MODOT Hot Topics

Dan Oesch, P. E.
Field Materials Engineer
Construction and Materials Div.

2015 Joint Annual Bituminous Conference/North Central Asphalt User Producer Group Technical Conference
Tack Coat

- Polymer Modified Emulsion (SS-1HP)
  - Extensive use last couple of years
- Non Tracking Tack
  - Being used in some projects
- Experimenting with Hot Asphalt Binder this year (PG64-22)

*Biggest Problem is keeping Tack on the Roadway.*
# Tack Coat

## Application Rates (Undiluted)

<table>
<thead>
<tr>
<th>Surface Type</th>
<th>Min Application Rate (gal/sq yd)</th>
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</thead>
<tbody>
<tr>
<td>New Asphalt Pavement</td>
<td>0.05</td>
</tr>
<tr>
<td>Existing Asphalt or Concrete</td>
<td>0.08</td>
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</tbody>
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Residual of 0.03 and 0.045 (gal/ sq yd)
Sealing Treatment Prior to Overlay

– Intended for Moderated to Severe Block Cracked Roadways

– Sealing Options (gal/sq yd)
  • Scrub Seal (0.25), Emulsion Membrane with Spray Paver (0.25), Seal Coat (0.28)
Missouri System

- 34,000 Miles of Roadway
- 3 Types of Dense Graded Asphalt Mixtures

Low Type Mixes (< 600 Trucks)

1) Surface Leveling (Farm to Market Roads)
   - 1 Inch Lift, 3 Passes with Roller
2) Bituminous Pavement and Base (BP & BB)
   - Greater Amount of Testing, Including Density

High Type Mixes (> 600 Trucks)

3) Superpave Mixes
   - Volumetric Production Testing, Including Density
Concern

- Cold Winter in 2014
- Experienced some Premature Cracking
  - Predominantly **BP Mixes**
- Finding High In-Place Binder Grades
BP Mixes

Reduce Virgin Binder Low Temperature by One Grade
- 10% Binder Replacement from RAS
- 20% Binder Replacement from RAP

Verification of Final Binder Grade Required for Mix Approval
- > 20% Binder Replacement from RAS
- > 40% Binder Replacement from RAP
Concern

- Difficult to Obtain the True Gsb for RAP or RAS
- Using RAP Gse to Calculate Combined Gsb
  - Slightly Inflated VMA
  - Slightly Drier than Intended Mix

\[
\text{Gse} = \frac{100 - \text{Pb}}{\text{Gmm}} - \frac{\text{Pb}}{\text{Gb}}
\]

\[
\text{VMA} = 100 - \frac{\text{Gmb} \times \text{Ps}}{\text{Gsb (Combined)}}
\]
Changes

Low Type Mixes
- Carry RAS Gravity Recommendation from 2013 Joint Surface Leveling Team to BP/BB Pavement mixes.

  RAS Gsb = 2.600

- Use 0.98 Correction for RAP with All Low Type Mixes

  RAP Gsb = RAP Gse x 0.98

BP & BB Mixes
- Minimum VMA Increase of 0.5 at 40% Virgin Effective Binder Replacement for 401 Mixes
High Friction Surface Treatment
Calcined Bauxite Aggregate and a Polymeric Resin
High Friction Surface Treatment

- Polymeric resin binder system used to bind the ¼ inch high friction aggregate.

- Used for Spot Treatments
  - Geometry, Poor Drainage, Short Stopping Distances

- HFST is **NOT** a Preventative Maintenance Treatment.
Questions