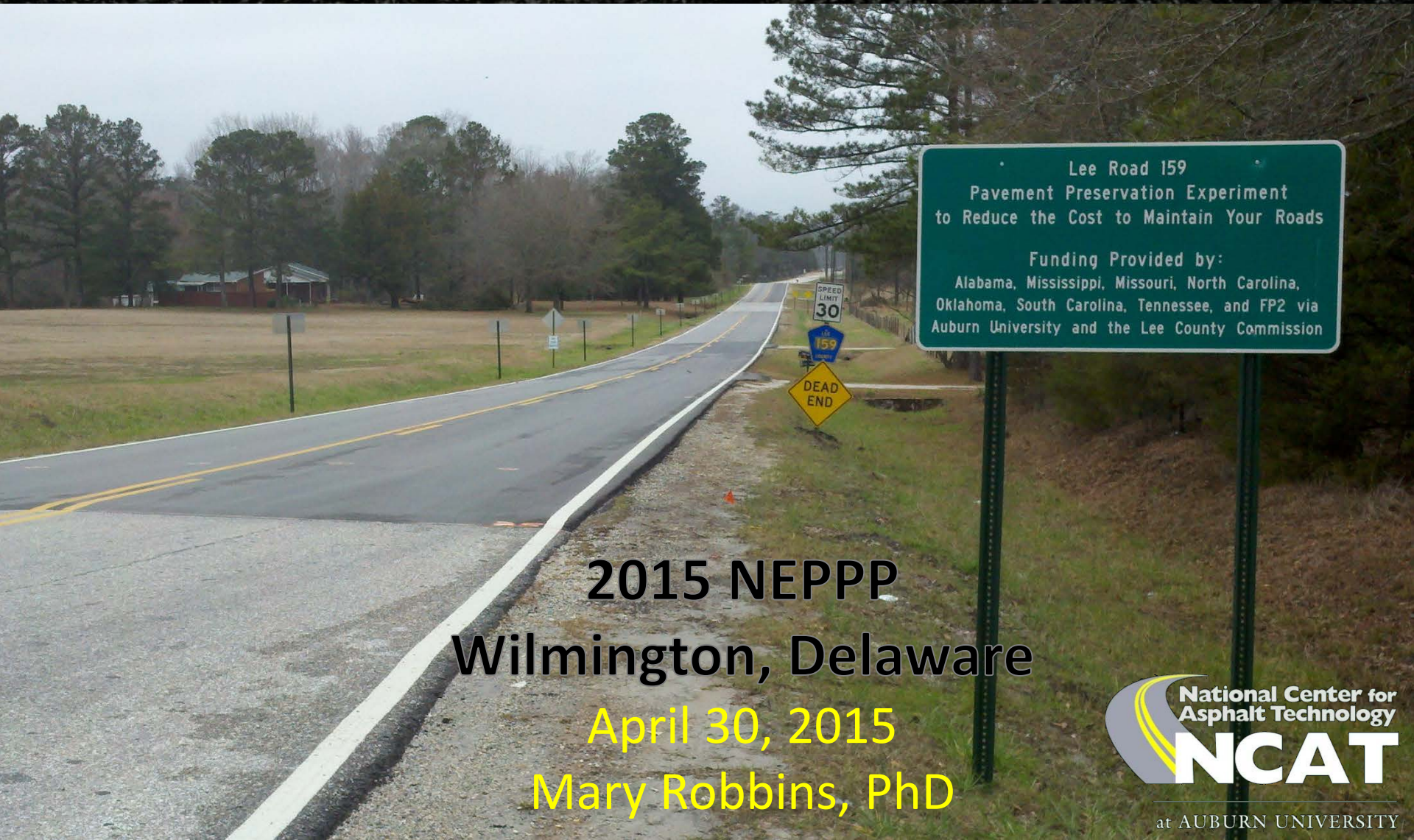
2012 NCAT Pavement Test Track:
Pavement Preservation Study Overview



2015 NEPPP

Wilmington, Delaware

April 30, 2015

Mary Robbins, PhD

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at AUBURN UNIVERSITY

Overview

- 2012 PG Study
  - Background
  - Methodology for Life Extending Benefit Curves
  - Early Findings
- 2015 PG Study
  - Locations
  - Treatments

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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

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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

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

Preservation Group (PG) Experiment

- 25 sections on local county road (Lee Road 159)
  - ≈5½” thick paved access road to quarry/asphalt plant
  - 2 control, 23 sections with treatments/combinations, Pretreatment condition varied by WP and direction
- 14 sections on the NCAT Pavement Test Track
  - 7” pavements placed in the summer of 2009
  - Range of Surfaces: PFC sections, DGA sections (virgin, high RAP)
  - >10 million ESALs at time of application

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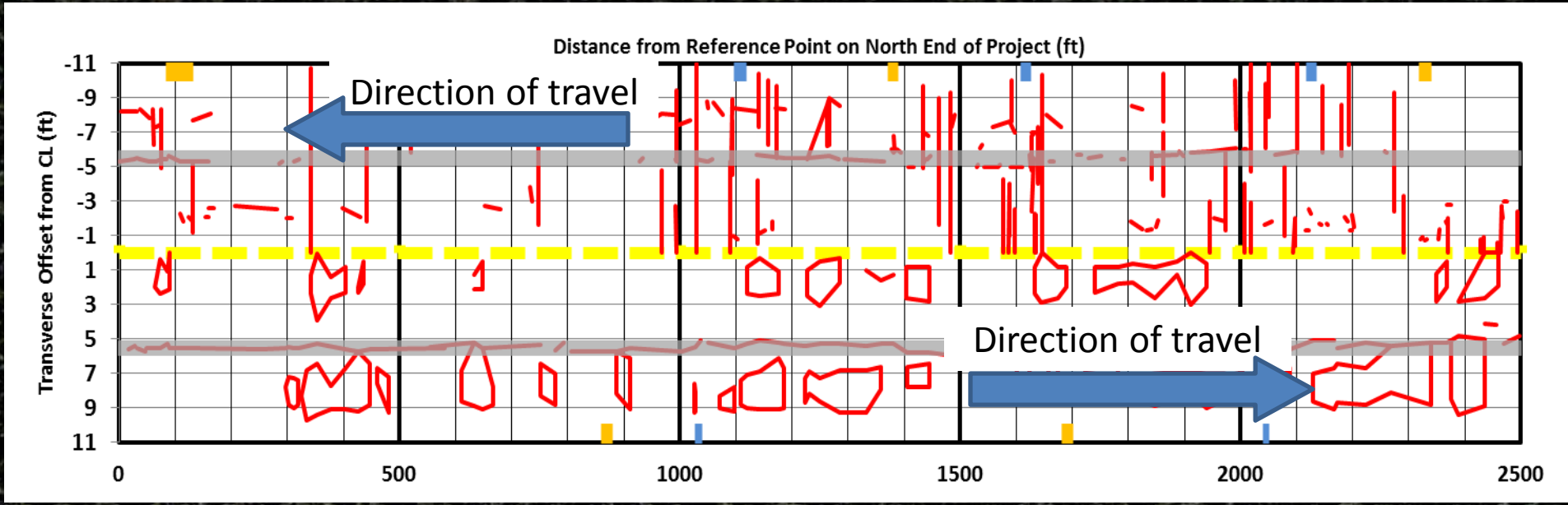
Lee Road 159



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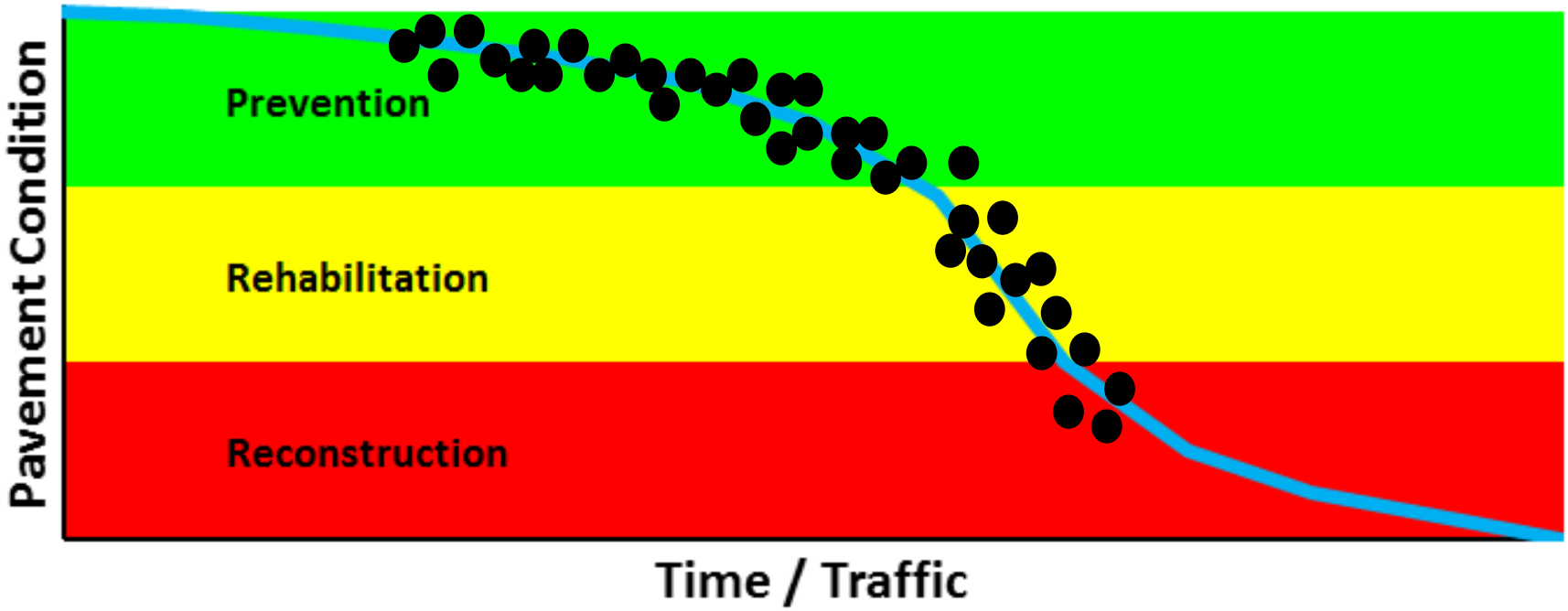
Pavement Preservation on Lee Road 159



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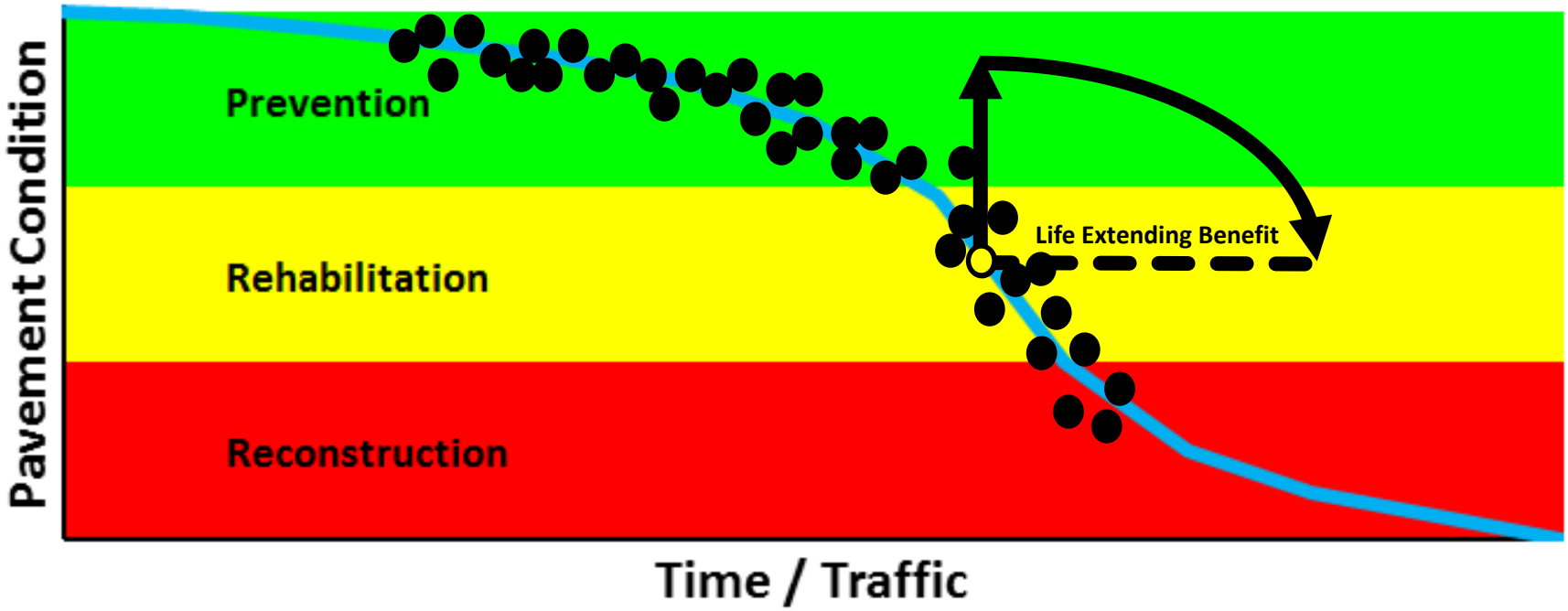
Pavement Preservation on Lee Road 159



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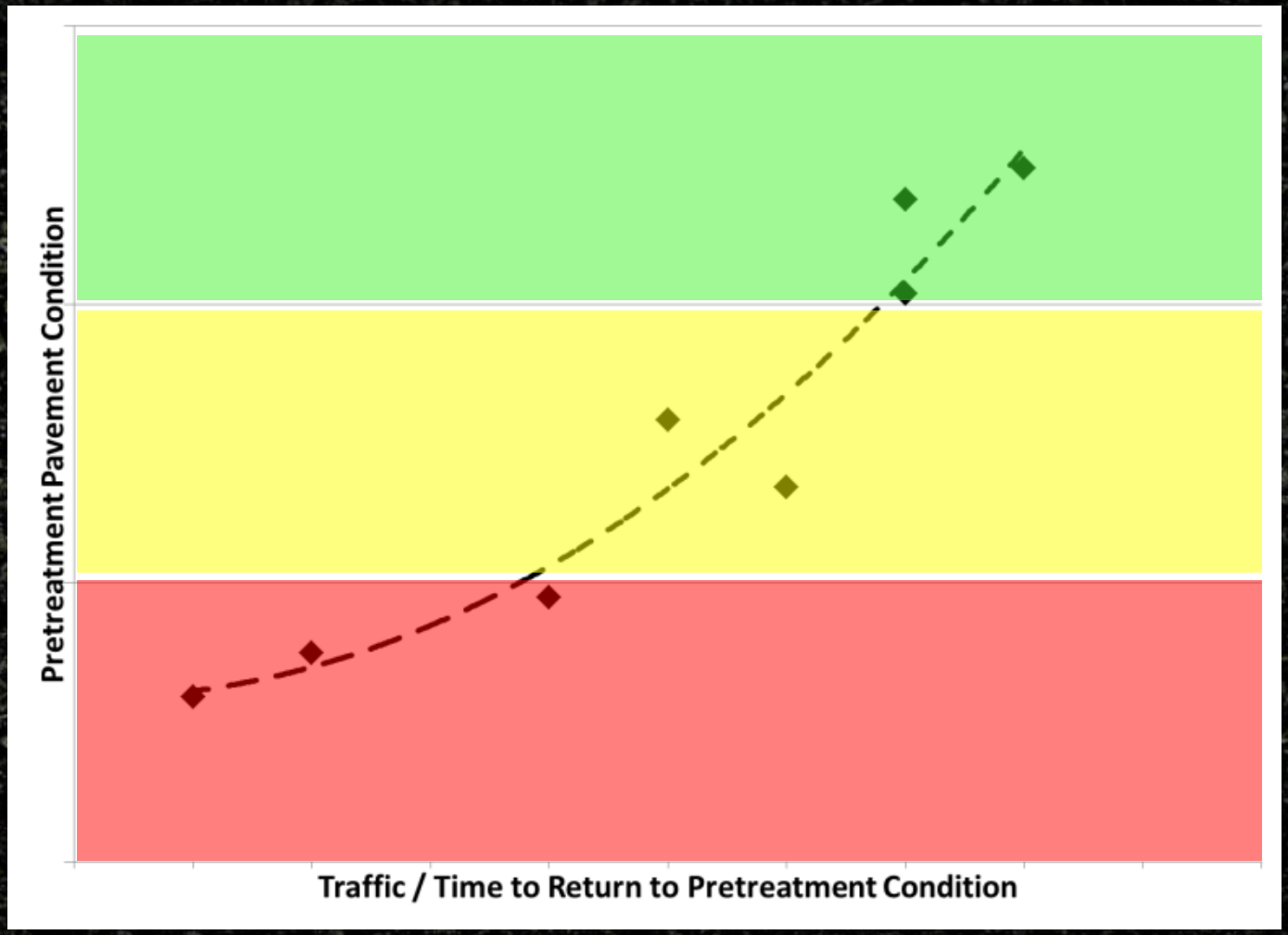
Pavement Preservation on Lee Road 159



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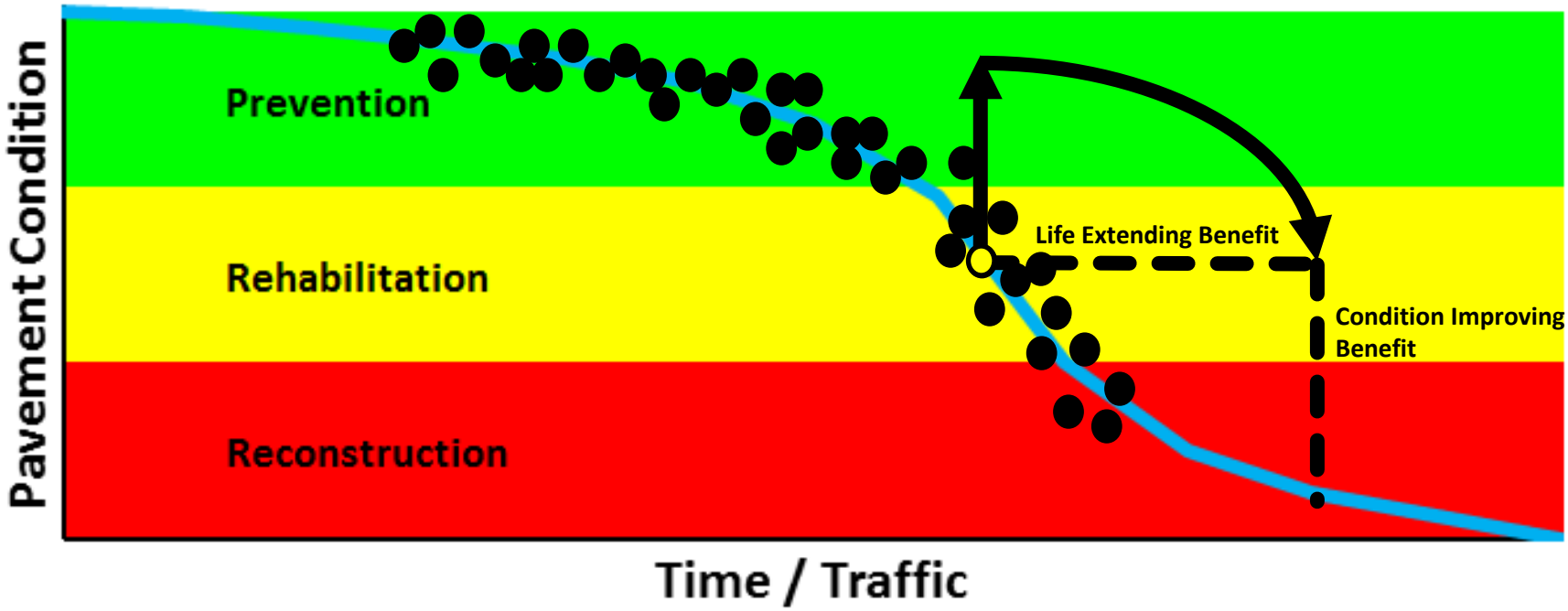
Pavement Preservation on Lee Road 159



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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)

LR 159 Testing Overview

- Weekly
  - Inertial Profiler (roughness, texture, rutting)
  - Visual inspections with notes/pictures

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LR 159 Testing Overview

- Monthly
  - Video for crack mapping
  - Rut depth
  - Wet ribbed surface friction
  - Subgrade moisture readings
  - Falling weight deflectometer (FWD)

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Video Crack Mapping

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PRETREATMENT CONDITION

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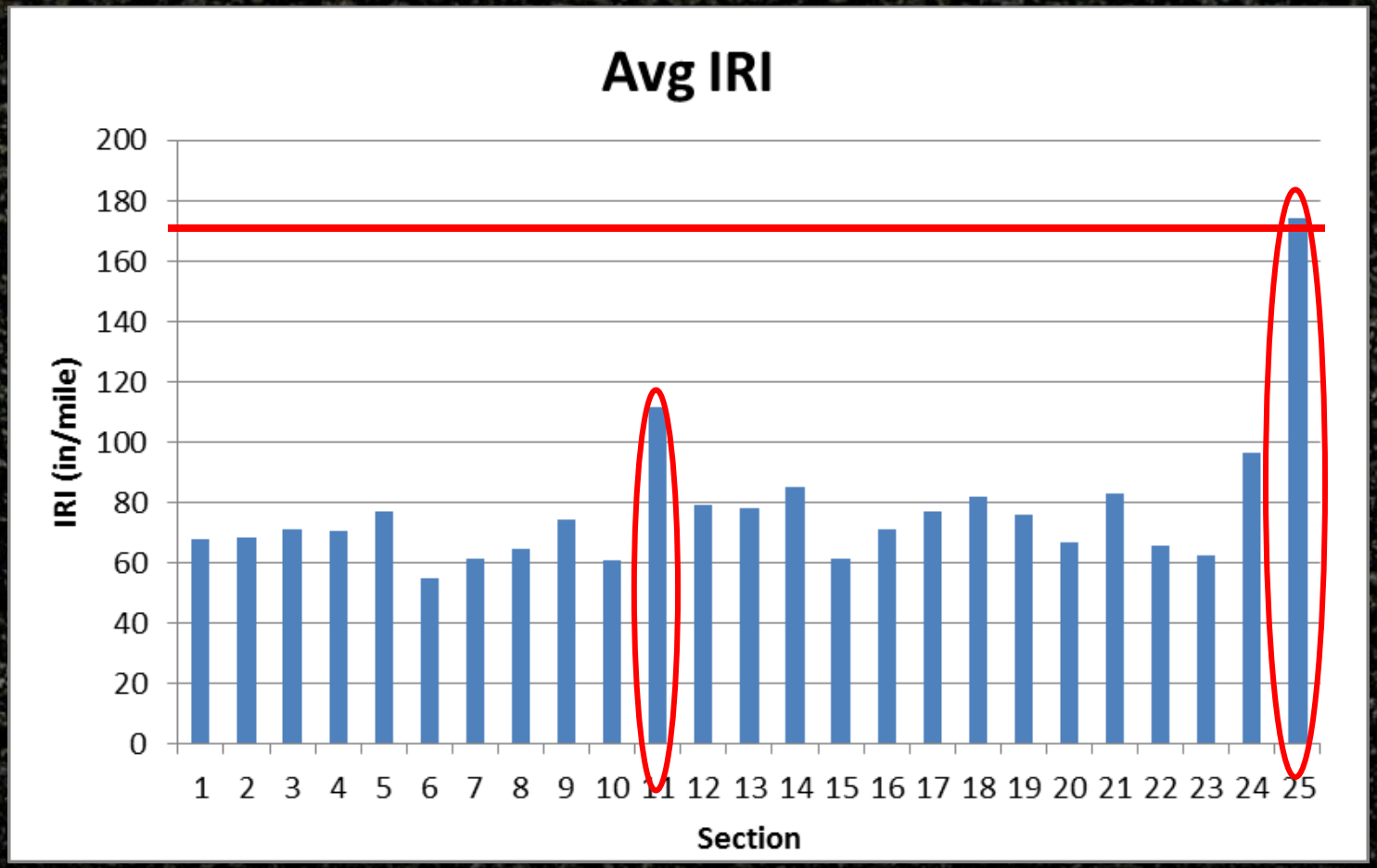
Pretreatment Condition



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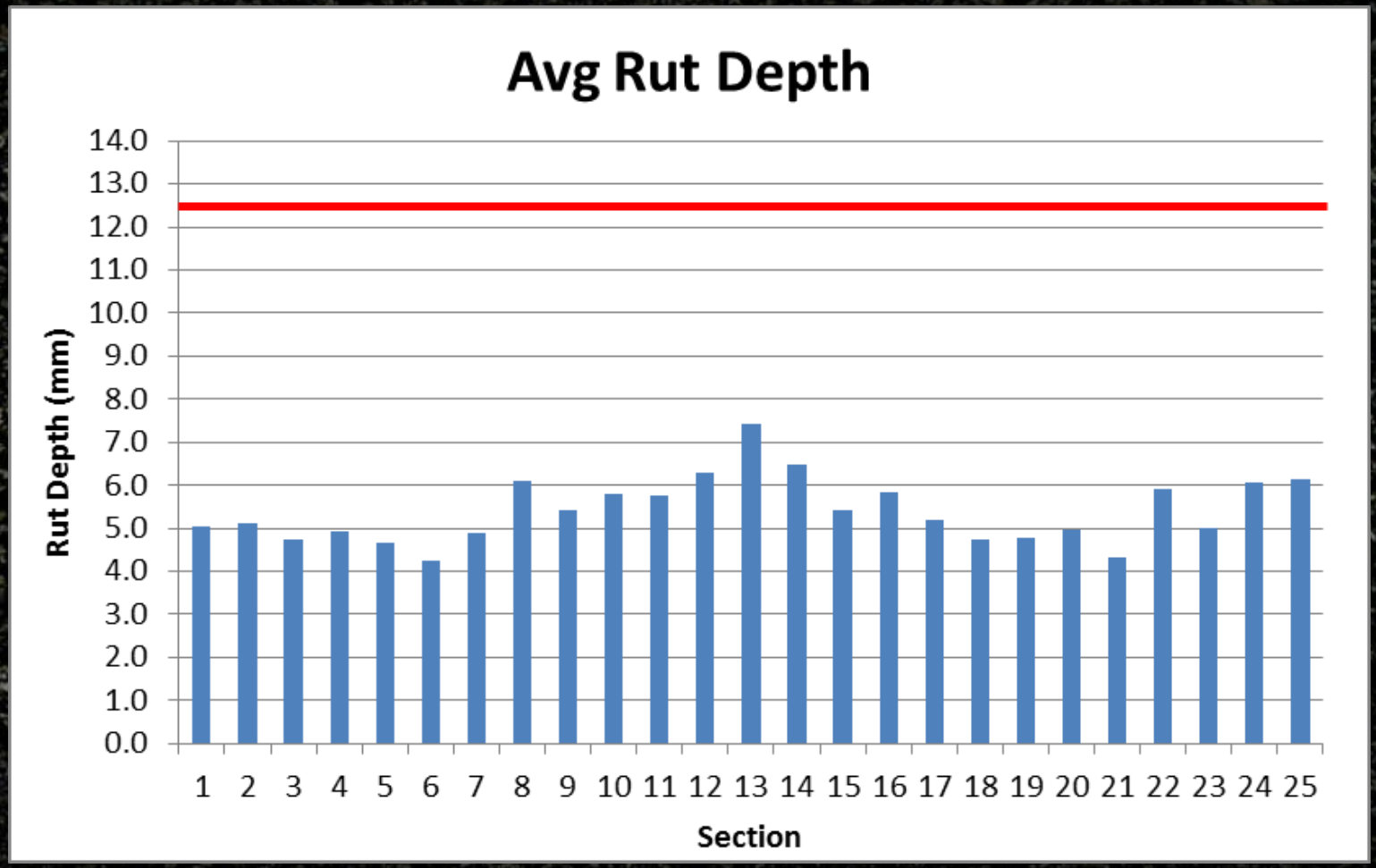
Pretreatment Condition



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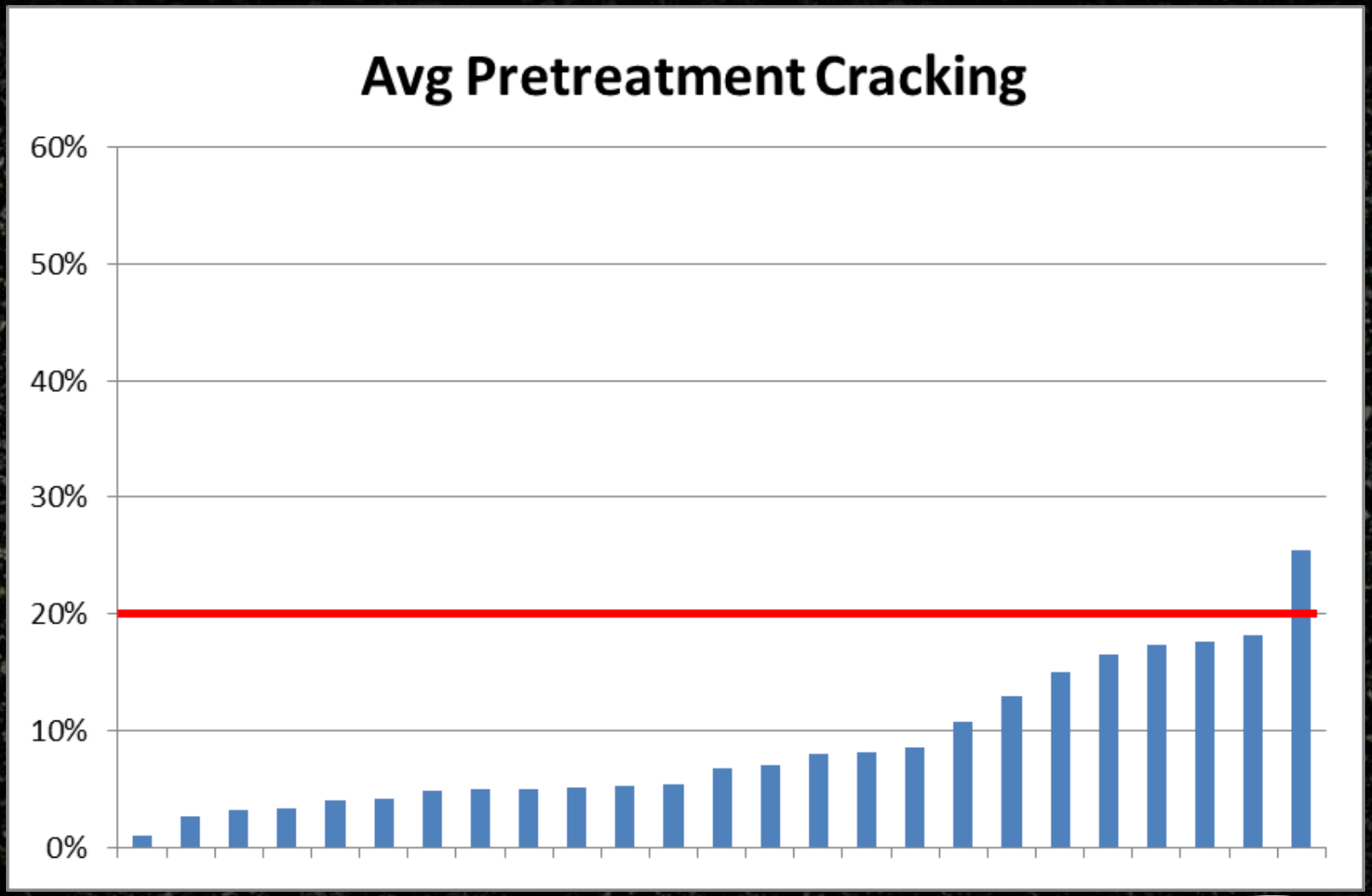
Percent of Lane Area Cracked



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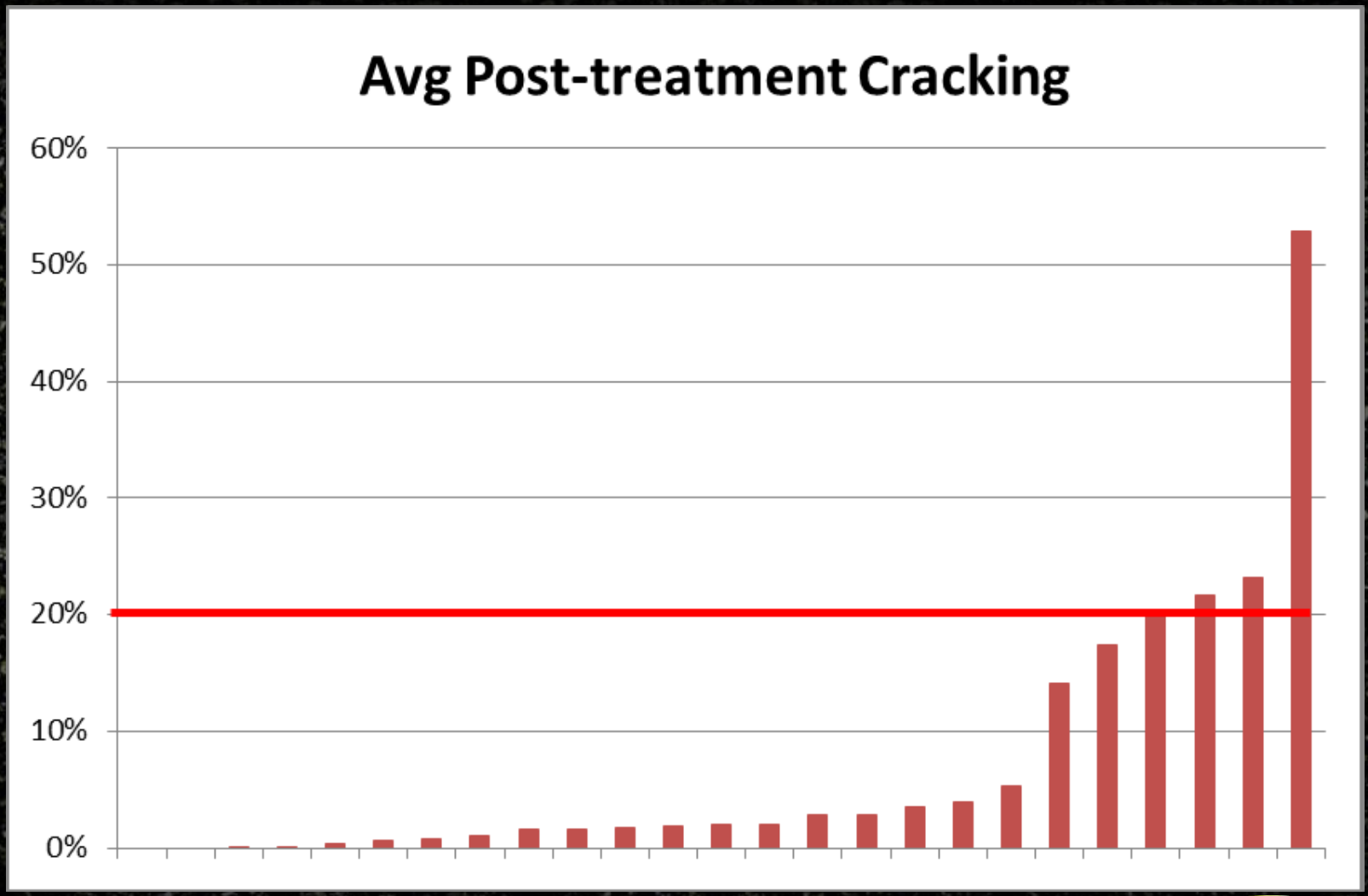
Percent of Lane Area Cracked



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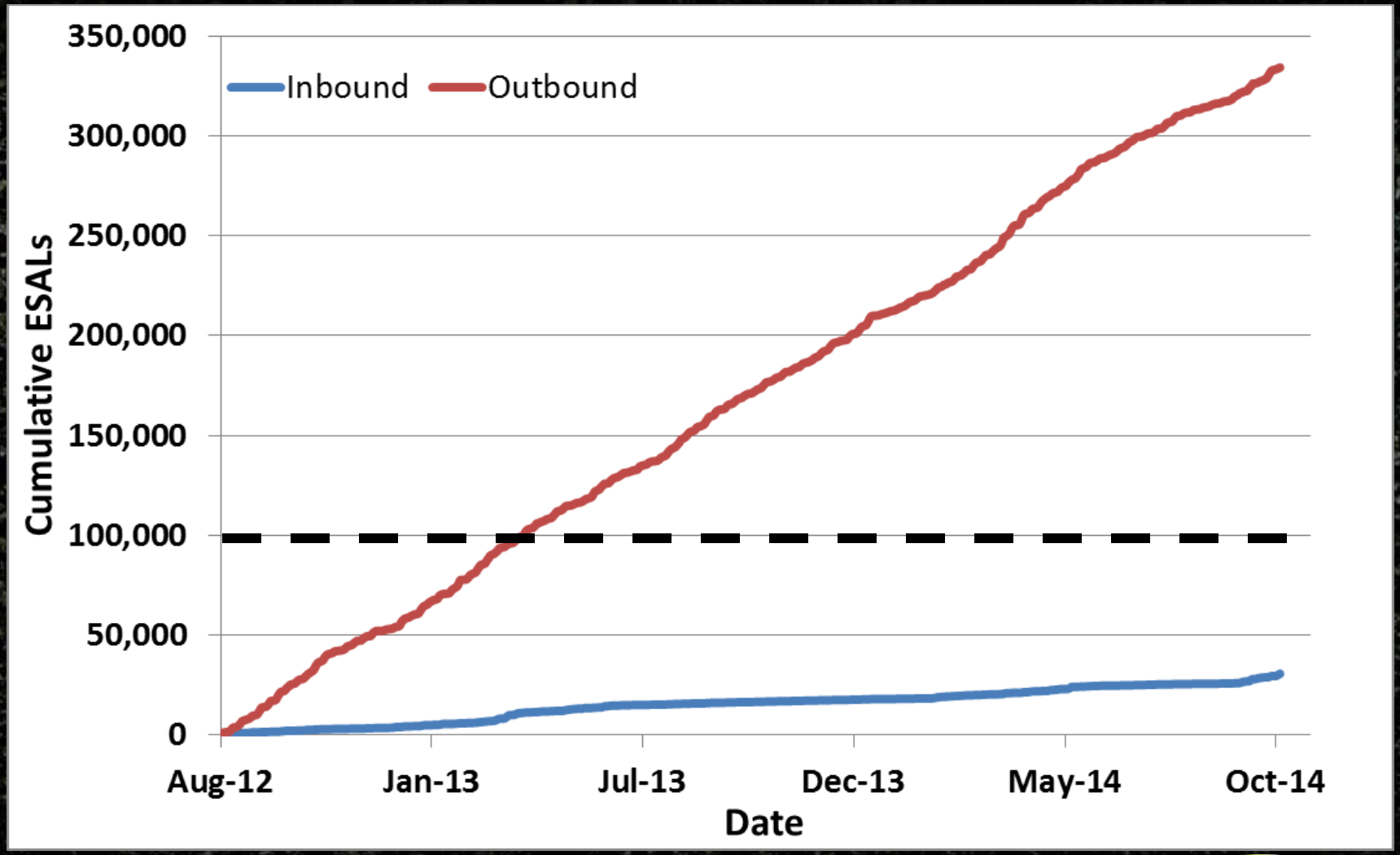
Truck Damage on Lee Road 159



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LIFE EXTENDING BENEFIT CURVES

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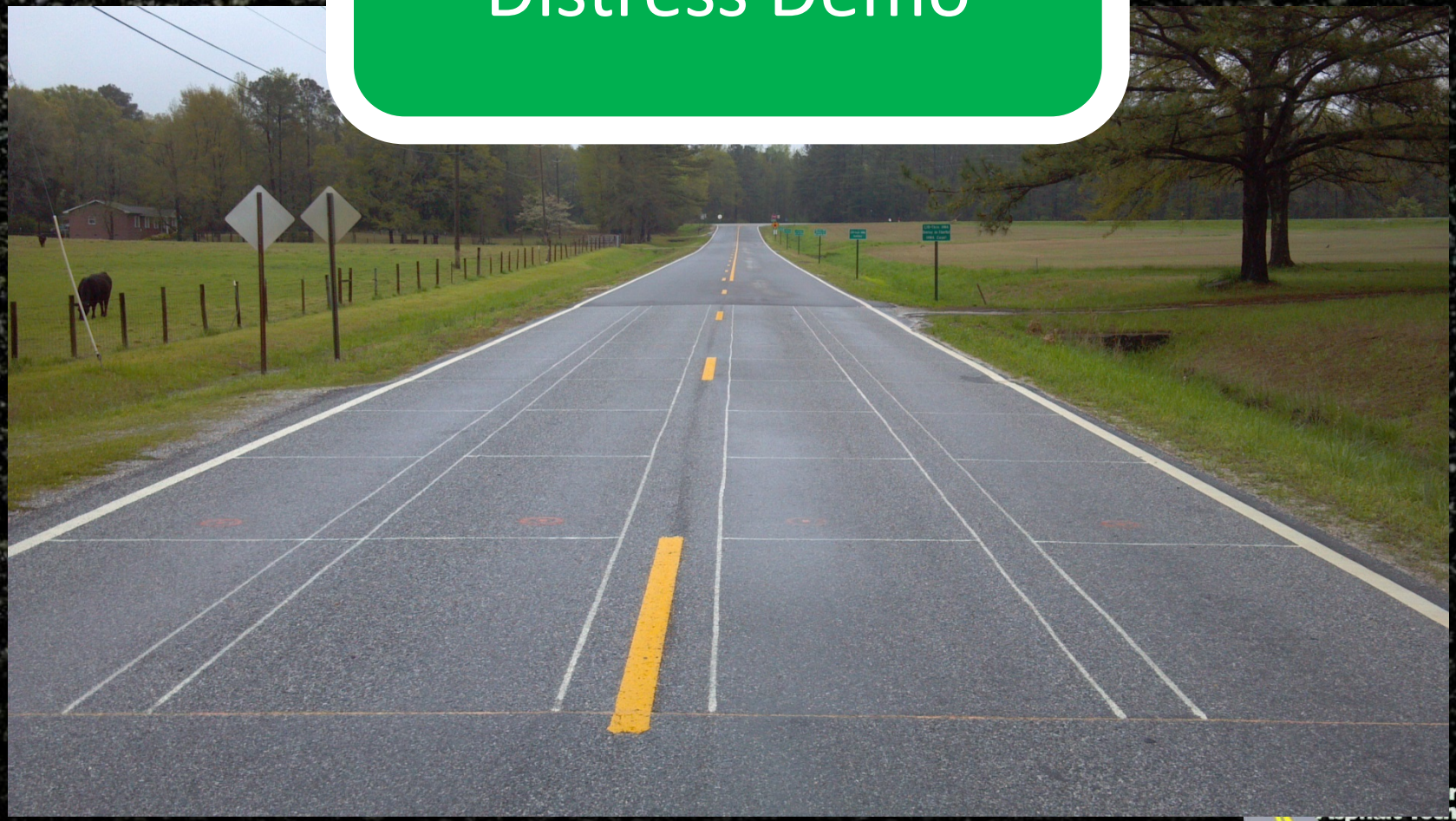
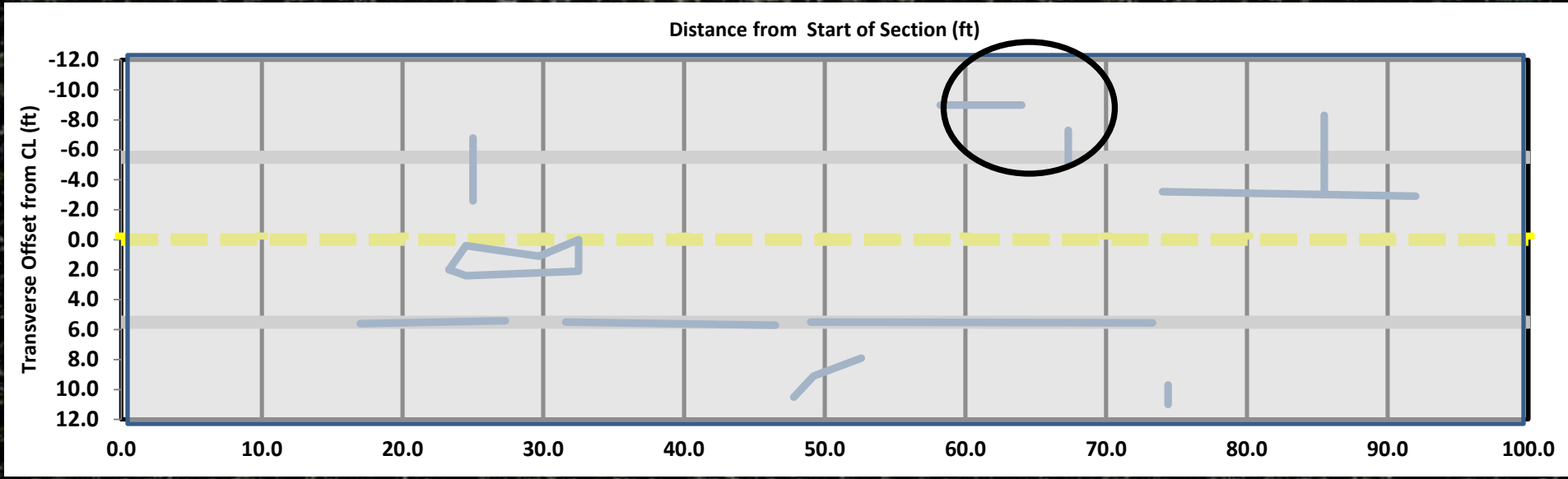
L17 – Subsection Distress Demo



Benefit of Pavement Preservation



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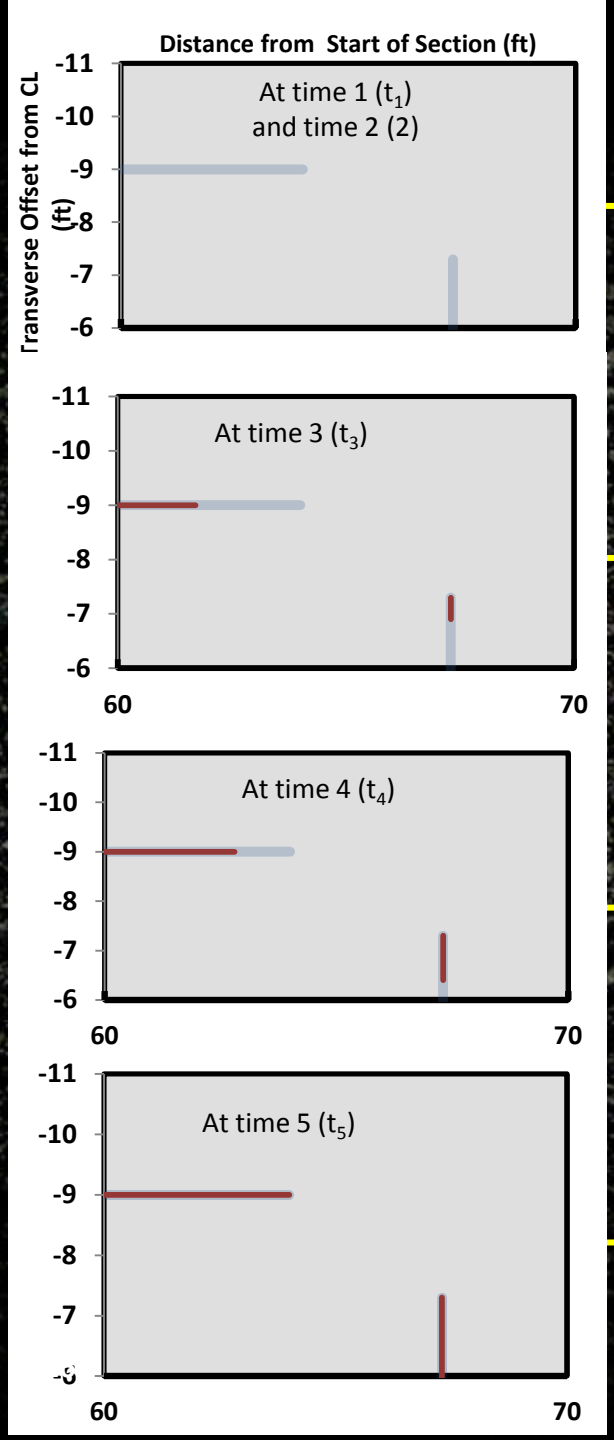

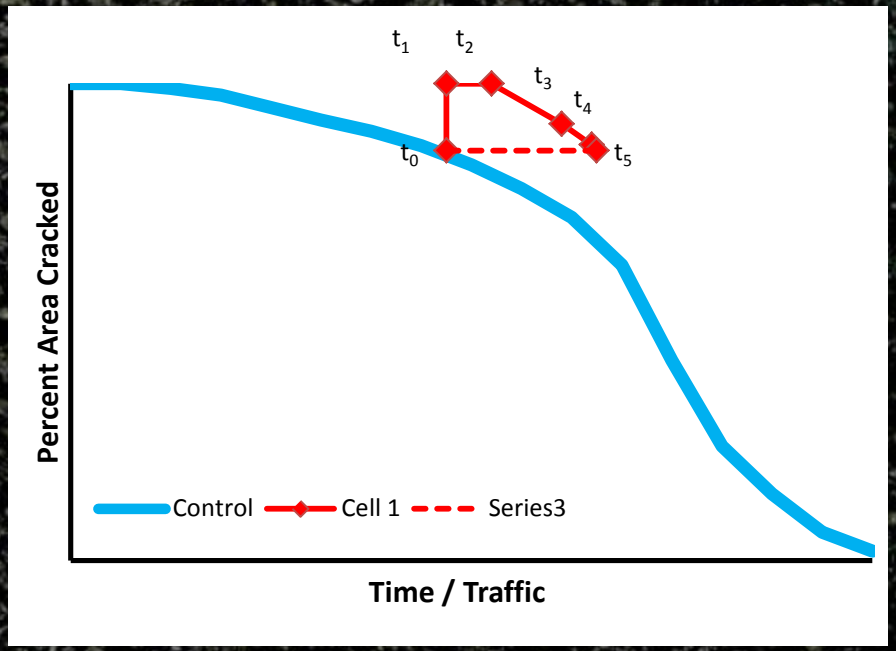

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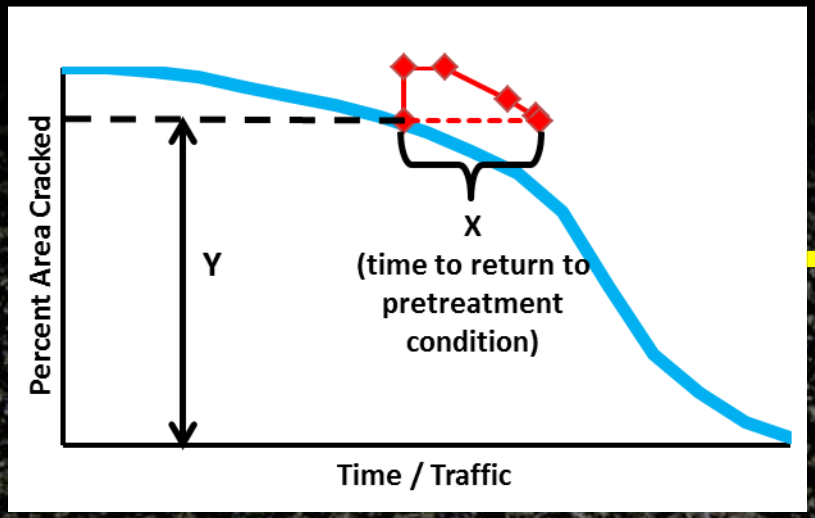

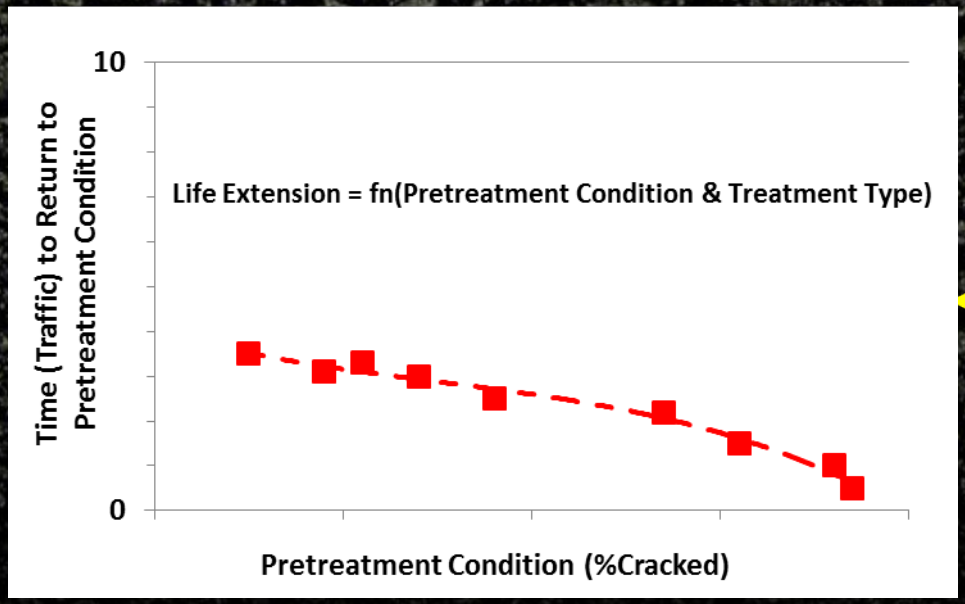

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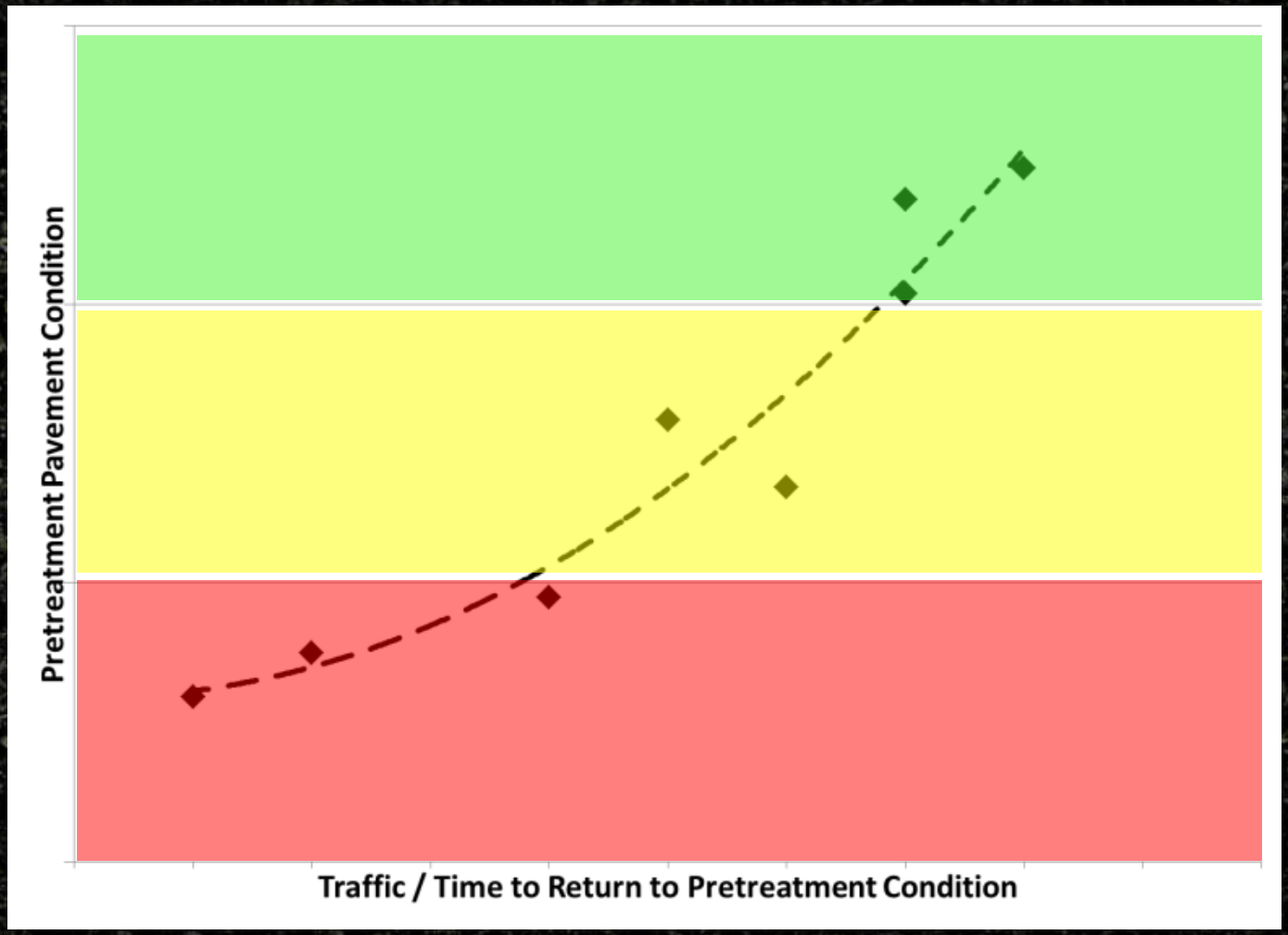
Pavement Preservation on Lee Road 159



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Post-Treatment Condition

QUANTIFYING BENEFITS

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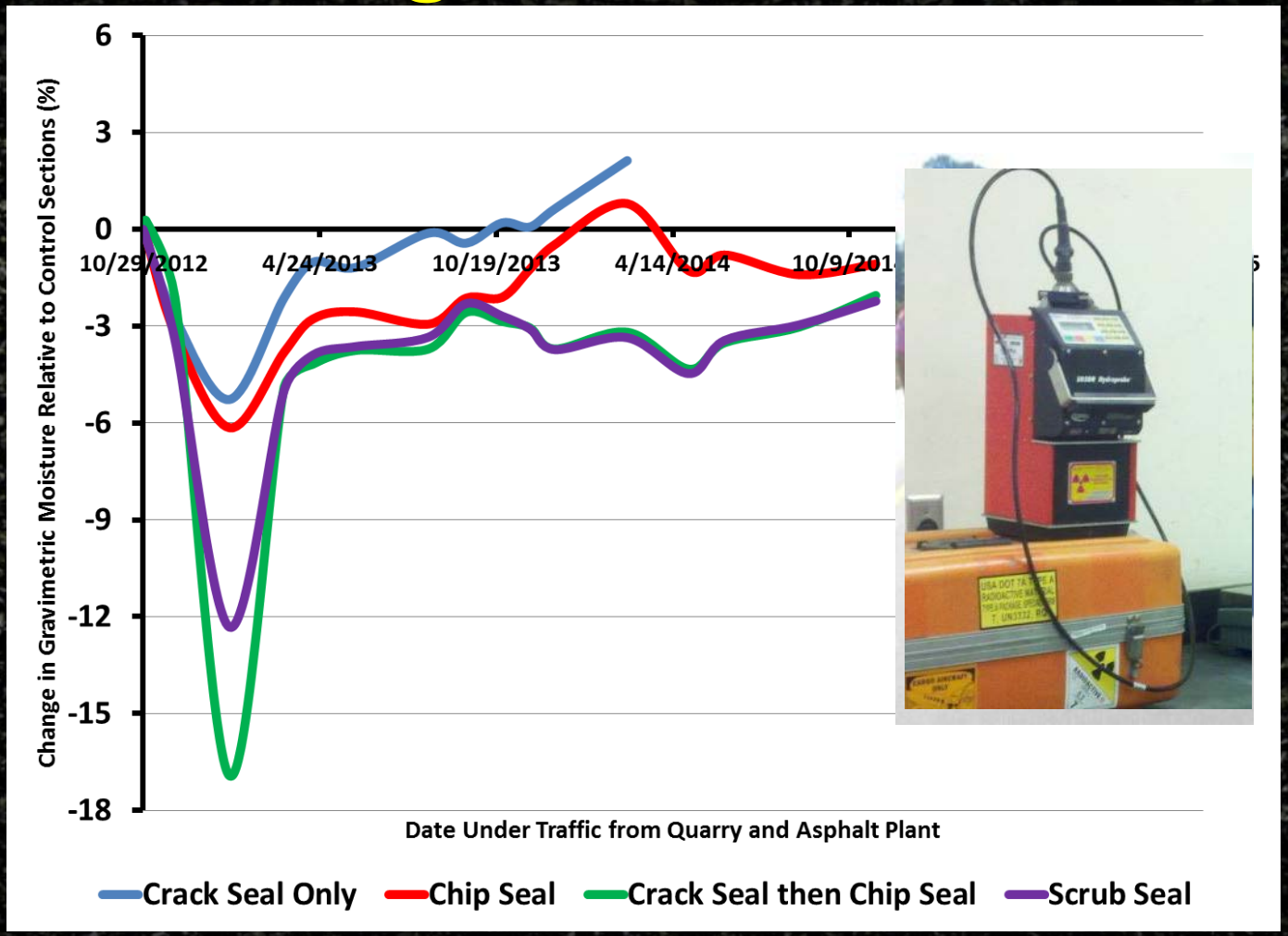
Subgrade Moisture



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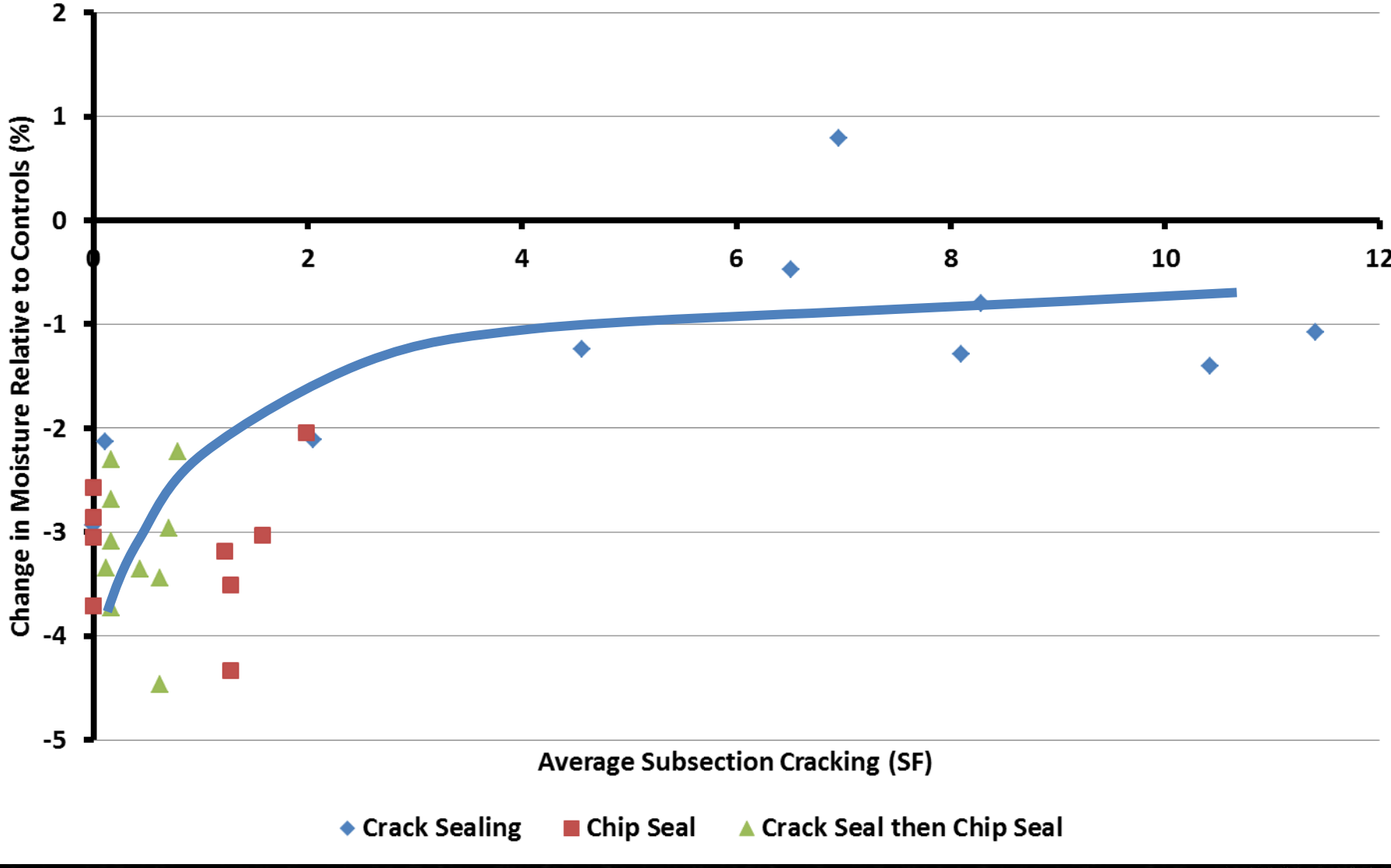
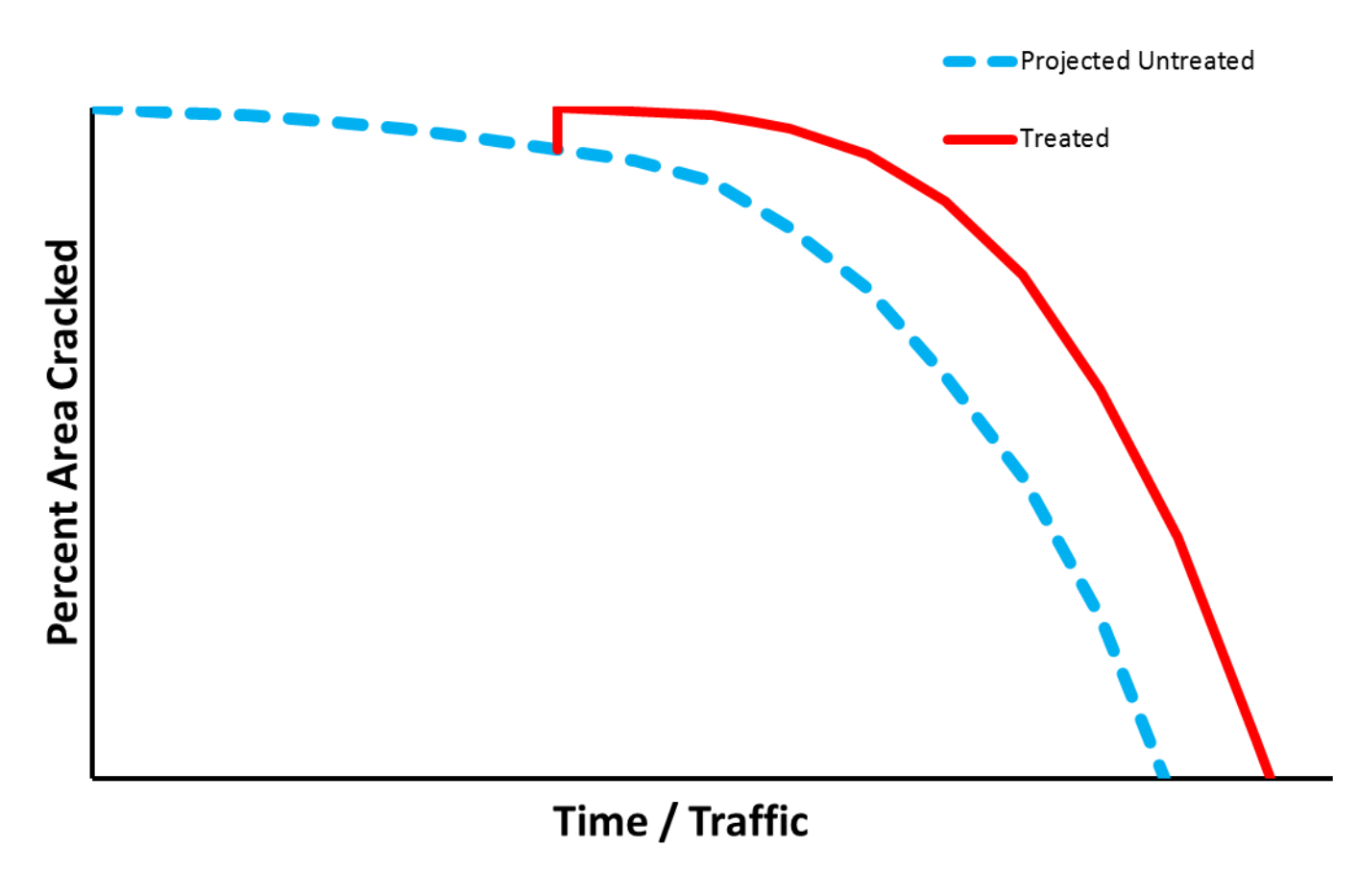
Subgrade Moisture vs Cracking



Reduction in Cracking



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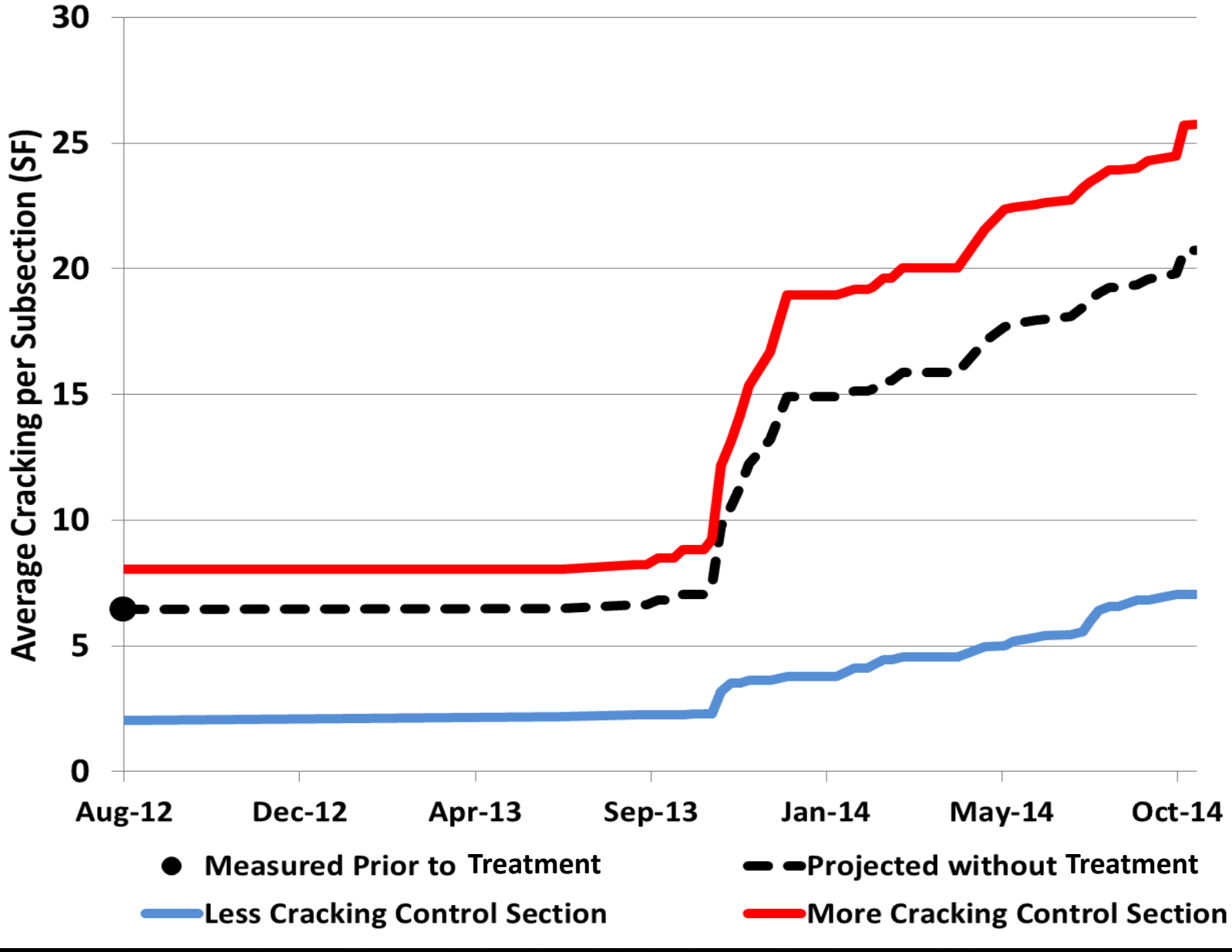
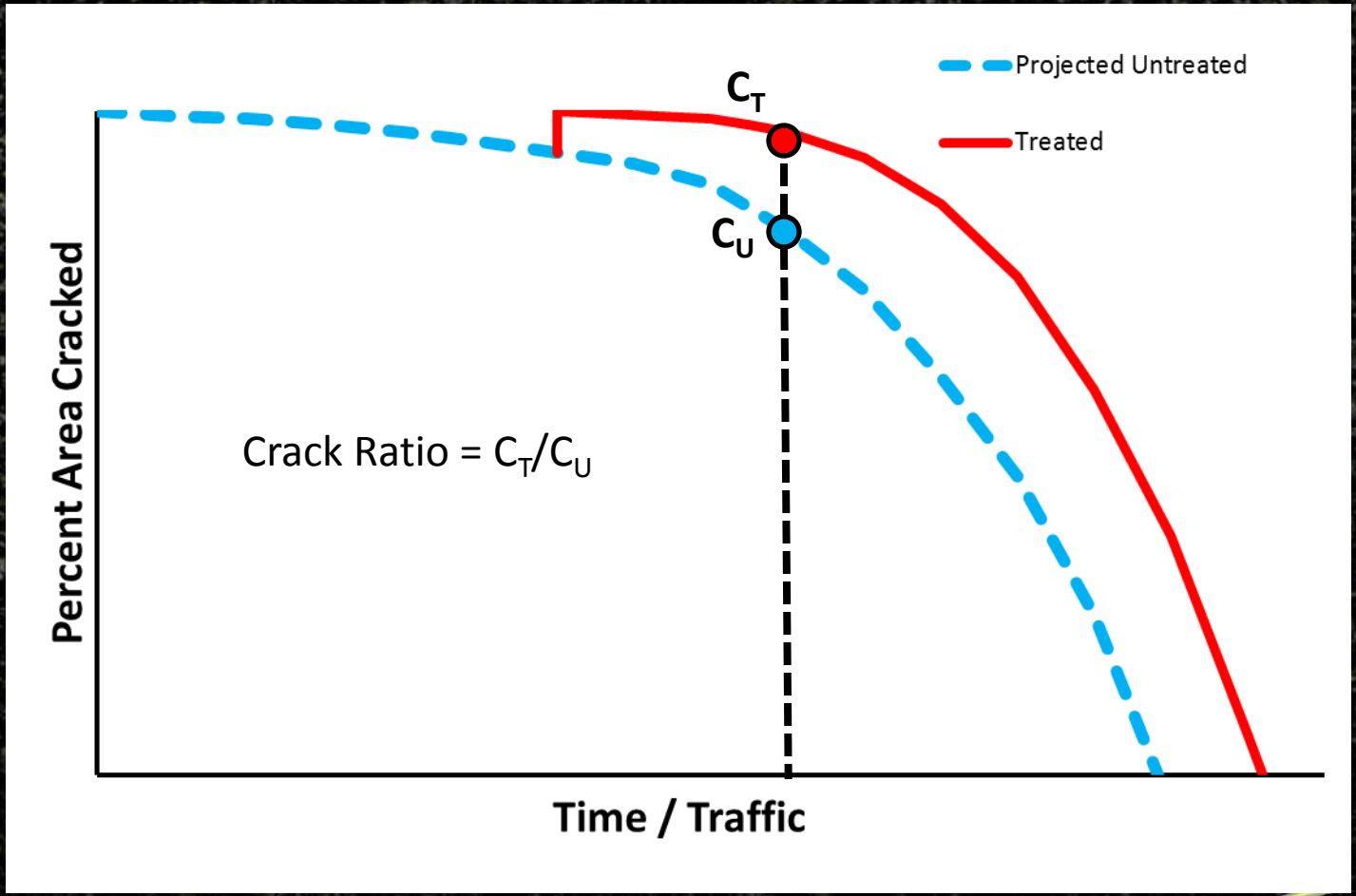
Projection of Cracking – What if left untreated?



Ratio of Cracking – Treated vs Untreated



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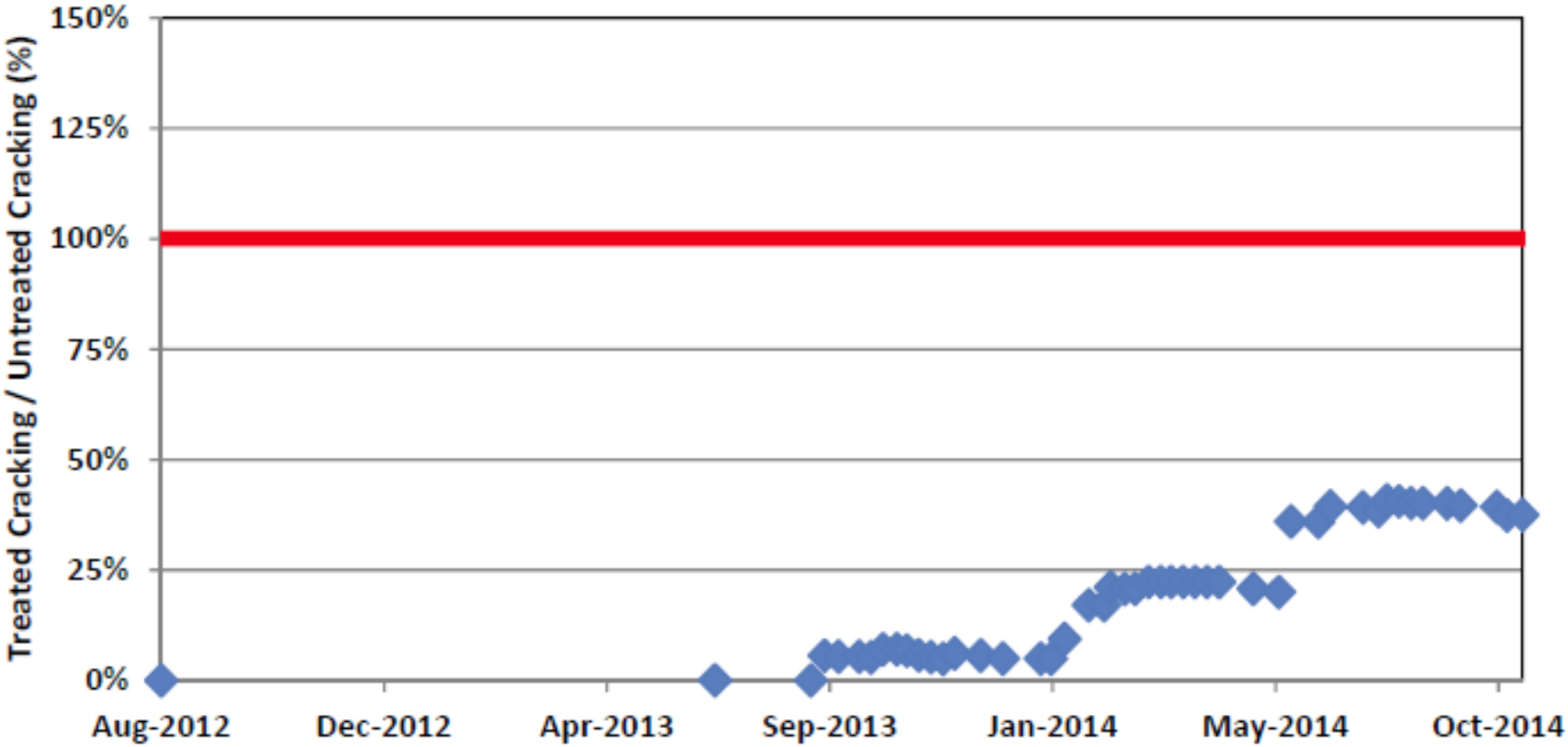
Treated Section – Cracking Ratio



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PG15 Locations

- Continue traffic on 7” Track sections 2.6M ESALs
- Continue data collection on Lee Road 159
- MnROAD/NCAT Partnership
  - Duplicate LR 159 Sections in MN
  - Build new sections on nearby US-280

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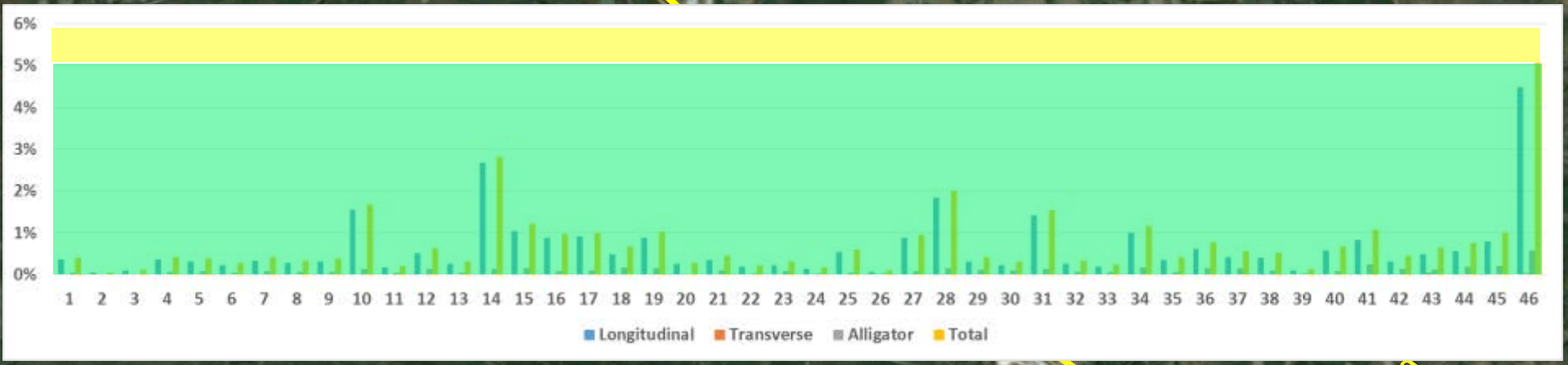
New Sections on US-280

- US-280 3 miles to east of Track
- 17,000 ADT, ≈9 year old surface
- Westbound outside lane
- ≥ MP 128.0 to MP 132.6



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US 280 - Methodology

- Duplicate LR 159 + Additional treatments
- Apply same methodology
  - Subsection analysis for life-extending benefit curves
- Data Collection
  - Automated Distress Detection
  - FWD
  - Traffic

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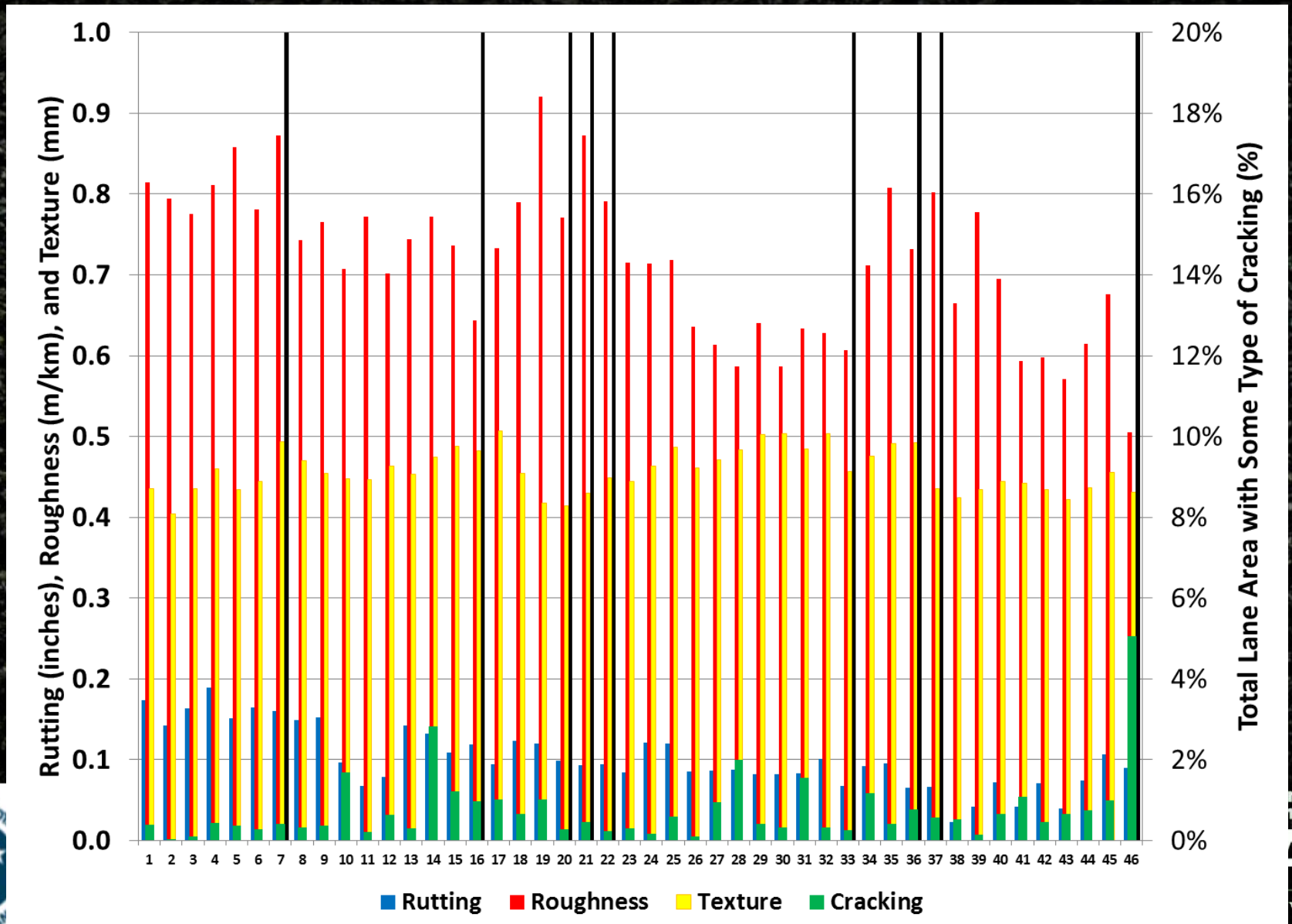
US-280 Pavement Condition



PG 15 Planning

- Consensus Plan
  - Every sponsor has a voice
- Discussions on possible treatments
  - CIR, HIR, HMA Cape (Chip + Thinlay); CS + HMA/WMA, OGFC thinlay….
- Construction to be completed on US 280 summer/fall 2015

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Questions ?

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