Moisture Induced Stress Testing (MIST) to Evaluate Stripping Potential of HMA Pavements

AASHTO RAC/TRB
2013 Summer Meeting

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Why was the research performed?

- MaineDOT uses Hot Mix Asphalt pavement only – AND IT’S FALLING APART!!!
Why was the research performed?

- HMA pavements pass the Superpave criteria
- Concerns with aggregate quality, excessive dust & liquid asphalt quality
- Existing method for moisture susceptibility AASHTO T283, doesn’t catch our poor performers
Why was the research performed?

- **Existing method for moisture susceptibility** AASHTO T283, *doesn’t catch our poor performers*

- **And did I mention our HMA pavements are FALLING APART!!!**
What We Did

- Sampled Cores from one and two year old HMA projects
- Condition core samples in MIST
- Visual observations and testing on non-conditioned cores and conditioned cores
What we found...

MIST equipment provides a better tool for helping to ID poor performers.
RESULTS
## RESULTS

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Visual Sample Degradation*</th>
<th>TSR</th>
<th>BSG (Absolute percent change)</th>
<th>Resilient Modulus (Net percent change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbot Monson</td>
<td>Severe</td>
<td>0.89</td>
<td>1.71</td>
<td>-43.1</td>
</tr>
<tr>
<td>Dover Foxcroft</td>
<td>Minor</td>
<td>0.9</td>
<td>0.95</td>
<td>-11.9</td>
</tr>
<tr>
<td>Ellsworth</td>
<td>Minor</td>
<td>1.09</td>
<td>0.5</td>
<td>9.7</td>
</tr>
<tr>
<td>Harrison</td>
<td>Very Minor</td>
<td>0.97</td>
<td>0.57</td>
<td>14.3</td>
</tr>
<tr>
<td>South Portland</td>
<td>Moderate</td>
<td>0.92</td>
<td>0.54</td>
<td>-25.0</td>
</tr>
<tr>
<td>Turner</td>
<td>Very Minor</td>
<td>1.06</td>
<td>0.94</td>
<td>-36.7</td>
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</tbody>
</table>
CONCLUSIONS AND RECOMMENDATIONS

1. MIST conditioned samples can ID poor performers

2. The effects of MIST conditioning should be studied further to develop standards
Benefits

- MIST equipment can be used immediately to help ID potential poor performers
- MaineDOT to consider adopting MIST and save taxpayers $$$’s