Long Life Asphalt Pavement, 6.3 mm Thinlay Asphalt, and Tack Status

Neal Fannin
Pavement Materials
CMD
LLAP Construction Specifications

- **Pilot Specification Only Included SMA projects**
- **Rutting Test. (Hamburg Wheel tracking)**

- **Cracking Tests (DCT, IFIT, SCB, OT,**}
Current Pilot Projects

• District 2-0 – SR 0080 Sect. B34 (ECMS 82105)
  – Mill and overlay
  – Projected let – 7/2017

• District 10-0 – SR 0079 Sect. 247 (ECMS 91919)
  – Structural overlay
  – Projected Letting 11/2017

• District 11-0 – SR 0279 Sect. A83 (ECMS 87772)
  – Binder & Wearing Performance Related Testing only.
  – Projected Letting 1/2017

• District 2-0 – SR 322 Section B06 (ECMS 96820)
  – LLAP or LLCP alternate bid.
Research Needed

• Research project will be proposed in order to:
  
  – Better define the cracking and rutting behavior of current asphalt mixtures in PA.
  
  – Define testing protocols and limits needed to establish a reasonable specification.
  
• Not a quick process.
6.3mm Thin Asphalt Overlay
(Thin Hot Mix Asphalt Overlay or Thinlay)
Specification features

• New Section 412 in Pub. 408
  – SUPERPAVE MIXTURE DESIGN, CONSTRUCTION OF PLANT-MIXED HMA/WMA 6.3MM THIN ASPHALT OVERLAY COURSES

• Pub 242 changes
  – Usage guidance in chapter 5.
  – Changes to add this new material to chapters 9, 10, 11, & 12.
Specification features

**Aggregates: Changes to Section 703**

- **SRL**
  - **Coarse Aggregate** – SRL as listed in Bulletin 14.
    - **AASHTO #89 and #9** Being added to Section 703.
    - **AASHTO #9** Need to be sampled and pass quality and SRL testing to be used in 6.3mm asphalt.
    - **AASHTO #89** Will be approved based on the AASHTO # 8 quality and SRL test results.

- **Fine aggregate** –
  - **Manufactured fine aggregate** must be manufactured from the same parent rock as SRL rated coarse aggregate.
  - **Natural Fine Aggregate** – Must be sent for SRL determination.
• **Design Gyrations** for all roadways = 75

• **Design VMA** = 16.5% minimum

• **Drain down test** (AASHTO 305) required for mixes with greater than 7.0% asphalt content.

• **RAP & RAS**
  – No RAP or RAS allowed

• **Binder Grade** is **PG 76-22 only**. Possible future inclusion of PG 64-22.
Specification features

• **Mixture Acceptance:**
  – **Certification or Lot.**
    • Lot acceptance includes
      – Asphalt content.
      – Percent passing 200 sieve.

• **Density Acceptance:**
  – Optimum rolling pattern
Thinlay Compaction

PaveCool 3.0 Report

Project: 6.3mm Thinlay

<table>
<thead>
<tr>
<th>Date &amp; Time</th>
<th>Start Rolling*</th>
<th>Stop Rolling*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/3/2017 9:25 AM</td>
<td>2 minutes (248 °F)</td>
<td>15 minutes (175 °F)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mix Type</th>
<th>Binder Grade</th>
<th>Thickness</th>
<th>Delivery Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fine/Dense</td>
<td>PG 76-22</td>
<td>1.00 in.</td>
<td>300 °F</td>
</tr>
<tr>
<td><strong>Air Temp.</strong></td>
<td><strong>70 °F</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wind Speed</td>
<td>5 mph</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sky</td>
<td>Clear &amp; Dry</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Existing Surface</th>
<th>Moisture</th>
<th>State</th>
<th>Surface Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td></td>
<td></td>
<td>110 °F</td>
</tr>
</tbody>
</table>

Mix Temperature, °F

- Cooling Curve
- Start Rolling
- Stop Rolling

15 Minutes
New Tack Coat Specification Requirements
Section 460
Change to Application Rate

- Application Rate depends on surface placed on.

<table>
<thead>
<tr>
<th>Surface Type</th>
<th>Uniform Asphalt Residue Rate (RR) (Gallons per square yard)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Bituminous Paving</td>
<td>0.03 to 0.05</td>
</tr>
<tr>
<td>Existing Bituminous Paving</td>
<td>0.04 to 0.07</td>
</tr>
<tr>
<td>Milled Surface (Bituminous &amp; PCC)</td>
<td>0.04 to 0.08</td>
</tr>
<tr>
<td>Portland Cement Concrete</td>
<td>0.04 to 0.07</td>
</tr>
</tbody>
</table>
A standard special provision (SSP) will be included on all projects with asphalt items let after February 16, 2017. Districts are encouraged to accept a no cost change to the new specification on existing contracts when proposed by contractors.
Status

• Meeting held with PAPA, PAMMA, and PADOT on Friday 7/28/17.
  – Districts surveyed, and 6 of 11 Districts responded to date.
    • Of over 300 projects reported 3 major issues were reported.
    • 23 minor issues reported.
  – Although there have been some very notable tracking problems in the state, most projects are having no more difficulty with tracking than with the previous specification.
• PAMMA / PADOT working on several outreach initiatives.
  – One page quick reference for drivers and paving crews being worked on.
  – Working with PADOT to develop training for paving crews and inspectors.
  – Encourage Districts to make this a subject for winter school.
  – Encourage paving contractors to make this part of their winter training.

• May make minor changes to application rates but these need to stay in line with FHWA guidance.
Questions?