



# **MRPA**

**MICHIGAN ROAD PRESERVATION ASSOCIATION**

2025 Highway Maintenance Conference  
May 24, 2025

## Meet Our Members



*Pavement Maintenance Contractors*  
*EEO/AA Employer*



# PreserveMIRoads.Org

# Anti-trust Statement

The Michigan Road Preservation Association is a non-profit (501c6) association dedicated to the principles of ethical business practices, free enterprise and equitable treatment of employees which has pledged to guard the best interest of the capital preventive maintenance industry in Michigan.

The official policy of MRPA is, has been, and shall be that the Association will not permit, condone, or promote activities taken on behalf of its members or staff that adversely affect the ability of any firm or individual to participate equally in the preventive maintenance industry or the Association.

**PreserveMIRoads.Org**

# What is Preventive Maintenance?

- Planned treatment of existing pavements.
- Decreases rate of deterioration.
- Adds 5 to 10 years to the pavement service life.
- The most cost-effective pavement treatments.
- Best practice – also has applications to maintain serviceability.

It's not patching potholes....  
It's preventing them!

**PreserveMIRoads.Org**







Oil Filter  
**\$9.99**

**OR** New Motor  
**\$4,000**



Deck Stain  
**\$200**

**OR**

New Deck  
**\$8,000**







New Shingles  
**\$2,500**

**OR** New Roof  
**\$8,500**





Crawford Rd →

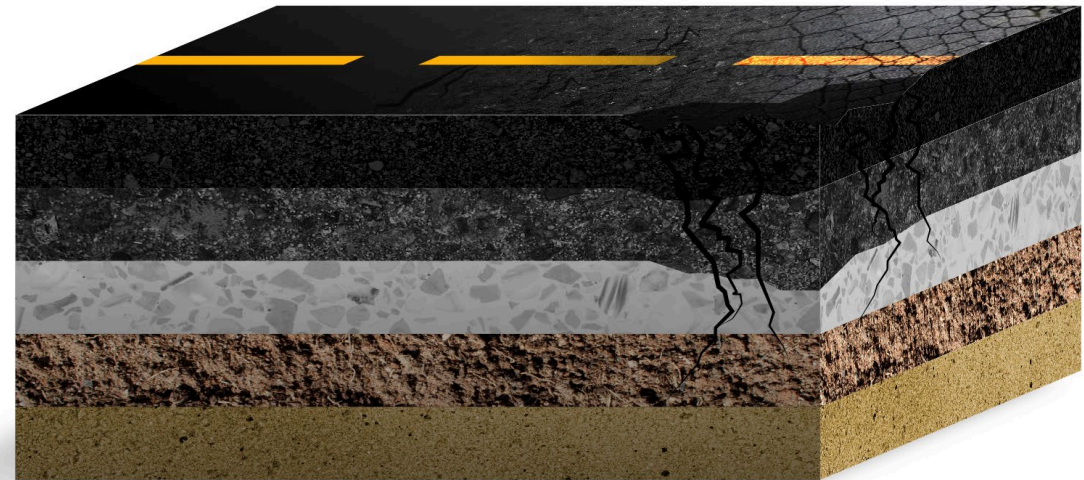


# Pavement Preservation

Strategic use of preventive maintenance to extend pavement life.

Goal=> Keep Roads in Good or Fair Condition.

**Preventive Maintenance Treatment**  
**Existing Surface Course**  
**Existing Base Course**  
**Sub-base of Aggregate Layer**  
**Compacted Sub-grade**



Good

Fair

Poor





# Life Extension Averages – RoadResource.org



GET THE MOST OUT OF ANY PAVEMENT WITH JUST ONE NEW TOOL.

Visit the new [roadresource.org](http://roadresource.org)



<b>Micro Surfacing</b>	<b>New</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>
PCI	85-100	75-85	65-75	55-65
Life Extension	10+	8-10	6-8	4-6
<b>Chip Seal</b>	<b>New</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>
PCI	80-100	80	60	40
Life Extension	10+	7-10	3-5	1-3
<b>Crack Seal</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>	
PCI	85-100	70-85	55-70	
Life Extension	5	3	1-2	
<b>Cape Seal</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>	
PCI	80	60	40	
Life Extension	8-10	6-8	4-6	
<b>Scrub Seal</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>	
PCI	70	55	40	
Life Extension	7-10	3-5	1-3	
<b>Fog Seal</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>	
PCI	70-100	65-75	55-65	
Life Extension	4	3	2	

**Roads need  
sunscreen too!**

LTAP's *The Bridge*  
September 2013





**BEST PRACTICE**

# CPM Treatments Placement on the Curve

## Good to Fair

- Seal new pavements
- Chip Seal with or without fog seal
- Micro surfacing
- Soft-binder fiberized micro surfacing
- Ultra-thin HMA

## Fair to "Fair-ish"

- Double Chip Seal
- Cape Seal
- FiberMat
- Paver Placed Surface Seal

## Crack Seal and Mastics

- Used across the curve
- Stand alone or pre-treatment
- Overband crack treatment
- HMA crack treatment
- Mastic crack treatments
- Concrete joint sealants

## Set Realistic Expectations

- Preventive vs. Restorative
- Record all relevant data





# Benefits of Fog Sealing over Chip Seal

- Appearance of newly paved road.
- Better embedment of stone.
- Increased visibility of pavement markings.
- Longer service life for chip seal.
- Improved motorist and homeowner satisfaction.











# Mixing the Fixes!

- As roads deteriorate, a single fix may not be the right fix
- Interlayers provide a cost-effective life cycle extension and substantial savings over more costly rehabilitation
- Better ride for life of pavement with less maintenance



# Chip Seal Interlayer

- Placed prior to HMA overlay  
**Texas Under Seal**
- Placed prior Micro Surfacing  
**Cape Seal**
- Most common interlayer for CPM
- Variations: Scrub Seal, FiberMat and Softer-binder Fiberized Micro Surfacing





# Benefits of Interlayers

- Extends life of the overlay by delaying reflective cracking
- Allows the energy from a crack to propagate horizontally as opposed to vertically
- Reduces amount of surface water that will penetrate the pavement
- The surface treatment can be thinner





# Benefits of Interlayers

- Better compaction and adherence of surface treatment
- CPM treatments can be mixed to meet project design needs – **Reverse Cape Seals** use micro surfacing as the interlayer.



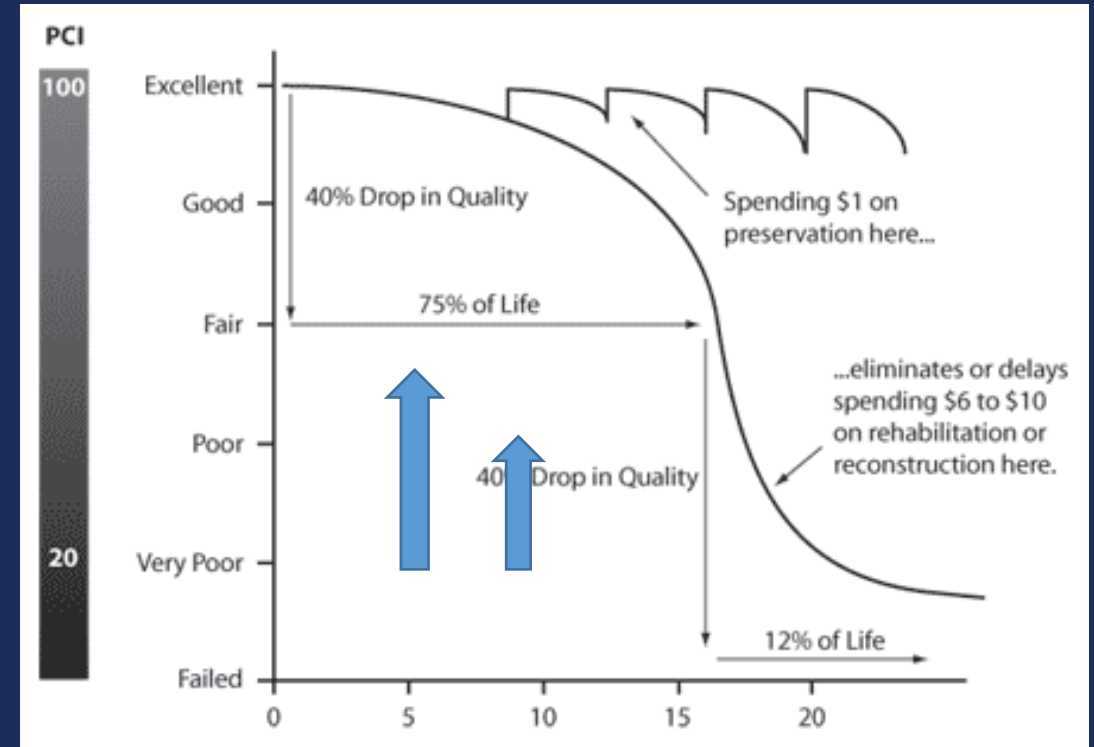
# Chip Seal Selection

- Intended to keep good roads in good condition
- The most cost-effective CPM surface seal
- More agencies have been stretching capabilities – Restorative
  - Shift expectations to maintaining serviceability
- Does not add structure to the road
- Seasonality – No chip seals in Michigan in October

# Micro Surfacing Selection

- Best performance placed higher on deterioration curve.
- Oxidized asphalt pavements.
- Good drainage.
- Previously treated pavements.
- All types of roads and traffic volumes.

## Asphalt Aging Curve





# Micro Surfacing Candidates

















# Cape Seal

- Wherever possible, allow traffic on chip seal prior to the application of the micro surface
- Importance of clean surface
- No need for tack coat between treatments
- Fast return to traffic times
- Increased friction counts





# Cape Seal Candidates









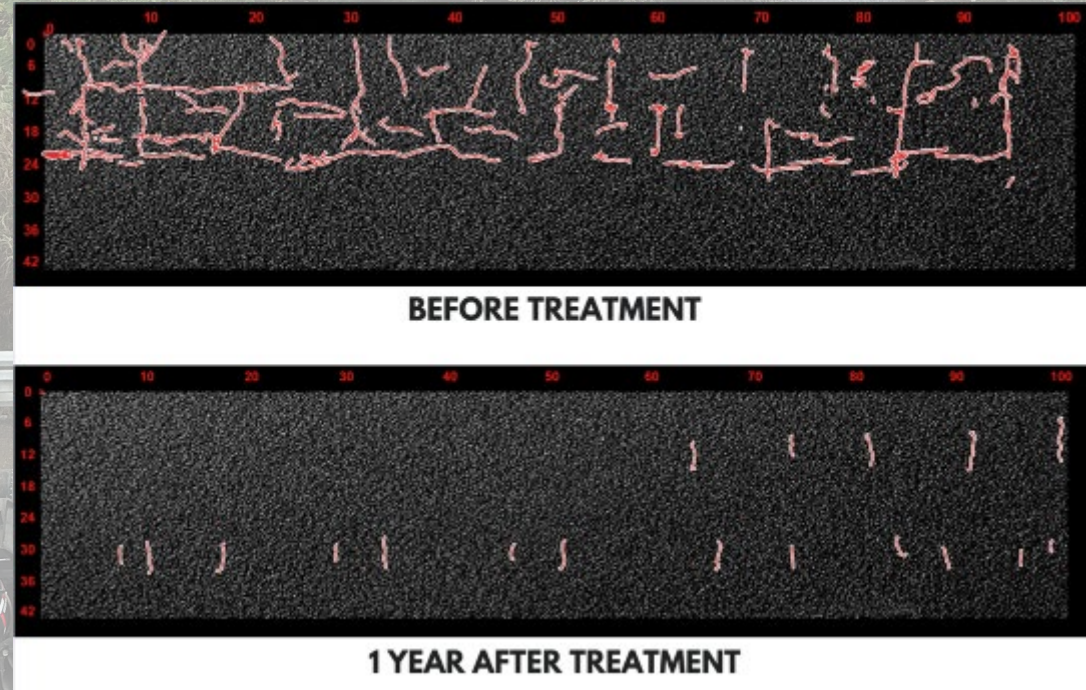
# Scrub Seal

- Benefits of a high-performance chip seal and rapid crack fill solution in one
- Highly polymerized rejuvenating emulsion scrubbed into cracks
- Designed to improve pavements with signs of alligator cracking, block cracking, raveling, and severe surface deterioration
- Proper pavement selection is extremely important



On top of Traditional  
Micro Surfacing benefits,  
you get:

- Delayed reflective cracking
- Better cold-weather aggregate retention
- Improved self healing



## Soft-binder Fiberized Micro



# Improving Safety – Added Benefit of CPM

- Micro surfacing is a high-friction surface treatment.
- Higher friction control helps motorists maintain control in both dry and wet driving conditions.
- Cost is substantially less than resins and bauxite used in HFST.





# 2023 MDOT CPM Program

Pavement Seal	# Projects
Single/Multi Course Chip Seals	9 244 In-mi <u>\$10,424,00 awarded</u> \$43k / In-mi
Soft Binder Fiber Microsurface	4
Paver Placed Surface Seal (UTBWC)	3
Cape Seal	1
Ultra-Thin	1
HMA/PCP Crack/Joint Sealing	13 (6 FPVS)
PCP Spall repair	1

Functional Enhancement	# Projects
HMA Mill & Overlay and HMA Overlays	26 359 In-mi <u>\$72,246,000 awarded</u> \$201k / In-mi
Full Depth CPR	2

60 Projects  
32 Pavement Seal  
28 Functional Enhancements

# Life Extension Averages – RoadResource.org



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# Which treatment is best for my road?

Input pavement criteria or select photos for treatment options

PAVEMENT CONDITION  
PLEASE SELECT ▼

PRIMARY DISTRESS  
PLEASE SELECT ▼

ROAD TYPE  
PLEASE SELECT ▼

SURFACE TYPE  
PLEASE SELECT ▼

OTHER FACTORS TO CONSIDER ⚠

FOG SEAL

REJUVENATING FOG SEAL

CRACK SEAL

SLURRY SEAL

CHIP SEAL

MICRO SURFACING

ULTRATHIN LIFT HMA

CAPE SEAL

SCRUB SEAL

MICRO-MILLING

TACK COAT

PRIME COAT

COLD PLANING

HOT IN PLACE RECYCLING

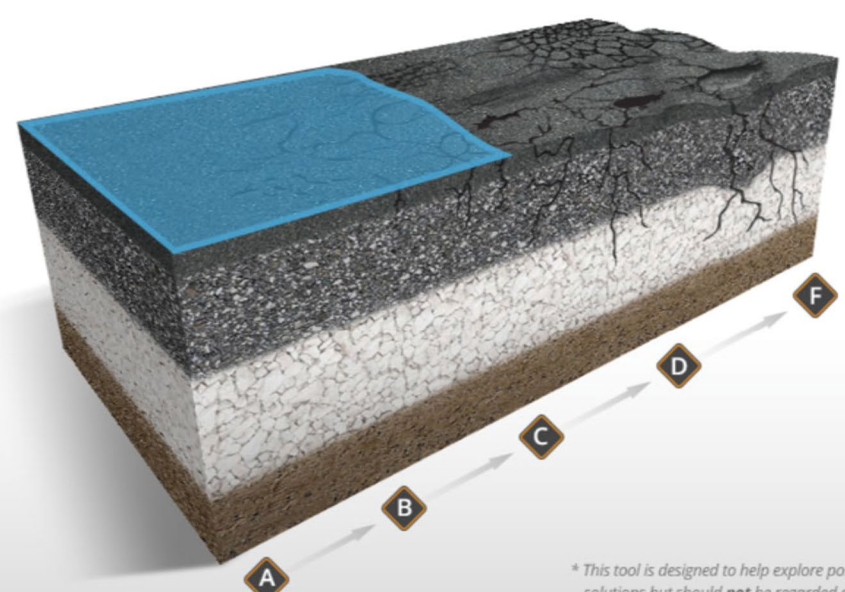
COLD IN PLACE RECYCLING

COLD CENTRAL PLANT RECYCLING

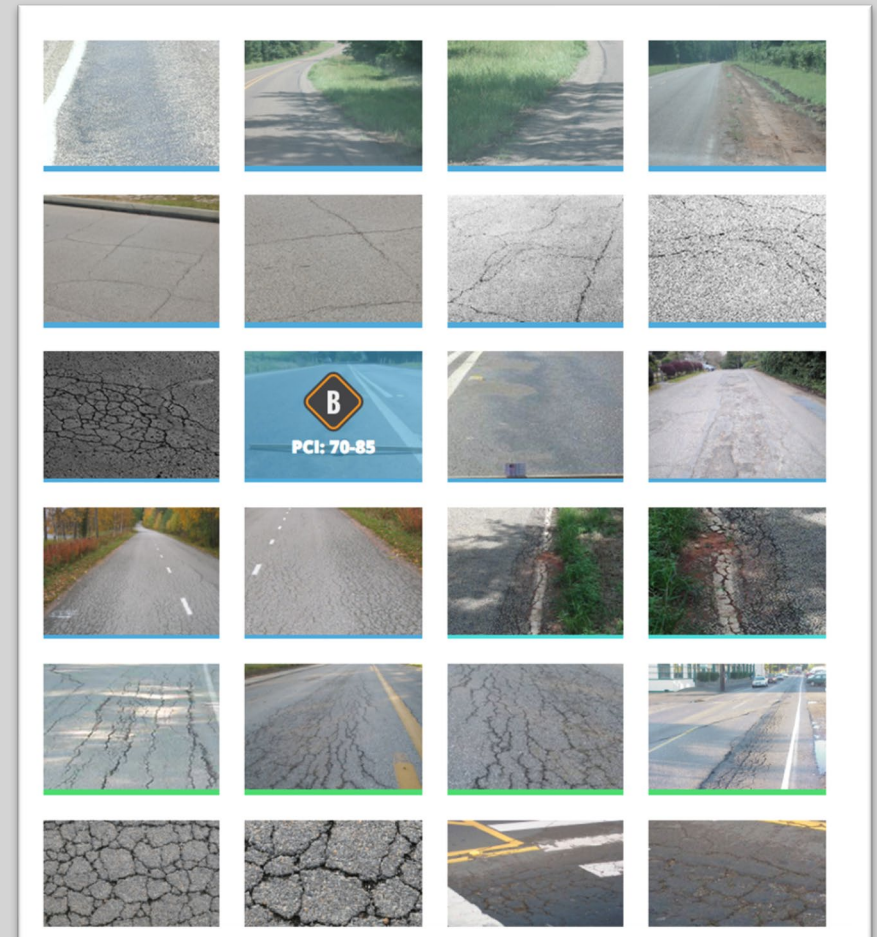
FULL DEPTH RECLAMATION

BASE STABILIZATION

SOIL STABILIZATION/MODIFICATION



\* This tool is designed to help explore possible solutions but should **not** be regarded as a formal recommendation for your pavement. Contact a supplier or contractor near you for a specialized consultation.





# Treatment Resource Center

## Ensure treatment success with comprehensive information on 18 treatments

### OVERVIEW

[ABOUT](#)  
[PROCESS & VARIATIONS](#)  
[EXPECTATIONS](#)  
[COST](#)  
[HISTORY](#)  
[BEST PRACTICES](#)

### PRE-CONSTRUCTION

[SITE SELECTION](#)  
[MATERIAL SELECTION](#)  
[MIX DESIGN](#)  
[SPECIFICATION REVIEW](#)

### CONSTRUCTION

[PREPARATION](#)  
[WEATHER REQUIREMENTS](#)  
[EQUIPMENT](#)  
[CALIBRATION](#)  
[TRAFFIC CONTROL](#)  
[APPLICATION](#)

### QUALITY CONTROL

[INSPECTION](#)  
[TESTING PROTOCOL](#)  
[TROUBLESHOOTING](#)  
[ACCEPTANCE](#)

### RESEARCH & PERFORMANCE

### SUCCESS STORIES

### FOR PAVEMENT CONDITIONS



(PCI of less than 70)

A cost-effective, long-lasting, greener alternative to conventional maintenance and rehabilitation techniques. Cold In-place recycling (CIR) is a process that cold mills and recycles the top 2-5 inches of asphalt using a continuous train operation. Through the complete reuse of existing material, CIR greatly reduces trucking, time and natural resources to significantly lower project costs. Generally, any road that is a candidate for mill & fill is a candidate for CIR.

- 20%–50% less expensive than conventional maintenance and reconstruction methods
- Reduce Greenhouse emissions by Up to 90%
- Reuses 100% of existing materials
- 20%–40% faster construction times
- Adds 15–20 years (combined with appropriate wearing course)
- Most agencies use SLCs between 0.30–0.38 (Recent research indicates values from 0.36–0.44 may be more appropriate)

### ISSUES ADDRESSED

- Frequent, severe, non-load distresses in top lift of hot mix
- All distresses within the recycling depth (2-5 inches)
- Reflective cracking from below CIR layer
- [See all](#)

### ATTRIBUTES

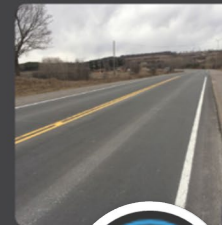
- Eliminates defects within the recycling depth
- Blocks or slows reflective cracking
- Reuses existing material in place
- Replaces 1 or 2 lifts of hot mix
- Allows for road widening where desired

### COMMON COMBINATIONS

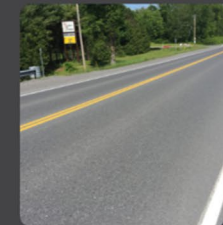
### CIR

	Optimum Performance	Average Performance	Stop-Gap Performance
Types of Distress	<ul style="list-style-type: none"> <li>• Transverse, longitudinal, multiple cracking</li> <li>• Ravelling</li> <li>• Oxidation</li> </ul>	<ul style="list-style-type: none"> <li>• Wheelpath cracking</li> <li>• Rutting (asphalt or subgrade)</li> </ul>	<ul style="list-style-type: none"> <li>• Alligator cracking from base failure</li> <li>• Distortion</li> </ul>
Depth of Distress	Within treatment depth (2"–5")	1"–3" below treatment depth	More than 4"–6" below treatment depth
Life Extension	20–25 years	10–20 years	5–10 years

### EXAMPLES OF ROADS THAT HAVE BEEN TREATED WITH COLD IN-PLACE RECYCLING OVER VARIOUS STAGES IN SERVICE LIFE:



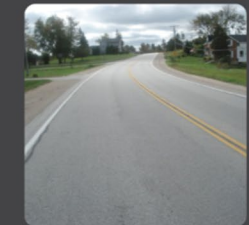
CIR 1 Year  
Bloomington Road, Ontario



CIR 3 years later: Prescott-Russel County Road, Ontario



CIR 5 years later: Bloomington Road, Ontario



CIR 7 years later: Hwy 6, Ontario



If a CIR mix ravels excessively due to rain, the mat can be re-processed with or without adding cement to facilitate drying



# Success Stories & Research

## Use, performance & best practices in your region

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### Success Stories

**Micro surfacing catching on in Sylvania**  
 Sylvania, OH is using micro surfacing to save on resurfacing streets. They expect 8 - 12 years of life with micro surfacing, costing 35 cents on the dollar to asphalt mill and repair.

[VIEW STORY](#)

**Micro Surfacing on High Volume Road**  
 Micro surfacing was successfully placed on one of the most congested roads in the Greater Cleveland area. Working with the Ohio DOT, the contractor was able to minimize traffic disruption while placing a high quality material.

[VIEW STORY](#)

**The Town of Fairfield Saves Big with Micro Surfacing**  
 The Town of Fairfield saves their network of roads by using micro surfacing as the primary backbone of a robust pavement system.

### APRN Journal of Earth Sciences

#### AUTHORS

Onyelowo Ken C.1 and Okoafor F. O.2

#### SUMMARY

This study was centered on elucidating the chemical reactions that bring about soil stabilization and modification. It has been established that the chemical compounds found in soil; quartz, feldspar, dolomite, calcite, montmorillonite, kaolinite etc. react with the chemical constituents found in different identified chemical stabilizers. This research work will better place designers, constructors and researcher on the choice of soil chemical stabilizer and techniques and the extent of chemical reactions that take place during soil chemical stabilization.

#### CITATIONS

Onyelowo Ken C.1 and Okoafor F. O.2 1Department of Civil Engineering, College of Engineering and Engineering Technology, Umuahia, Nigeria Michael Okpara University of Agriculture, Umudike, Umuahia, Abia State, Nigeria 2Faculty of Engineering, University of Nigeria, Nsukka, Nigeria

[VIEW FULL REPORT](#)



### MICRO SURFACING SUCCESS STORY

Minnesota DOT

MnDOT Experiments with micro-milling and micro surfacing to improve ride quality and treatment performance

**IRI improved** from 166.3" per mile to 61.4" per mile after micro-milling and micro surfacing

**Reflective cracking and plow damage reduced** by using softer base asphalts, higher emulsion contents, and increased polymer loadings in the micro surfacing mixes

#### INNOVATION SUMMARY:

Progressive agencies are constantly seeking the most cost effective methods to improve ride quality and decrease cracking as part of their overall pavement management strategy. More and more agencies like MnDOT are finding the use of micro-milling and high performance micro surfacing mixes to be worthwhile investments of their limited funding.

#### BACKGROUND:

MnDOT has had a long history of successes using micro surfacing. With its harsh wet-freeze climate and frequent snow plowing, the Minnesota agency needed new ways to further improve the crack resistance and plow abrasion durability of their micro surfacing mixes.

*"[Future] monitoring will determine how cost effective this process is for ride improvement and preservation of the pavements, but initial results are promising."*

— Jerry Geib, MnDOT

#### APPROACH:

Beginning in 2005, MnDOT began experimenting with some softer base asphalts (PG48-34) and higher emulsion contents (from 13% up to as high as 16.5%) in some micro surfacing mixes. And then in 2012, the agency started testing a higher polymer loading on selected micro surfacing projects, increasing the polymer from 3% to as high as 6.5%.




**MRPA**

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**[PreserveMIRoads.Org](https://PreserveMIRoads.Org)**





**What do  
you see  
in this  
picture?**

# Questions?

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