

2012 NCAT Pavement Test Track Pavement Preservation Study



at AUBURN UNIVERSITY

SE Pavement Preservation Partnership

May 28, 2014

Louisville, KY

Mary Robbins

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

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- *FHWA Pavement Preservation Expert Task Group*

2012 Preservation Group (PG) Study

- Quantify life extending benefit of study treatments
 - Time/traffic to return to pretreatment condition(s)
 - Test sections on the Track and Lee Road 159
- Sampling/testing for construction quality

Preservation Group (PG) Experiment

- 25 sections on local county road (Lee Road 159)
 - $\approx 5\frac{1}{2}$ " thick paved access road to quarry/asphalt plant
 - 2 control, 23 sections with treatments/combinations, 1 demonstration section
 - Pretreatment condition varied by WP and direction
- 14 sections on the NCAT Pavement Test Track
 - 7" pavements placed in the summer of 2009
 - PFC sections, DGA sections (virgin, high RAP)
 - >10 million ESALs

PG Sections on Lee Road 159

Martin Marietta Quarry

Asphalt Plant

Lee Road 159

- Low ADT roadway
- Very high % trucks
- Load data provided by quarry and asphalt plant
- No traffic control needed for data collection

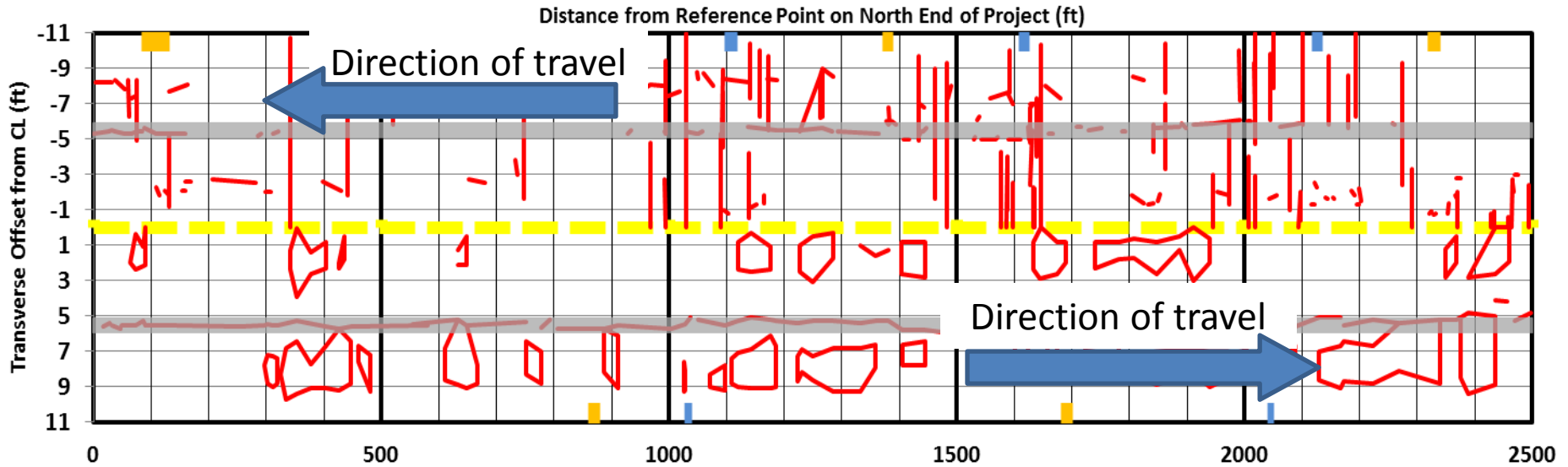
Lee Road 159

Pavement Preservation Experiment
to Reduce the Cost to Maintain Your Roads

Funding Provided by:

Alabama, Mississippi, Missouri, North Carolina,
Oklahoma, South Carolina, Tennessee, and FP2 via
Auburn University and the Lee County Commission

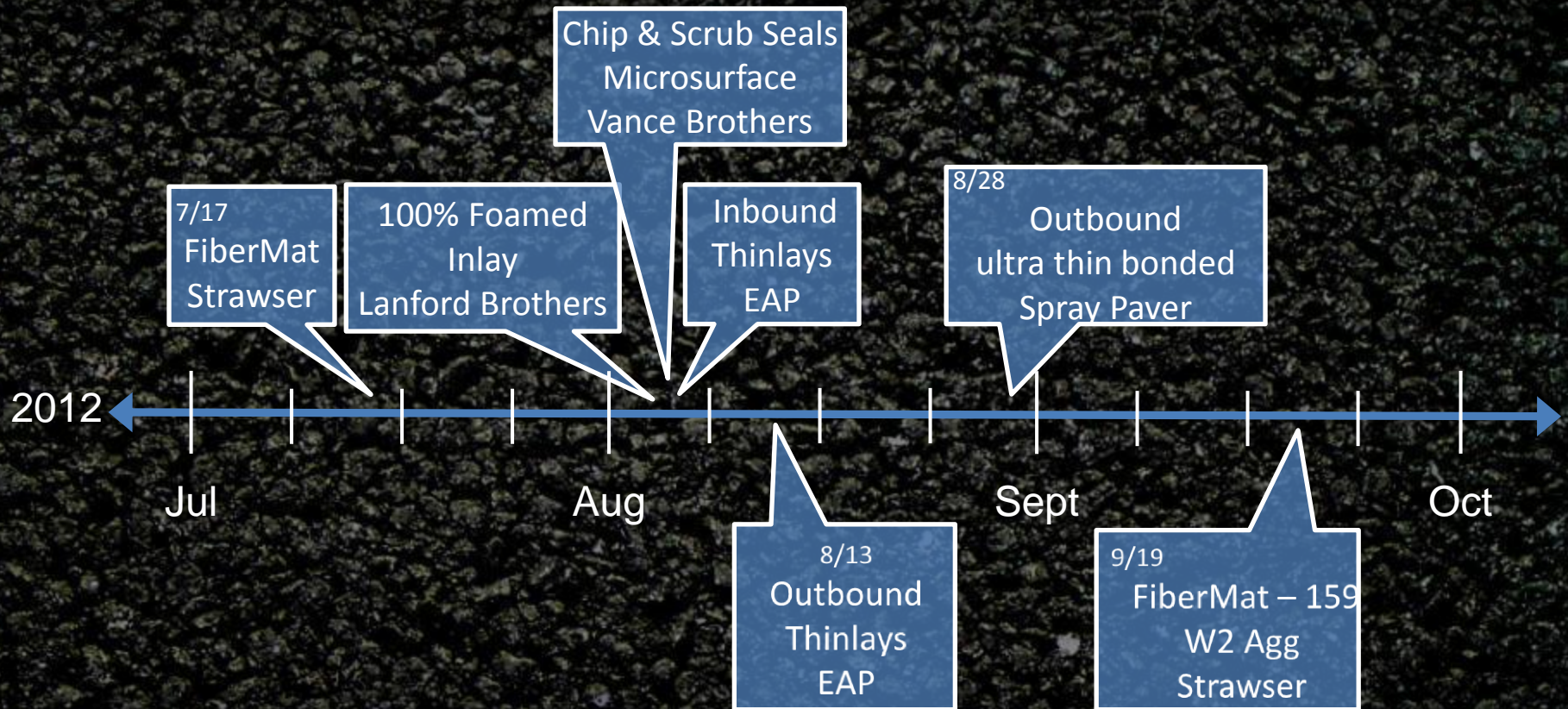
Lee Road 159



Final Layout

1. Rejuvenating Fog Seal
2. Fibermat Chip Seal
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. Single Chip + Microsurfacing (Cape)
11. Microsurfacing
12. CS + Microsurfacing
13. Double Layer Microsurfacing
14. Fibermat Chip + Microsurfacing (Cape)
15. Scrub Seal + Microsurfacing (Cape)
16. Scrub Seal
17. Distress Demo Section
18. Fibermat Chip + 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)

Lee Road 159 Construction



Rates Checked Prior to Placement



Actual Rates Verified During Placement



Plastic with Sample Pans



Plastic for Startup



LR 159 Testing Overview

- Weekly
 - Inertial Profiler (roughness, texture)
 - Visual inspections with notes/pictures
- Monthly
 - Video for crack mapping
 - Rut depth
 - Wet ribbed surface friction
 - Subgrade moisture readings
 - Falling weight deflectometer (FWD)
- Other
 - Ground penetrating radar (GPR)

Falling Weight Deflectometer



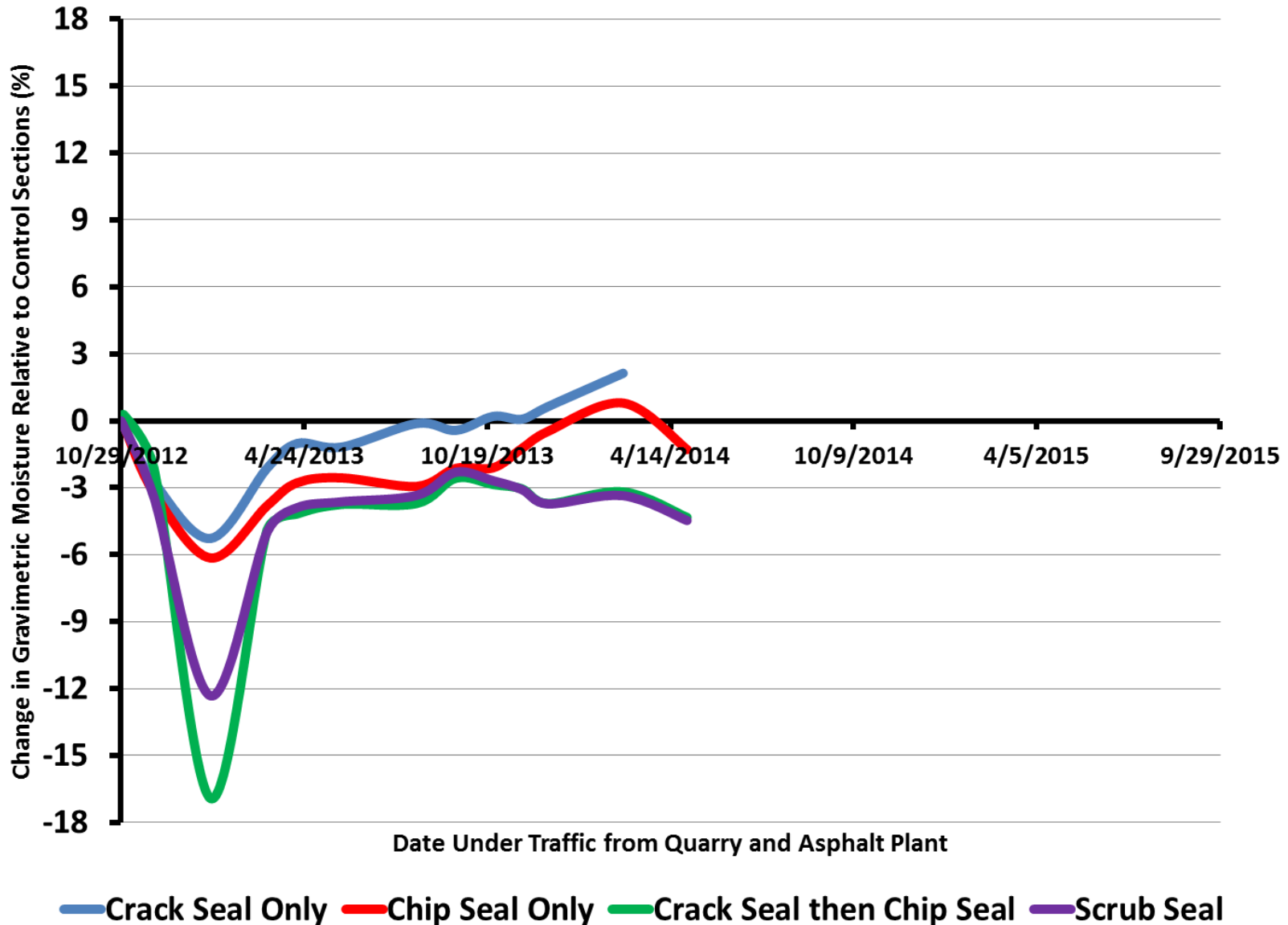
Nuclear Moisture Measurements



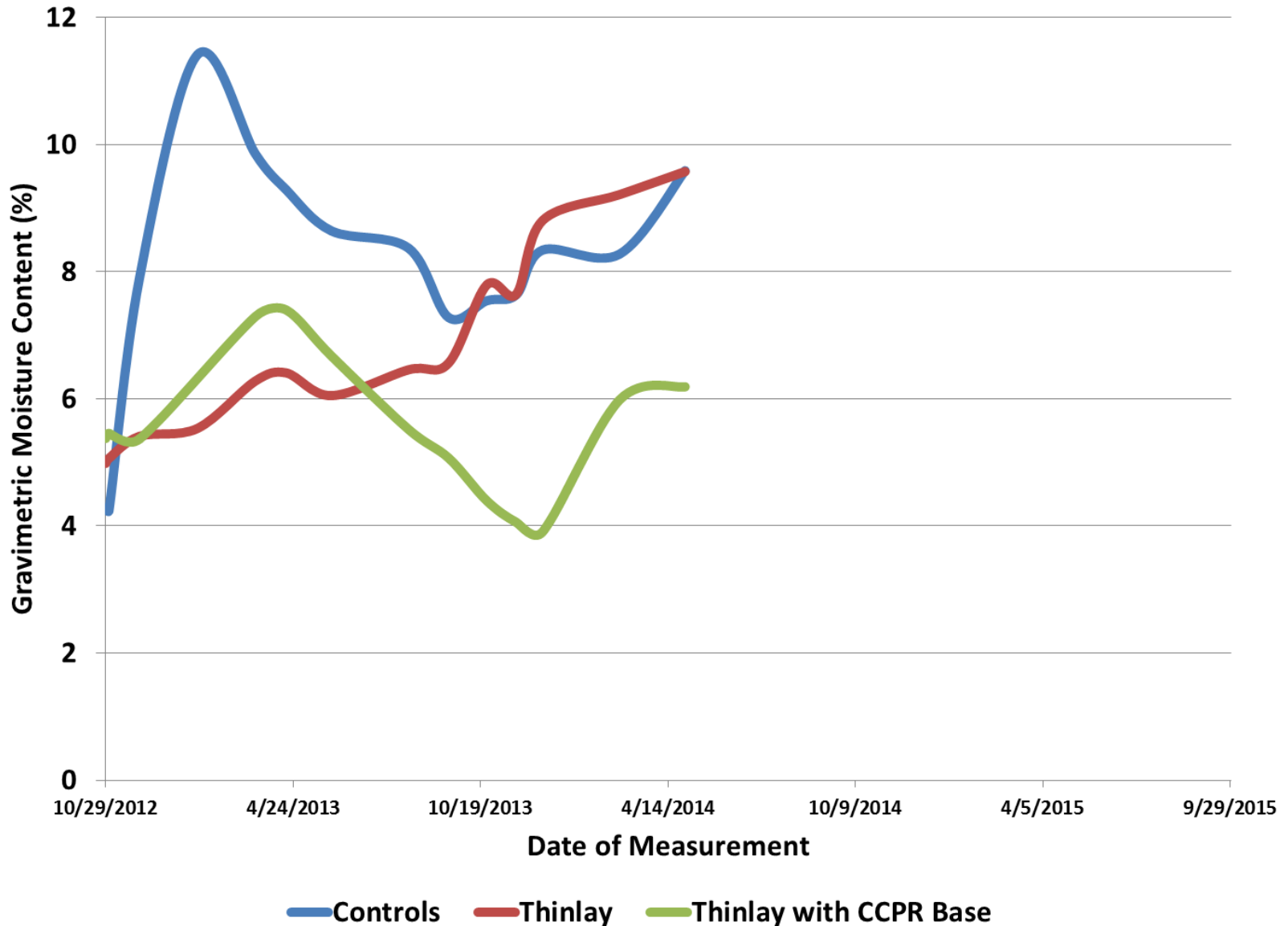
Subgrade Moisture Readings



Subgrade Moisture Contents



Subgrade Moisture Contents



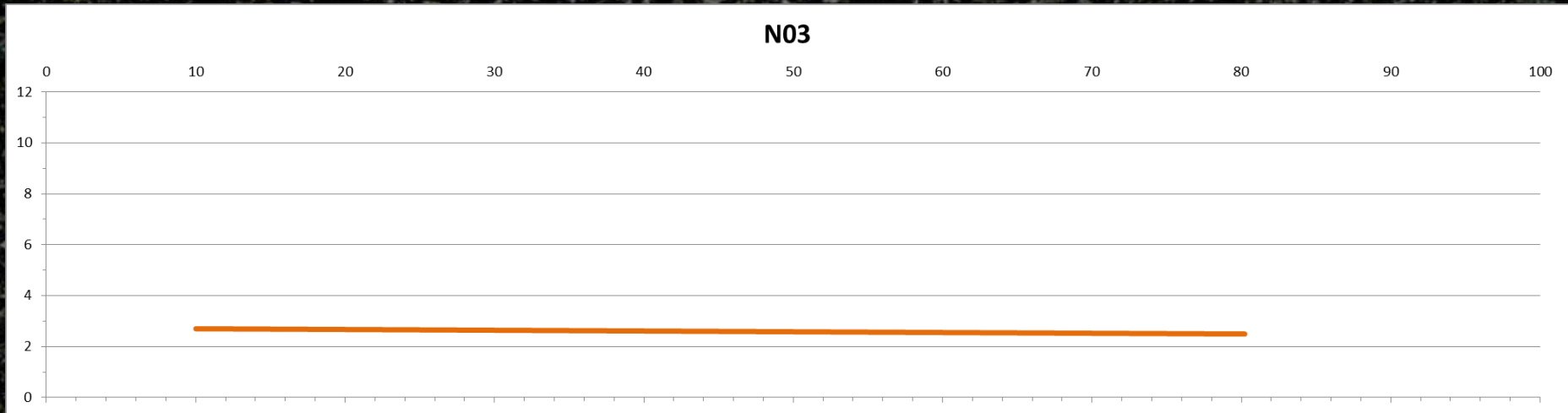
Video Crack Mapping



PROGRESSION OF CRACKING – UNTREATED CONTROL

Progression of Cracking Time Zero

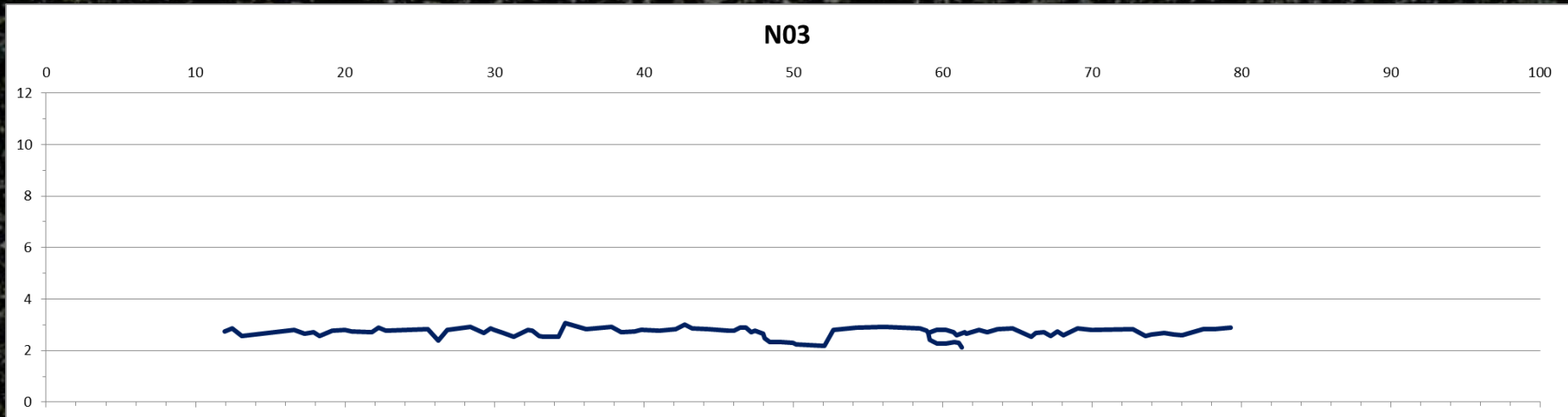
Traffic ←



Progression of Cracking

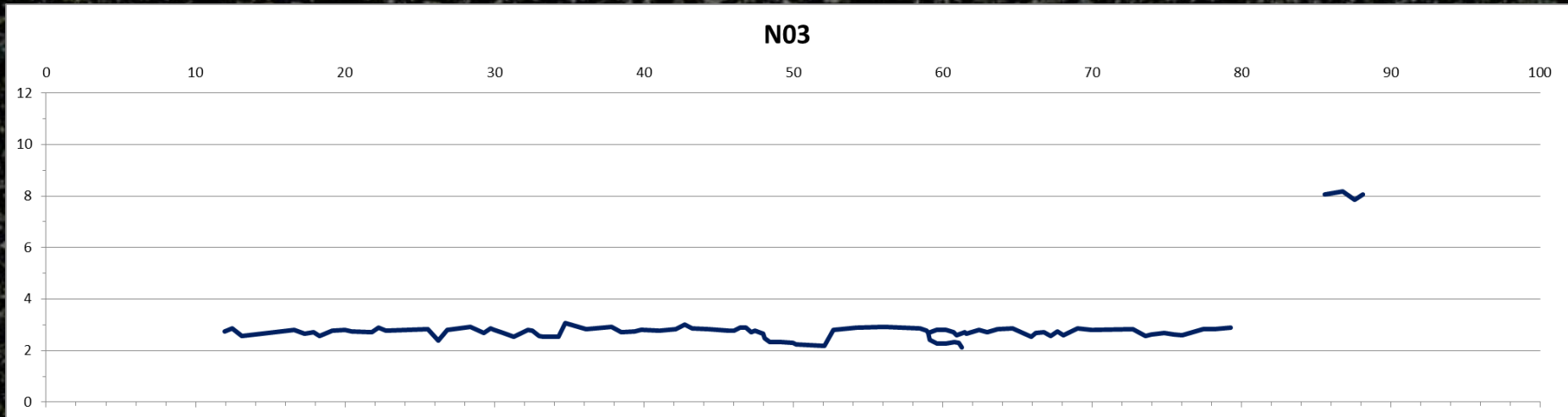
July 2013

Traffic ←

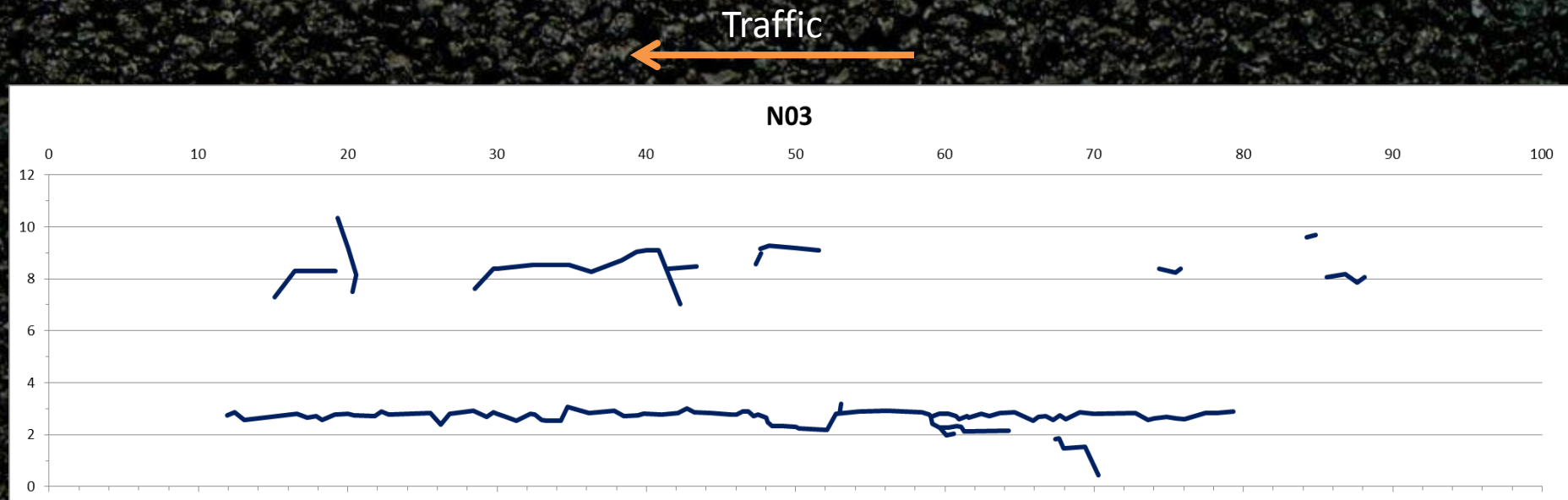


Progression of Cracking September 2013

Traffic ←

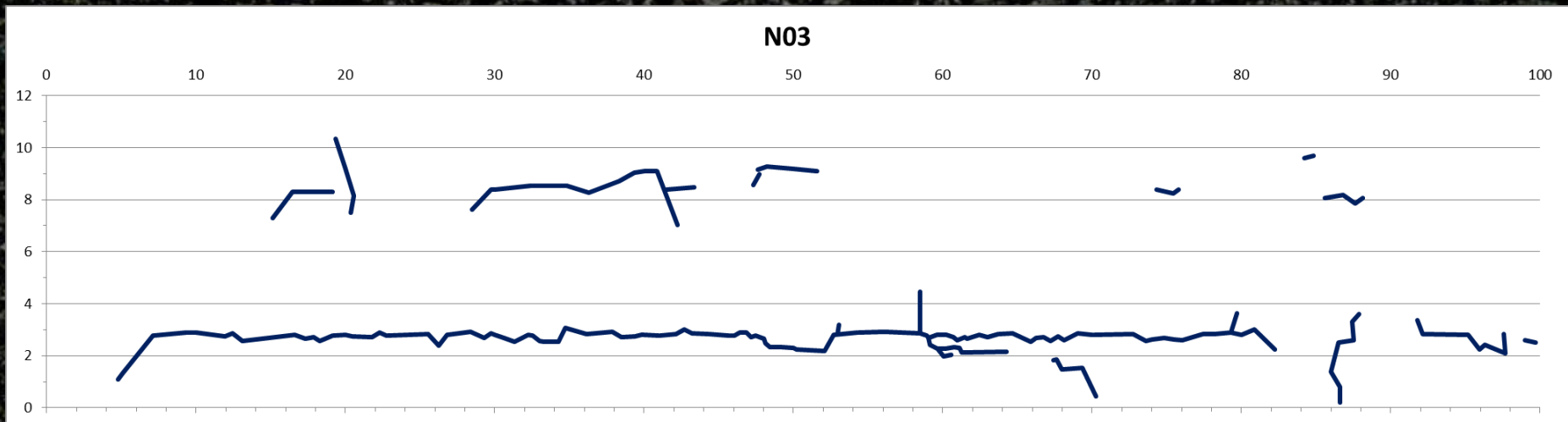


Progression of Cracking October 2013



Progression of Cracking December 2013

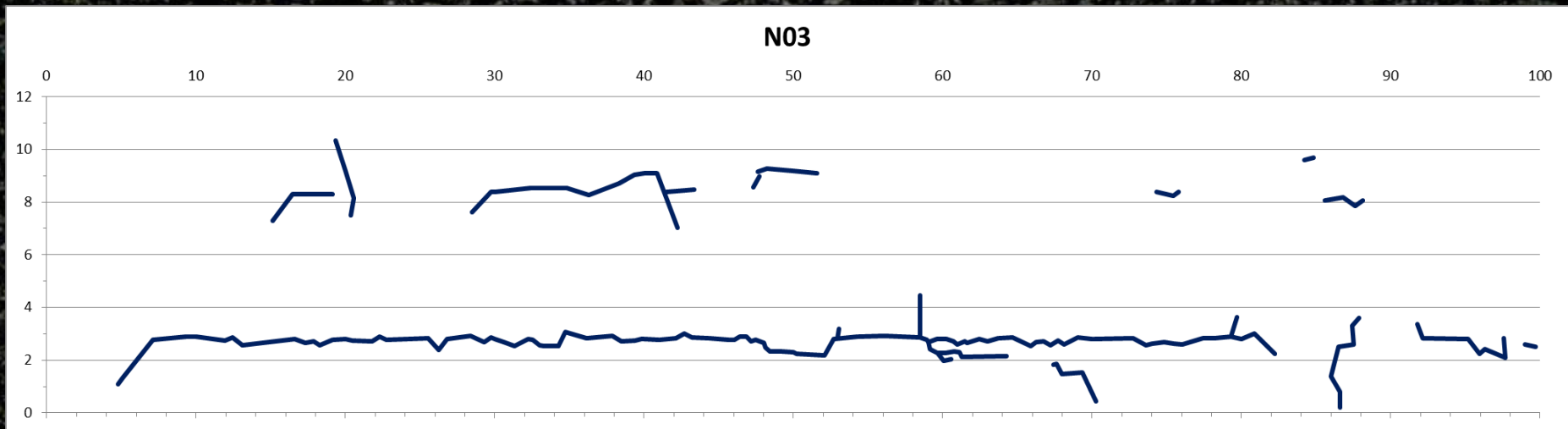
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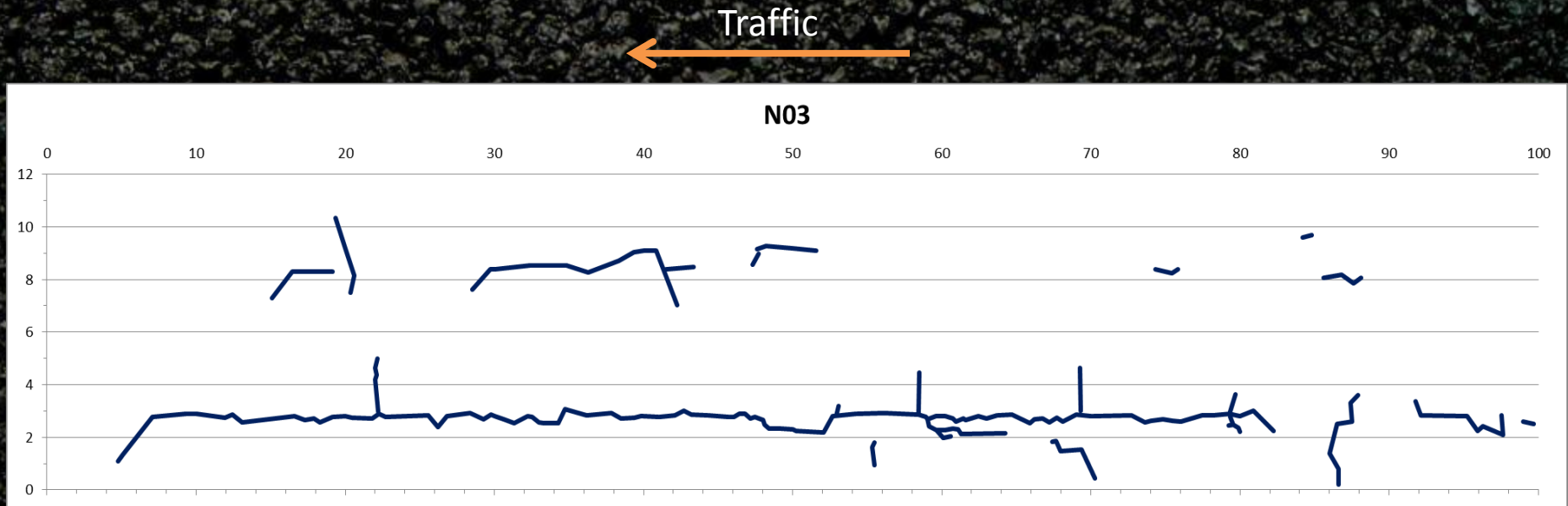
Progression of Cracking

January 2014

Traffic ←



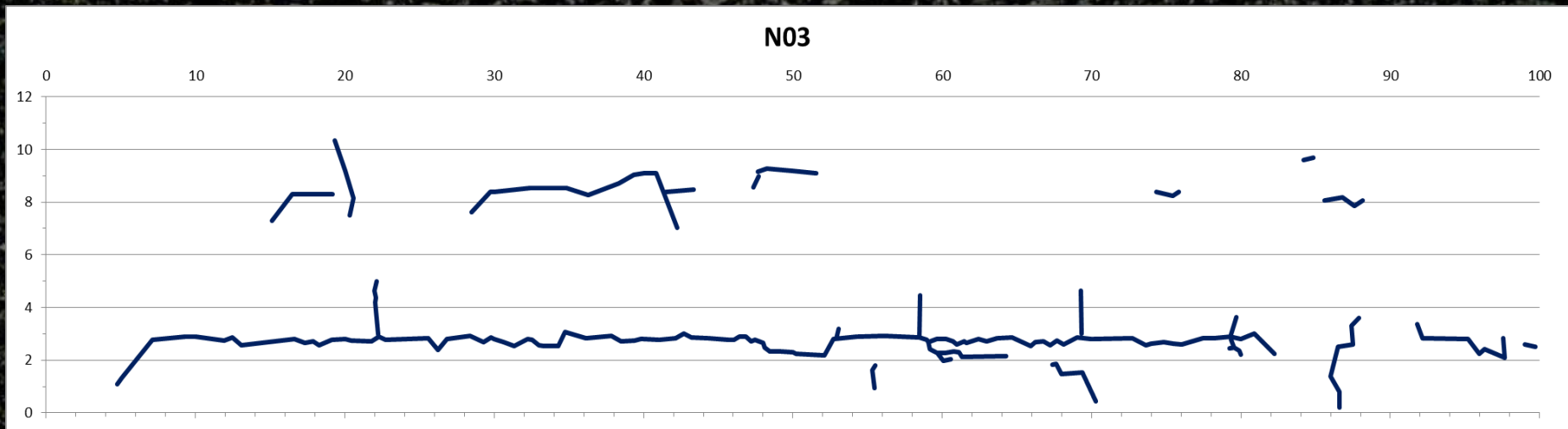
Progression of Cracking February 2014



Progression of Cracking

March 2014

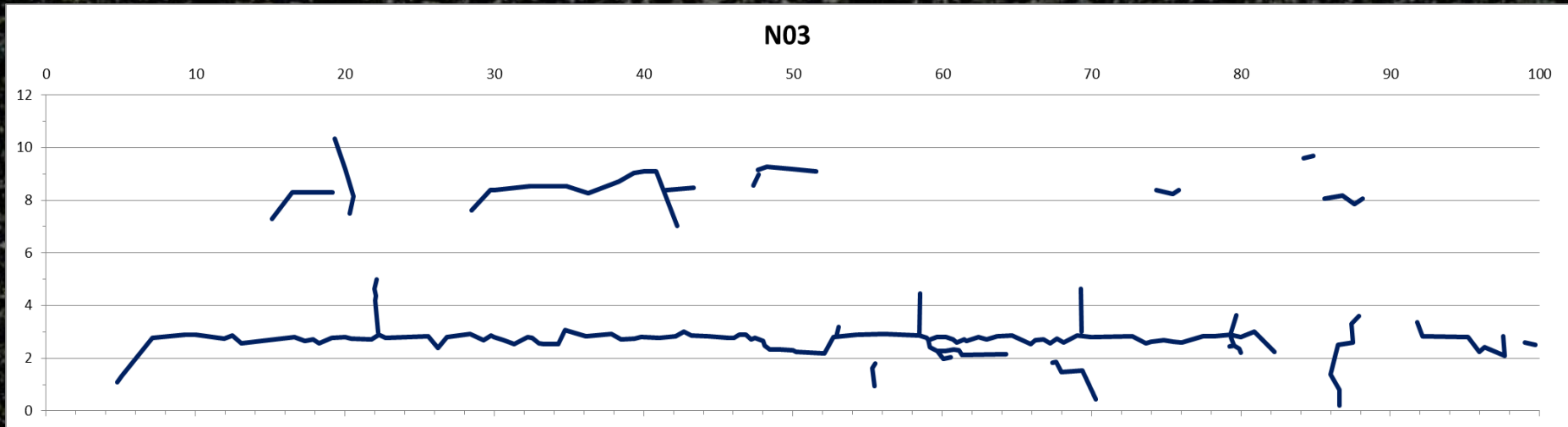
Traffic ←



Progression of Cracking

April 2014

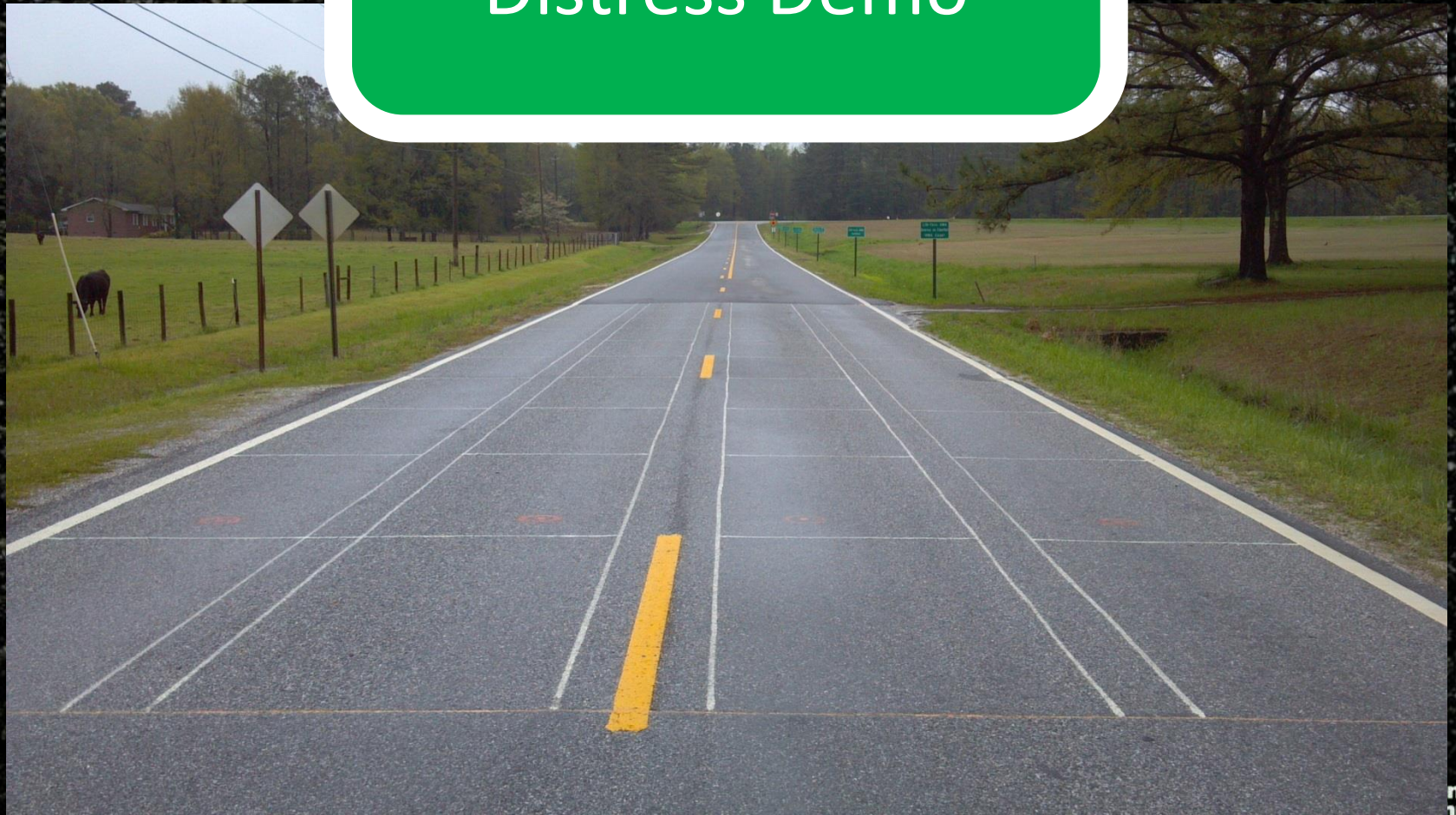
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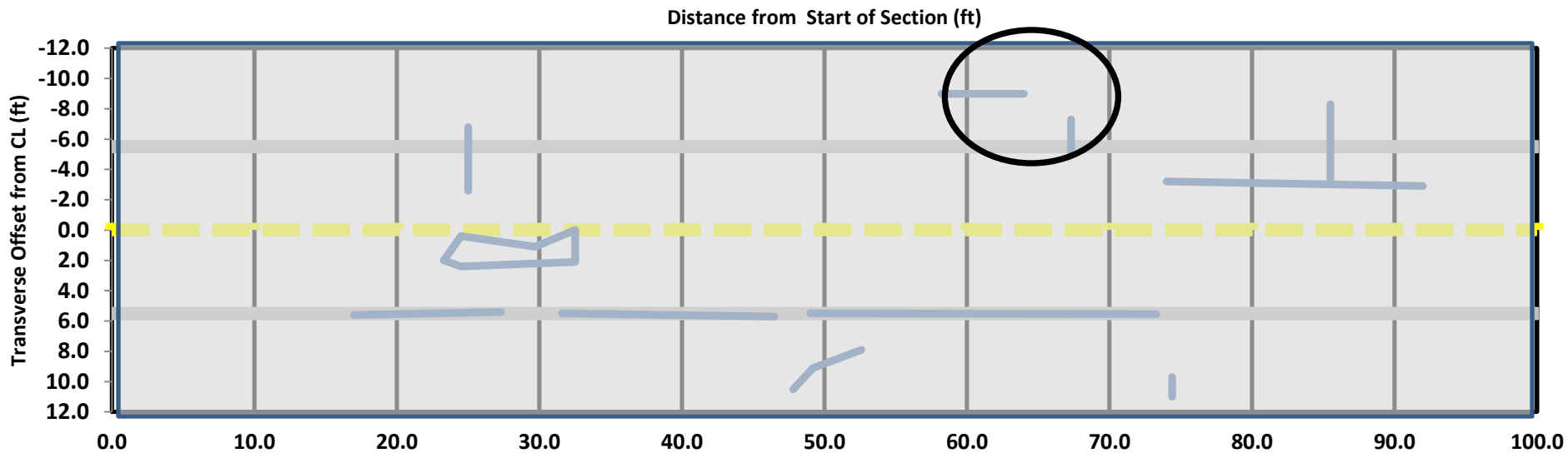
Where We Are Going....

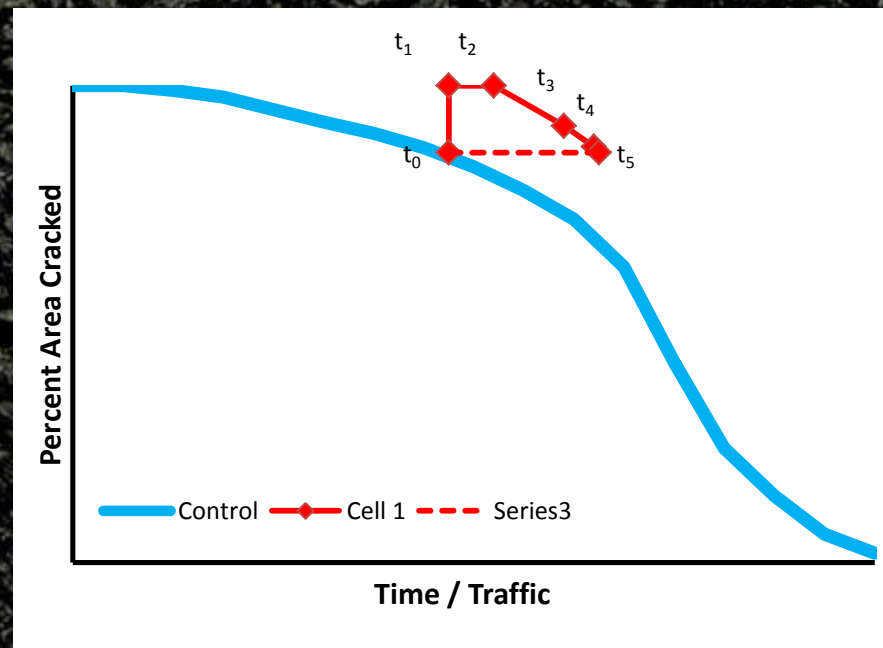
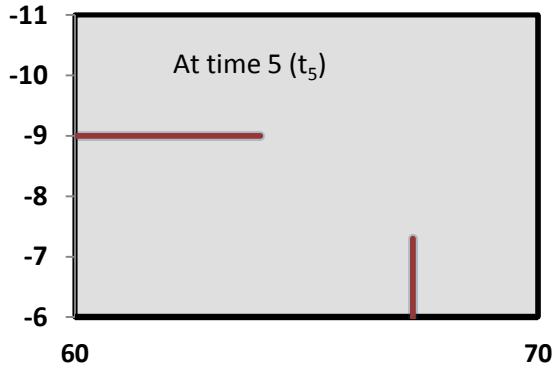
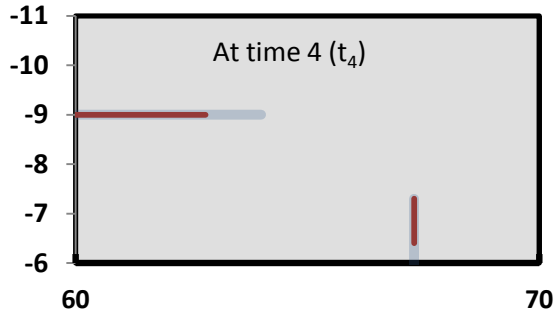
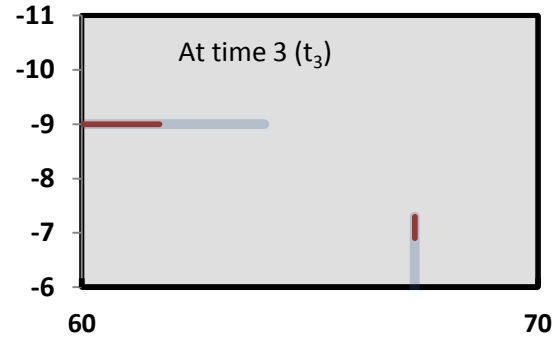
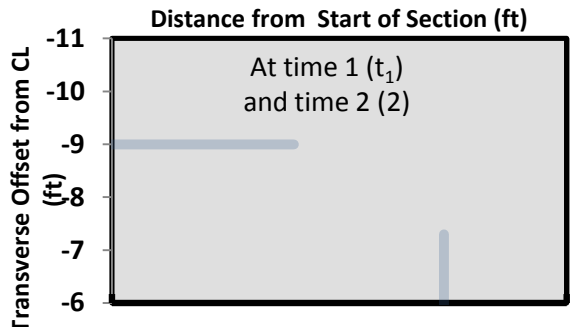
LIFE EXTENDING BENEFITS

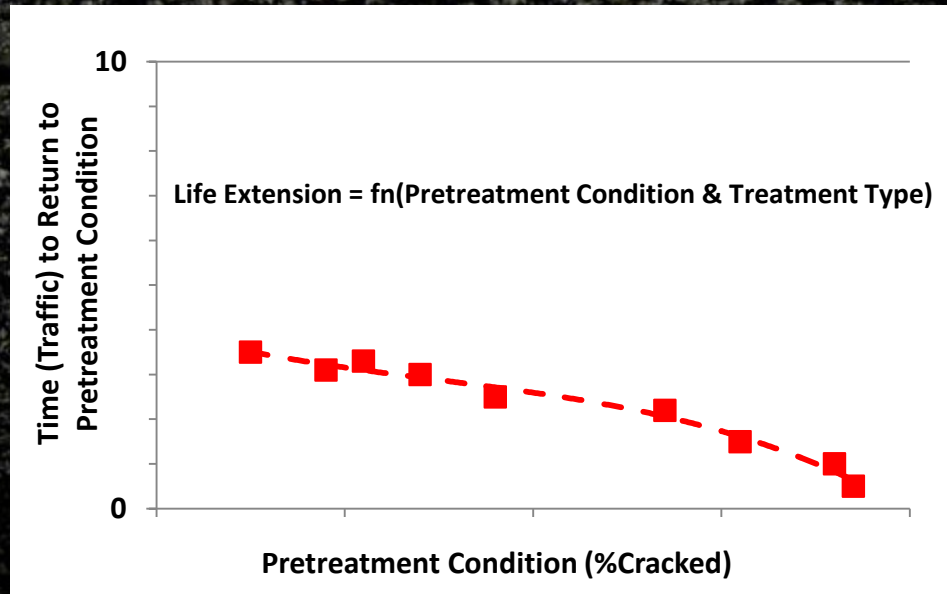
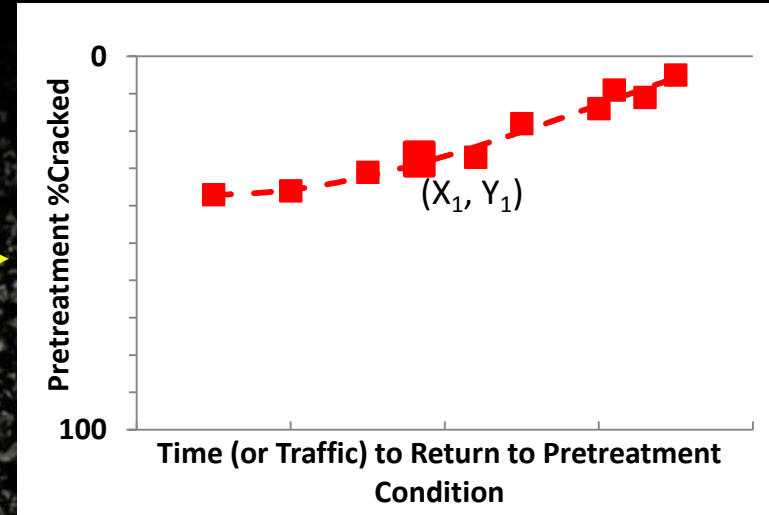
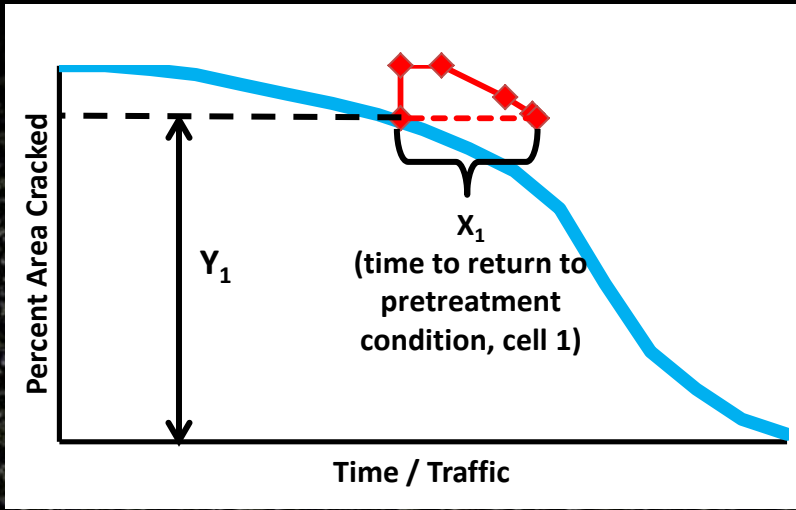
L17 – Subsection Distress Demo



Development of Curves







Preservation Summary

- Crack sealing appears to be beneficial in all cases
- Preservation treatments reduce subgrade moisture
- Objective life extending benefit curves expected
- Expect extension of project in 2015 research cycle
- “Final” results presented at 2015 Track Conference

www.pavetrack.com



Performance



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Click here for [the official NCAT web site](#), [Tracks in US](#), or [Tracks Worldwide](#)

Opelika, AL
Get the 10 day forecast

61°F
Cloudy

Feels Like: 61°F
Humidity: 81%
Wind: SE at 8 mph

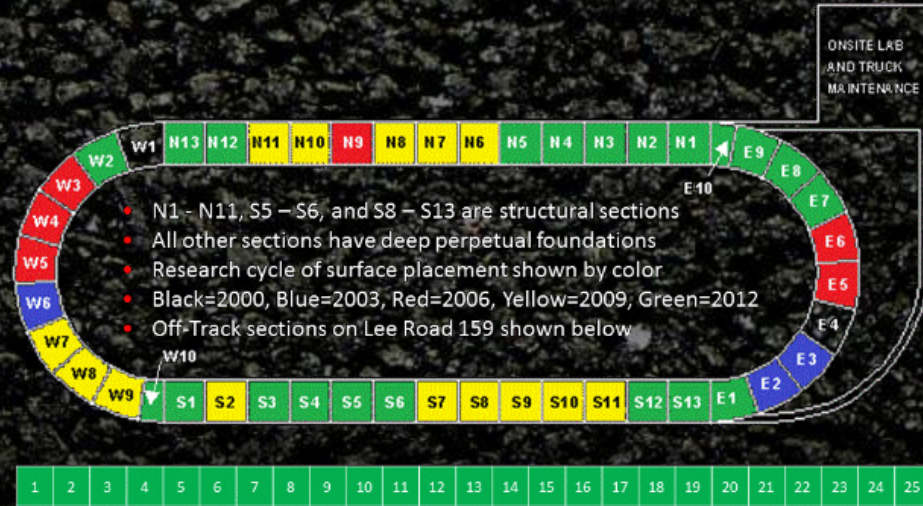
Enter city/zip **GO!**

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Travel Top 10s
Weather at 30,000 feet

HOTLINKS to [download PAVE reports](#), [review upcoming NCAT training courses](#), [query historical weather data](#), [view current color radar](#) or [preview local forecast](#).

0. ESALs as of 2300 hours on

Performance data for each section can be viewed by positioning your mouse over the section in question and left-clicking. Based on feedback from our research sponsors, the performance reports have been revised to include crack maps. The 2009 performance reports are now a fully integrated and active part of the web presentation.



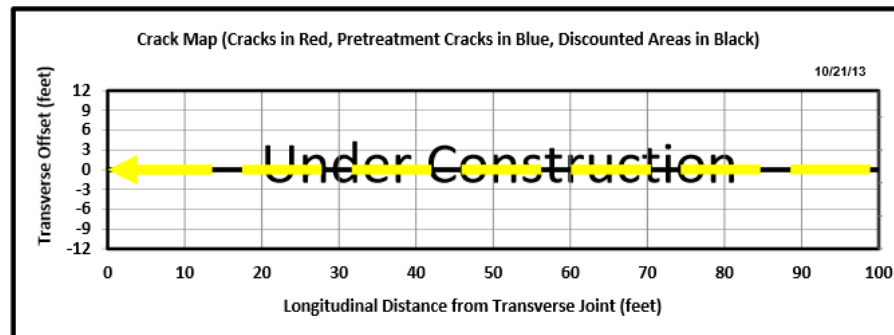
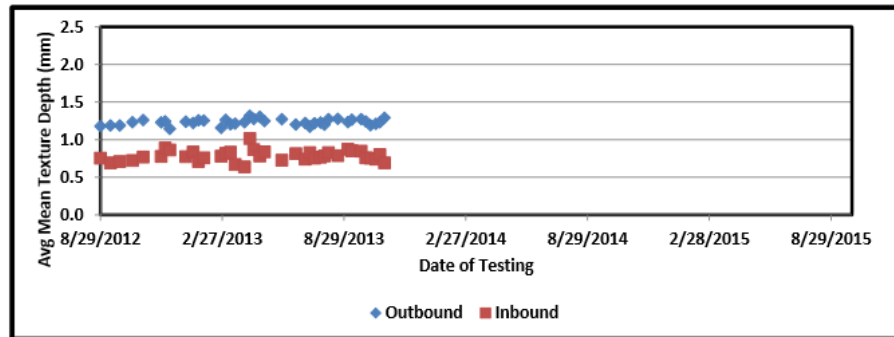
Pavement Preservation Treatment(s): Control with More Cracking

Inbound (Northbound) Lane

Outbound (Southbound) Lane

Crack Sealing Method: N/A
 1st Treatment Applied: NA
 2nd Treatment Applied: NA
 3rd Treatment Applied: NA

Crack Sealing Method: N/A
 1st Treatment Applied: NA
 2nd Treatment Applied: NA
 3rd Treatment Applied: NA



General Notes:

- 1) Sections 5, 7, & 12 were the only ones to be crack sealed. Crack sealing was the only treatment in section 5; and
- 2) All performance information is in draft form until reviewed and approved by Track research sponsors.

End-of-Cycle Track Conference

- WMA & high RAP/RAS/GTR mixes
- Optimized structural design
- Pavement preservation
- Implementation



Pavement Test Track Conference

March 3-5, 2015

The Hotel at Auburn University
and Dixon Conference Center

www.ncat.us



Questions ?



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