Pavement Preservation Group Study

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Background

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

• GOAL:

Develop *independent* life-extending benefit curves for a range of pavement preservation treatments under varying traffic levels and climates
**PG Study Timeline**

**Summer/Fall 2012:**
Start 2012 Cycle
Treatments placed on LR 159

**Spring 2014:**
Treatments placed on Track

**Summer 2015:**
Start 2015 Cycle
Treatments Placed on US280

**Summer 2016:**
“North” Treatments placed in MN

**2015:**
NCAT – MnROAD Partnership Est.
PG Study Test Sites

Cold, wet, freeze

Hot, wet, no-freeze

Map of the United States with states colored to indicate climate conditions:
- Minnesota: Cold, wet, freeze
- Alabama (upper peninsula): Hot, wet, no-freeze
Record Temp. °F  South  North
Low  -7° (1985)  -48° (1996)
Average Annual Snowfall, in

<table>
<thead>
<tr>
<th></th>
<th>South</th>
<th>North</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>0.7</td>
<td>44.0</td>
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<table>
<thead>
<tr>
<th>Average Precipitation, in</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
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<tbody>
<tr>
<td>South Precip.</td>
<td>5.3</td>
<td>5.1</td>
<td>1.2</td>
<td>4.3</td>
<td>2.6</td>
<td>3.7</td>
<td>4.4</td>
<td>4.0</td>
<td>3.8</td>
<td>3.5</td>
<td>4.3</td>
<td>4.5</td>
</tr>
<tr>
<td>North Precip.</td>
<td>0.9</td>
<td>0.7</td>
<td>1.2</td>
<td>4.3</td>
<td>2.7</td>
<td>3.0</td>
<td>4.0</td>
<td>3.7</td>
<td>2.7</td>
<td>1.5</td>
<td>1.1</td>
<td></td>
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Source: weather.com
PG Study Test Sites

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<tbody>
<tr>
<td>Traffic volume</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>High</td>
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<tr>
<td>Avg. thickness, in</td>
<td>5.5</td>
<td>9.9</td>
<td>7.0</td>
<td>6.5</td>
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<tr>
<td>Section length, ft</td>
<td>100</td>
<td>528</td>
<td>528</td>
<td>528</td>
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<tr>
<td>No. Treated sections</td>
<td>23</td>
<td>34</td>
<td>22</td>
<td>21</td>
</tr>
<tr>
<td>Age when treated, yrs</td>
<td>14</td>
<td>9</td>
<td>6</td>
<td>6</td>
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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
Performance Monitoring

- Roughness (IRI)
- Rutting
- Macrotexture
- Crack mapping
- FWD
- Surface friction
- Permeability
THANKS!

Any questions?
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