Asphalt Pavement Highlights

53rd Annual Idaho Asphalt Conference
Moscow, Idaho
October 24, 2013

Butch Wlaschin, P.E.
Director, FHWA Office of Asset Management
Pavements and Construction
Overview

- MAP-21
  - New Rules
  - Asset Management
  - Pavement Performance
- Asphalt Pavement Activities
- EDC2
- SHRP2
MAP-21

• 2 year Bill with 5 years of activities

• Continued funding
• Fewer funding programs
• Increased flexibility
  • New provisions

• 9 new rules
  • Asset Management and Pavement Performance
MAP-21

• Asset Management
  • Business approach to managing highway infrastructure
  • Preservation of existing pavement and bridge assets
  
  • Stated goal and vision
  • Inventory and condition assessment
  • Gap analysis
  • Lifecycle cost and risk assessment
  • Financial Plan
  • Investment scenarios
MAP-21

• Rule includes new minimum criteria for pavement and bridge management systems

• Must lead to a program of projects that will be used in STIP and TIP along with HSIP, CMAQ, Freight etc
MAP-21

• Draft completed
• Undergoing legal review

• Should be published late in the year
• 60 day comment period
• Final rule Early summer 2014

• Phased approach
MAP-21

• Pavement Performance

• Establish a method to assess the condition of the pavement on the Interstate and NHS

• Set minimum standards for the condition of the pavement on the Interstate
MAP-21

- Assess the condition of the pavement
- 43000 miles of Interstate
- 177000 miles of NHS

- Could we just use IRI?

- What does it mean?

- Can we assess I-90 or I-84 from one end to another consistently?
MAP-21

- HPMS – PMS
- HPMS reporting tool
- PMS a management tool
- Good – fair – poor
- 95 – 170 / 220
MAP-21

- PMS often includes IRI, rutting, cracking, faulting
  - Weighted
  - Non-weighted

- Matrix
- Uniform segments
- Both directions / 100% coverage
MAP-21

• Lane miles
  • 2 lane / 4 lane / 16 lane?

• VMT – law only wants to look at lane miles

• HWA – PCC – Composites?
MAP-21

- Equipment
  - Calibration Centers
  - Driver certification
  - QC/QA
- Analysis tools
- Legacy data

- 3rd generation?

- Maximum ‘poor’ condition of Interstate
MAP-21

• Draft rule completed
• Legal review
• NPRM early 2014
• 90 comment period
• Final rule late 2014
Asphalt Materials Lab Field Support

- Focus on Emerging Technologies - New asphalt binder modifiers, high recycled asphalt, warm mix asphalt, recycled shingles, ground tire rubber
- Field Data QC/Testing
- Use/Demo Emerging Test Devices
- POC: Matthew Corrigan
Asphalt Mix Design & Testing

• Mix Design Manual - NCHRP 9-33

• Asphalt Mix Performance Tester (AMPT)
  • Refined under NCHRP 9-29
  • Provides Pavement ME Design input
  • Dynamic Modulus $E^*$ | and Flow (Fn)
  • Fatigue Testing protocols

• POC: Jeff Withee
Reclaimed Asphalt Pavement & Recycled Asphalt Shingles

• Guidance on use of High RAP +25%
• Guidance on RAS Usage
• Ongoing NCHRP Research Studies
• Update AASHTO Test Standards
• Usage: NAPA Member Survey
  http://www.aspahlttpavement.org/
• POC: Lee Gallivan

Website: www.moreRAP.us
RAP Usage in HMA/WMA

Percentage of Total Mix Production in

<table>
<thead>
<tr>
<th>Total mix: HMA/WMA (million tons)</th>
<th>358.4</th>
<th>359.8</th>
<th>366.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>19%</td>
<td>20%</td>
<td>22%</td>
</tr>
<tr>
<td>67.2 million tons</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>73.5 million tons</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2011</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>79.1 million tons</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2012 data being collected</td>
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</tbody>
</table>
RAS Usage in HMA/WMA

**Total RAS tons used for mix production**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total RAS tons used (thousand tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>701</td>
</tr>
<tr>
<td>2010</td>
<td>1,099</td>
</tr>
<tr>
<td>2011</td>
<td>1,192</td>
</tr>
<tr>
<td>2012</td>
<td>Data being collected</td>
</tr>
</tbody>
</table>

Total asphalt mix: 358.4, 359.8, 366.0 (million tons)
Warm Mix Asphalt Initiatives

- Guidance on use of WMA
- Regional Training
- On-going and Proposed Research Needs
- Recommendation for AASHTO Test Standards
- EDC Technology and Industry Focus

http://warmmixasphalt.com

- POC: Matt Corrigan
WMA Usage in HMA/WMA

Percentage of Total Mix Production in

<table>
<thead>
<tr>
<th>Year</th>
<th>2006 WMA trials begin</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012 data being collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total HMA/WMA mix: (million tons)</td>
<td>358.4</td>
<td>359.8</td>
<td>366.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>16.8 million tons</td>
<td></td>
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<tr>
<td>2010</td>
<td>41.1 million tons</td>
<td></td>
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<td></td>
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<tr>
<td>2011</td>
<td>68.7 million tons</td>
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Note: Data for 2012 indicates a significant increase in WMA usage compared to previous years.
Ground Tire Rubber, GTR

• GTR blending study – size, source, %
• Evaluate GTR modified binders to the Superpave Performance Grading system.
• GTR size will effect test results
• Careful formulation is needed to meet all current asphalt binder standards.
  — but it can be done successfully
• POC: John Bukowski
**In-Place Recycling Technologies**

- Basic Asphalt Recycling Manual (Currently being updated by FHWA and ARRA for release in 2013)
  - Hot In-Place Recycling (HIR)
  - Cold In-Place Recycling (CIR)
  - Full Depth Reclamation (FDR)

- FHWA-NHI Training Course # 131050 (Asphalt Pavement In-Place Recycling Technologies)
  - Web Based Training
  - Instructor Lead Training (2-days)

- POC: Lee Gallivan
Quality Assurance

• State Programmatic Stewardship Review
  • Title 23 CFR Part 637
  • Since 2003 – 39 States

• QA Assessment - Average index score nationwide for materials quality assurance systems – 2013 75% target

• Information - Technical Advisory T 6120.3, FHWA-RD-02-095, FHWA-HRT-04-046, NHI Course 134042, TB FHWA-HIF-12-045

• Lab Accreditation

• POC: Rafalowski/Dvorak
EDC2

• Accelerated Bridge Construction
• Slide in Bridge Construction
• 3D Modeling
• Intelligent Compaction
SHRP2

- RENEWAL
- R26 – Preservation on High Volume Roadways
- R05 – Precast Concrete
- R21 – two lift pavement
- R23 – extended life for existing pavements
Discussion / Comments / Questions