

# NCAT Pavement Test Track

National Center for  
Asphalt Technology  
**NCAT**

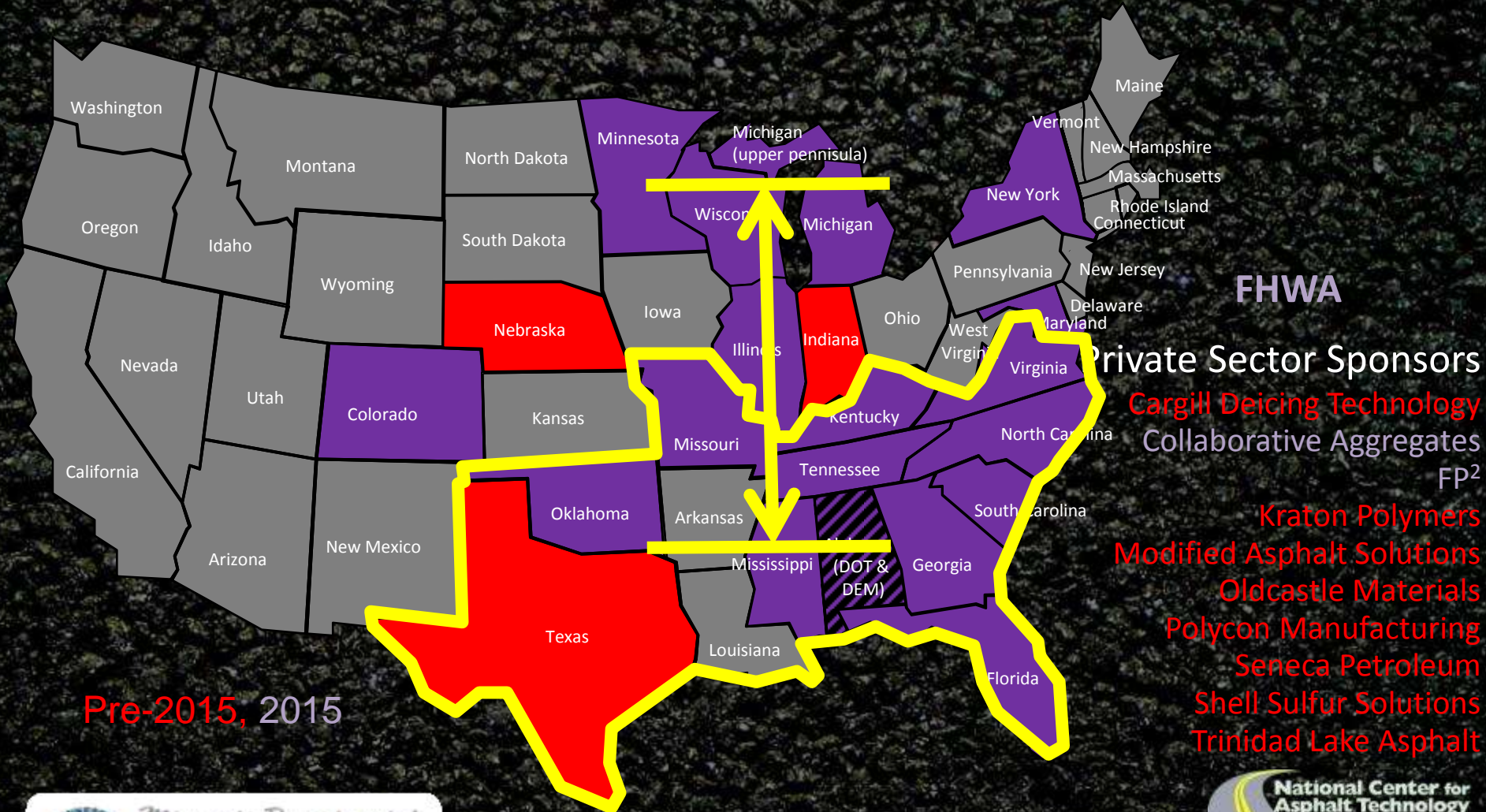
at AUBURN UNIVERSITY

**Buzz Powell**  
**Cold Central Plant Mix**



**US-280**

# NCAT Pavement Test Track



# Content

- Track research overview
- VDOT structural base layers
- Preservation on Lee Road 159
- Preservation on US-280
- Astec Double Barrel Green

# Track Research Goals

- Help state DOTs implement positive change
- Promote real innovation for the industry.

# Track Research Goals



- Preservation
- Mix & materials
- Thickness design
- Construction

# VDOT Research Background



## Lanford Brothers Uses

## In-Place Recycling on I-81 Project

Three recycling methods used in combination for the first time on a project in the U.S. will save Virginia both time and money.

By Lisa Cleaver, editor

23,000 AADT  
28% Trucks  
7.2 Lane Miles  
CIR and  
FDR+CCPR  
\$7.6 Million

# CCPR Mix on Track and Lee Road 159

- Virginia I-81 RAP processed (unscalped) to  $-3/4$
- 5.77% RAP binder content at 3% moisture
- 2% virgin binder foamed with  $2\frac{1}{2}$ % water
- 7.73% measured total binder content
- Virgin binder content computed as 1.96%
- Mix moisture content measured at 3.14%
- All dry densities exceeded 100% of lab control

# Comparison Test Sections

**S12**

**4-inch AC**

**5-inch CCPR**

**8-inch FDR**

**Subgrade**

**N4**

**4-inch AC**

**5-inch CCPR**

**6-inch Agg**

**Subgrade**

**N3**

**6-inch AC**

**5-inch CCPR**

**6-inch Agg**

**Subgrade**



# 2012 100% RAP Cold Recycle Mix



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Center for  
Technology

**CRAT**

at AUBURN UNIVERSITY

# 2012 100% RAP Cold Recycle Mix



# 2012 100% RAP Cold Recycle Mix



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

# 2015 Pavement Preservation



# CCPR<sub>F,E</sub> on US-280 (KMA220)



# CIR<sub>F,E</sub> on US-280 (3800CR)



# Cold Recycle<sub>F,E</sub> Mix





# ABR Thinlays on Cold Recycle<sub>F,E</sub>



CCPR (KMA220)



CIR (3800CR)

# ABR Thinlays on Cold Recycle<sub>F,E</sub>



Aged Binder Ratio (from Both RAP and RAS)

CAI

# Cracking Group (CG) Section Surfaces

- 20% RAP control<sub>N1@20/0</sub>
- High density control<sub>N2@20/0</sub>
- Low AC/density control<sub>N5@21/0</sub>
- Control + 5% RAS<sub>N8@20/14</sub>
- Control +15% RAP with PG58-28<sub>S5@33/0</sub>
- Control with HiMA<sub>S6@19/0</sub>
- 15% RAP AZ rubber with ARB20<sub>S13@7/0</sub>

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# Cold Recycle from a Hot-Mix Plant



# Cold Recycle from a Hot-Mix Plant



# Cold Recycle from a Hot-Mix Plant



# Cold Recycle from a Hot-Mix Plant





# Key Takeaways

- Best use of 100% of all RAP generated
- Base layers with 100% RAP in high traffic
- Binder layers with 100% RAP in moderate traffic
- Cold recycle via central plant in urban markets
- Cold recycle in-place in rural markets
- Durable, crack resistant surface mixes.

# End-of-Cycle Track Conference

- High RAP/RAS balanced mix designs
- Nationwide pavement preservation
- Preventing reflective distresses
- Optimized structural design
- Implementation



## Pavement Test Track Conference

March 6-8, 2018

The Hotel at Auburn University  
and Dixon Conference Center

[www.ncat.us](http://www.ncat.us)



# Track Mission Statement

- Help state DOTs implement positive change
- Promote real innovation for the industry.



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