LTPP SPS-10: Warm Mix Asphalt (WMA) Overlays of AC Pavements

FHWA Asphalt Mixture ETG
September 17, 2015
Oklahoma City, Oklahoma

Jim Musselman
Florida DOT
Background

• Need to investigate long-term performance of WMA
  – Higher potential for rutting?
  – Increased risk of moisture damage?
• Compare WMA to HMA
• Compare various WMA technologies
• Investigate inclusion of RAP in various quantities
# Experimental Design

<table>
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<th>WMA Technology</th>
<th>Core Test Sections on Project</th>
<th>Wet</th>
<th>Dry</th>
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<td>HMA (Control)</td>
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<tr>
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<td>WMA (Foaming Process)</td>
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<td>WMA (Chemical Additive)</td>
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- **WMA Technology**: High Low High Low High Low High Low
- **Core Test Sections on Project**: HMA (Control), WMA (Foaming Process), WMA (Chemical Additive)
- **Wet**: Freeze High, No Freeze Low
- **Dry**: Freeze High, No Freeze Low
- **Projects**: 16 Projects
Status of LTPP SPS-10

- **Nominated**
- **Constructed**
- **Rejected**

**States and Statuses:**
- AZ-2 2016 Both
- FL Spring 16
- ON Summer 16
- NV Spring 16
- OK Fall 15
- OR Fall 15
- GA Spring 16
Southern Region

- New Mexico - I-40 *(Constructed October 2014)*
  - WMA with chemical additive (Cecabase)
  - WMA with chemical additive (Cecabase) and PG 70-28+ binder (standard binder is PG 70-28 binder)

- Texas - US-277 *(Constructed February 2015)*
  - No Supplemental Sections
Southern Region

• Oklahoma - SR-66 (Fall 2015)
  – Stone matrix asphalt with chemical WMA additive
    • No fibers, RAP, or RAS
    – PG 64-22 binder with 10% - 25% RAP/RAS
      • standard binder is PG 70-28
    – PG 58-28 binder with 10% - 25% RAP/RAS

• Georgia – US-84 (Spring 2016)
  – 1.5” overlay (standard overlay is 2”)

• Florida – SR-77 Jackson County (Spring 2016)
  – Chemical at HMA temperature
  – Foaming with >35% RAP
  – Chemical with >35% RAP
Western Region

• Washington: *(Constructed Summer 2015)*
  – 1 HMA section with ½” NMAS and 60 gyration mix
  – 1 foaming section with ½” NMAS and 60 gyration mix,
  – 1 HMA section with 3/8” NMAS and 100 gyration mix,
  – 1 HMA with 3/8” NMAS and 60 gyration mix

• Arizona: (2016) - Both projects will have the same supplemental test sections
  – 1 foaming section with increased RAP,
  – 1 chemical section with increased RAP,
  – 1 HMA with increased RAP.
Western Region

- Nevada: (Spring 2016)
  - 1 organic WMA section,
  - 1 foaming additive,
  - 1 foaming additive with TBR (terminal blend rubber),
  - HMA with TBR

- Oregon: (Spring 2016)
  - 1 foaming section produced at hot mix temperatures,
  - 1 HMA section with increased RAP
North Central Region

• Manitoba: *(Constructed August 2015)*
  – HMA Control Section
  – WMA with Foaming process
  – WMA Foaming process with chemical additive
  – WMA with chemical additive 0.3% Evotherm
North Atlantic Region

• Ontario (2):
  – WMA Chemical Additive test section (Rediset),
  – WMA Organic Additive test section (SonneWarmix).
Summary

• 13 of the 16 projects have been selected
  – 5 Western Region
  – 5 Southern Region
  – 2 North Atlantic Region
  – 1 North Central Region

• 4 Projects completed
  – 2 will be constructed in late 2015
  – 7 in 2016

• No wet/freeze projects yet in the U.S. This has been a focus during state visits
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Thank You... Questions?