

National Partnership to Improve the Quality of Preventive Maintenance Treatment Construction & Data Collection Practices *TPF-5(522)*



Ben Worel

MnROAD Operations Engineer

National Pavement Preservation Conference



IMPACTS AND BENEFITS FROM PAVEMENT PRESERVATION
September 18-21 • J.W. Marriott Hotel • Indianapolis, Indiana



MICHIGAN STATE
UNIVERSITY



Presentation Objectives

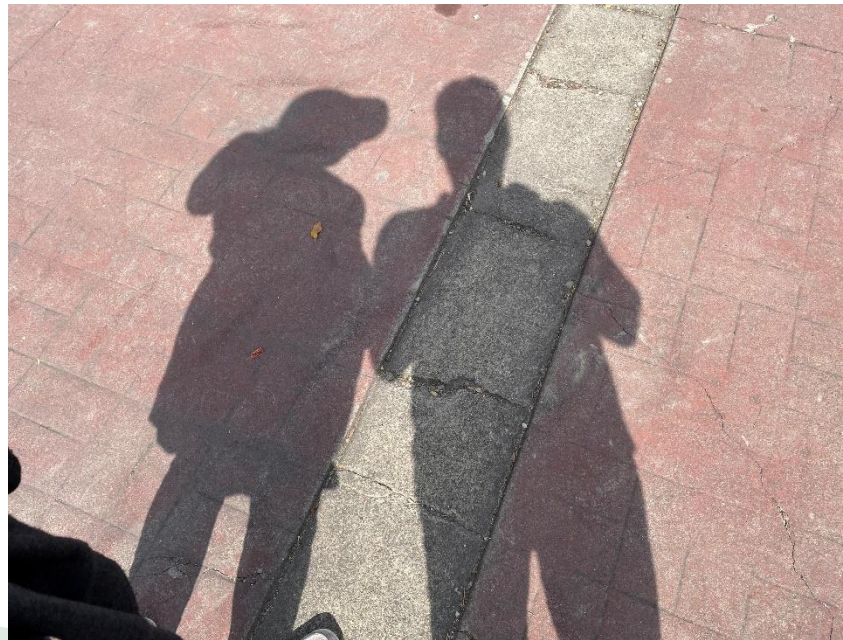
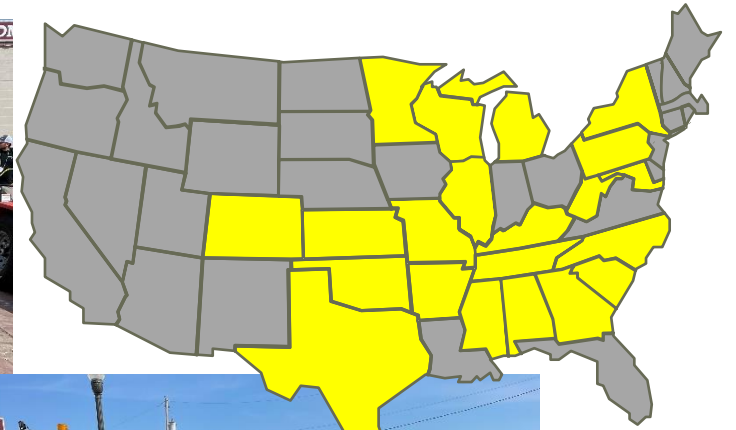
- ▶ Provide an overview of
 - Phase-I
 - Phase-II
- ▶ Describe the process Phase-III is being developed
- ▶ Request for for your input/participation



Special Thanks

- ▶ Agencies
- ▶ Industry
- ▶ NCAT Staff
- ▶ MnROAD Staff

- ▶ Jerry Geib
- ▶ Buzz Powell



National Partnership

Formalized Partnership (Formalized 2015)

- Full scale accelerated test facilities
- North / South Climatic Zones / Sections

Cracking Group Experiments

- 6 year of partnership with 10 Government Agencies
- HMA cracking test for LTC and fatigue cracking

Additive Group Experiment

- NCAT focus on fatigue cracking
- MnROAD focus on Reflective Cracking
- Continued National Research Coordination

Preservation Group Experiments

- Life extending benefits of pavement preservation techniques
- 8 year of partnership with over 23 agencies



MnROAD
Safer, Smarter, Sustainable Pavements Through Innovative Research



**National Center for
Asphalt Technology**
NCAT
at AUBURN UNIVERSITY

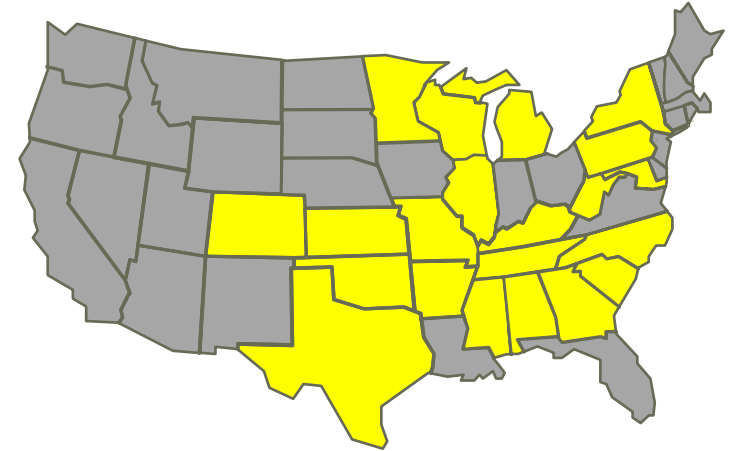
Preservation Group – Pooled Fund Overview

Phase-I Study (2015 – 2018)

- Built South and North Test Sections
- Salaries/Traffic Control
- Development of initial process and findings

Phase-II Study (2019 – ~~2022~~ 2024)

- 70th Street Recycling Built
- Salaries/Traffic Control
- Analysis of both northern and southern test sections



Foundation for Pavement Preservation FP2
(many industry supporting members)

Federal Highway Administration FHWA

Transportation Pooled Fund Program Project # TPF-5(375) http://www.pooledfund.org/Details/Study/627		Report Period: Year 2023 Quarter 2 (April 1 – June 30, 2023)
Project Title: National Partnership to Determine the Life Extending Benefit Curves of Pavement Preservation Techniques (MnROAD/NCAT Joint Study – Phase II) http://www.dot.state.mn.us/mnroad/ncatpartnership/index.html		
Project Manager(s): Ben Worel (MnDOT) Jack Jernigan (FHWA)	Phone Number: (651) 366-5522 (202) 493-3363	E-Mail ben.worel@state.mn.us Jack.Jernigan@dot.gov
Lead Agency Project ID: None	Other Project ID (i.e., contract #): None	Project Start Date: January 1, 2019
Original Project End Date: December 30, 2023 (60 months)	Current Project End Date: December 30, 2023 (60 months) NCAT Contract – June 30, 2022	Number of Extensions: 1 (18-month extension for NCAT till December 30, 2023)

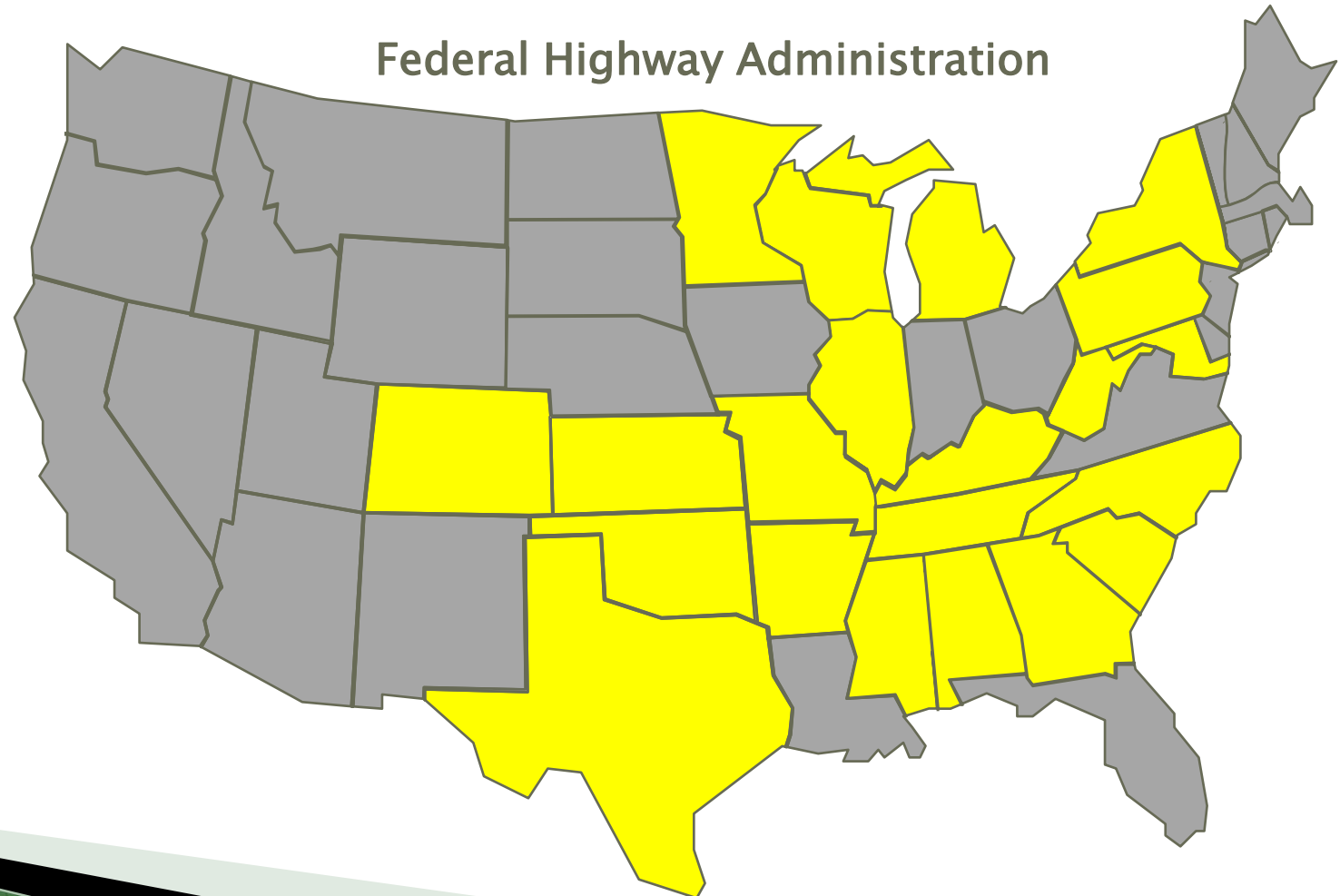
Preservation Group – Pooled Fund Overview

Foundation for Pavement Preservation FP2
(many industry supporting members)

21 Agencies
FHWA
FP2

~\$5,150,000

Federal Highway Administration



Pavement Preservation Partnership History

----- Research -----

Implementation →

2012
Lee Road 159
(Alabama)

2015
US - 280
(Alabama)

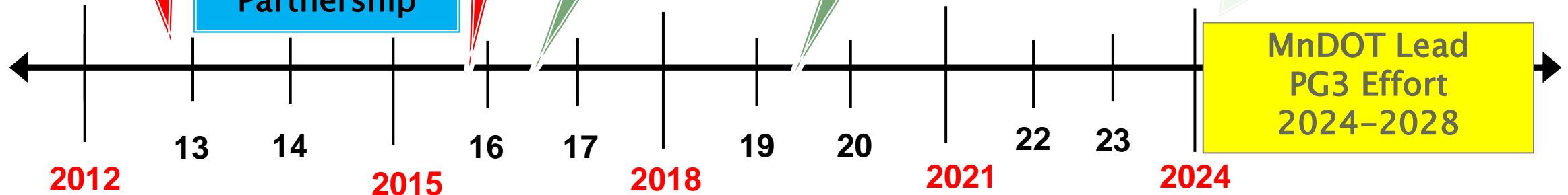
2015
NCAT - MnROAD
Partnership

2016
US - 169
CSAH - 8
(Minnesota)

2019
70th Street
(Minnesota)

2024?
US - 169
Rehab

**MnDOT Lead
PG3 Effort
2024-2028**



Alabama Lead
PG1 Effort

MnDOT Lead
PG2 Effort

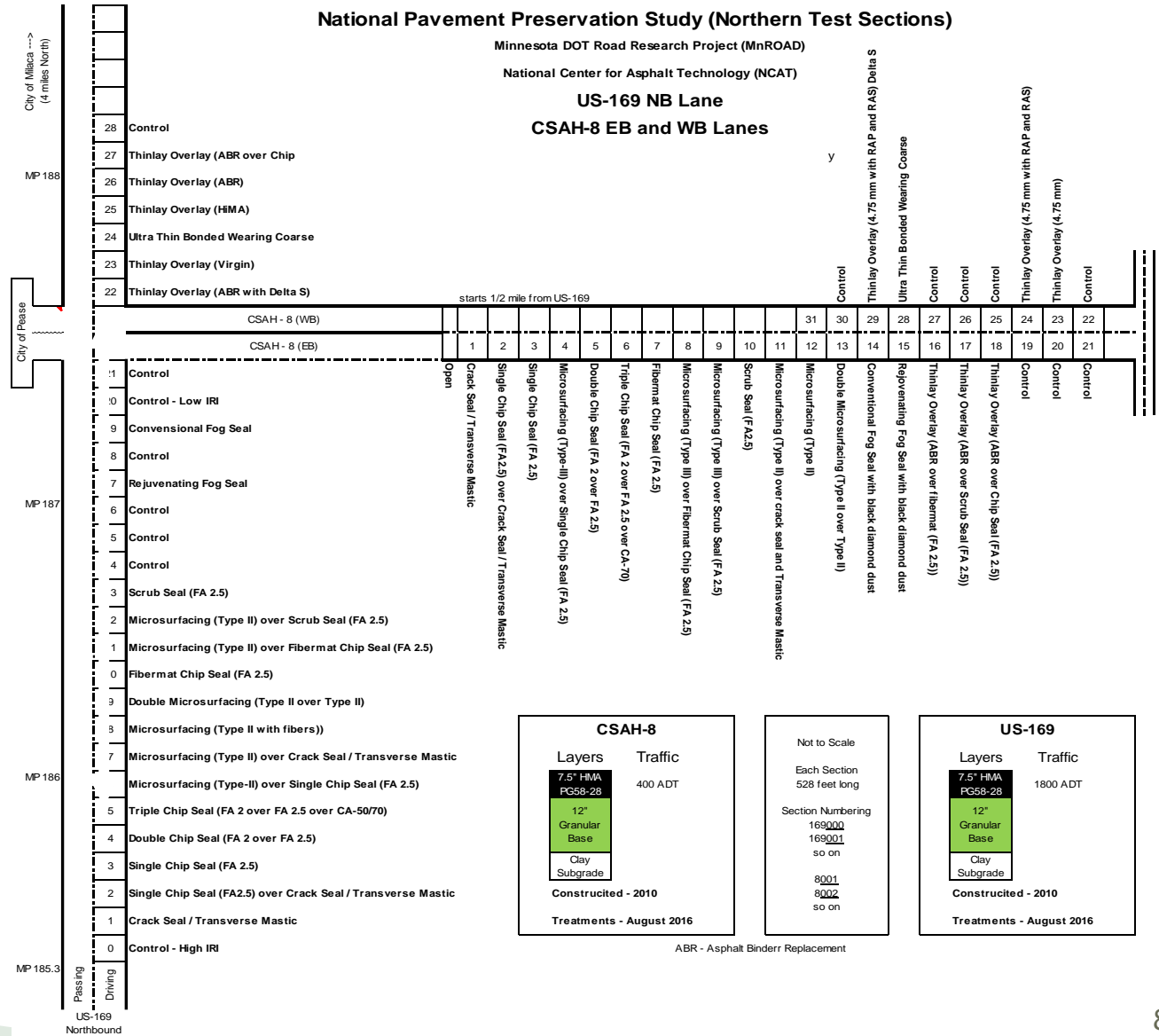
18 month
Extension

Pavement Preservation – Northern Example of US-169/CSAH-8

(same designs, contractor, local materials for north and south)



Northern
High Traffic
Preservation
on US-169
4 mile



Preservation Group Test Sections

- **Control Sections**
 - **Surface Treatments**
 - Crack Sealing
 - Fog Seal
 - Chip Seals
 - Scrub Seals
 - Micro surfacing
 - Treatment Combinations
 - **Thin Overlays (3/4")**
 - Dense Graded (4.75 mm)
 - OGFC (Alabama and MnROAD)
 - UTBWC
 - Treatment Combinations
- Built on US-280**
Cold Recycling + Thin Overlay
Cold-In-Place (CIR)
Cold Central Plant Recycle (CCPR)
- Northern Recycling Test Sections

Q Treatment

- Virgin thinlay with PG67-22 ✓
- 5% RAS Thinlay
- 50% RAP thinlay
- Cape seal
- Crack sealing only

... ✓

Q Condition

- Fair
- Good
- Poor

Q Time

0.0
0.5
1.0
1.5
2.0

Time to Poor (Control)

1.8

Time to Poor (Treatment)

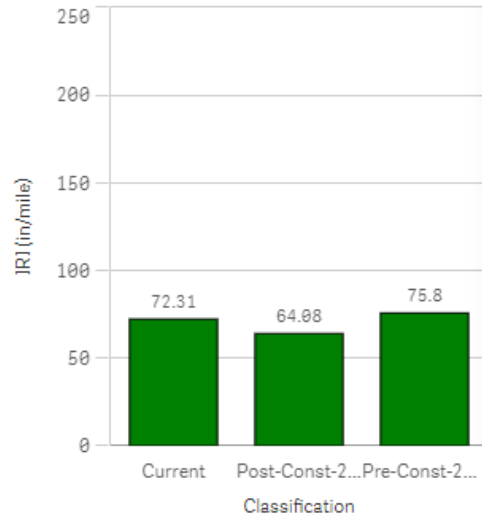
9.1

Crack Reduction (Average)

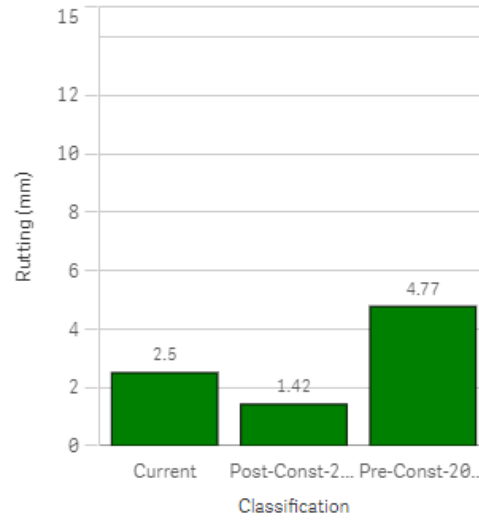
37.0

Pick a treatment, condition, and time to see a specific Crack Reduction.

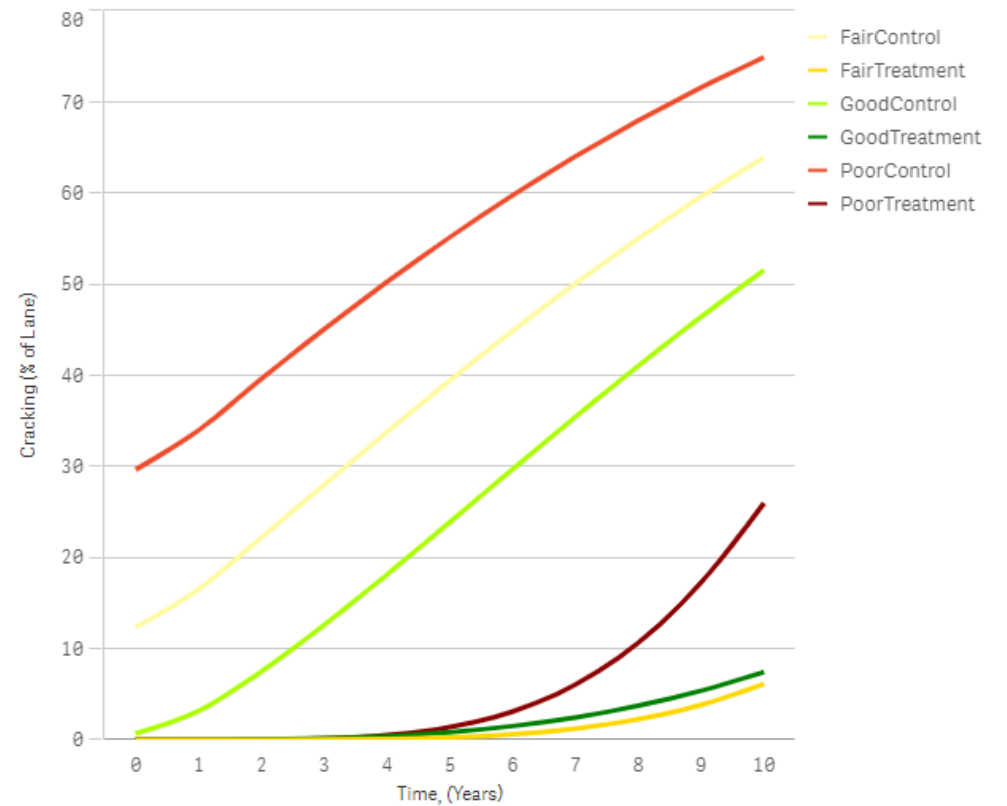
IRI (in/mile) for Treatment



Rutting (mm) for Treatment



Treatment to Control Comparison



Overall Section Performance

Treatment	Parameter	Value	Rating	Overall Cor
Virgin thinlay with PG67-22	IRI (in/mile)	72.31	GOOD	FAI
Virgin thinlay with PG67-22	Rutting (mm)	2.50	GOOD	FAI
Virgin thinlay with PG67-22	Cracking (%)	7.44	FAIR	FAI

Pavement Preservation Outreach

8 Webinars (2 hours – every other month)

- Crack Seals (7/26/22)
- Fog Seals (10/4/22)
- Chip Seals (12/6/22)
- Micro-surfacing (1/31/23)
- Dense Graded Thinlays (3/28/23)
- Ultra Thin Bonded Wearing Coarse (5/30/23)
- Open Graded Friction Coarse (8/1/2023)
- **Cold Recycling (October 3, 2023)**



All sessions are recorded
www.pavetrack.org

Phase-III Technical Advisory Panel

Agency and Industry Representation

- Development of pooled fund solicitation
- Oversight in remaining tasks for Phase-II
- Development of the Phase-III activities

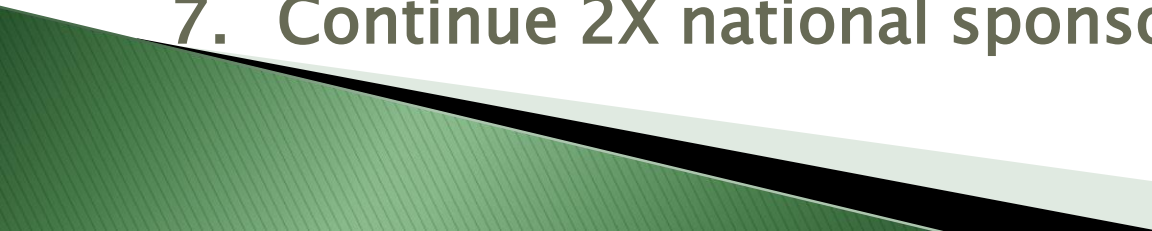
Meetings held over the past 1.5 years to help develop the direction being taken for PG3

Agency	Technical Staff	
	Name	Email
AL	Scott George	georges@dot.state.al.us
AR	Sarah Tamayo	Sarah.tamayo@ahtd.ar.gov
CO	Michael Stanford	michael.stanford@state.co.us
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FP2*	Jim Moulthrop	jmoulthrop@austin.rr.com
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SC	Cliff Selkinghaus	SelkinghCB@scdot.org
TN	Matthew Chandler	Matthew.chandler@tn.gov
TX	Feng Hong	Feng.Hong@txdot.gov
WI	Barry Paye	Barry.Paye@dot.wi.gov
NCPP	Bouزيد Choubane	choubane@egr.msu.edu
Industry	Tim Harwood	tharrawood@vancebrothers.com

Initial TAP Review

- Who are the customers for implementation?
- What if any adjustments are needed for Phase-III?
- What should the final product look like?
 - Implementation planning (what do you need and in what form)?
 - Curves / Tables / Develop a tool/app?
- What trigger values are most important?
 - Cracking-driven / roughness-driven / Other?
 - Life-extending benefit / Condition improving benefit
- What treatments to focus on (preservations/recycle/OGFC)?
- How to bring in costs?
- Future – What if any adjustments are needed for Phase-III?
- Future – What after tasks to focus on for Phase-III?
- Include PCC maintenance efforts?

TAP Findings – What is needed for Phase–III

- 1. TAP member will be more active – better communication**
 - 2. States build test decks/document construction/collect performance data**
 - Comparisons national and state practices
 - Investigate Innovative/New technologies
 - 3. Training and Implementation to our key customers**
 - Pavement Management (Decision Trees/Curves)
 - Decision Makers (Money distribution)
 - Field Construction (quality – specs/inspection)
 - 4. National/Agency specification harmonization**
 - Needed regional practices due to materials/environment
 - 5. Utilization of “InfoPave” type of system to document performance**
 - 6. Bring cost effectiveness into the conversation**
 - 7. Continue 2X national sponsor meetings**
- 

Pooled Fund – TPF-5 (522)

Improving the Quality of Preventive Maintenance Construction and Data Collection Practices

Phase III (Jan 2024–Dec 2027)

- MnDOT Lead Pooled Fund
- Focus on State Implementation / agency demonstration projects
- Technical Advisory Panel Led
 - 2022–23 Planning Meetings
 - FHWA greater involvement
 - Additional input from agencies
- Transitioning to Joel Ulring as the lead for this effort

Phase-3 Expected Responsibilities

MnDOT

- ▶ Lead State
- ▶ Agency Test Sections / Performance Monitoring Support
- ▶ Management and Entry of data to “InfoPave” system
- ▶ Lead Quarterly TAP online meetings

Agency Tasks

- ▶ Provide active TAP member/direct the pooled fund
- ▶ Nomination of test section
- ▶ Select Treatments and Project Locations
- ▶ Construct and pay for treatments
- ▶ Construction inspection and construction report
- ▶ Long Term Field Data Collection/Uploads to MnDOT database

FHWA

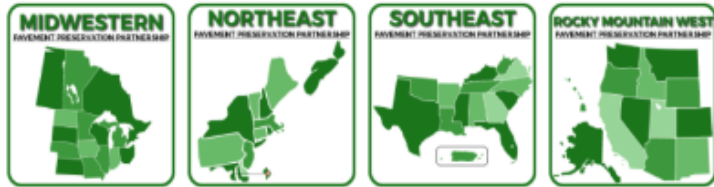
- ▶ Long Term Field Data Collection
- ▶ SPS-11 (HMA) and SPS-12 (PCC) guidelines to support efforts
- ▶ National “matrix” of preferred treatments for national ties
- ▶ Demonstration Project Open Houses



Phase-3 Expected Responsibilities

Consultant Contract(s) – NCAT and NCPP

1. Develop standardized reporting forms
 - Agency nomination process
 - Construction documentation
 - Performance monitoring
2. Assist Agencies
 - National/agency specification development, review, harmonization, and enhancement
 - Field review for construction inspection/testing standards
 - Performance monitoring consistency
3. Perform life cycle cost analysis based on construction costs and observed performance
4. Develop treatment selection tool incorporating life cycle cost



[MPPPP](#)

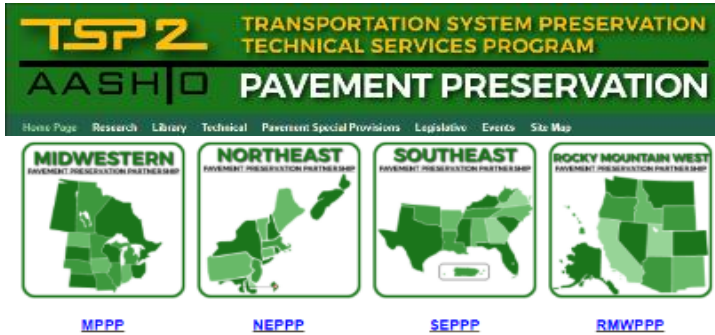
[NEPPP](#)

[SEPPP](#)

[RMWPPP](#)



Phase-3 Expected Responsibilities



Consultant Contract(s) – NCAT and NCPP (continued)

5. Coordinate formal kick-off workshop
6. Coordinate and pay for travel for sponsor meetings
 - Spring MnROAD/NCAT
 - Fall Regional Meetings (NW, NE, SE, Rocky Mountain West)
7. Maintain website
8. Conduct webinars
9. Prepare journal articles
10. Identify training opportunities (Agency inspectors, Agency/Contractor certifications)
11. Hold and facilitate a national workshop near end of study
12. Prepare final report

Pooled Fund SPR Commitments

SPR Agency Funding Request

- 5 Years of SPR Funding
- \$50,000/year
- FY24, 25, 26, 27, 28
- MnDOT Lead State

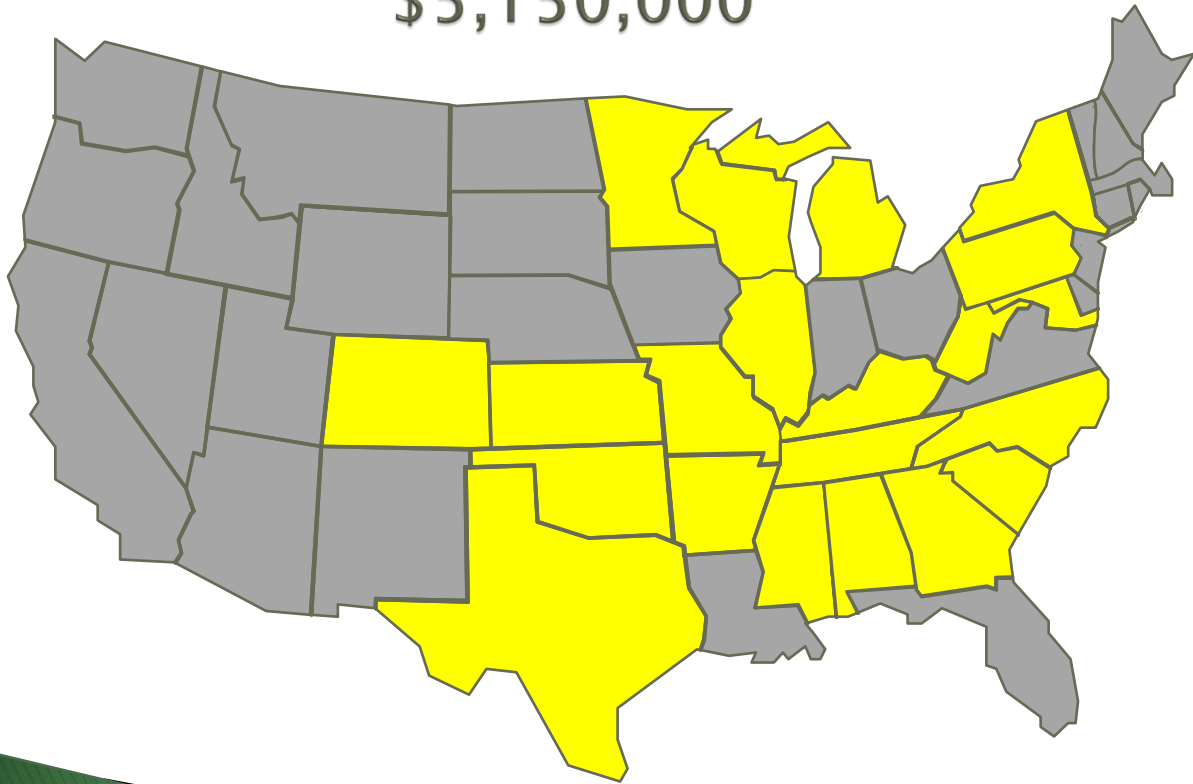


<https://pooledfund.org/Details/Study/754>
(search “522” pooledfund.org)

Preservation Group – Pooled Fund Overview

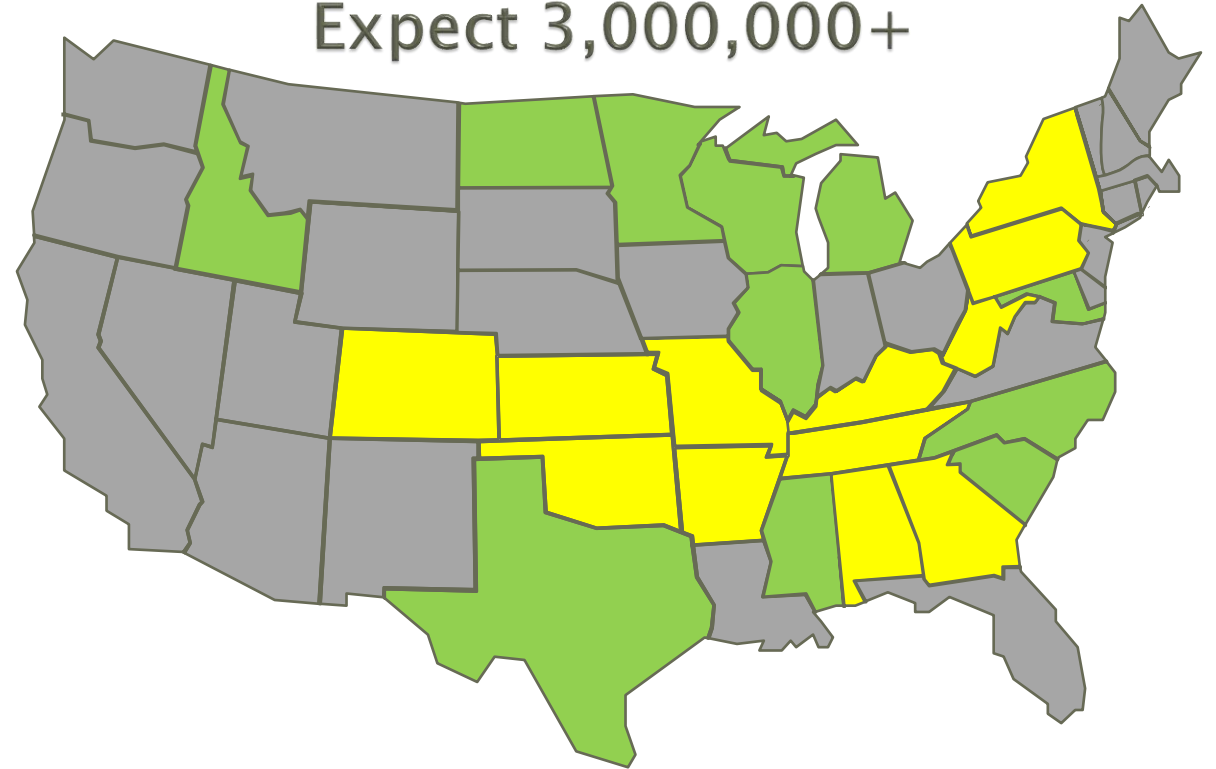
Phase-II

21 Agencies/FHWA/FP2
\$5,150,000



Phase-III

11 Agencies
Currently \$2,250,000
Expect 3,000,000+



Alaska

Foundation for Pavement Preservation FP2
Federal Highway Administration FHWA

Phase-3 Pooled Fund Timeline

	Year 1 2024	2 2025	3 2026	4 2027	5 2028
Nominations	x	x			
Research Framework (forms and processes)	x				
Construction		x	x		
Monitoring		x	x	x	x
Stakeholders (TAP) Meetings	x x	x x	x x	x x	x x
Data Analysis Phase - 1,2,3	x	x	x	x	x
Final Report					x

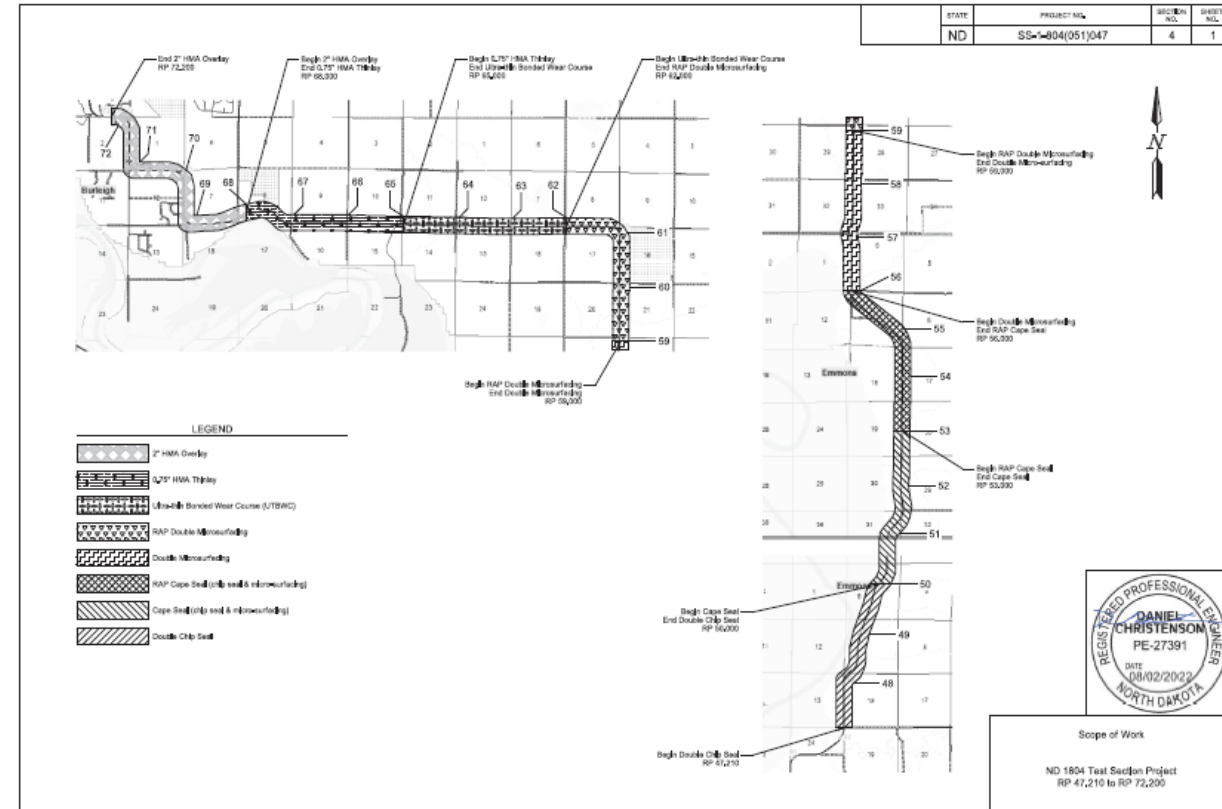
Example – North Dakota

2023 ND Pavement Preservation Test Sections

- Double Chip Seal
- Cape Seal
- RAP Cape Seal
- Double Microsurfacing
- RAP Double Microsurfacing
- Control

Current Expectations

- Agencies Nominate (one project)
- 500-foot test sections established
- Full Support for
 - Control Section
 - 2 Agency Sections
- Partial Support for any other test sections



2023 Timelines (Phase-3 Development)

April 2023 → FHWA Webinar

May 9-11 → Connected at the Sponsor Meeting at NCAT

May 19 → Friday 10am (CT) – online TAP meeting

June 9 → Friday 10am (CT) – online TAP meeting

July 2023 → Tasks/Roles Finalized from TAP

Share with consultants for input and proposal

October 2023 → Proposals Due / TAP Review / MnDOT Contracting

January 2024 – Contracts Start (Research and Implementation focus)

MnROAD+NCAT Pavement Research Partnership Fall Sponsor Meeting (October 17-18, 2023)

Radisson Blu Hotel in Bloomington, MN at the Mall of America

October 17 (full day)

- NCAT / MnROAD Operations Updates
- NCAT Test Track Experiments
- Additive Group Study
- MnDOT Road Doctor / DPS Studies
- Dinner

October 18 (morning)

- Preservation Study
(afternoon - bus)
- Pease Tour (169-8)
- MnROAD Tour / 70th Street
- Dinner at MnROAD



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npcc23

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