


Pavement Preservation Group Study Findings


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PG Study

- State DOTs must preserve existing infrastructure with limited resources
 - Preservation treatments can extend life of pavement
- Insufficient performance data
- Existing estimates are too broad
- Several variables need to be considered
 - Pretreatment condition is critical


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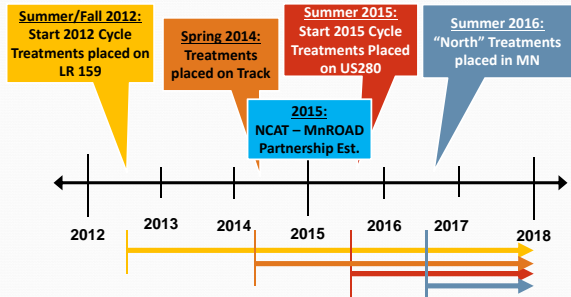
PG Study

- GOAL:
Develop *independent* life-extending benefit curves for a range of pavement preservation treatments, under varying traffic levels and climates


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Preservation Group Experiment: History



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Low Traffic Volume



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

LR-159 Low Traffic Preservation



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Higher ADT Preservation on US-280

- US-280 3 miles to east of Track
- 17,000 ADT, ≈9 year old surface
- Westbound truck lane (>5k ADT)
- ≥ MP 128.0 to MP 132.6
- Tenth mile sections
- Repeat Lee Road 159 (±)
- Add CCPR_{FE} and CIR_{FE}
- Optimized ABR thin overlays

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US-280 High Traffic Preservation

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Treatments

- Control Sections
- Surface Treatments
 - Crack Sealing
 - Fog Seal
 - Chip Seals
 - Scrub Seals
 - Micro surfacing
 - 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

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Monitoring Plan

Parameter	Track	Lee Road 159	US-280
Roughness	Weekly	Weekly	Weekly
Rutting	Weekly	Weekly	Weekly
Macrotexture	Weekly	Weekly	Weekly
Crack Mapping	Weekly	Monthly+	Monthly+
FWD	Weekly	Monthly	Quarterly
Surface Friction	Monthly	Monthly	Monthly
Permeability	Quarterly	-	Quarterly
Noise	Quarterly	Quarterly	Quarterly

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Performance

- 3 Performance indicators help us see the “big picture”
- MAP-21 criteria

Category	% Cracking	Rutting, mm	IRI, in/mi
Good	< 5	< 5	< 95
Fair	5 – 20	5 – 10	95 – 170
Poor	> 20	> 10	> 170

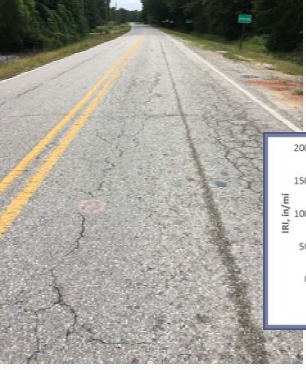
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LOW TRAFFIC SECTIONS

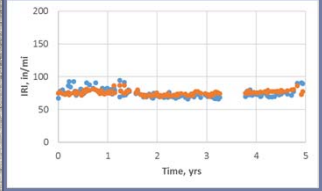
5 YEARS OLD

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Control Sections to Date



Cracking	Rutting	IRI
P	G	G
P	G	G



IRI, in/mi

Time, yrs

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Low Traffic Chip Seals to Date

Treatment	Cracking	Rutting	IRI
Single chip seal	F	G	G
Single chip seal + crack sealing	F	G	G
Double chip seal	F	G	G
Triple chip seal	F	G	G
Scrub seal	F	G	G
FiberMat chip seal	F	G	G

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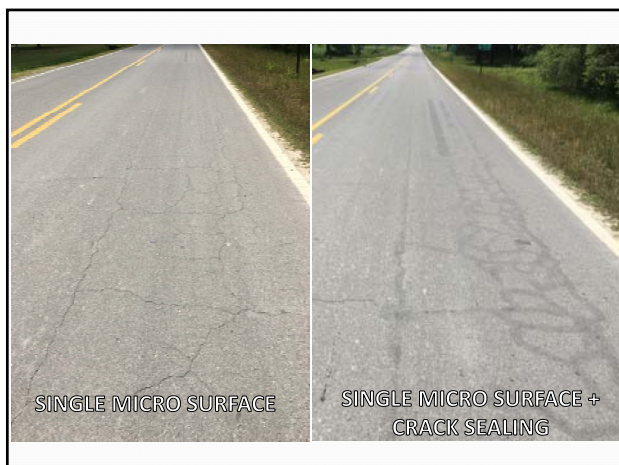


Low Traffic Micro Surfacing to Date

Treatment	Cracking	Rutting	IRI
Cape seal	G	G	G
Single micro surface	P	G	G
Single micro surface + crack sealing	P	G	G
Double micro surface	F	G	F
FiberMat Cape seal	G	G	G
Scrub Cape seal	F	G	G

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Low Traffic Thinlays to Date

Treatment	Cracking	Rutting	IRI
HMA Cape seal	G	G	P
Virgin thinlay PG67-22	G	G	G
Virgin thinlay on 100% foamed base	G	G	F
Virgin thinlay PG76-22	G	G	F
Ultra thin bonded surface course	F	G	F
50% RAP thinlay	F	G	G
5% RAS Thinlay	F	G	G
HIMA Thinlay	G	G	F

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Observations from Lee Road 159

- Sections in good to fair overall condition
- Treatments continue to outperform the control in terms of cracking
- Excellent rutting performance
- Wide range of IRI – no significant changes over time

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HIGH TRAFFIC SECTIONS



2 YEARS OLD

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High Traffic Control Sections to Date

Treatment	Cracking	Rutting	IRI
Low Cracking	G	F	G
High Cracking	F	F	G
Low Rutting	G	G	G
High Rutting	G	F	G
Low IRI	G	F	G
High IRI	G	F	F

Dark green = 0% cracking

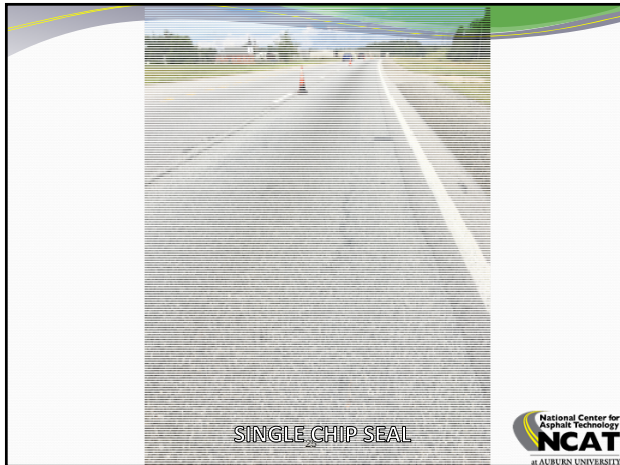
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High Traffic Chip Seals to Date

Treatment	Cracking	Rutting	IRI
Single chip seal	G	F	F
Single chip seal + crack sealing	G	F	G
Double chip seal	G	F	G
Triple chip seal	G	F	G
Scrub seal	G	F	F
FiberMat chip seal	G	F	G

Dark green = 0% cracking


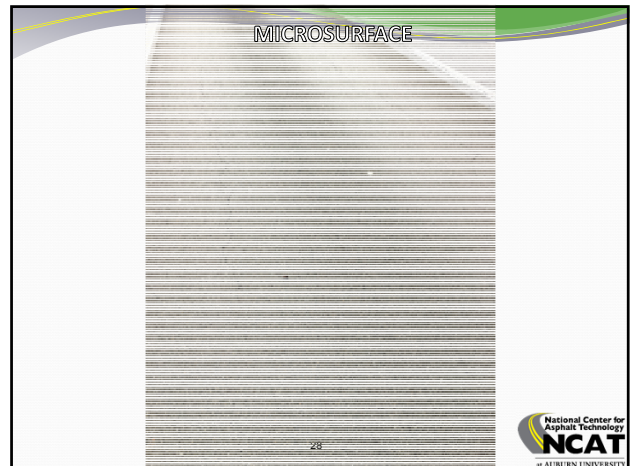
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High Traffic Micro Surfacing to Date

Treatment	Cracking	Rutting	IRI
Cape seal	G	F	G
Single micro surface	G	F	F
Single micro surface + crack sealing	G	F	F
Double micro surface (SS)	G	G	G
Double micro surface (LMS)	G	F	F
FiberMat Cape seal	G	F	G
Scrub cape seal	G	F	F
HiMA Micro surface	G	F	G
Micro surface on thinlay	G	G	G
Micro surface with fibers	G	F	G


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High Traffic Thinlays to Date

Treatment	Cracking	Rutting	IRI
HMA Scrub cape seal	G	G	G
HMA Cape seal	G	G	G
HMA Fibermat cape seal	G	G	G
Virgin Thinlay	G	G	G
ABR Thinlay	G	G	G
Thinlay on foamed CCPR	G	G	F
Thinlay on foamed CIR	G	F	G
Thinlay on emulsion CCPR	G	G	G
Thinlay on emulsion CIR	G	F	F
Ultra thin bonded surface	G	G	G

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OGFCs to Date

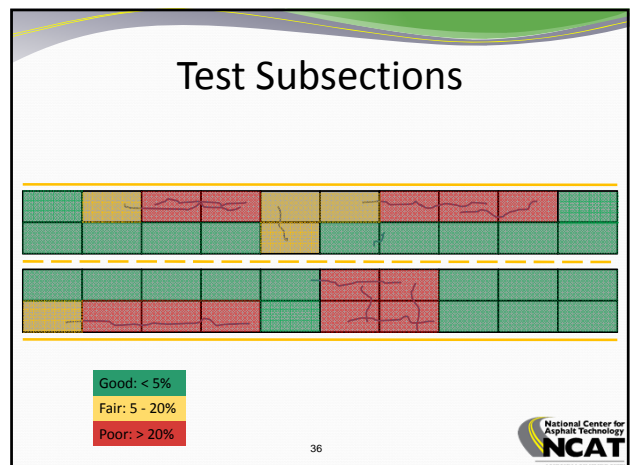
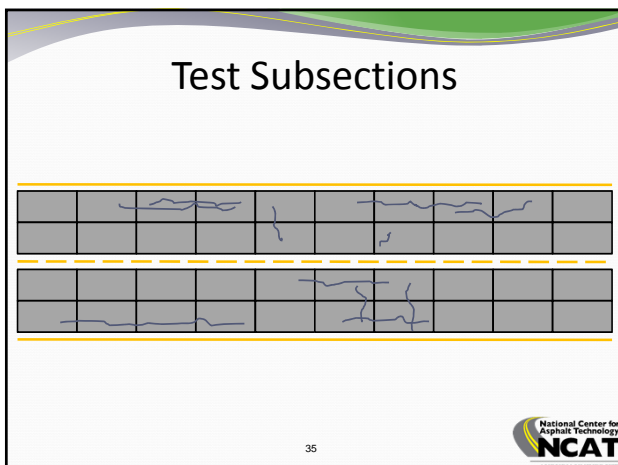
Treatment	Cracking	Rutting	IRI
OGFC w/ Spray paver	G	G	G
OGFC w/ Trackless tack	G	G	G
OGFC w/ PG 67-22	G	G	G
OGFC w/ Ultra fuse	G	G	G
OGFC w/ eTac	G	G	F

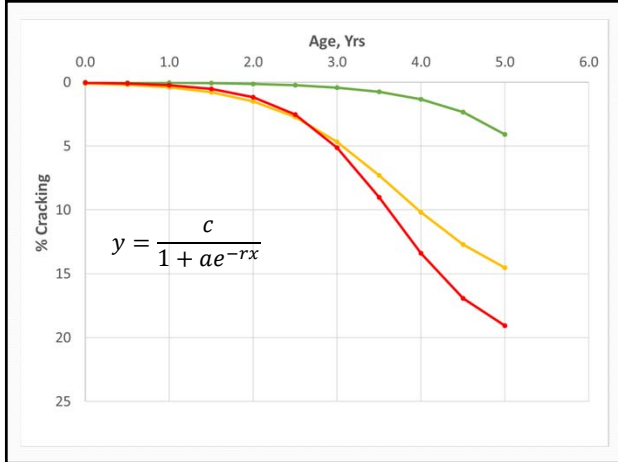
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- ### Observations from US 280
- Sections in good to fair overall condition
 - Cracking observed in all treatment categories
 - Good to fair rutting performance
 - No significant changes in IRI over time
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- ### Future/Ongoing Work
- Develop performance models based on initial condition, traffic and climate
 - Requires long-term monitoring
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Future/Ongoing Work

- Integrate other measures into analysis
 - Texture
 - Permeability
 - Structural condition

A small scatter plot with a trend line showing MTD (mm) on the y-axis (0.0 to 2.0) and Time (yrs) on the x-axis (0 to 5). The data points show a decreasing trend from approximately 1.4 mm at 0 years to about 0.7 mm at 5 years. A horizontal dashed line is drawn at approximately 0.7 mm, labeled 'Initial MTD'.

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2018 TEST TRACK CONFERENCE

MARCH 27-29, 2018
AUBURN, AL