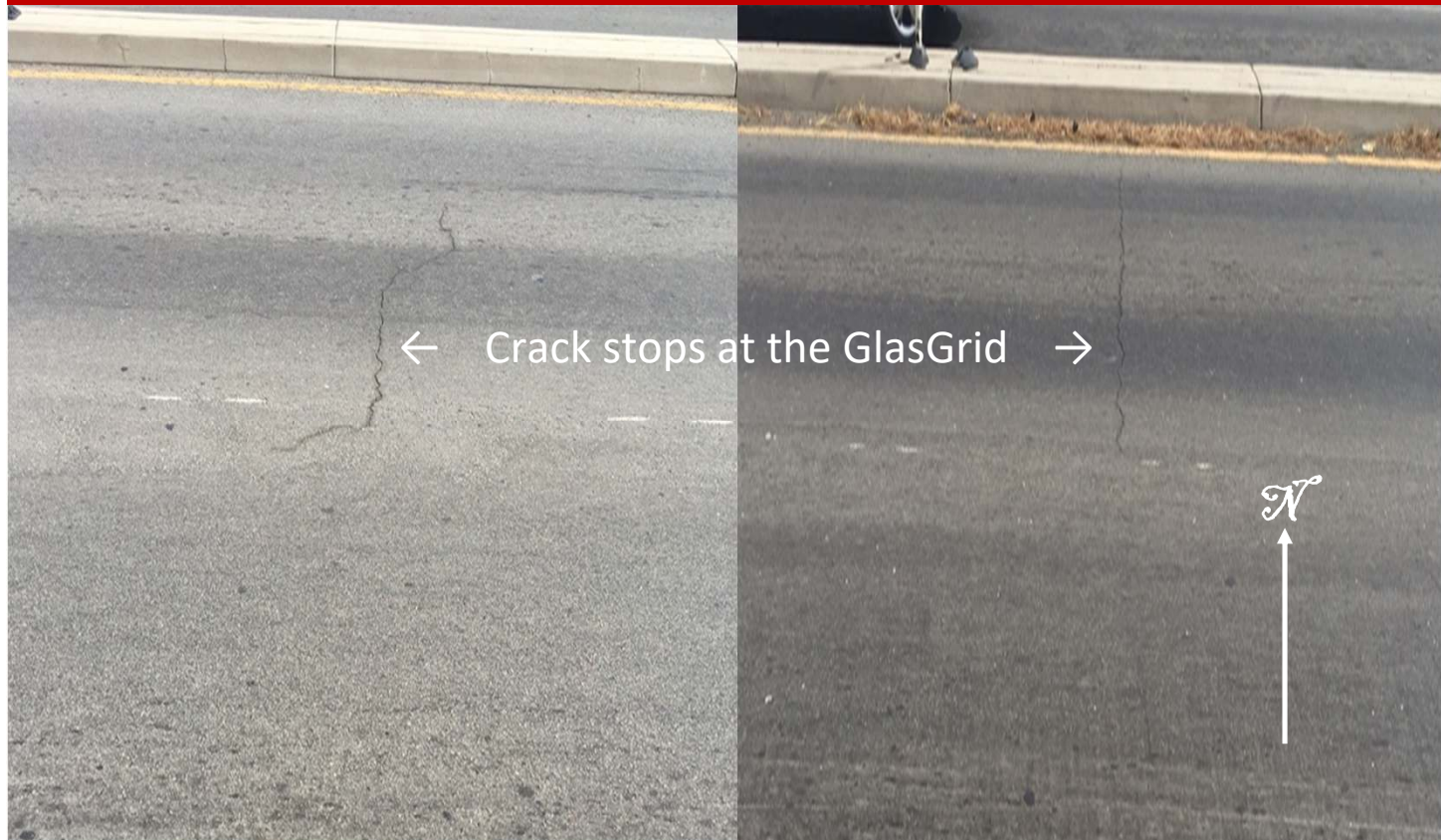
Van Hut Road
GlasGrid® placed
on shoulder.



Van Hut Road
4 years after install.



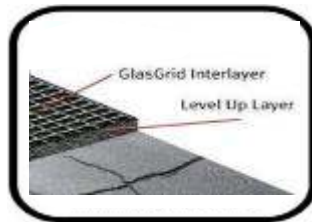
**GlasGrid 8501 Installed 2003 S/B curb lane only
– 3" HMA and 13 yrs later**



Fiberglass Paving Grid

Installation Requirements

- Leveling course is required - $\frac{3}{4}$ " thickness
- Surface clean and dry
- Compact GlasGrid using pneumatic tire roller
- A tack coat is suggested, TF best
- 1.5" Overlay



GlasGrid Tack Film - GG8511TF

Project - City of Ithaca



Fiberglass Paving Grid

High Strength Asphalt Pavement Reinforcement

- Project - 25 yrs
- GG8501 extends reflective crack relief of an overlay by up to 300%.

Project: Centralia Airport, ON

Project Date: June 1993

Image taken: August 2018



Project Profile

NH DOT I-93 Concord - Canterbury

Project date: May 2006

Right lane

- Mill out 3.5" (89mm) of failed mix
- ½" (12.5mm) levelling
- Place 100 x 200 kN Fiberglass Paving Grid 10 feet wide in lane (GG8502/8512)
- Pave 2 lifts of 1.5" (37.5mm)

Left lane

- Mill out 2.5" (63.5mm) of mix
- Replace in two lifts 25.5mm + 37.5mm

Future schedule:

- 40mm lift of ACC to meet design analysis, schedule for the following year, however this was postponed until 2016. Ten year delay.



Project Profile

NH DOT I-93 Concord - Canterbury 2006



Project Profile

NH DOT I-93 Concord - Canterbury 2006



Project Profile

NH DOT I-93 Concord - Canterbury 2006 VS 2012





Tensor Will Help!

- ✓ *Extend life of existing inventory - GlasGrid*
- ✓ *Stretch maintenance cycles – InterAx, TriAx, GlasGrid*
- ✓ *Build new inventory to last longer and fail less expensively – InterAx & TriAx*



Questions?

