NCAT Pavement Test Track

Reducing Reflective Cracking

NCAT Pavement Test Track and Lee Road 159
NCAT Pavement Test Track

- Top-down cracking in perpetual pavements
- Route/fill versus blow/band crack sealing
- Fatigue cracking in thinner structures
- Crack inhibiting interlayer treatments
- Pavement preservation on Lee Road 159
Perpetual Pavement Top-Down Cracking
Perpetual Pavement Top-Down Cracking
Perpetual Pavement Top-Down Cracking

Crack Map (Recent Cracks in Solid Red, Potential Reflective Cracks in Blue, Patches Outlined in Green, and Trucking Percent Complete via Height of Gray Map Date Box)

Approx. Cracked Areas:
- Lane: 21%
- LWP: 16%
- RWP: 22%

National Center for Asphalt Technology at Auburn University
Perpetual Pavement Top-Down Cracking

Untreated control

Blow and band

Route and fill
Fatigue Cracking in Thinner Structures

![Graph showing the relationship between Equivalent Single Axle Loadings (ESALs) and the percent of total lane area cracked for different materials.](image_url)
Track Micro Surface

11.7 million ESALS...
Track Thinlay

11.7 million ESALs...
Healing via Rejuvenating Scrub Seals
Crack Inhibiting Interlayers
<table>
<thead>
<tr>
<th>Treatment</th>
<th>Applied Type</th>
<th>Date</th>
<th>Emulsion Grade</th>
<th>Target Emulsion Rate (GSY)</th>
<th>Measured Emulsion Rate (GSY)</th>
<th>Aggregate Type</th>
<th>Measured Aggregate Rate (PSY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>7 Chip Seal</td>
<td>8/8/2012</td>
<td>CRS-2HP</td>
<td>0.26</td>
<td>0.28</td>
<td>Granite</td>
<td>23.0</td>
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<tr>
<td>2nd</td>
<td>89 Chip Seal</td>
<td>8/8/2012</td>
<td>CRS-2HP</td>
<td>0.34</td>
<td>0.28</td>
<td>Granite</td>
<td>16.0</td>
</tr>
<tr>
<td>3rd</td>
<td>W10 Chip Seal</td>
<td>8/9/2012</td>
<td>CRS-2HP</td>
<td>0.15</td>
<td>0.14</td>
<td>Granite</td>
<td>15.0</td>
</tr>
</tbody>
</table>
12.5 mm Open Graded Interlayer (OGI)
12.5 mm Open Graded Interlayer (OGI)
Cracking-N13
Lee Road 159 Low Traffic Preservation

790k ESALs

70k ESALs
Lee Road 159 Low Traffic Preservation

% of Total Area Cracked in Both Lanes

- HMA Cape seal
- Virgin Thinlay
- Virgin Thinlay on CR Base
- Virgin Polymer Thinlay
- Ultra Thin Bonded
- 50% RAP Thinlay
- 5% RAS Thinlay
- Virgin HiMA Thinlay

MnROAD
National Center for Asphalt Technology
Summary

- Ideally mill to depth of top-down cracking
- Route/fill is best for standalone treatment, but...
- Blow/band is best for combination treatment
- OGI vs triple chip crack inhibiting interlayers...
- Fabric vs grid vs OGI+UF vs AZR vs double chip
- Thinlay on fatigue cracking has performed well
2018 TEST TRACK CONFERENCE
MARCH 27-29, 2018
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