NCAT Pavement Test Track

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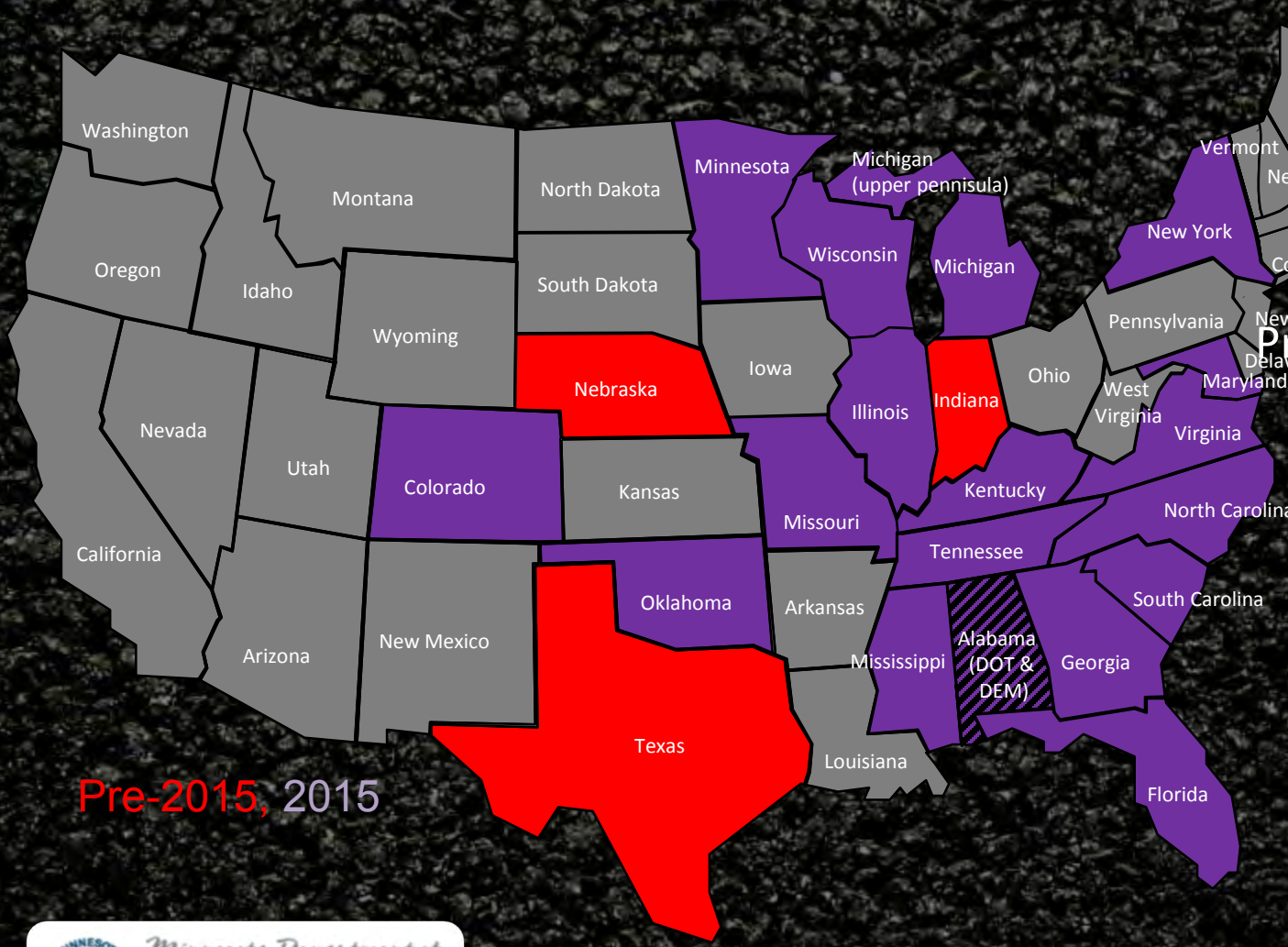
NCAT
at AUBURN UNIVERSITY

Minnesota Department of Transportation

Buzz Powell
Pavement Preservation Research

NCAT Pavement Test Track



Pre-2015, 2015

FHWA

Private Sector Sponsors

Cargill Deicing Technology

Collaborative Aggregates

FP^2

Kraton Polymers

Modified Asphalt Solutions

Oldcastle Materials

Polycon Manufacturing

Seneca Petroleum

Shell Sulfur Solutions

Trinidad Lake Asphalt

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Content

- Track preservation sections
- Preservation on Lee Road 159
- Preservation on US-280
- Planning for MnROAD sections

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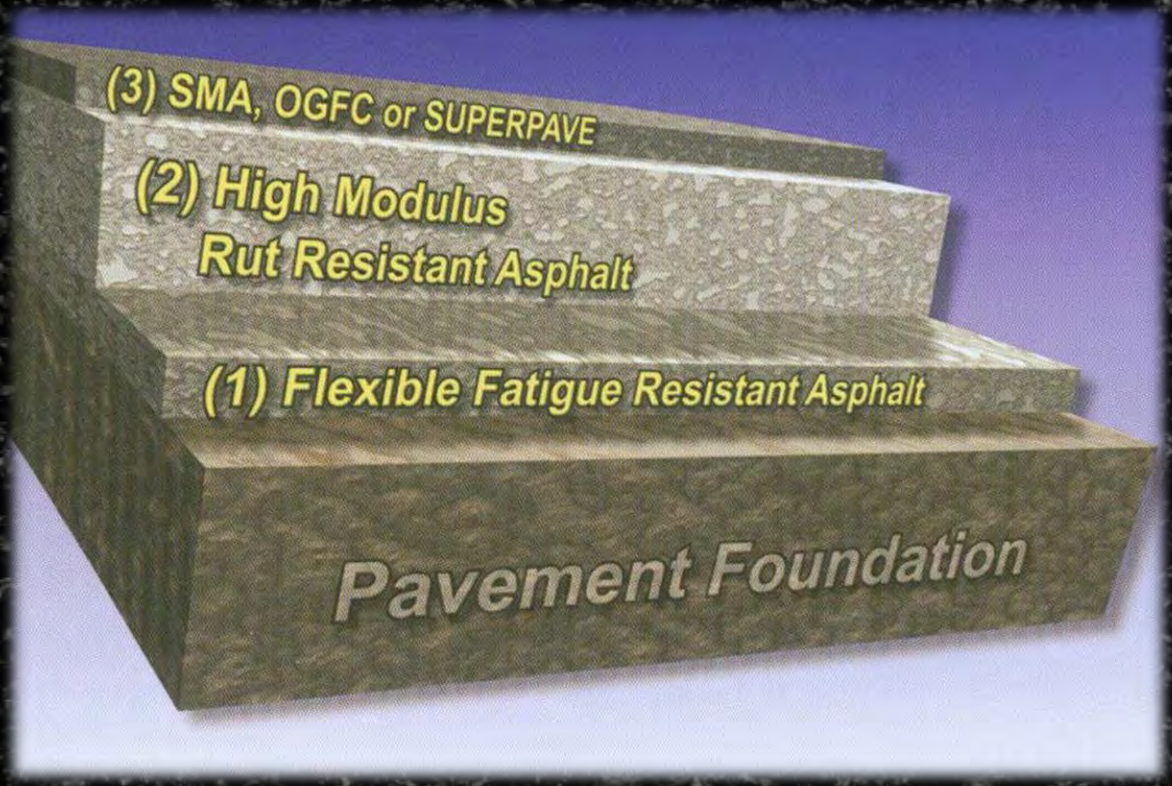
Track Research Goals



- Preservation
- Mix & materials
- Thickness design
- Construction

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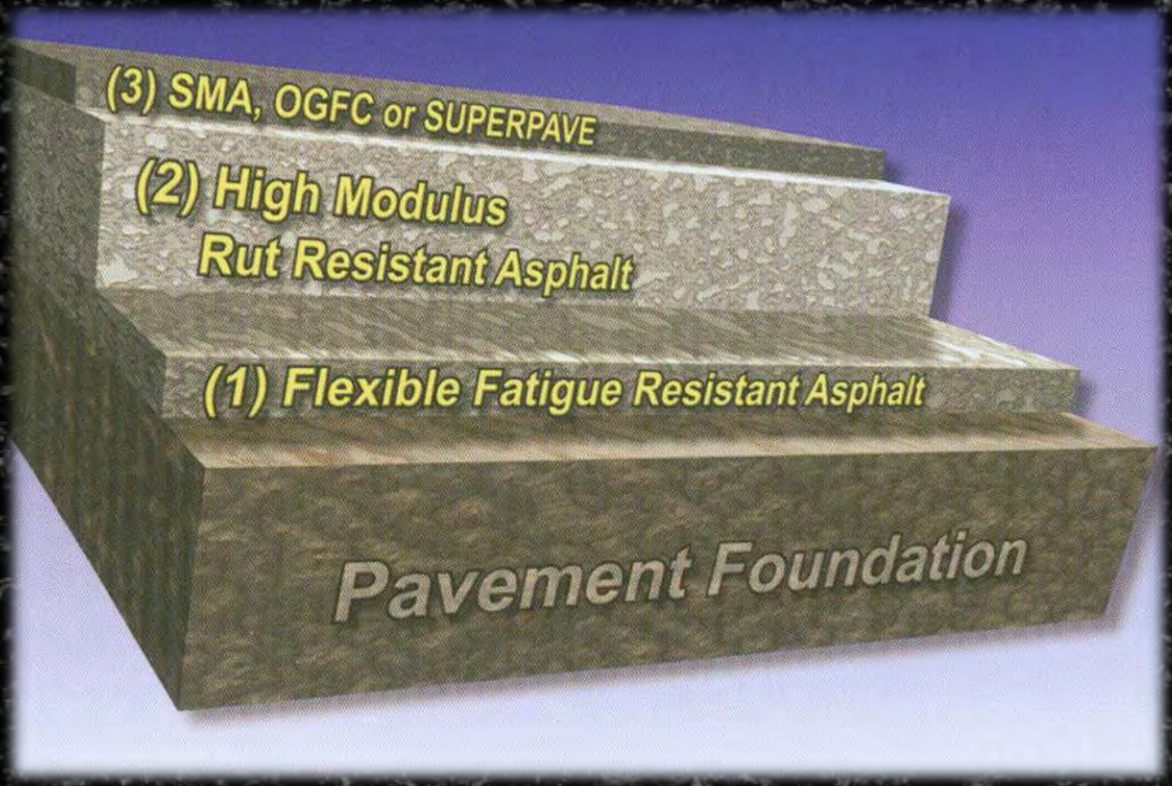
Track Research Goals



- Preservation
- Mix & materials
- Thickness design
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PG15 Experiment Design

- NCAT Pavement Test Track (accelerated)
  - Thinlay, micro surface, Cape seal, scrub/chip seals
- Lee Road 159 (low ADT, high percent trucks)
  - Single/double/triple chips, scrub, FiberMat, sealing
  - Single/double micro surface, Cape x 3, sealing
  - Track thinlay, neat binder, ABR variants, CCPR base
- US-280 (high ADT, moderate percent trucks)
  - 159 + CCPR/CIR, OGFC, durable/friction micro, etc.
- Duplicate NCAT preservation sections at MnROAD.

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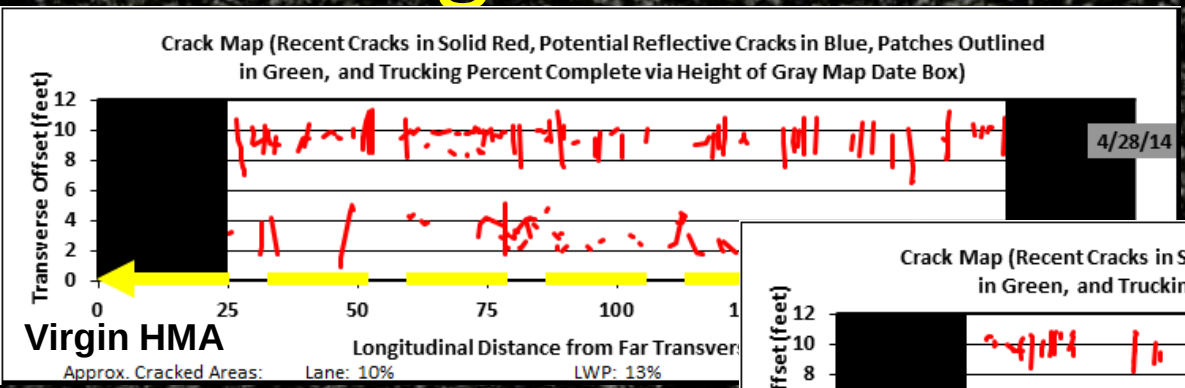
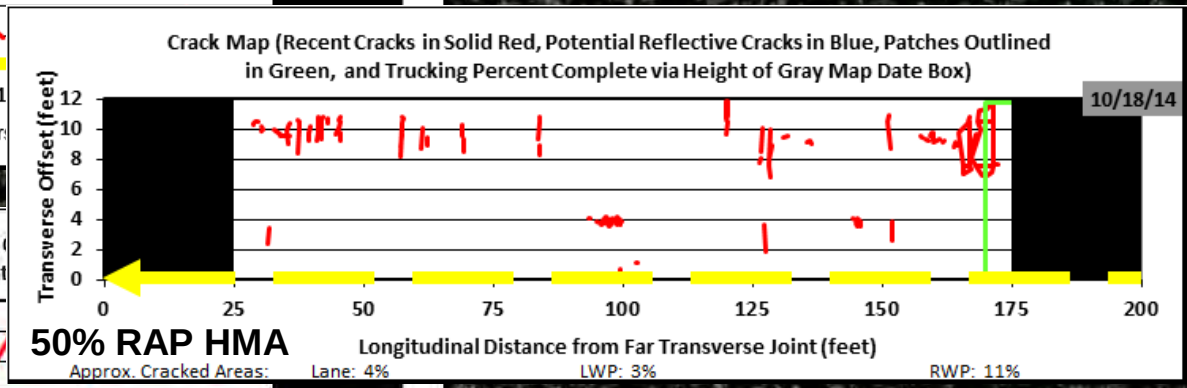
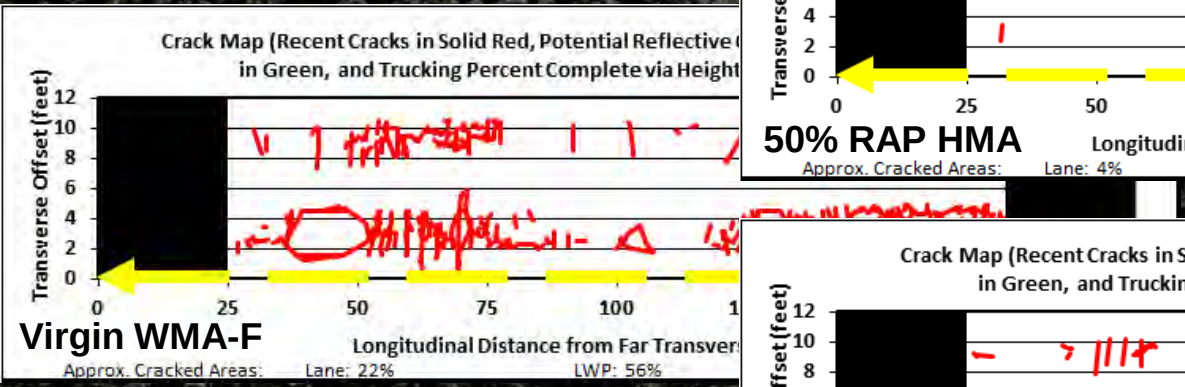
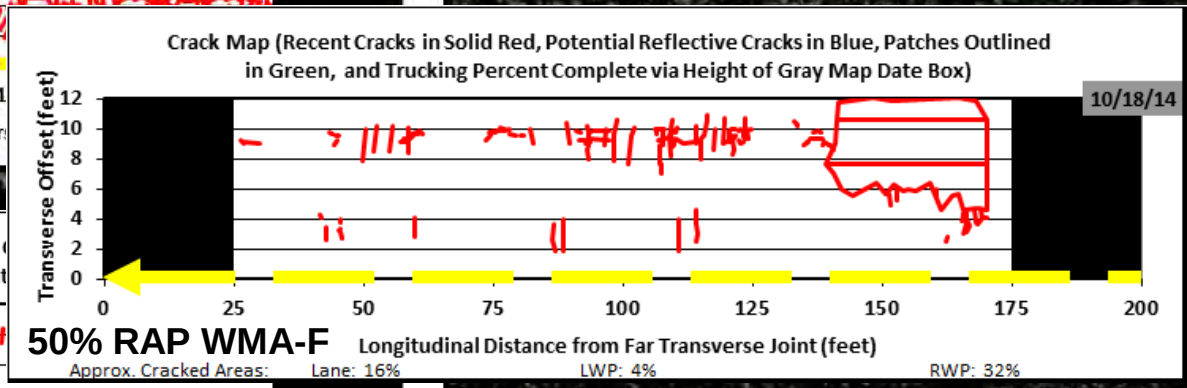
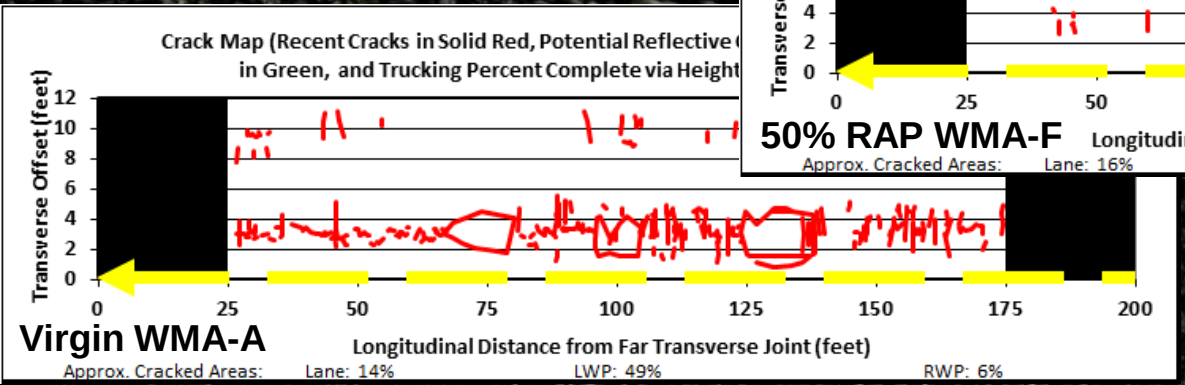
High RAP Mixes and WMA



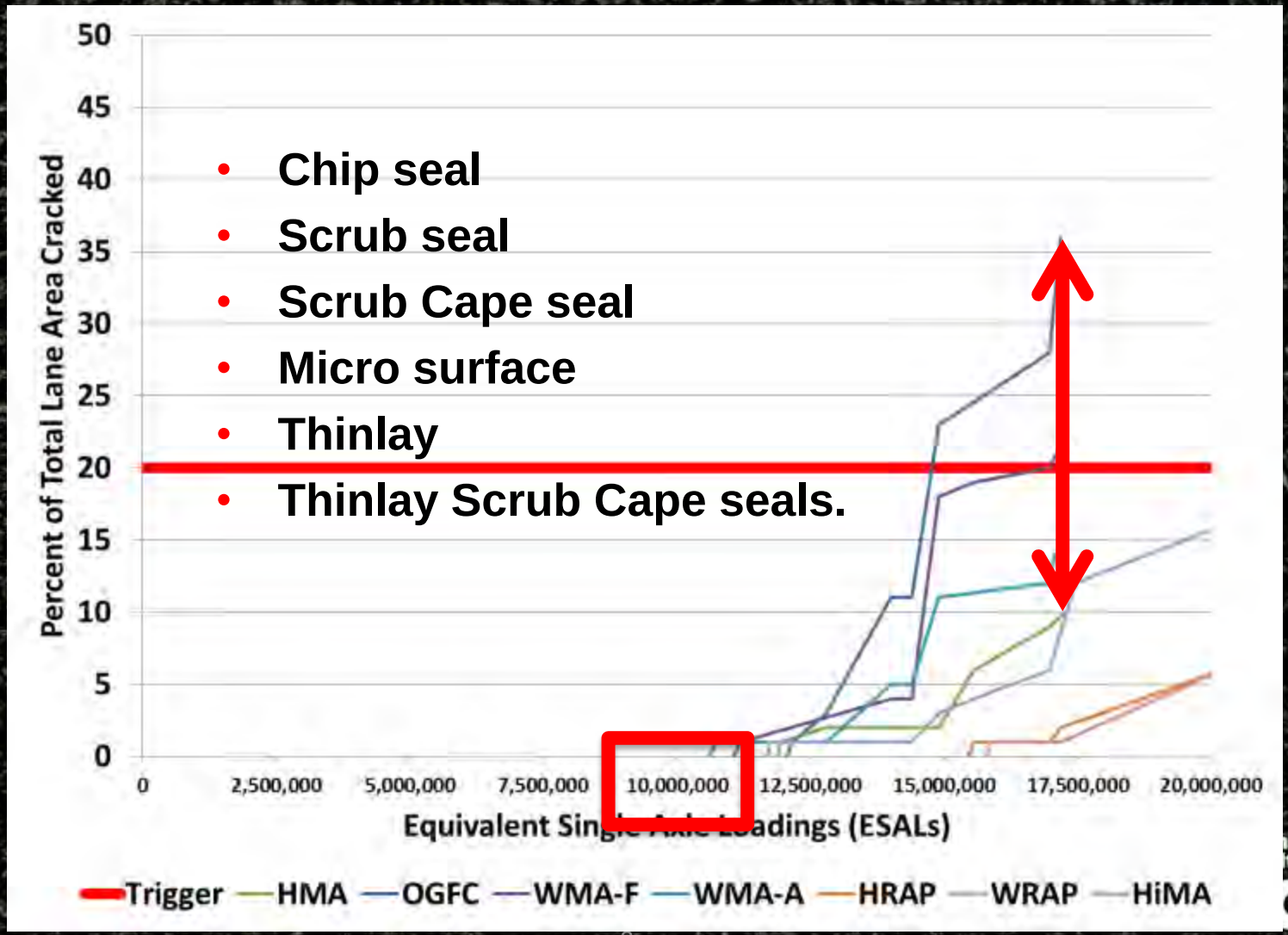








Track Pavement Preservation



- Chip seal
- Scrub seal
- Scrub Cape seal
- Micro surface
- Thinlay
- Thinlay Scrub Cape seals.

Track Pavement Preservation

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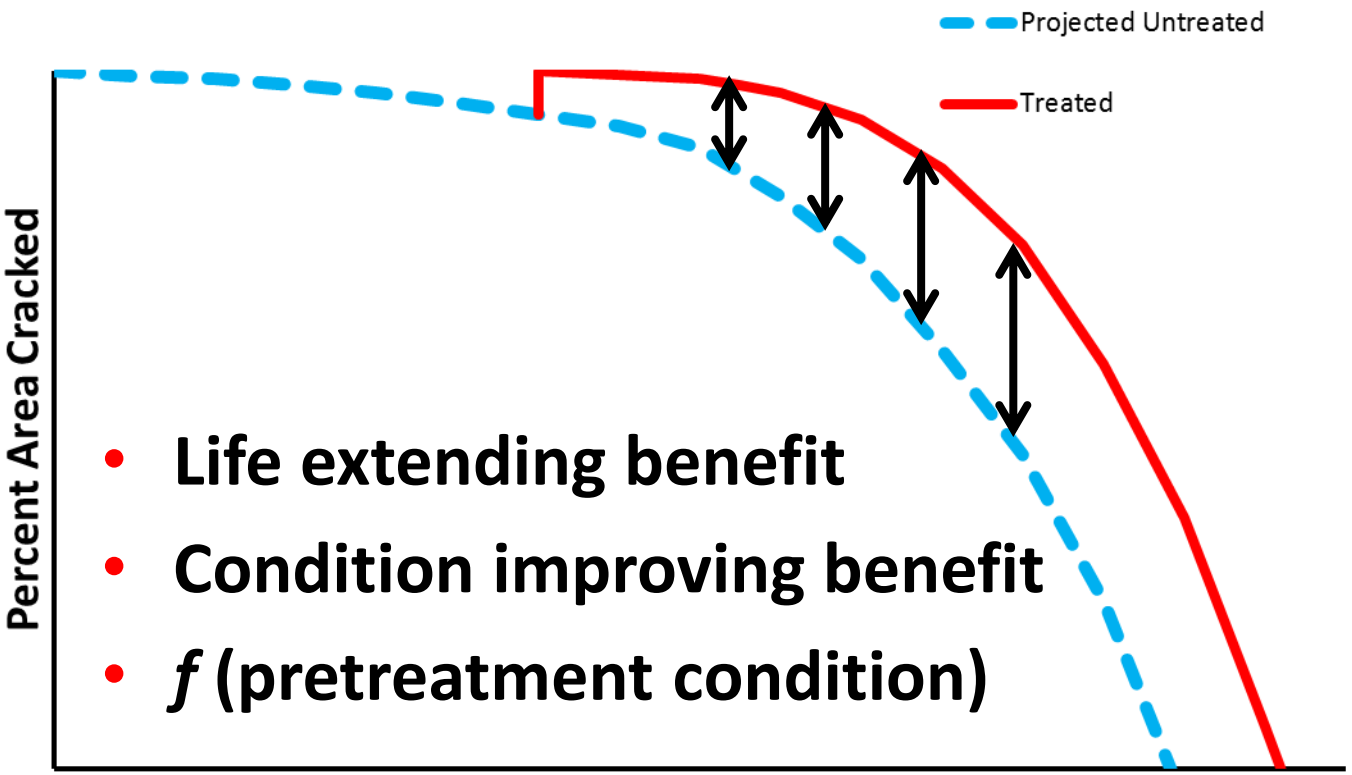
Track Pavement Preservation

Lee Road 159 Low Traffic Preservation

Benefits of Preservation



- **Life extending benefit**
- **Condition improving benefit**
- ***f* (pretreatment condition)**

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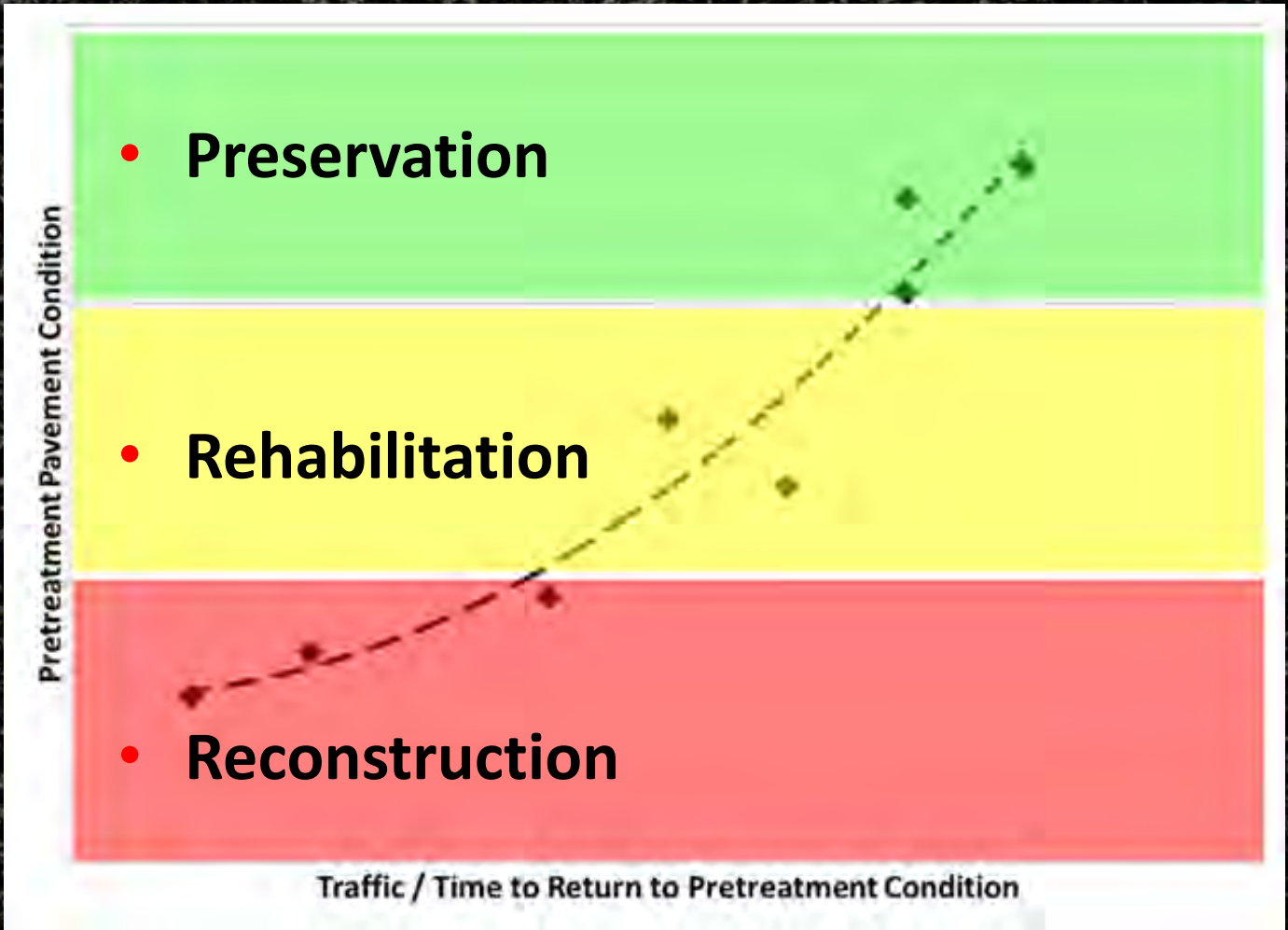
Benefits of Preservation



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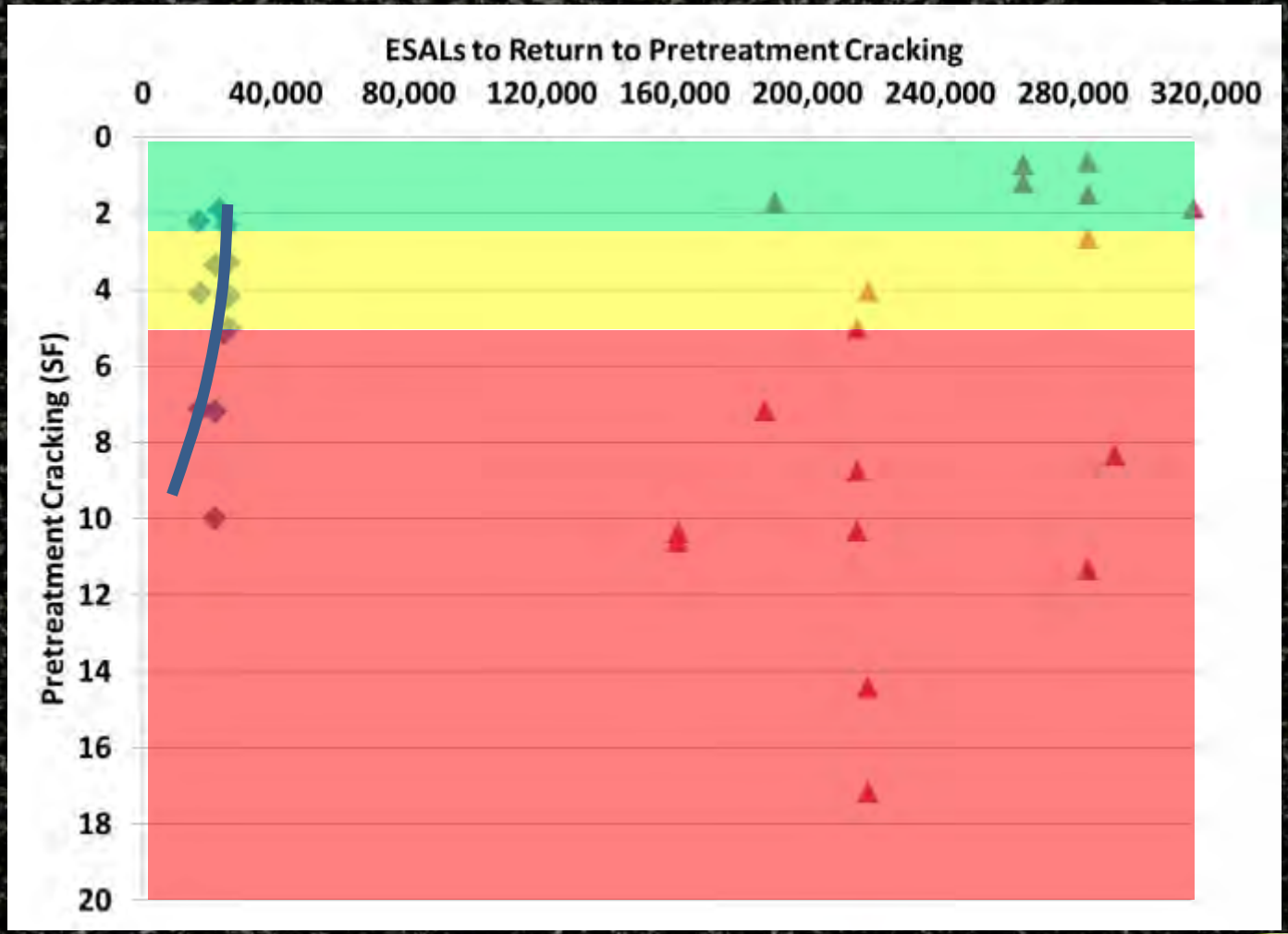

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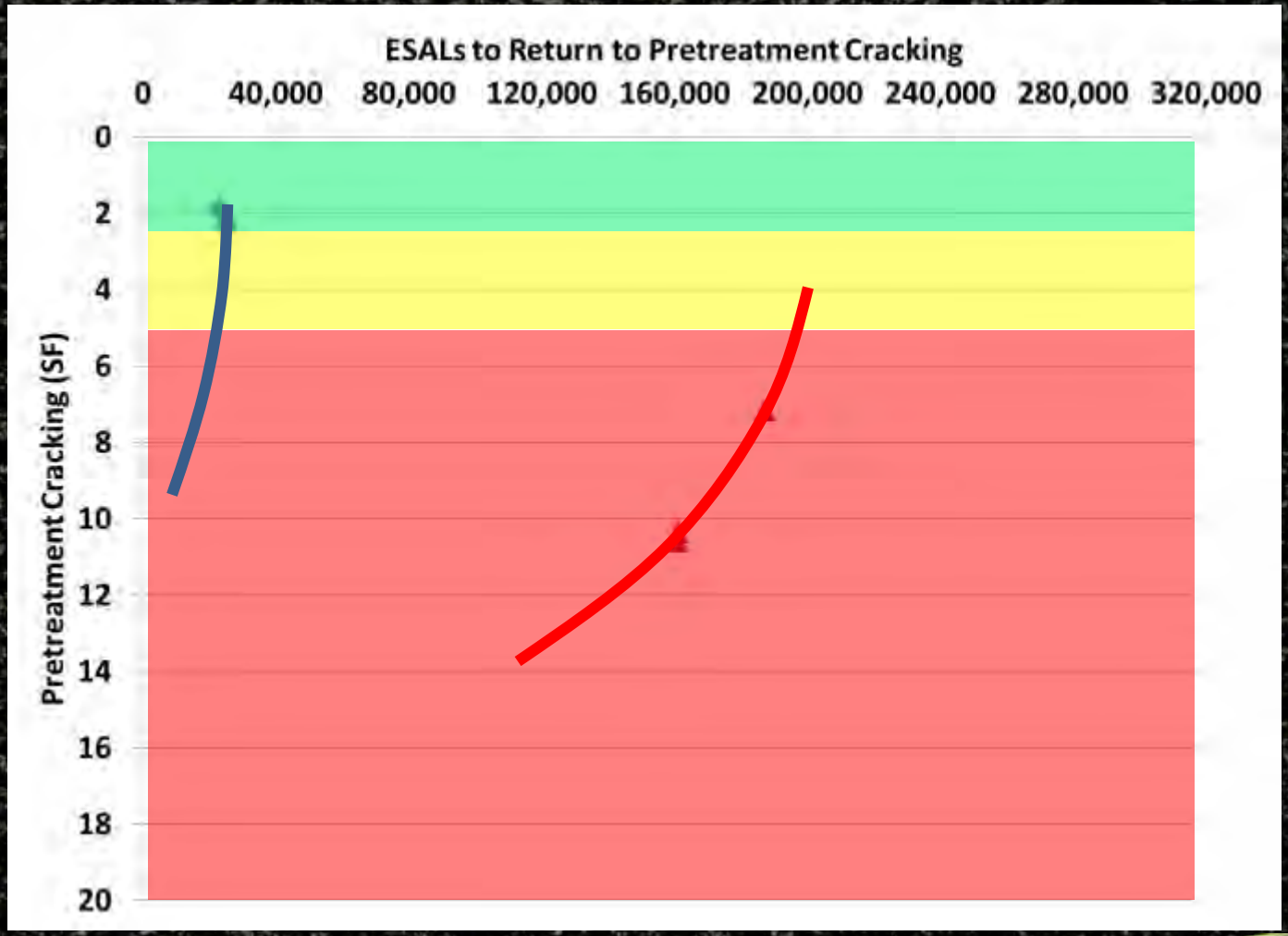

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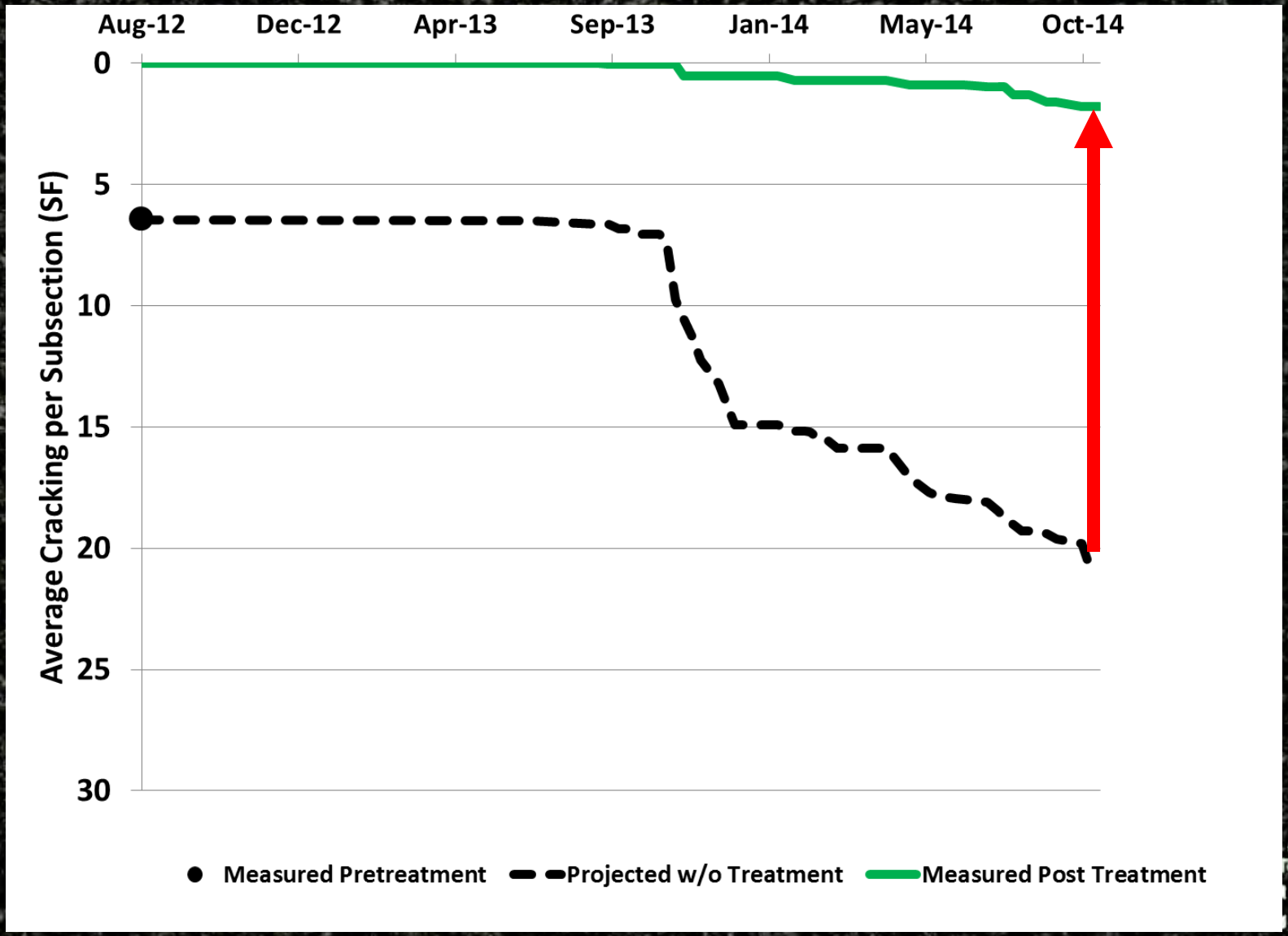

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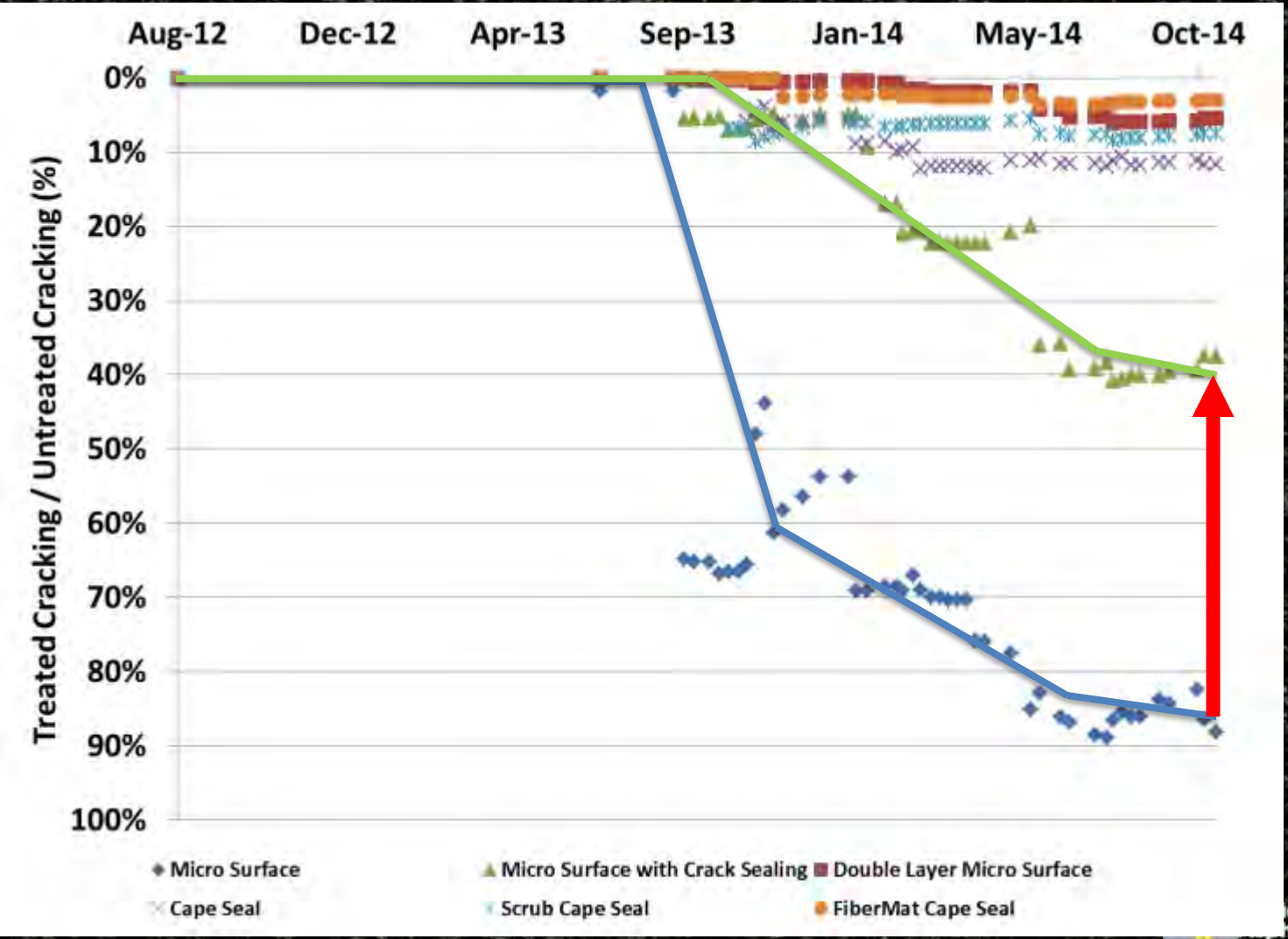

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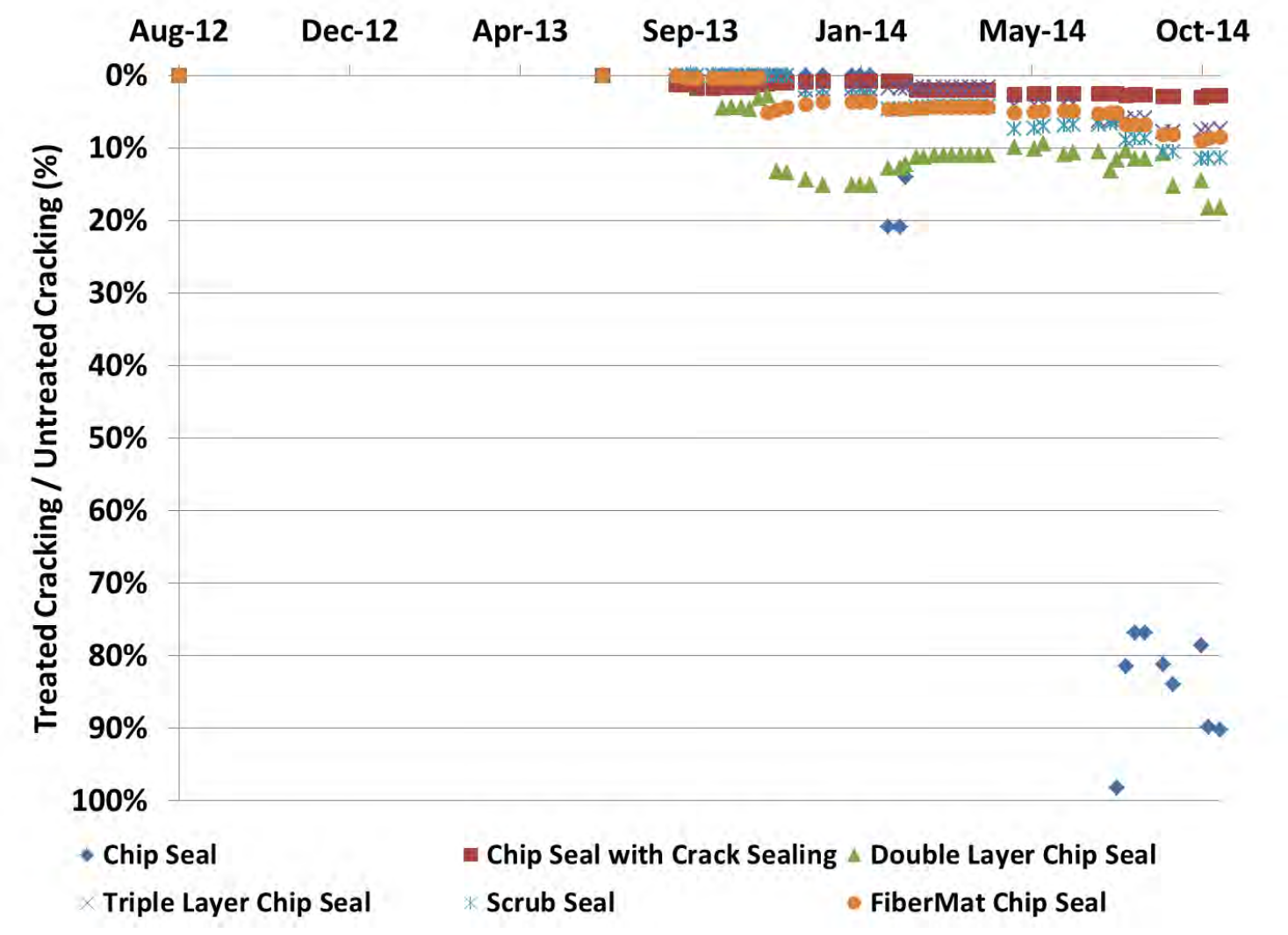

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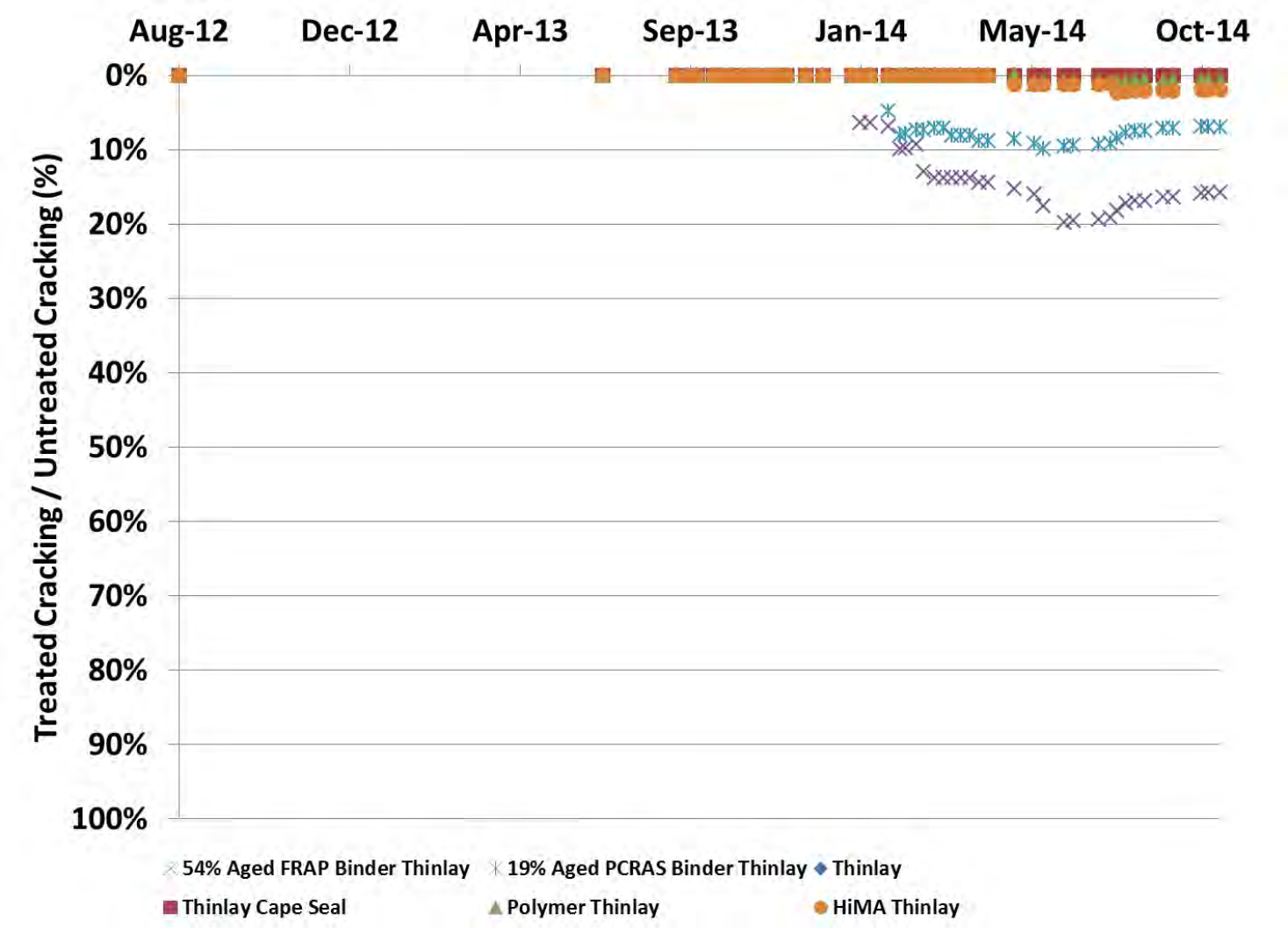

Virgin Thinlay with Polymer Binder

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Virgin Thinlay with Neat Binder

Virgin Thinlay on Cold Recycle Base

Virgin Thinlay on FiberMat Chip Seal

50% F-RAP Thinlay with Neat Binder

5% PC-RAS Thinlay with Neat Binder

Virgin Thinlay with HiMA Binder

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US-280 High Traffic Preservation

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US-280 High Traffic Preservation

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$CCPR_{F,E}$ on US-280 (KMA220)

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$CIR_{F,E}$ on US-280 (3800CR)

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Cold Recycle$_{F,E}$ Mix

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ABR Thinlays on Cold Recycle$_{F,E}$

CCPR (KMA220)

CIR (3800CR)

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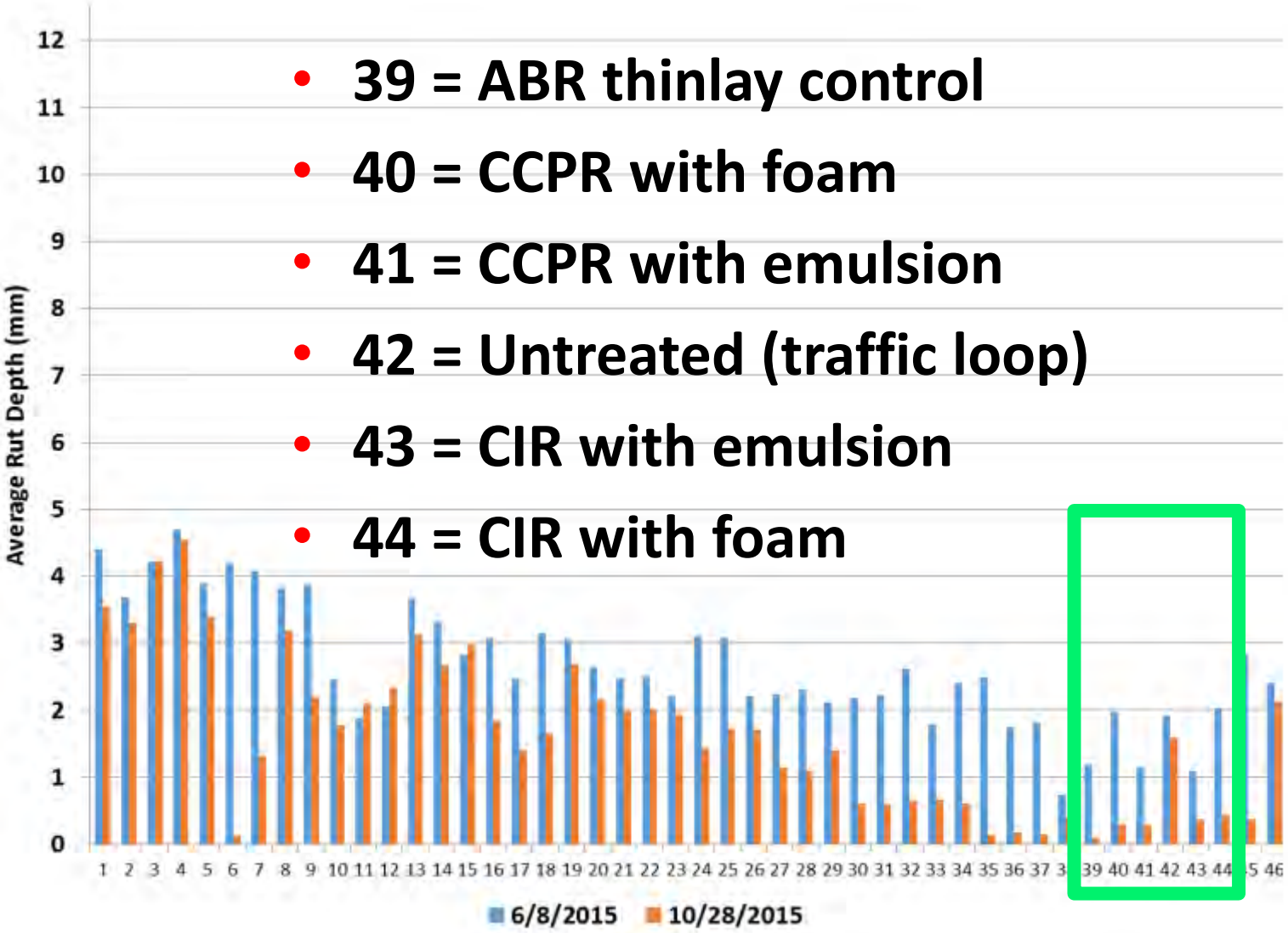
HMA Thin Overlays on US-280

- 39 = ABR thinlay control
- 40 = CCPR with foam
- 41 = CCPR with emulsion
- 42 = Untreated (traffic loop)
- 43 = CIR with emulsion
- 44 = CIR with foam



Significant Interim Findings

- Durability of micro surface (Track and US-280)
- Viability of asphalt based high friction surfaces
- Performance of lightweight aggregate chip seal
- Differences in crack sealing (blow-band vs route-fill)
- Demonstration of unique treatment combinations
- Success of high traffic pavement preservation (CR)
- Short term condition improvement methodology
- Long term life extending benefit methodology.

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MnROAD Partnership

- Nationwide life extending benefit experiment
- Duplication of work on LR-159 & US-280
- Regional aggregates & emulsion grades
- Both low (CR-8) & high (US-169) volume roads
- Focus on thermal cracking & snow plow damage
- Planning process ongoing with sponsor oversight
- Planning for summer 2016 placements.

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