Warm Mix Asphalt (WMA) Implementation

Steven L. Koser, P.E.
Chief, Roadway Management

March 14-16, 2016
Warm Mix Asphalt (WMA)

• What is WMA?
HOT MIX vs WARM MIX
**Warm Mix Asphalt (WMA)**

<table>
<thead>
<tr>
<th>Class of Material</th>
<th>HMA Minimum</th>
<th>HMA Maximum</th>
<th>WMA Minimum</th>
<th>WMA Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG 58-28</td>
<td>260</td>
<td>310</td>
<td>215</td>
<td>310</td>
</tr>
<tr>
<td>PG 64-22</td>
<td>265</td>
<td>320</td>
<td>229</td>
<td>320</td>
</tr>
<tr>
<td>PG 76-22</td>
<td>285</td>
<td>330</td>
<td>240</td>
<td>330</td>
</tr>
</tbody>
</table>

From Pub. 408, Section 409 (HMA) and 411 (WMA)
Warm Mix Asphalt (WMA)
Warm Mix Asphalt (WMA)

• How do we get to 100% WMA?
• District Plans
• Potential Issues
WMA Usage – Nationwide

- Nationwide use of WMA
- Based on 2014 NAPA Industry Survey
WMA Usage - PA

Asphalt Producers Sampled in 2015

- Asphalt Producers sampled either with HMA or WMA = 123 (125 in 2014)
- Asphalt Producers sampled with WMA = 86 (63 in 2014)
- Percent of Total Asphalt Producers sampled with WMA = 86/123 = 69.9% (50.4% in 2014)

Source: CAMMS

Pennsylvania Department of Transportation
Increase Use of Warm Mix Asphalt

*Projections
Focus Areas: HMA vs. WMA Standard Const. Individual Core Density

2015 Statewide % of HMA & WMA Cores with X% Density [Std. Lots (409A)]

Normalized % of Total

% Density of Individual Cores - Wearing

Wearing Course Density Data from eCAMMS.
Focus Areas: HMA vs. WMA RPS Const. Individual Core Density

2015 Statewide % of HMA & WMA Cores with X% Density [RPS Lots (409B)]

- HMA
- WMA

% Density of Individual Cores - Wearing

Wearing Course Density Data from eCAMMS.
Warm Mix Asphalt (WMA)

Questions?