# Treatment Overview

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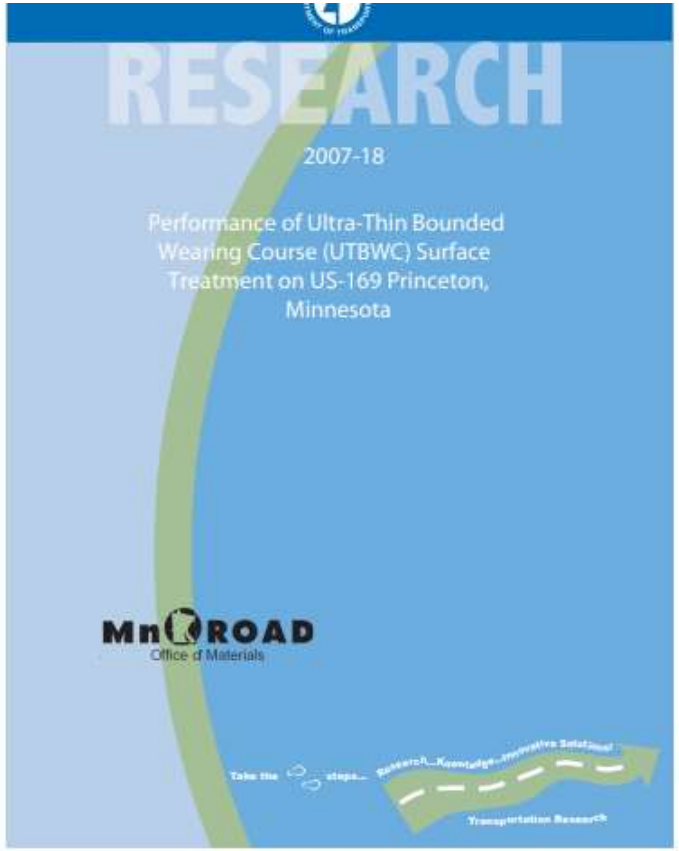
# Agenda

- What is Pavement Preservation
- Why use Pavement Preservation
- Surface Treatments

# What is Pavement Preservation

- Pavement Preservation is "**a program employing a network level, long-term strategy that enhances pavement performance by using an integrated, cost-effective set of practices that extend pavement life**, improve safety and meet motorist expectations." Source: FHWA Pavement Preservation Expert Task Group.Sep 12, 2005

# Performance



# Why Pavement Preservation

Table 5.1 Weibull parameters obtained for various treatments overlaid on different substrates.

| Type of Treatment | Type of Substrate | Threshold Time to Failure, $t_o$ | Failure Mode, $\beta$ | Remaining Service Life, $\mu$ |
|---|---|---|---|---|
| UTBWC | BOB [1] | 0 | Wear-out failures | 13 |
| | BOC [1] | 2 | | 8 |
| Chip Seals | BOB | 0 | Wear-out failures | 9 |
| | BOC [1] | 0 | | 8 |
| | BAB | 0, 2 | | 8 - 10 |
| Micro-surfacing | BOB | 0, 2 | Wear-out failures | 10 - 11 |
| | BOC | 0 | | 9 – 15 [2] |
| | BAB | 0 | | 8 - 9 |

[1] NDDOT does not have substrates that have been overlaid with this type of treatment.

[2] Significant difference observed between two data sets from t-test analysis.

# Micro Surfacing

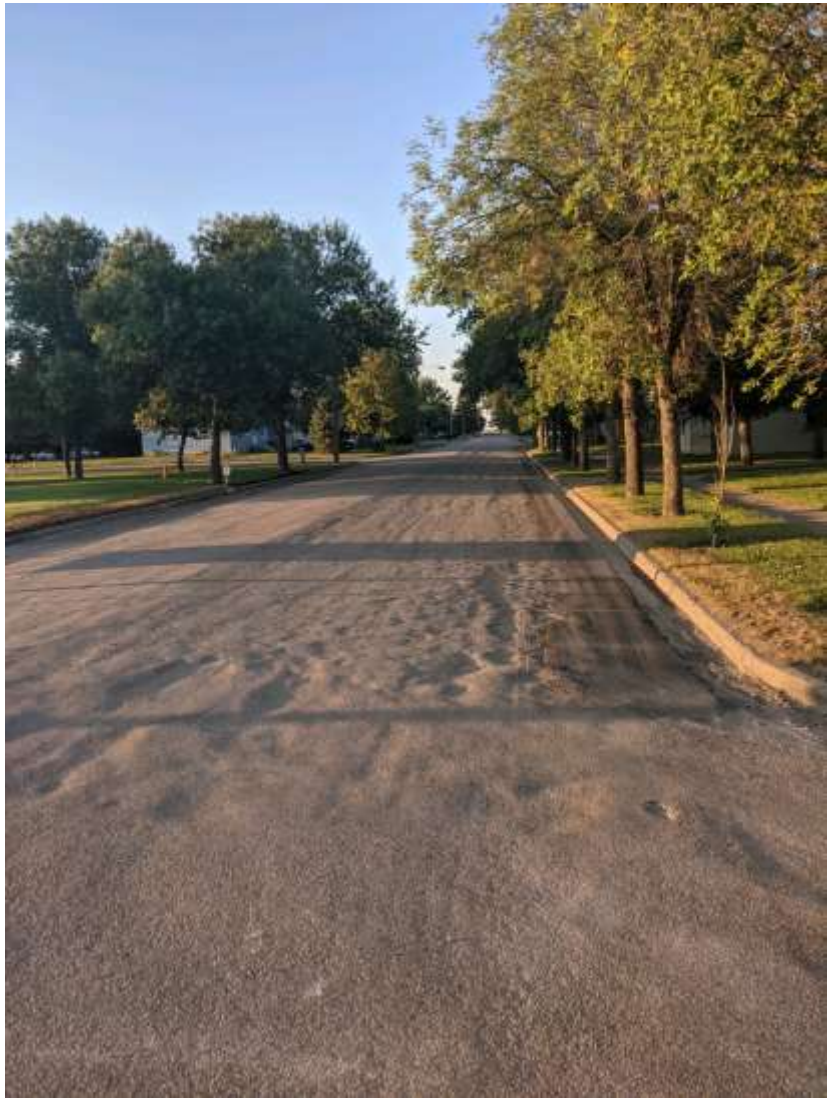
# MnDOT's Definition of Micro Surfacing

- **Treatment Description:** Micro surfacing consists of a mixture of modified emulsified asphalt, mineral aggregate, mineral filler, water, and additives. Micro surfacing material is mixed in specialized, compartmented, self-powered trucks or continuous machines and placed on the pavement using an augured screed box. It is typically placed in two courses. The first course, the scratch course, uses a steel box to fill in low areas of the pavements by "scratching" the surface. The surface course is placed with a rubber squeegee to create a smooth surface.

# Uses For Micro Surfacing

- Surface Treatment
- Ride Improvement
- Rut Filling
- In-place of thin over lays

# Ride Improvement



# Ride Improvement

# In Place of Thin Overlay

# Ride Improvement
# Cupped Cracks

# Rut Filling

# Rut Filling
# Scratch Course

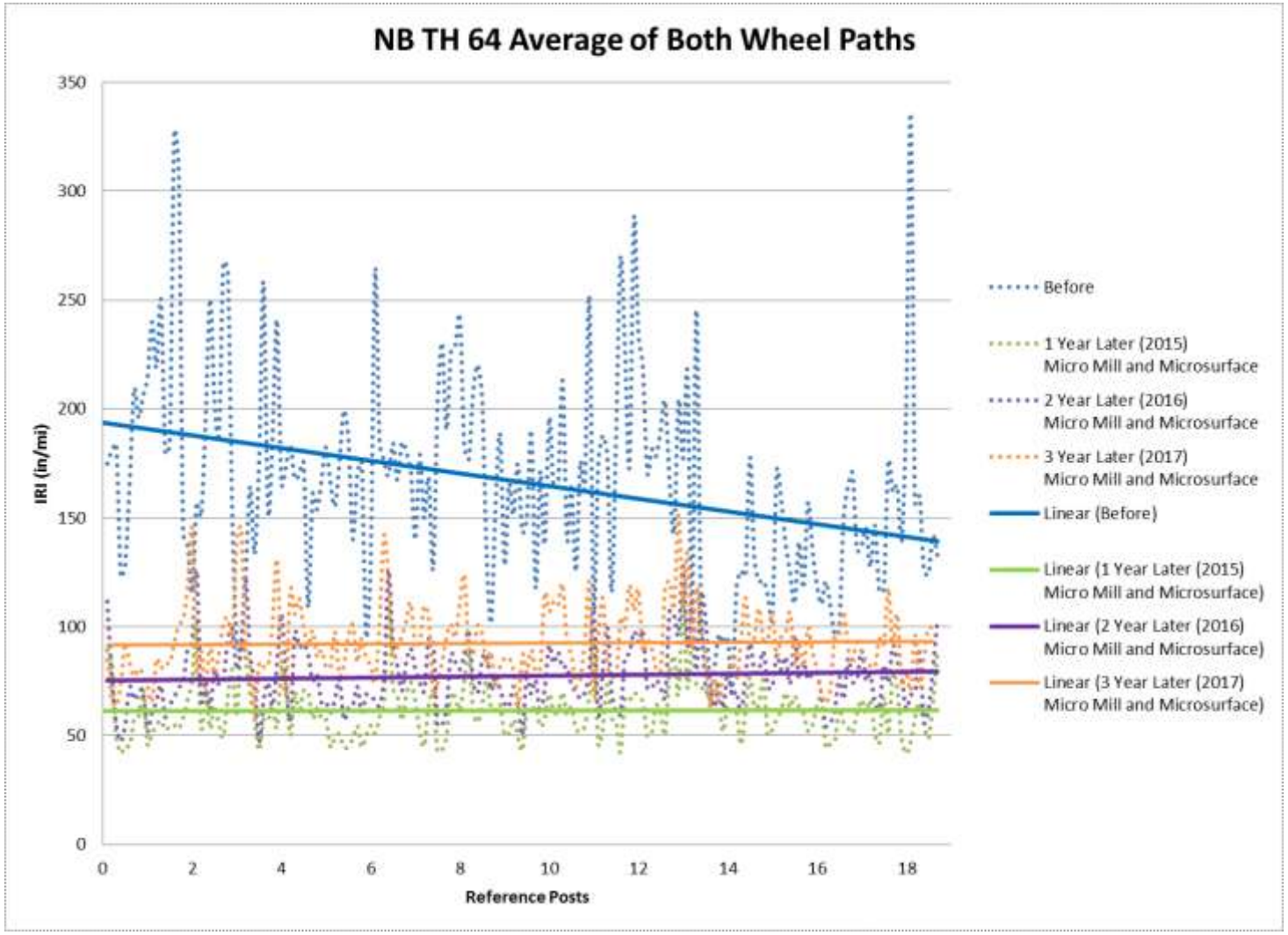
# Finished Rut Filling

# Micro Milling Followed By Micro Surfacing

# Micro Milling Followed By Micro Surfacing

# Why Micro Mill?

# Results

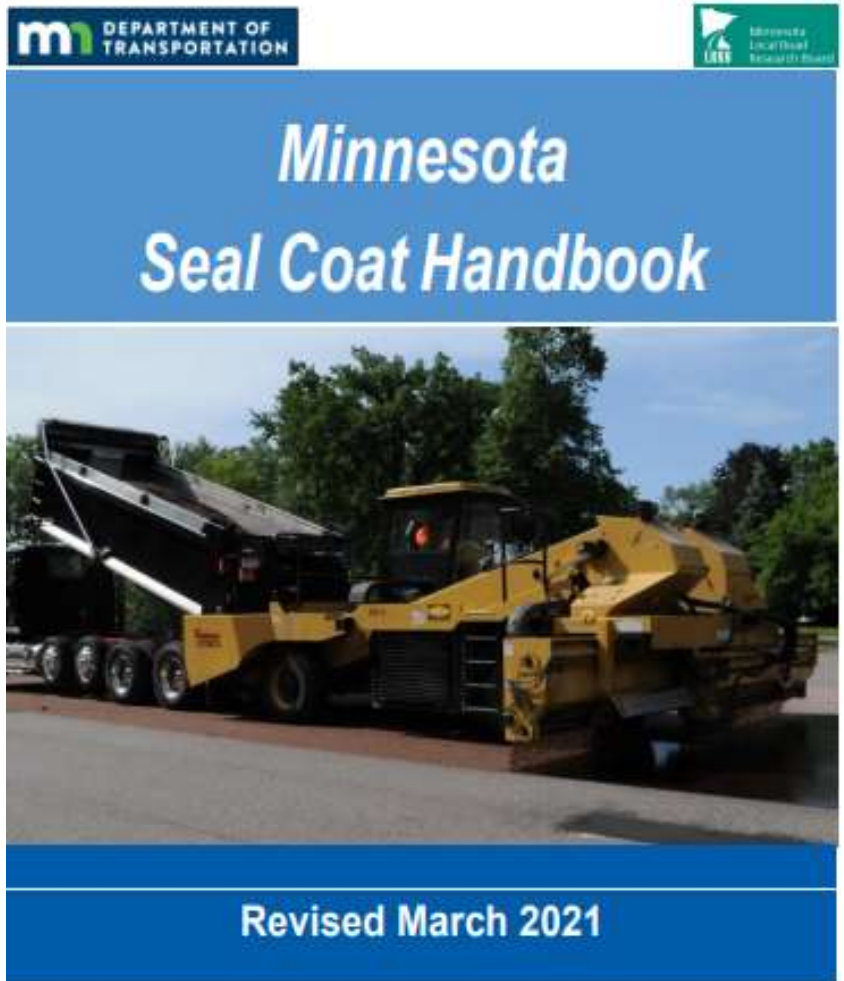

NB TH 64 Average of Both Wheel Paths
IRI (in/mi)
350
300
250
200
150
100
50
0
0
2
4
6
8
10
12
14
16
18
Reference Posts
Before
1 Year Later (2015) Micro Mill and Microsurface
2 Year Later (2016) Micro Mill and Microsurface
3 Year Later (2017) Micro Mill and Microsurface
Linear (Before)
Linear (1 Year Later (2015) Micro Mill and Microsurface)
Linear (2 Year Later (2016) Micro Mill and Microsurface)
Linear (3 Year Later (2017) Micro Mill and Microsurface)

# Failing Paving Joints

# Filling Rumble Strips

# Chip Sealing

# Updated Seal Coat Handbook Now Available Online!



# Chip Sealing Update

- Updated Seal Coat Handbooks is available
- Use of RAP for aggregate has been used in North Dakota
- Will be used in Mn  2022
- Rap to generated from Micro Milling roadway
- Using chip sealing to lightly surface gravel roads is increasing
- Scrub sealing

# Scrub Seal

# What is Scrub Seal

- Scrub seal is an application that is very similar to a chip seal treatment. The only difference is that the asphalt distributor pulls a broom sled that houses a series of brooms placed at different angles. These brooms guide or “scrub” the emulsion into cracks that ensure the road will be sealed. (*source PPRA)*

# Scrub Seal

# Scrub Seal

# Tips for Chip Sealing

- Put first chip seal on early in pavement's life
- 0 to 5 years is best
- Do a design to yield starting application rates
- Polymer modified emulsion is recommended
- Apply cover aggregate as soon as possible
- 1 to 2 minutes maximum time
- Complete rolling in 5 minutes or less
- May require 4 roller to keep up.
- Rolling determines how fast chip sealing can process

# Tips for Chip Sealing

- Sweep as soon as possible
- No later than next day
- Same day with polymer modified emulsions
- Apply fog seal after final sweeping
- Helps reduce chance of vehicle damage from loose aggregates
- Reduces snow plow damage

# Ultra Thin Bonded Wearing Course (UTBWC)

# What is UTBWC?

Ultra Thin Bonded Wearing Course (UTBWC) is a preventative maintenance tool used to help extend the life of a road. This ultra-thin bonded wearing course is an **open graded hot mix asphalt placed over polymer modified** asphalt emulsion through a special, self-priming paver.

# Benefits UTBWC

- Durable surface treatment
- Ride improvement
- Noise reduction
- Less splash and spray during rain events

# My New Role

- Working with LTAP's to supply training
- Topics
- In-place Recycling
- Surface Treatments
- Dealing with Cracks.
- Help with project selection
- Similar to what I did at MnDOT

# Thanks

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