

MnROAD-NCAT

Pavement Preservation Study



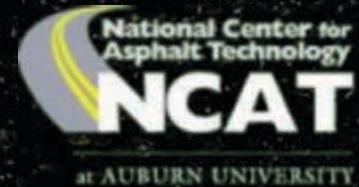
NEAUPG
Burlington, Vermont
Mary Robbins, PhD, NCAT
Jerry Geib, MnDOT
October 22, 2015



Pavement Preservation

“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”

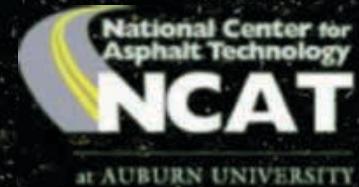
- FHWA Pavement Preservation Expert Task Group



Pavement Preservation

“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”

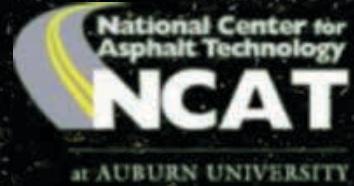
- FHWA Pavement Preservation Expert Task Group



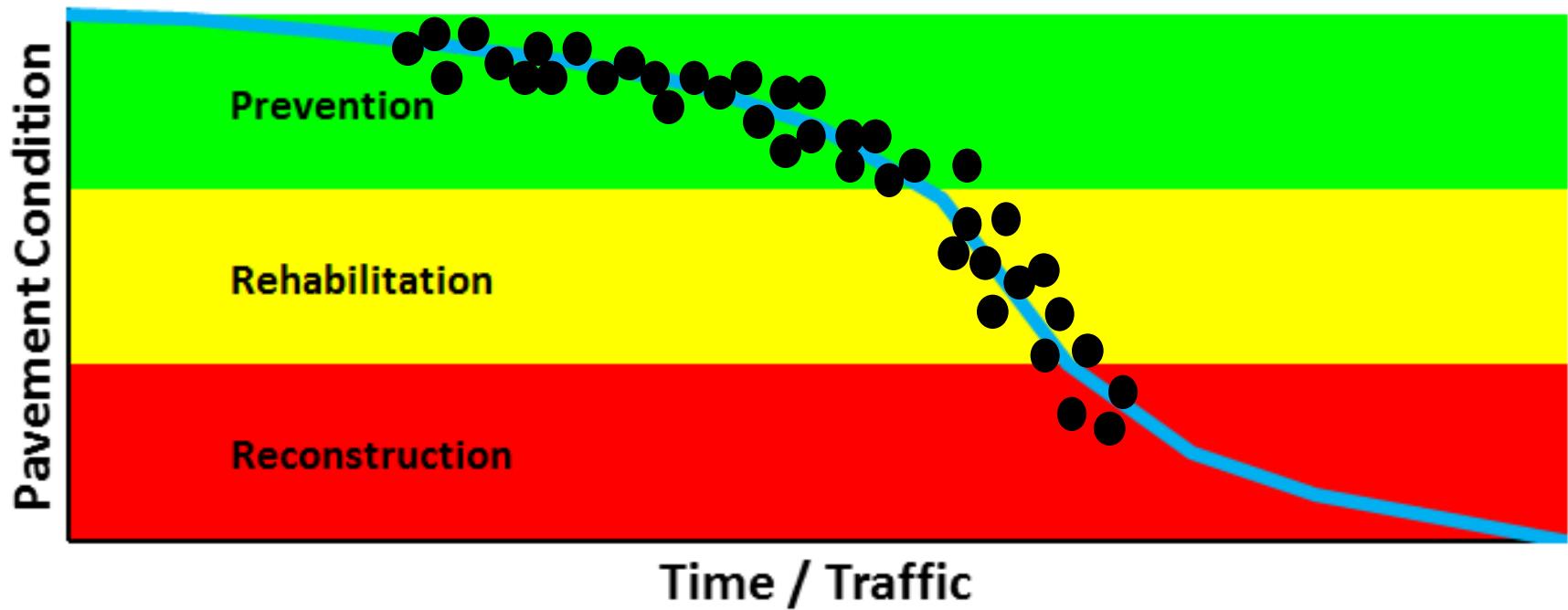
Pavement Preservation Study

Objectives:

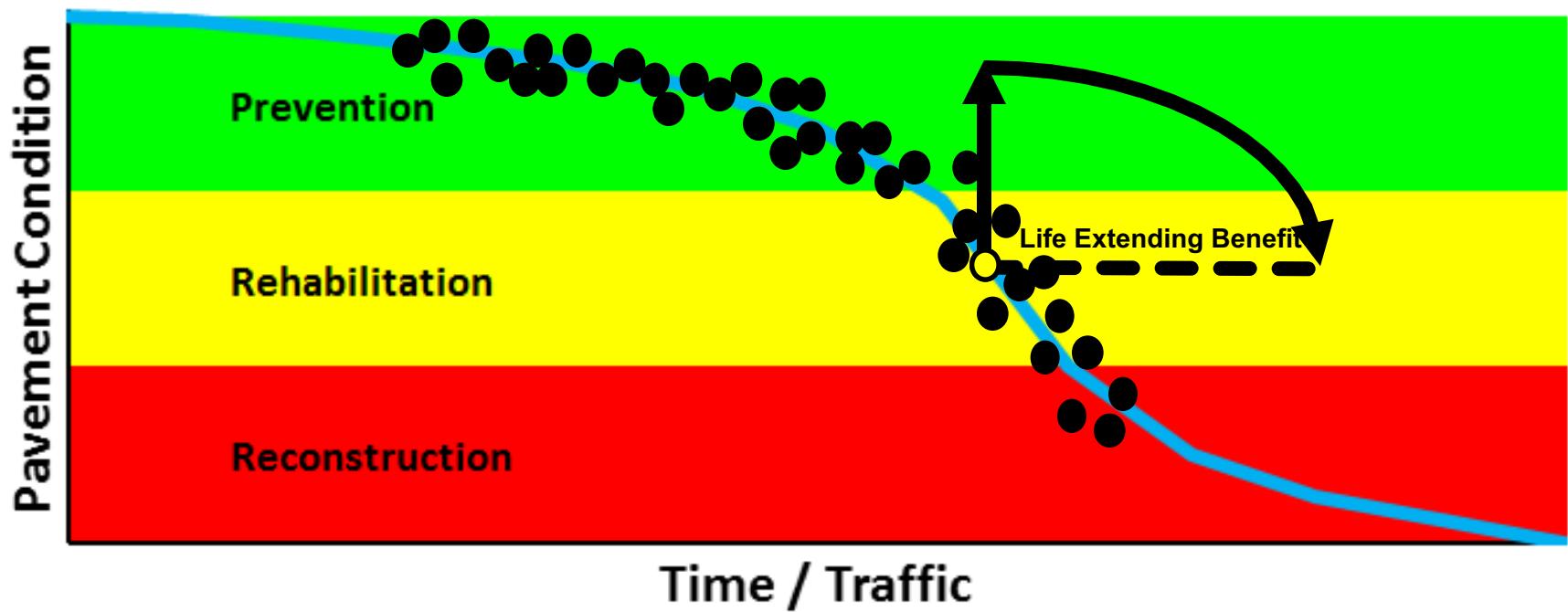
- 1) Quantify life extending benefit of study treatments
- 2) Sampling/testing methods for construction quality



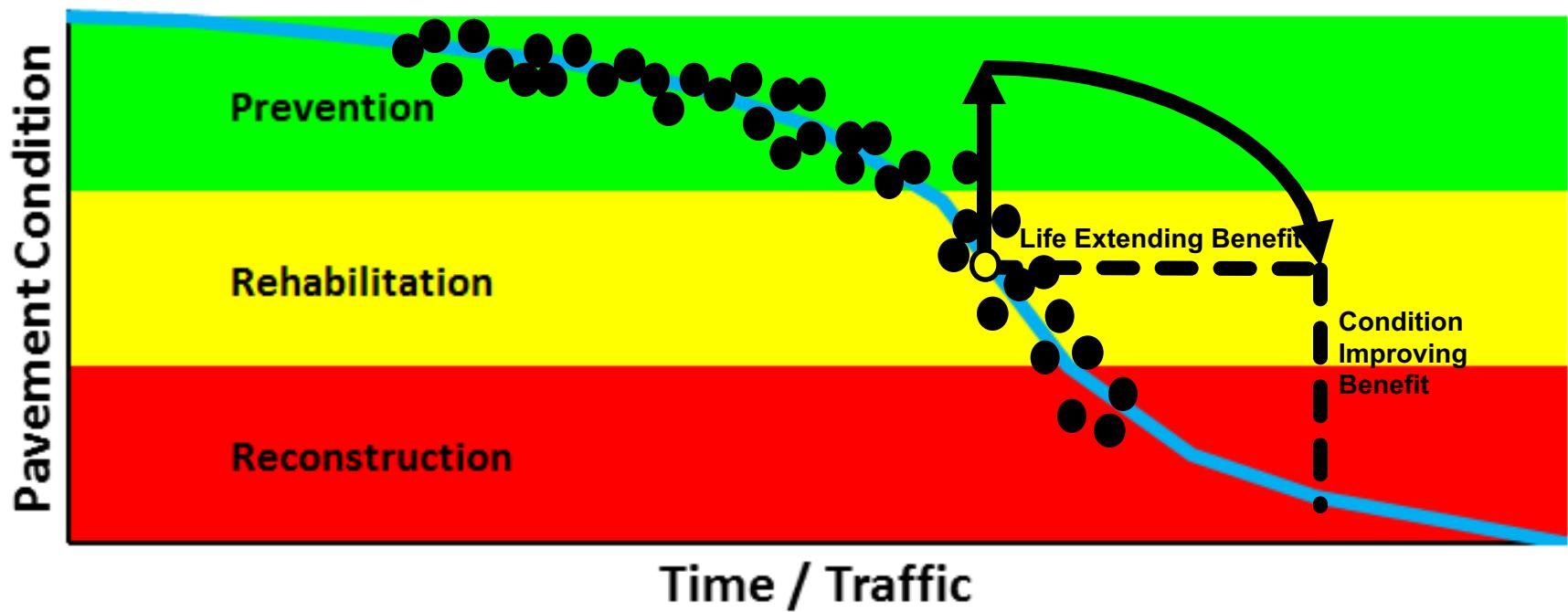
Pavement Preservation



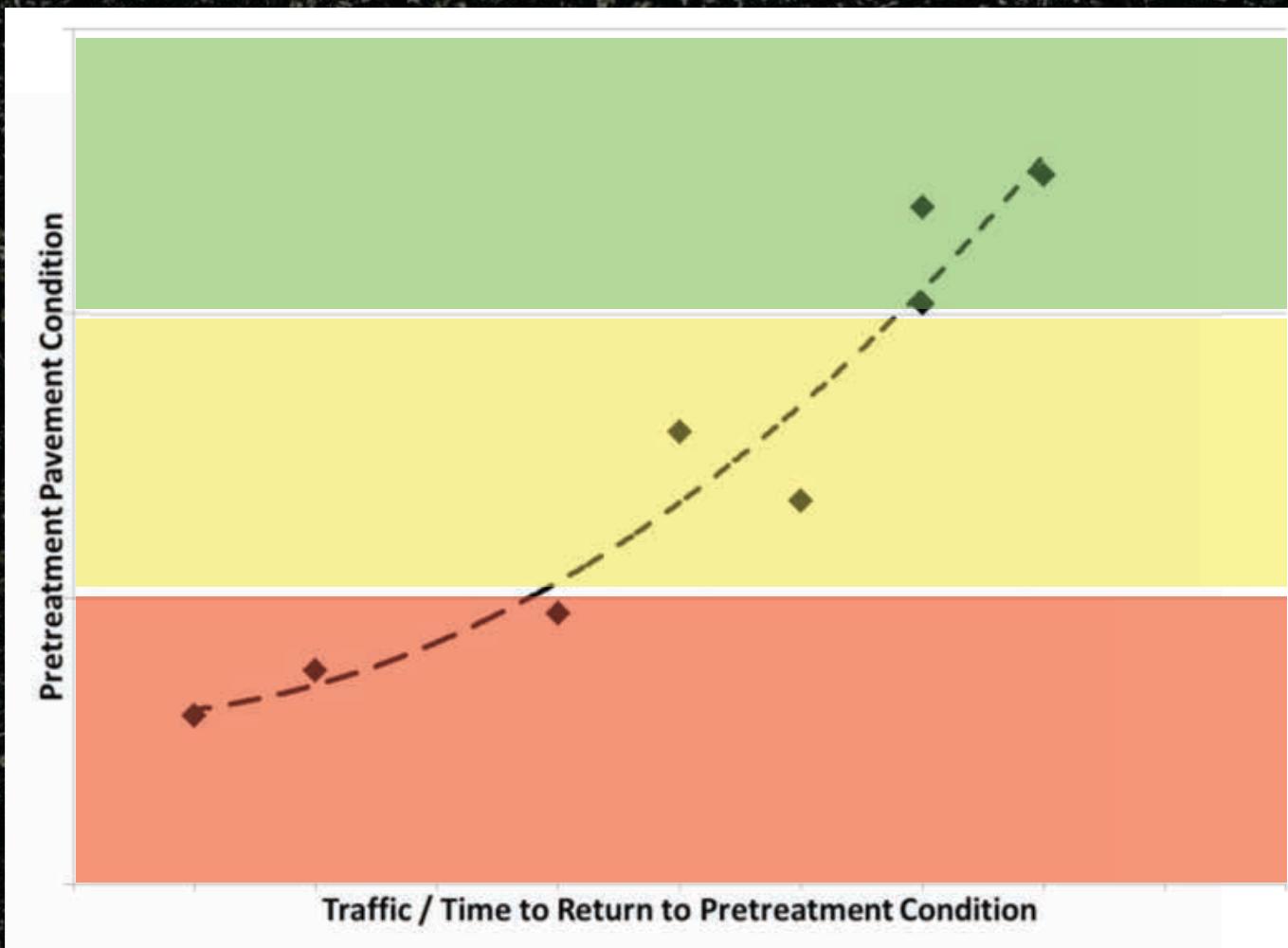
Pavement Preservation



Pavement Preservation



Pavement Preservation

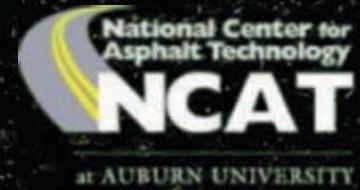


Lee Road 159, Auburn, Alabama

PG 2012



Minnesota Department of
Transportation



National Center for
Asphalt Technology

NCAT

at AUBURN UNIVERSITY

Pavement Preservation on Lee Road 159

Martin Marietta Quarry

Asphalt Plant

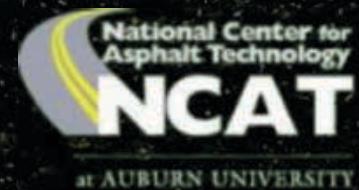
Lee Road 159

- Low ADT roadway
- Very high % trucks
- 14-year old 5½" pavement
- Diverse pavement condition
- Load data provided by quarry and asphalt plant



Pavement Preservation on Lee Road 159

1. Rejuvenating Fog Seal
2. Fibermat
3. Control
4. Control
5. Crack Seal (CS)
6. Single Layer Chip Seal
7. CS + Single Layer Chip Seal
8. Triple Layer Chip Seal
9. Double Layer Chip Seal
10. Microsurfacing + Single Chip (Cape)
11. Microsurfacing
12. CS + Microsurfacing
13. Double Layer Microsurfacing
14. Fibermat + Microsurfacing (Cape)
15. Scrub Seal + Microsurfacing (Cape)
16. Scrub Seal
17. Distress Demo Section
18. Fibermat + HMA thinlay (HMA Cape)
19. HMA Thinlay (PG 67-22)
20. HMA + 100% Foamed Recycle Inlay
21. HMA Thinlay (PG 76-22)
22. Ultra Thin Bonded Wearing Course
23. HMA Thinlay (50% RAP)
24. HMA Thinlay (5% PCRAS)
25. HMA Thinlay (High Polymer)



Pavement Preservation on Lee Road 159

- Rutting, roughness, texture
- Surface friction
- Subgrade moisture contents
- Falling weight deflectometer (FWD)
- Visual and video based cracking measurement

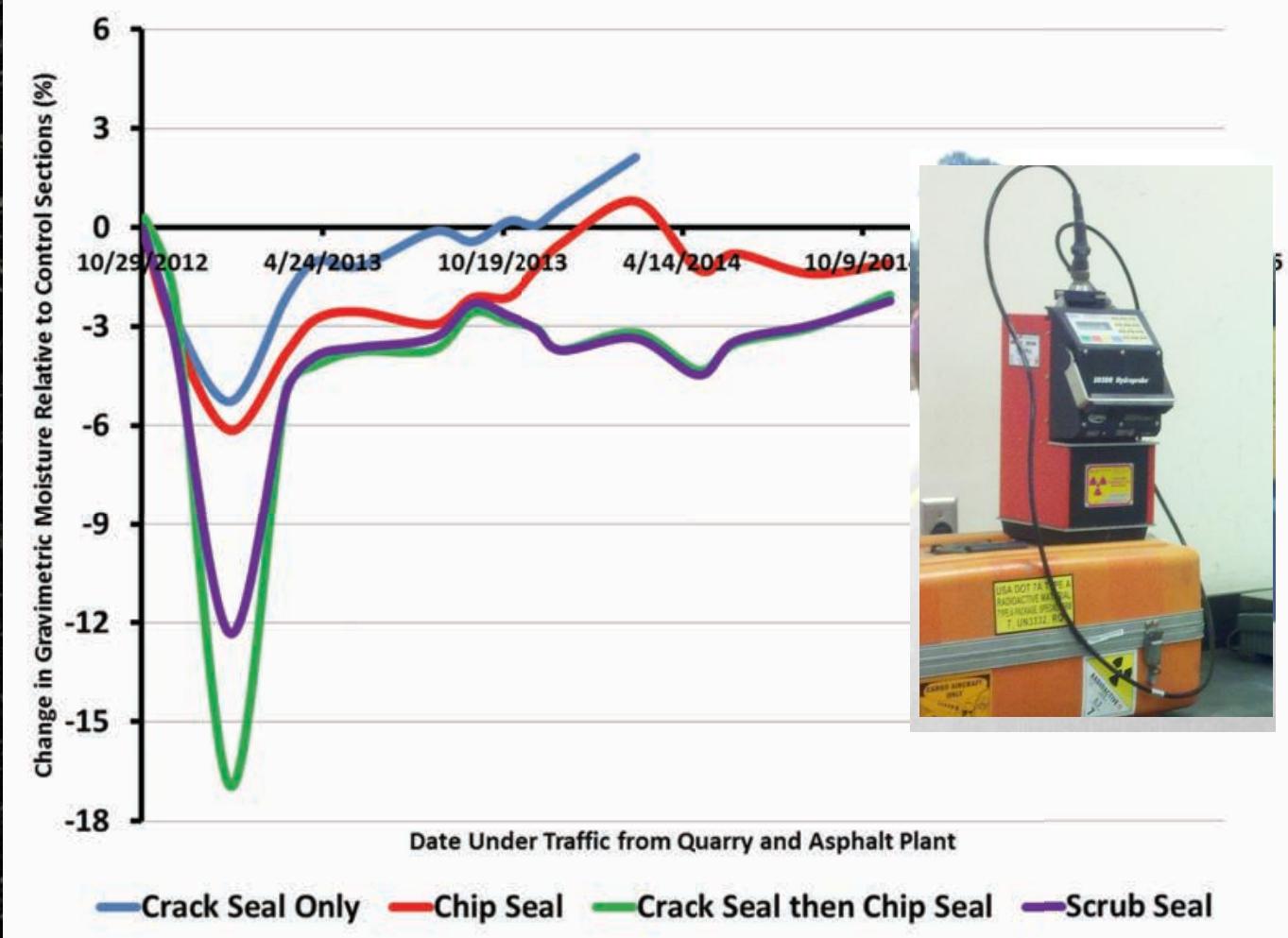
Rates Checked Prior to Placement



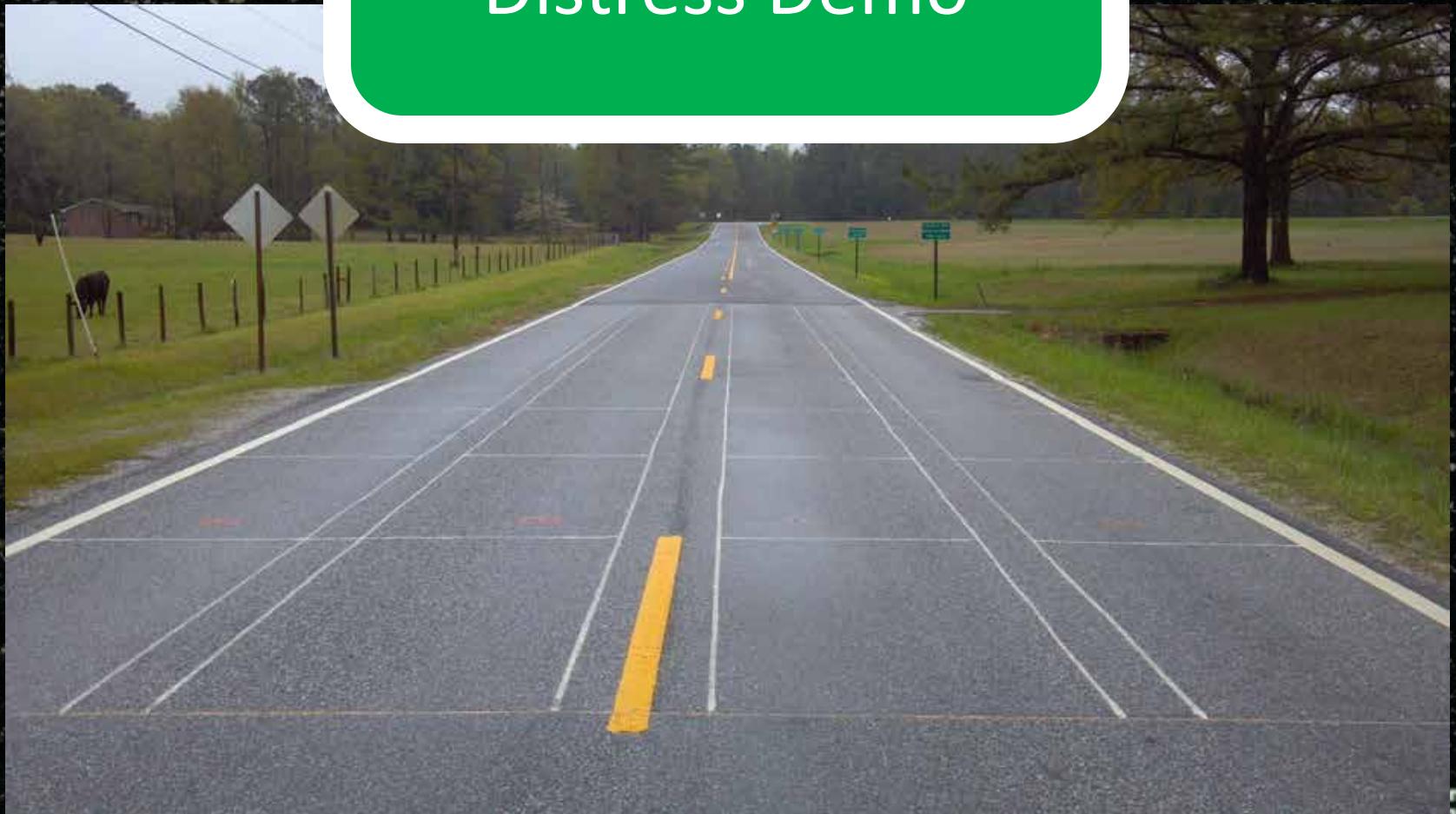
Actual Rates Verified During Placement



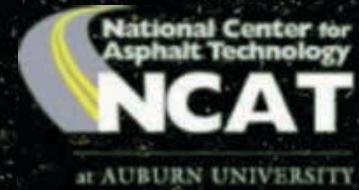
Subgrade Moisture



L17 – Subsection Distress Demo

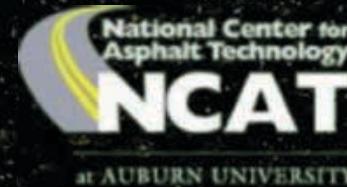


MNROAD-NCAT PARTNERSHIP PG 2015

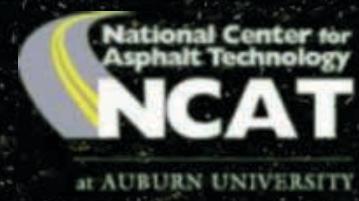
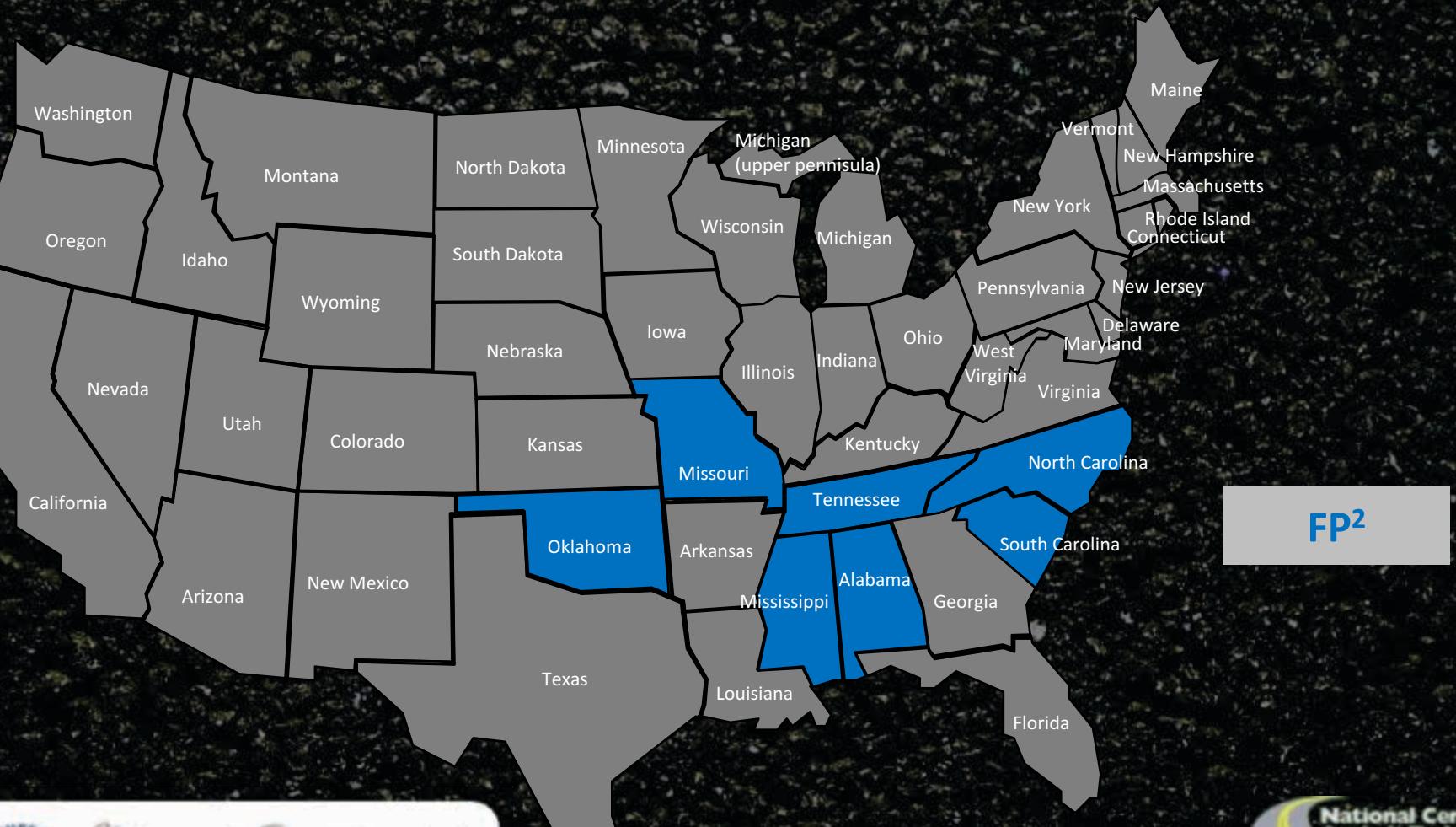


MnROAD & NCAT Partnership

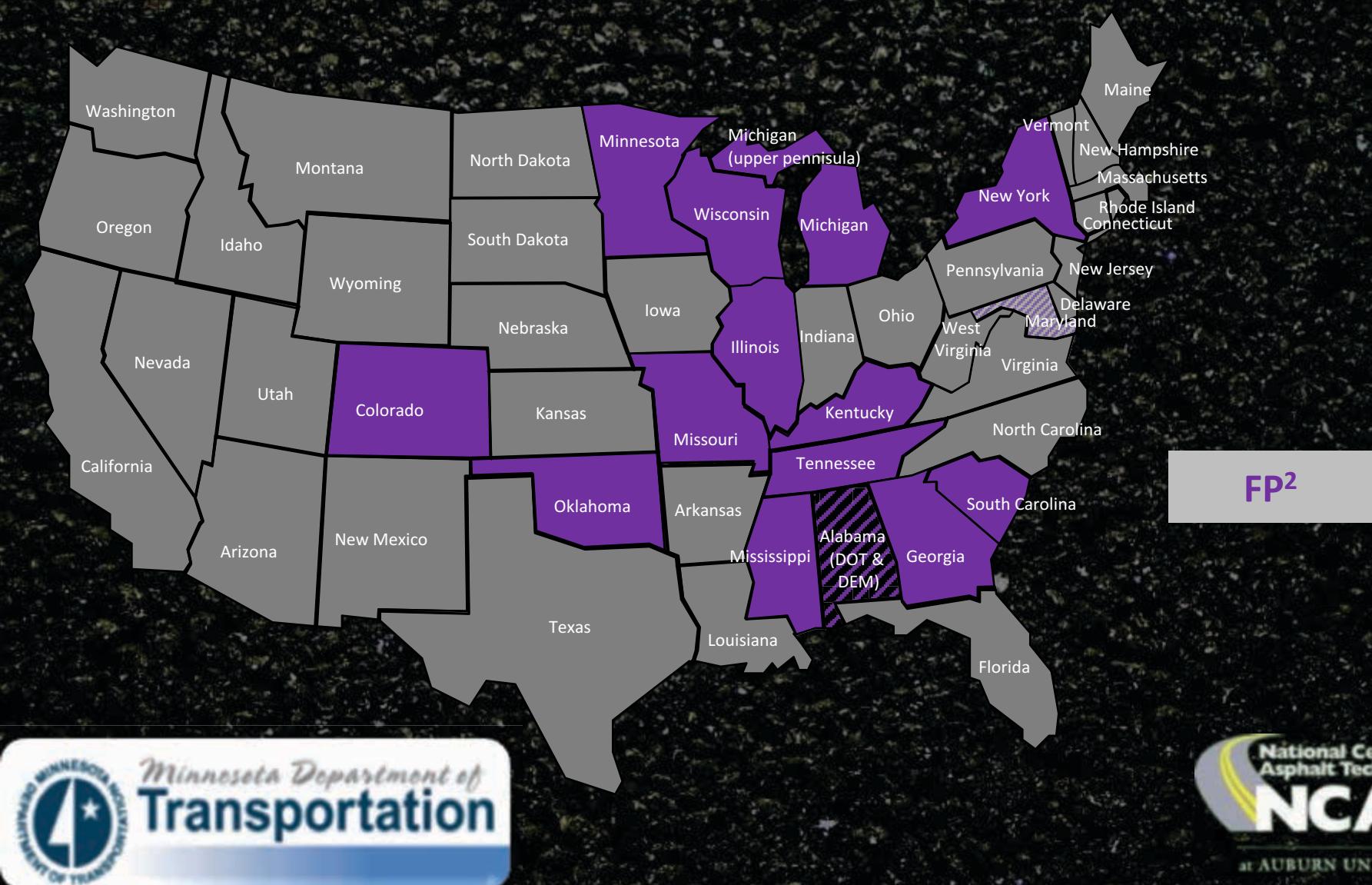
- Development
 - Informal in the past
 - June 2014 @ MnROAD
 - October 2014 @ NCAT
 - Formalized in 2015
 - FP² / NCPP Participation
- Partnership Benefits
 - Individual Strengths of Each Other
 - Operations / Data Sharing / Analysis
 - Greater National Appeal



PG 2012 Research Sponsors

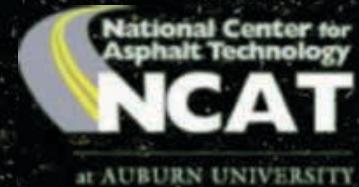


PG 2015 Research Sponsors

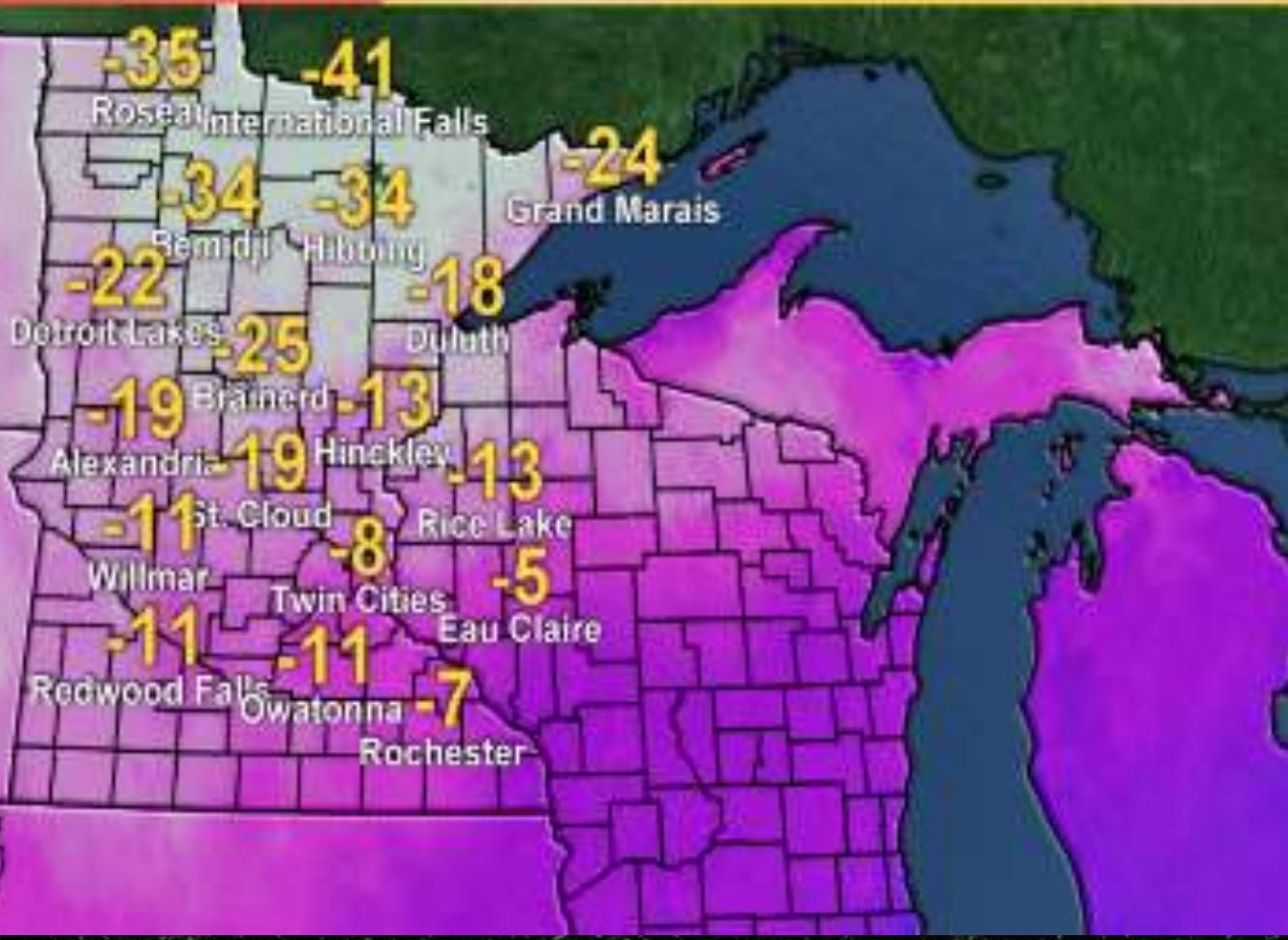


MnDOT

The 29,300 lane mile state highway system is 74% of State-owned capitol assets



TEMPERATURES NOW



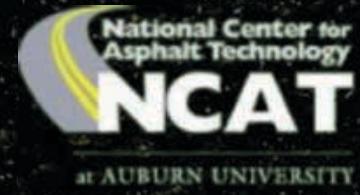
Minnesota Department of
Transportation

National Center for
Asphalt Technology
NCAT
at AUBURN UNIVERSITY

Thermal Crack

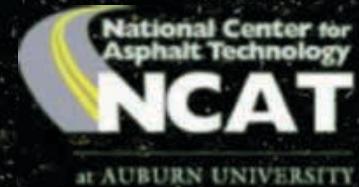


Minnesota Department of
Transportation



2015 Preservation Continuation/Expansion

- Continue monitoring '12 sections (Track & 159)
- Capture life extending benefit curve data
- Partnership with MnROAD for nationwide scope
 - Build low-volume and high-volume sections in MN
- Build sections on higher ADT roadway in AL.



MnROAD-NCAT Partnership

NCAT	MnROAD
<i>Analysis</i>	<i>Analysis</i>
- Subsections to develop life-extending benefit curves	- Subsections to develop life-extending benefit curves
<i>Higher Volume (US 280)</i>	<i>Higher Volume (TBD)</i>
Control sections	Control sections
Treated sections	Treated sections
Replicate LR 159 treatments	Replicate LR 159 treatments
Additional treatments (CIR, ABR thin overlay, etc.)	Possibly additional treatments
<i>Low Volume (LR 159)</i>	<i>Low Volume (TBD)</i>
2 control sections 23 treated sections	Control sections Treated sections

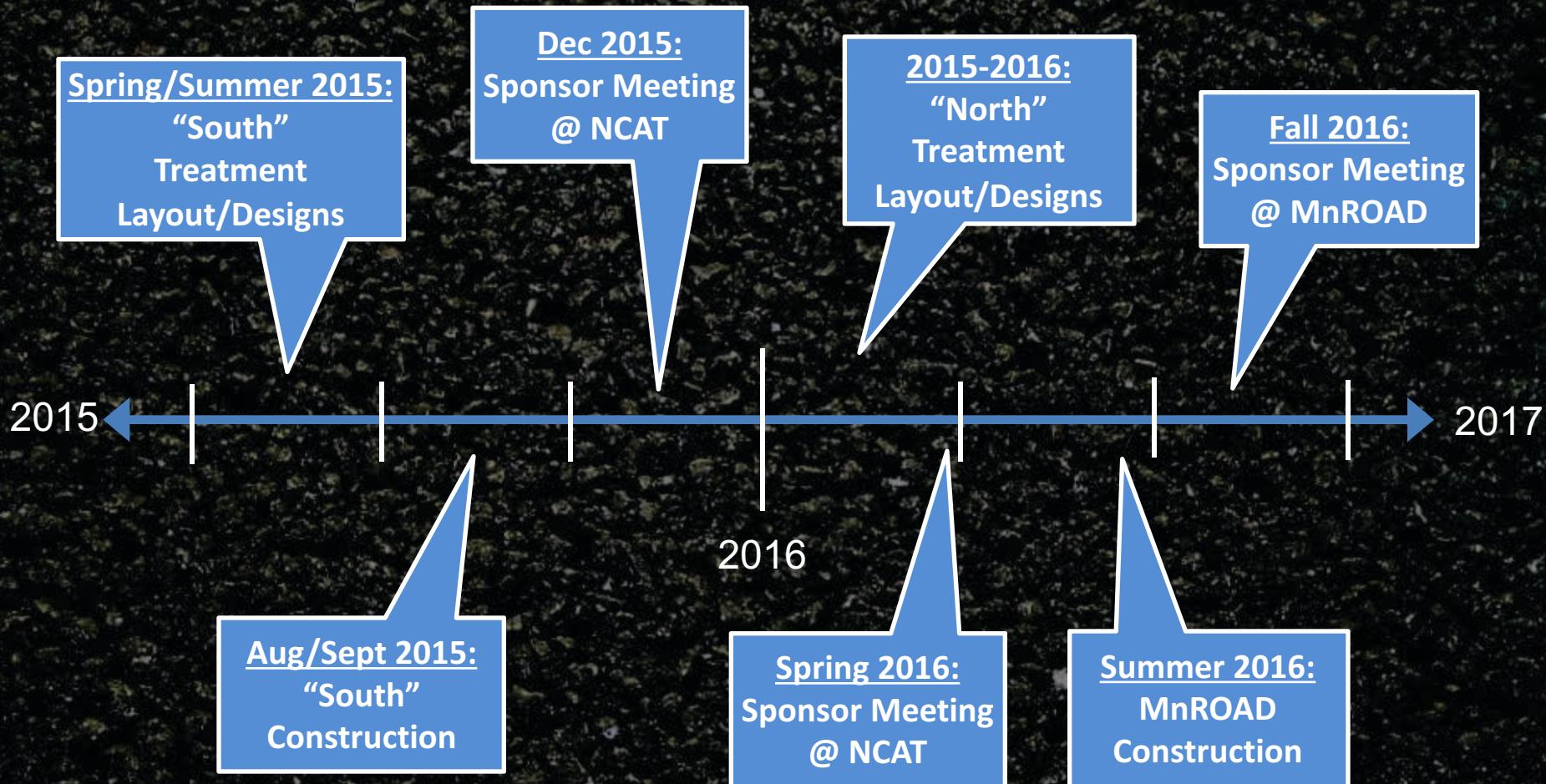
Higher ADT Off-Track Preservation



Treatments

- Control Sections
- Surface Treatments
 - Crack Sealing
 - Fog Seal
 - Chip Seals
 - Scrub Seals
 - Microsurfacing
 - Combinations (Cape Seals)
- Cold Recycling + 1" overlay
 - Cold-in-place (CIR)
 - Cold Central Plant Recycle (CCPR)
- Thin Overlays (3/4")
 - Dense Graded (4.75 mm)
 - OGFC
 - UTBWC
 - Combinations

Timeline



South Treatments Placed Aug/Sept 2015



Questions ?



at AUBURN UNIVERSITY

www.ncat.us

Dr. Mary M. Robbins

Assistant Research Professor

277 Technology Parkway
Auburn, AL 36830

Phone: (334) 844-7303
Cell: (334) 750-2076

Email: mmr0001@auburn.edu



Minnesota Department of
Transportation



at AUBURN UNIVERSITY