NCAT Pavement Test Track

- 2009 Track Research Findings
- Planning for the 2012 Research Cycle

End-of-Cycle Track Conference

- WMA & high recycled content mixes
- Mechanistic pavement design
- Alternative materials
- Implementation

Pavement Test Track Conference

February 28-29, 2012

The Hotel at Auburn University and Dixon Conference Center

National Center for Asphalt Technology
NCAT
at AUBURN UNIVERSITY

www.ncat.us

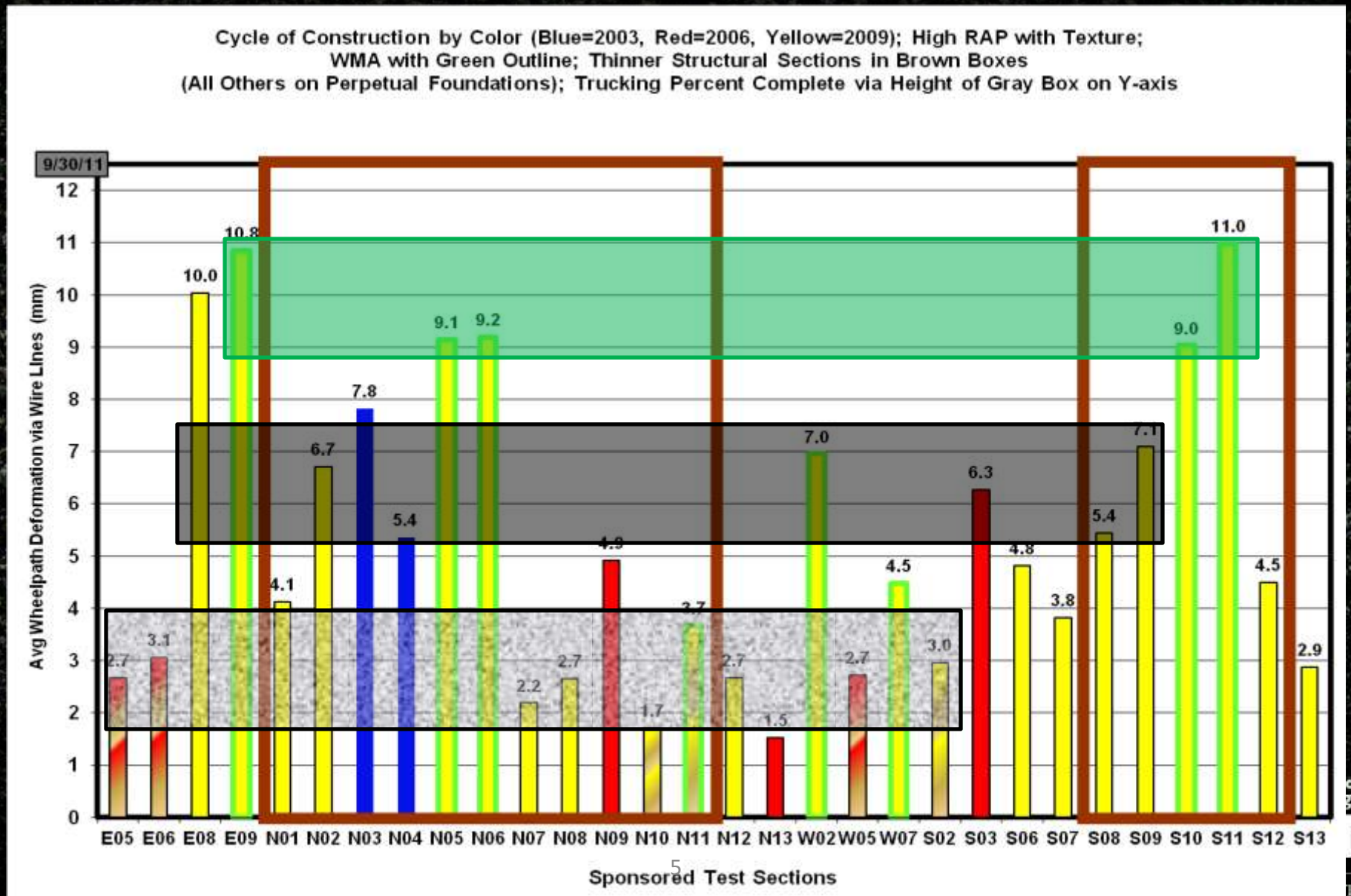
Accelerated Pavement Testing (APT)

National Center for Asphalt Technology
NCAT
at AUBURN UNIVERSITY

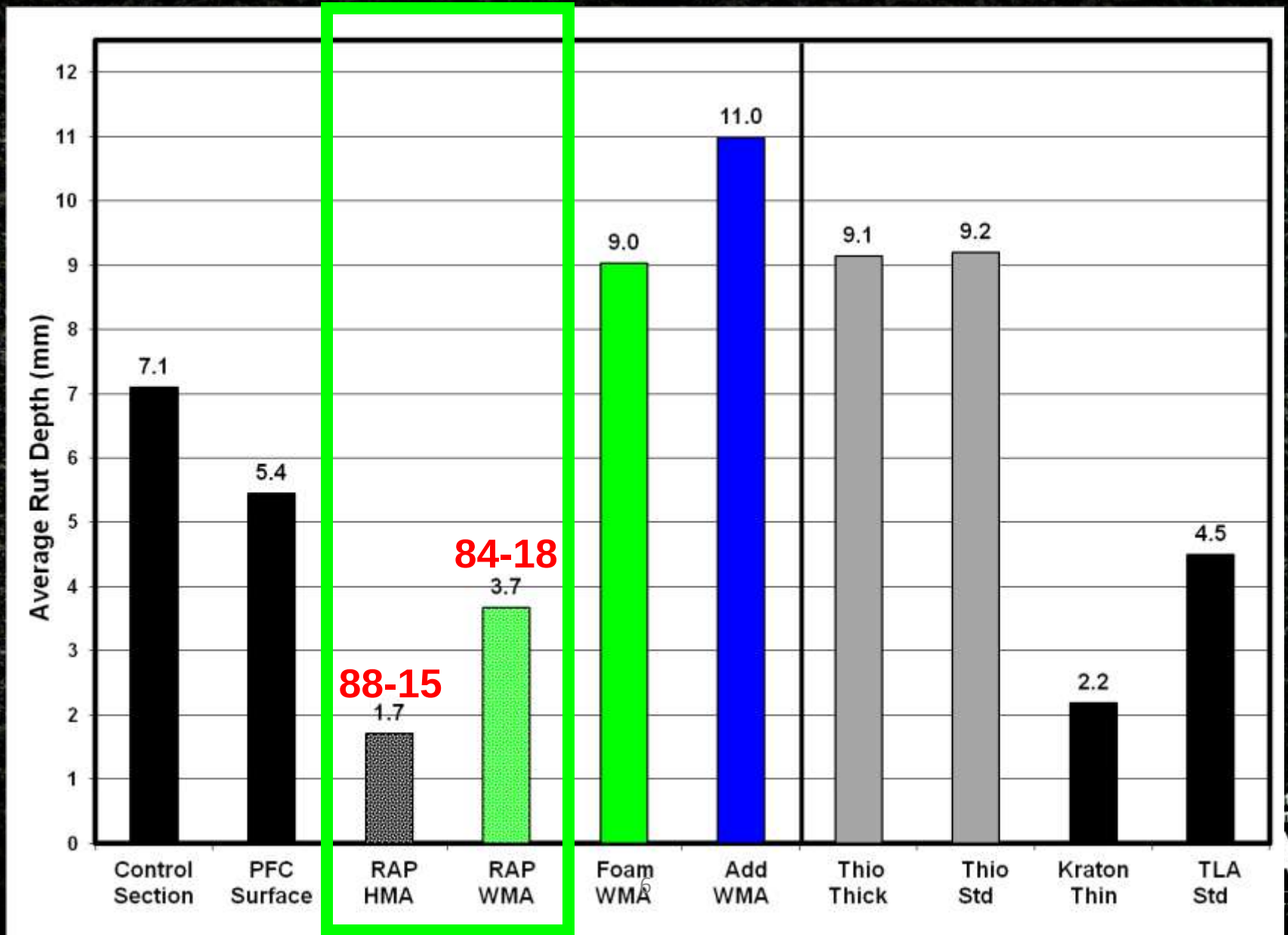
Implemented Track Findings

- Change from coarse to fine gradations (2000–2003)
- Alternative mix materials (polymers, gravel, etc.)
- Design gyration revisions (139_{98}, 100_{00}, 80_{03}, 60_{06})
- Construction variability limits (PG67 VTM > 2¾%)
- Interim pavement design recalibration (0.44 - 0.54)

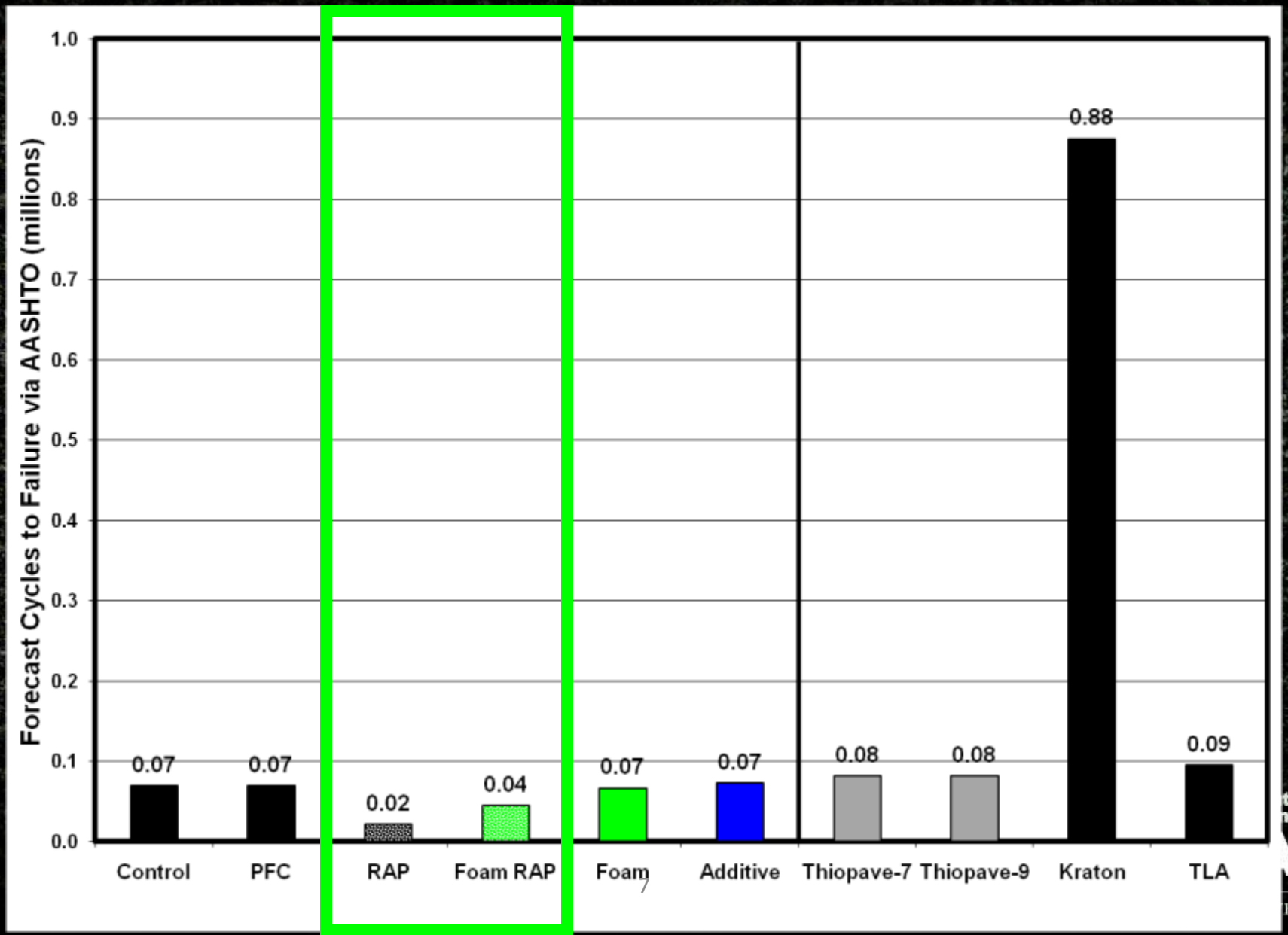
Wire Line Rutting Performance All



Rutting Performance GE+



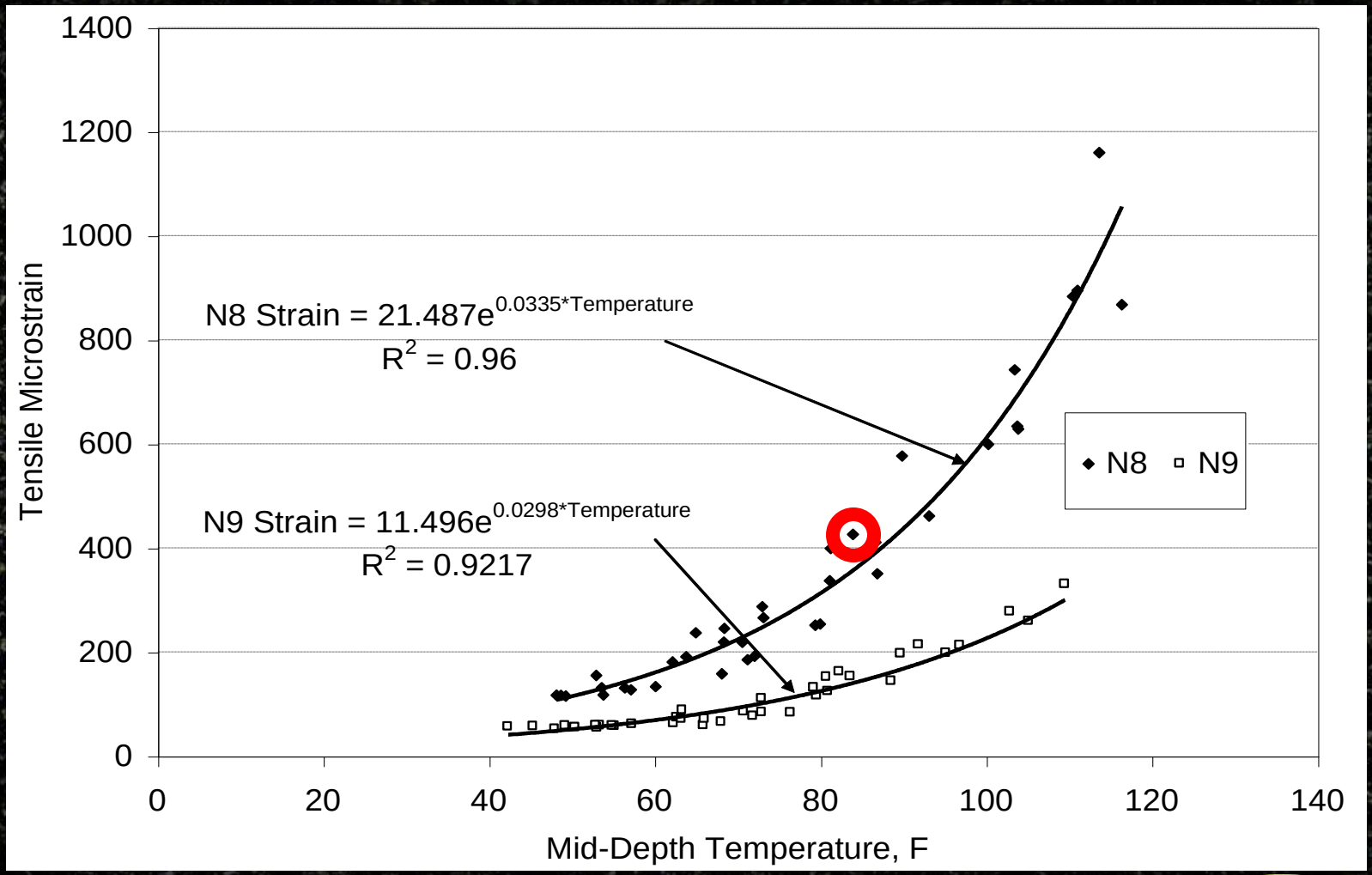
2009 GE+ Fatigue Expectations 500



High-Speed Pavement Response

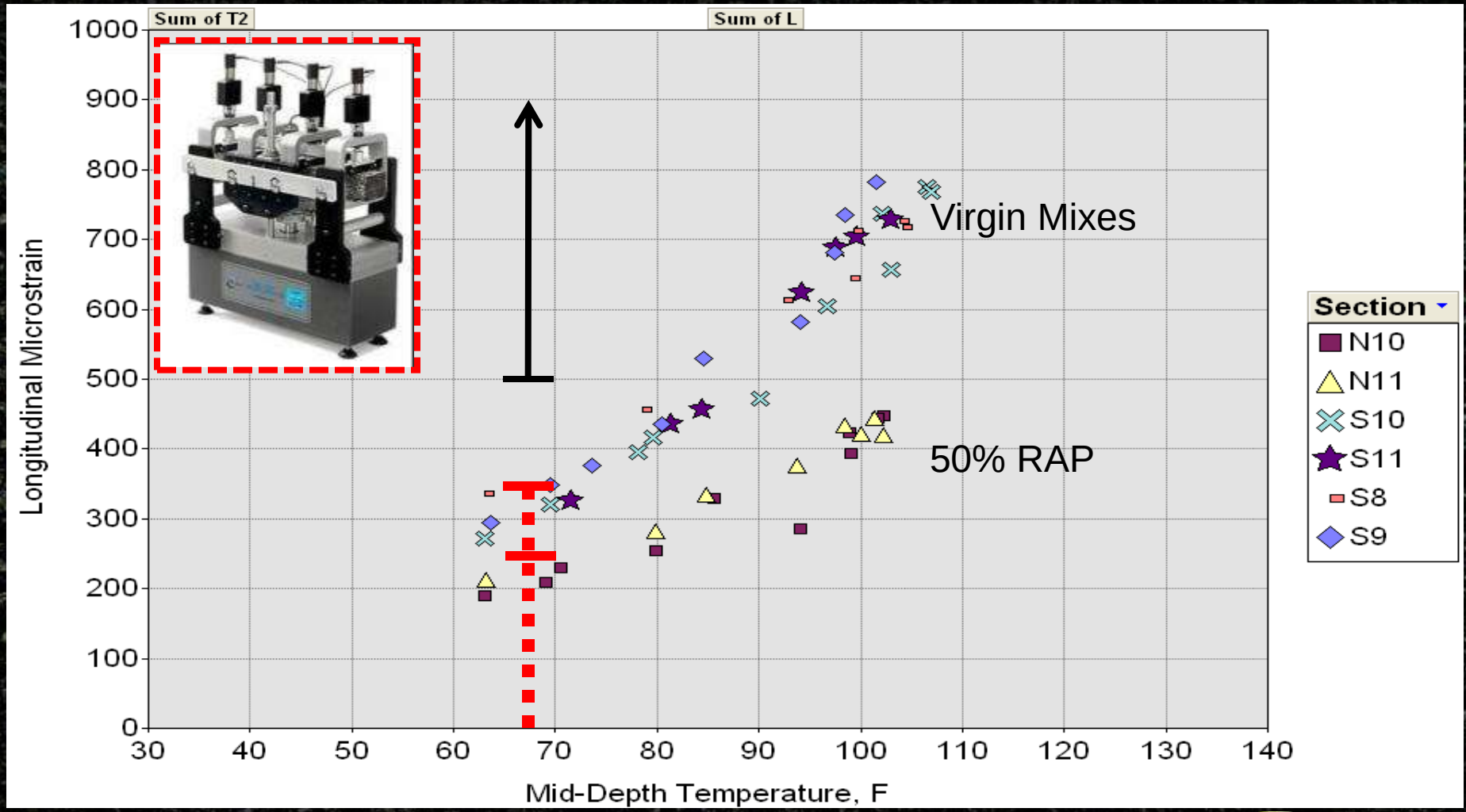
National Center for Asphalt Technology
NCAT
at AUBURN UNIVERSITY

High-Speed Pavement Response



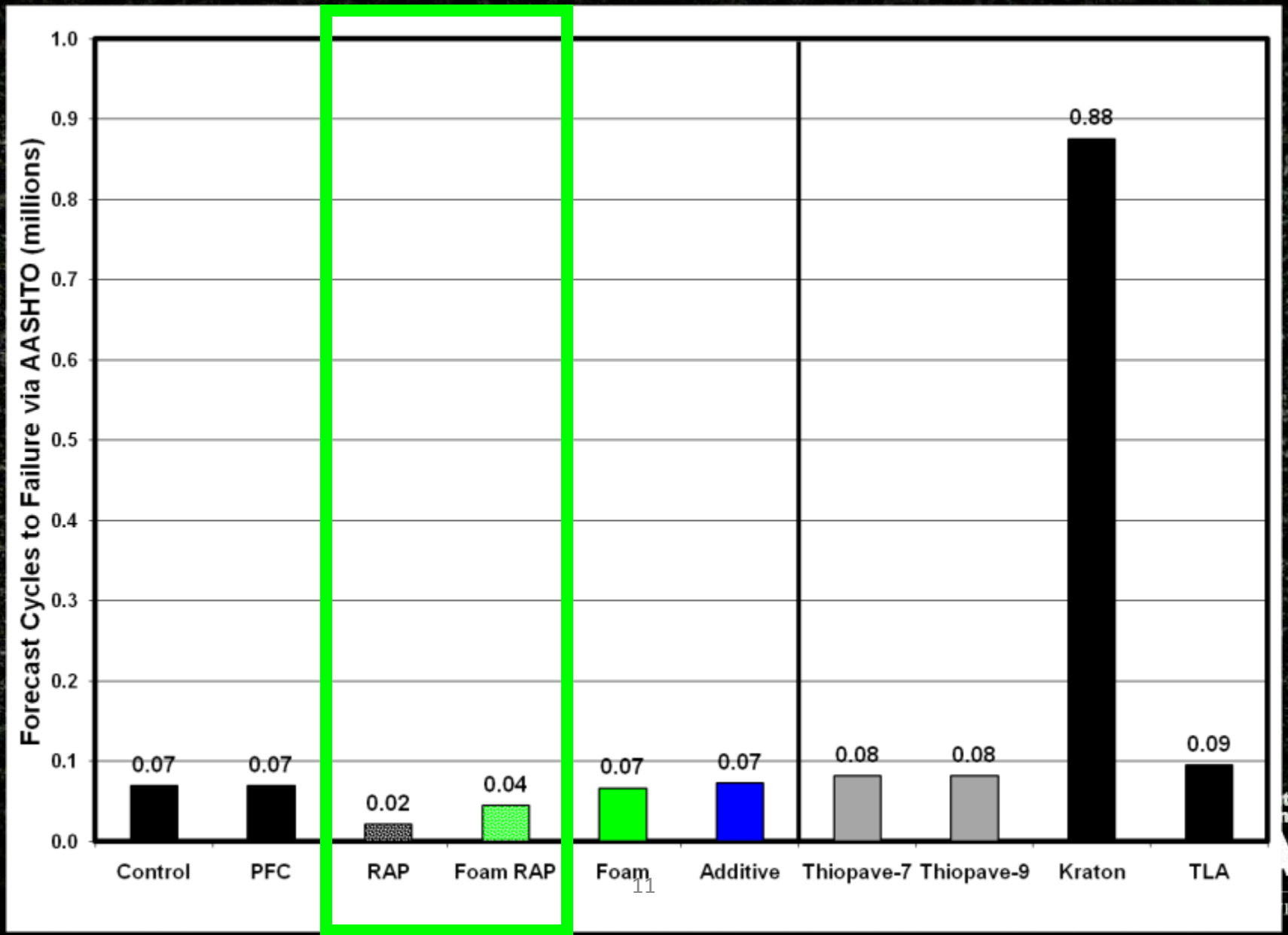
National Center for Asphalt Technology
NCAT
at AUBURN UNIVERSITY

High-Speed Pavement Response

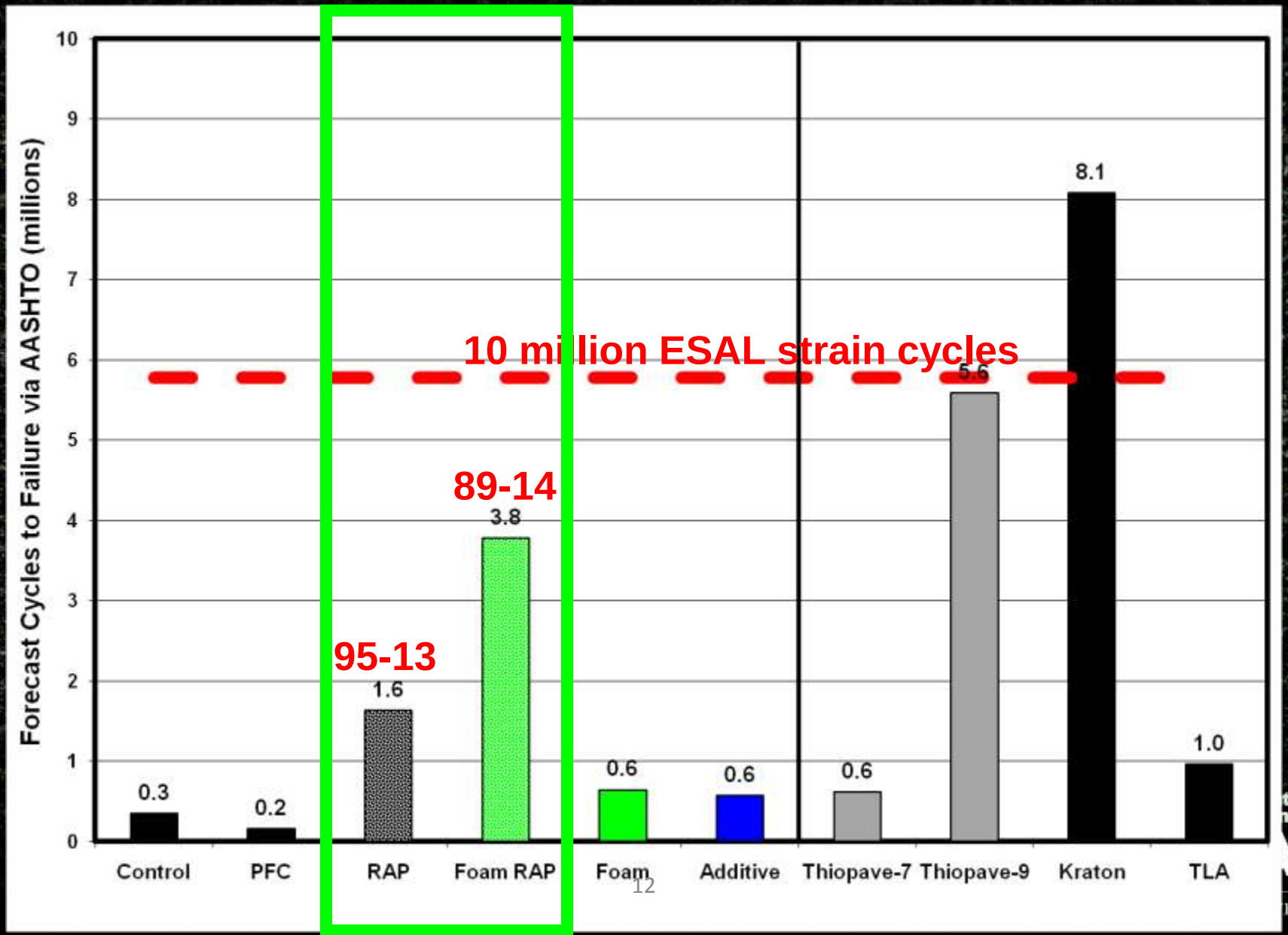


National Center for Asphalt Technology NCAT at AUBURN UNIVERSITY

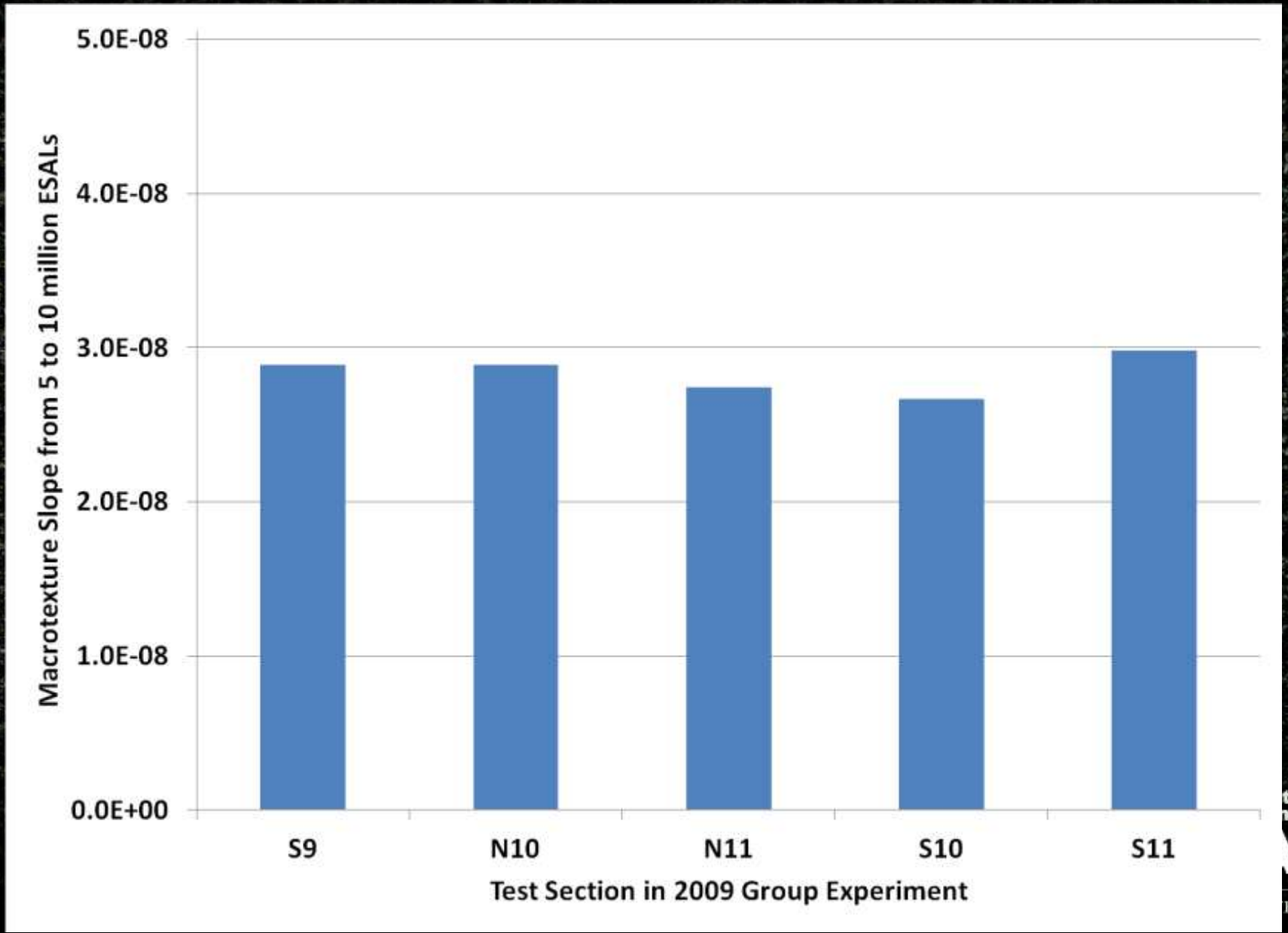
2009 GE+ Fatigue Expectations $_{500}$



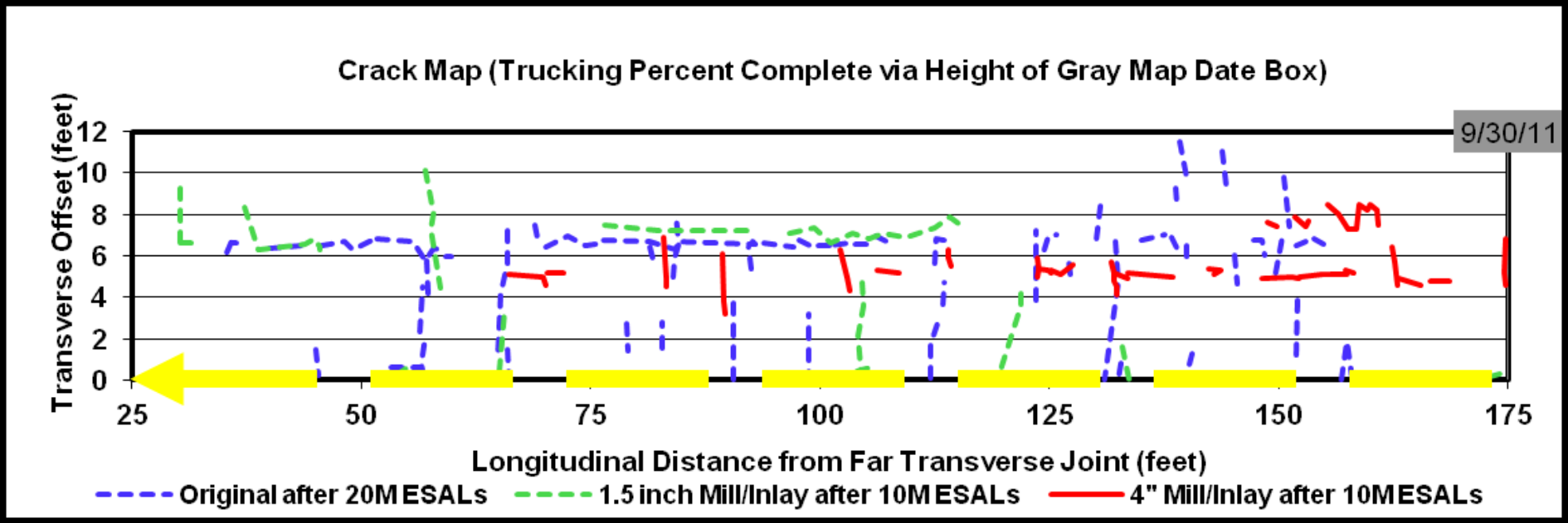
2009 GE+ Fatigue Expectations Actual



Durability


5.0E-08
4.0E-08
3.0E-08
2.0E-08
1.0E-08
0.0E+00
Macrotexture Slope from 5 to 10 million ESALs
S9
N10
N11
S10
S11
Test Section in 2009 Group Experiment

MS High RAP Reflective Cracking 140-80-60



National Center for Asphalt Technology NCAT at AUBURN UNIVERSITY

Surface Performance Studies

- Long term performance of high RAP mixes
- OGFC to protect crack susceptible Superpave
- Effect of spray paver on OGFC performance
- 29% F&E versus 15% in both OGFC and SMA
- GTR versus SBS modified PG76-22

Structural Studies

- Two 9” pavements perpetual (like 24”)
- 10” on soft subgrade not perpetual (unlike 14”)
- High polymer mix for construction/rehabilitation
- Layer coefficient recalibration (0.44 $\Rightarrow$ 0.54)
- Higher fatigue life expectation for WMAs
- Higher fatigue life expectation for high RAPs

2012 Research Cycle

- Traditional stand alones
  - Traffic continuation
  - Mill/Inlay
  - Structural Sections
- Green Group (GG)
- Preservation Group (PG)

- Safety Edge implementation

Green Group (GG) Experiment

Preservation Group (PG) Experiment

- Traffic continuation on 2009 GE+ test sections
- Stop traffic when trigger distress(es) reached
- Apply consensus PP treatments to GE+ sections
- Duplicate / expand study in off-Track research
- County access road to local aggregate quarry

Off-Track “PG” Test Sections

NCAT at AUBURN UNIVERSITY

Loaded Trucks in Outbound Lane

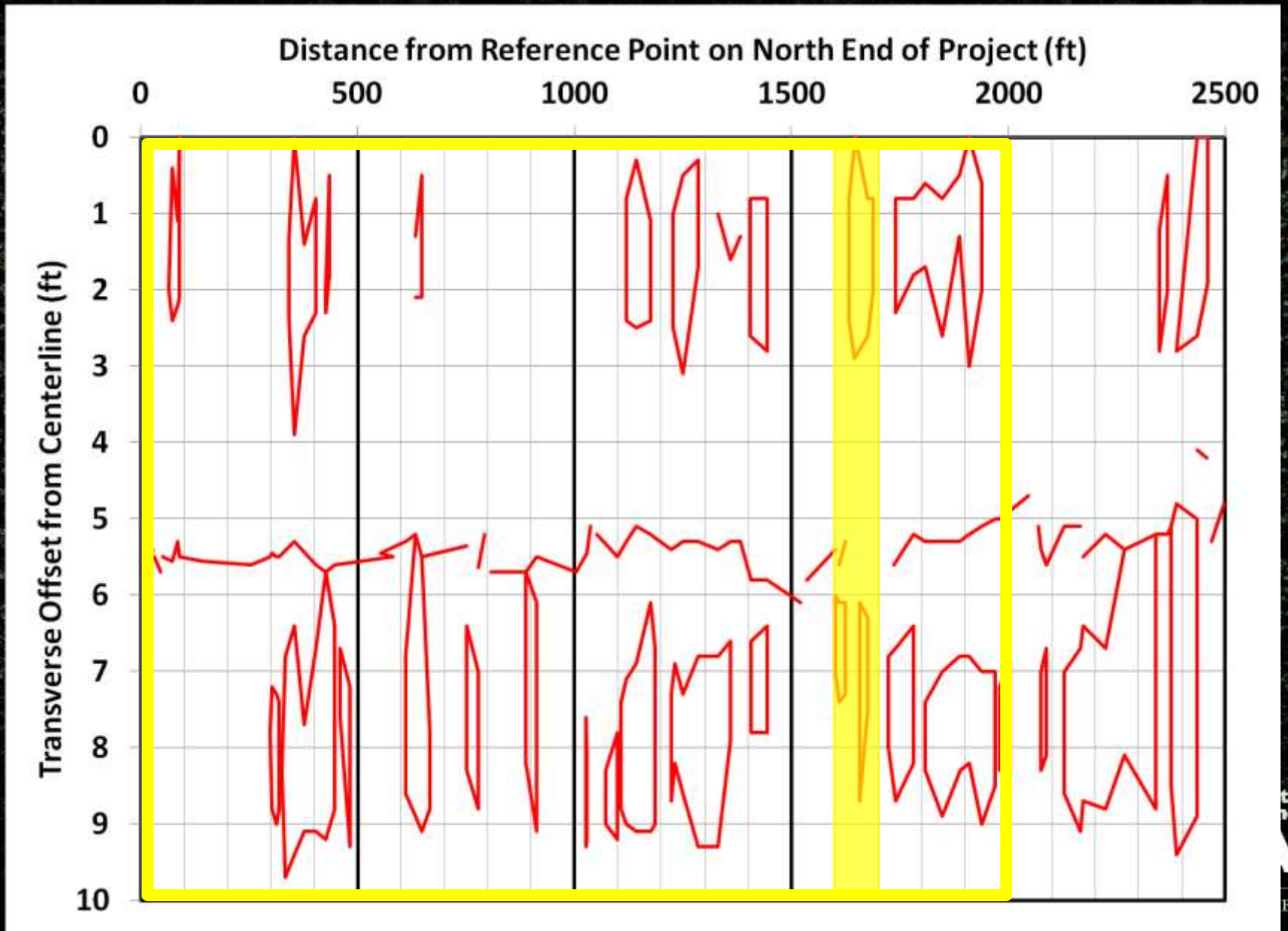
Condition of Outbound Lane

NCAT at AUBURN UNIVERSITY

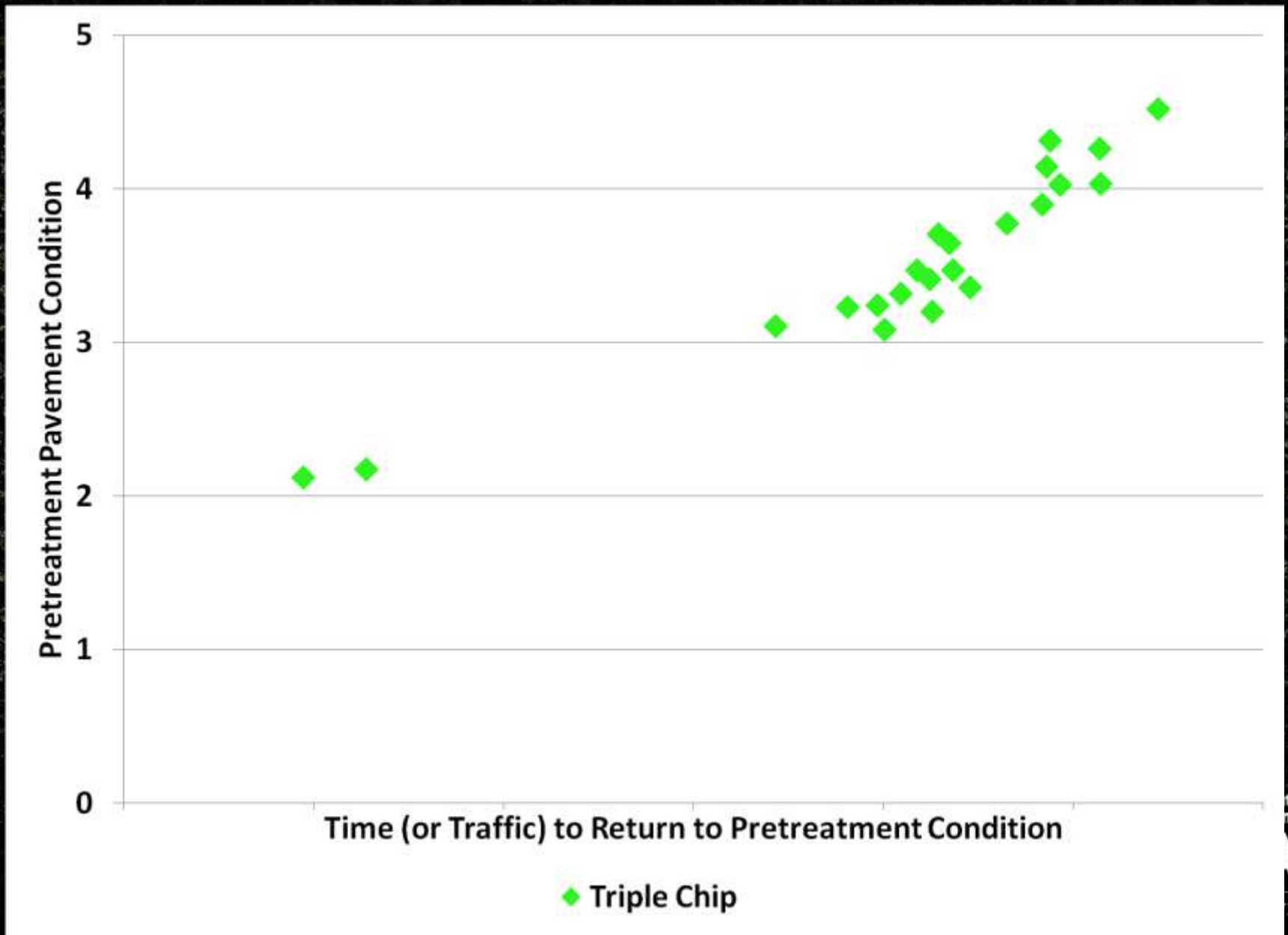
Proactive versus Reactive Preservation

NCAT at AUBURN UNIVERSITY

Pretreatment Crack Map



Life Cycle of Preservation Alternatives



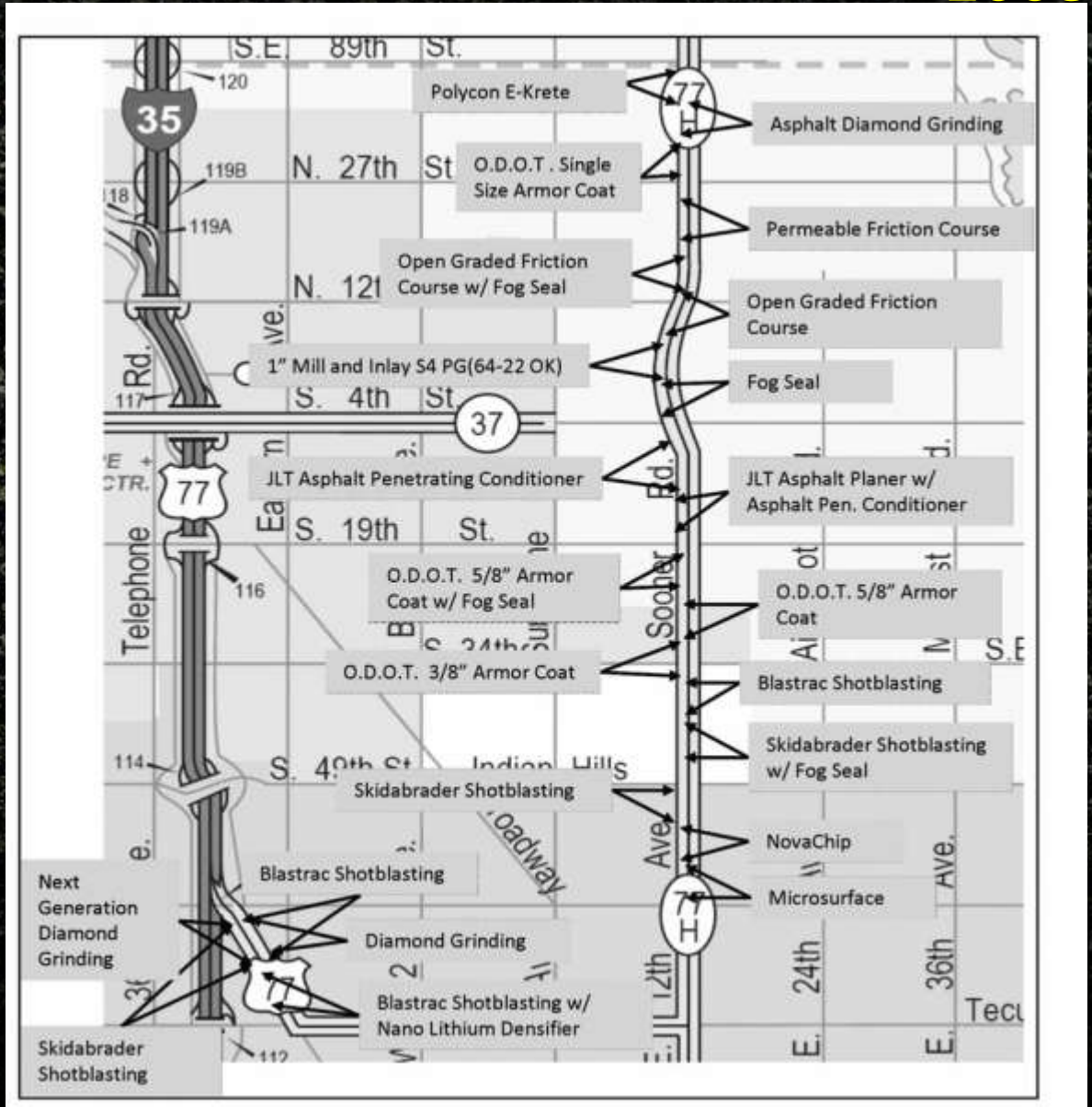
Life Cycle of Preservation Alternatives

Life Cycle of Preservation Alternatives

FDOT US 98 Preservation Study 2012

- Micro-surfacing
- 4.75 NMA mix overlays (½ inch vs ¾ inch)
- 9.5 NMA mix 1 inch thick overlay
- 9.5 NMA mix 1 inch thick mill/inlay
- 12.5 NMA mix 1½ inch thick mill/inlay
- Bonded friction course (¾” spray paved FC-5)
- Hot in-place recycling 1½ inch thick

Oklahoma Friction Study 2008-2009



National Center for Asphalt Technology
NCAT
at AUBURN UNIVERSITY

2012 Track Preservation Treatments

- Chip seals (Various agg sizes, design processes, application rates)
- Scrub seals
- Micro-surface
- Cape seals
- Thin-lift HMA (Inlays vs overlays, conventional vs low cost)
- "HMA Cape seals"
- Fog seals (Traditional fog seals vs low pen recycled rubber)
- Micro-milling
- Etc…

Web Reports

Quadrant: S
Section: 2

Surface Mix and Materials

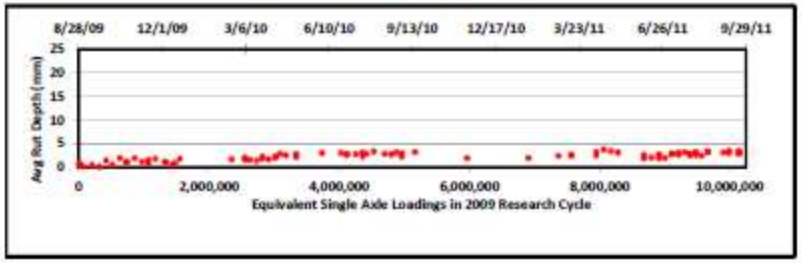
Year of Completion:	2009
HMA Design Methodology:	Superpave
Specified Binder:	PG67-22
Surface Mix Stockpile Materials:	Gravel/Sand (45% RAP)

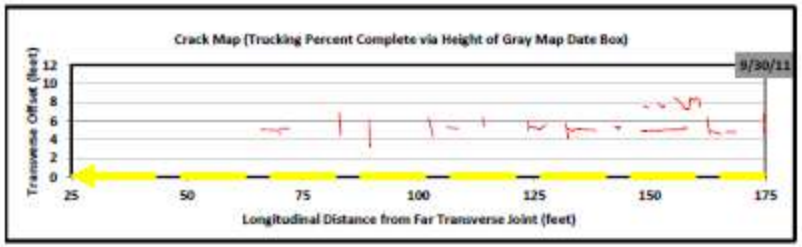
Structural Buildup Information

Study HMA (in):	4
Total HMA (in):	24
Base Material:	Granite
Subgrade:	Stiff

Research Objective: High RAP Content Gravel Superpave

Preliminary Field Performance Data





National Center for Asphalt Technology
NCAT
at AUBURN UNIVERSITY

www.pavetrack.com

NCAT Pavement Test Track

Performance

PAVE

Home | Sponsors | Information | Construction | Trucking | Performance

Click here for the official NCAT web site, Tracks in US, or Tracks Worldwide

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.

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

1,439, 922 ESALs as of 2300 hours on December 5,

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

National Center for Asphalt Technology NCAT at AUBURN UNIVERSITY

Questions ?

National Center for Asphalt Technology
NCAT
at AUBURN UNIVERSITY

www.ncat.us

Dr. R. Buzz Powell, PE

Assistant Director & Test Track Manager

277 Technology Parkway
Auburn, AL 36830

Phone: (334) 844-6857
Cell: (334) 750-6293

Email: buzz@auburn.edu
Web: www.pavetrack.com

National Center for Asphalt Technology
NCAT
at AUBURN UNIVERSITY