Implementing Test Track Research
NCAT Test Track Cold Central-Plant Recycling Sections

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A Little History (Part 1)

• 2011
  – VDOT constructed a pavement recycling project on I-81
  – Lab-based materials characterization
  – No instrumentation

• 2012
  – It was performing so well, we starting thinking about long-term performance
I-81 (2011)
A Little History (Part 2)

• 2012 (April)
  – Opportunity to sponsor sections at NCAT
  – What could we build?
  – What could we learn?

• 2012 (July-August)
  – 3 sections that resembling I-81 project
  – Focus on instrumentation response, less on lab characterization
VDOT Sponsored Sections

S12
N3
N4
### NCAT Test Track Sections

<table>
<thead>
<tr>
<th>N3</th>
<th>N4</th>
<th>S12</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-inch AC</td>
<td>4-inch AC</td>
<td>4-inch AC</td>
</tr>
<tr>
<td>5-inch CCPR</td>
<td>5-inch CCPR</td>
<td>5-inch CCPR</td>
</tr>
<tr>
<td>6-inch Agg</td>
<td>6-inch Agg</td>
<td>8-inch FDR</td>
</tr>
<tr>
<td>Subgrade</td>
<td>Subgrade</td>
<td>Subgrade</td>
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NCAT Test Track Sections

• No observable surface distresses for any of the sections after 20 million ESALs

• Perpetual type performance from Section S12
Section S12

- Recycled content
  - Layer 1 = 12.5%
  - Layer 2 = 30%
  - Layer 3 = 100%
  - Layer 4 = 100%

- Entire cross section
  - 80% recycled
I-64 Lane Widening Projects

• Segment I, 5.6 miles
  – Widen, overlay existing jointed concrete
  – Completed 2017

• Segment II, 7.08 miles
  – Widen, reconstruct
  – Estimated completion Spring 2019

• Segment III, 8.3 miles
  – Widen, reconstruct
  – Start Summer 2018, completion 2021
I-64 Lane Widening – Recycle Designs

• New lanes
  – Import crushed concrete or RAP
    • stabilize in FDR process
  – OGDL
  – CCPR
  – 4 inches asphalt surface

• Existing lanes
  – FDR existing base materials
  – OGDL, CCPR, 4 inches asphalt surface
Processed RAP, 100% Passing 12.5mm
#10s, Quarry Co-Generated Product
CCPR, 85% RAP, 15% #10s
SN = 7.08, $83/SY

12-inch AC

2-inch OGDL

8-inch Cement Treated Agg

Subgrade

SN = 7.06, $40-61/SY

4-inch AC

6-inch CCPR

2-inch OGDL

12-inch FDR/RC*

Subgrade
# I-64 Lane Widening – Recycle Designs

<table>
<thead>
<tr>
<th></th>
<th>Segment II</th>
<th>Segment III</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDR existing lanes</td>
<td>345,000 SY</td>
<td>229,000 SY</td>
</tr>
<tr>
<td>Cement treated concrete/RAP new lanes</td>
<td>146,000 tons</td>
<td>201,000 tons</td>
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<tr>
<td>CCPR</td>
<td>168,000 tons</td>
<td>196,000 tons</td>
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Total cost savings, about $15 million
Thank you!
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