2017 APAM Conference
Hot Mix Asphalt (HMA) Update

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Hot Mix Asphalt (HMA) Update

• Why Specification Changes?
• PWL Specification Changes
• Fine Texture Milling
• Material Transfer Device
• Longitudinal Joint Pilot Project
• 30 Year Pavement Design
• Future Specification Changes
Why Specification Changes?

- HMA Peer Review
- Legislative Influence (Roads Innovation Task Force)
- Department Goals (Innovation)
- Data Review
- Input from Industry, MDOT Field Staff, Local Agencies, Consultants, & FHWA
RITF - Comprehensive Public Report

- Evaluates road materials & construction methods
- Focuses on materials that may cost more in up-front spending but produce life-cycle savings
- Focuses on longer-term time frames that maximize value to taxpayers on total cost basis
- Includes a plan to achieve these targets
Public Act 175 of 2015

- Requires establishment of MDOT Roads Innovation Task Force (RITF)
- Requires RITF to produce comprehensive public report with specific requirements
- Release of funds after concurrent House & Senate resolution
PWL Specification Changes

• Bulk Specific Gravity
  • Sampling and Testing on Jobs with IPLs
  • Impact on VMA and Overall Pay Factor
• Vibratory Exclusion Areas
  • Regress to 2.5% air voids
  • 1000 ton threshold (if not identified on plans)
• Table 3 (Specification Limits)
  • Tighter limits on VMA, Binder Content, Air Voids, and Density (92.5%)
• Table 4 (QC/QA Limits)
  • Suspension Limits for Air Voids and VMA now +/- .9
• Single Test Acceptance
  • Address small quantities of hand patching
  • Binder content pay formula changed
Fine Texture Pavement Milling

- Consider for use on one course, non-freeway mill and resurface
  - Integrity of the existing pavement makes it suitable to allow traffic to be maintained on a milled surface for up to 72 hours
  - It is desirable to expedite the project schedule and/or increase production paving

- The milling machine must be configured with either a 0.3 inch tooth spacing, a 0.6 inch tooth spacing operated at a maximum speed of 40 feet per minute, or approved equal configuration and speed capable of meeting ASTM E 965 testing requirements (maximum macro texture of .08 inches)

- Milled area is free from gouges, continuous grooves, ridges and has a uniform texture
Material Transfer Device

• Rehabilitation and Reconstruct – 7,500 Tons

• Gap Graded SuperPave
  • R&R and CPM
  • 5,000 Tons

• For limited access routes with intersections and at grade crossings the project Maintenance of Traffic (MOT) must close all intersections and at grade crossings during paving operations

• Language to address shoulders with inadequate base conditions
Longitudinal Joint Pilot Project

• US-127 University Region
  • One Course Mill and Resurface
  • Four Test Sections (3 longitudinal joints)
    • Joint Adhesive
    • Double Bond Coat
    • PG Binder
    • Longitudinal Joint Sealer
Density History:

- 2009- Informational Average Density 89.8
- 2011- Pilot 90.7
- 2012- FUSP 91.6
- 2013- FUSP 92.4
- 2014- FUSP 92.2
- 2015- FUSP 92.3
- 2016- FUSP 92.6
Longitudinal Joint
30 Year Pavement Design

- HMA Reconstruct on US-131 Grand Region Kent County
  - MEPDG Design – 30 Year Traffic
  - 2 Feet of Free-Board for Underdrain Outlets - Drainage
  - Additional Depth of Base Material – Frost Protection
  - Increased Ride Quality
  - 93% Density
  - Film Thickness Requirement
  - Limit Fines to Effective Ratio During Production
  - Gap Graded Superpave
  - Material Transfer Device
Additional FUSP Changes

• Minor Changes to:
  • FUSP 501J (ACCEPTANCE OF HOT MIX ASPHALT MIXTURE ON LOCAL AGENCY PROJECTS)
    • Air Void Regression
  • FUSP 501Z (WARM-MIX ASPHALT PERMISSIVE USE)
    • 250 Degrees (Water Foaming)
    • 225 Degrees (Chemical Additives)
  • FUSP 501G (RECYCLED HOT MIX ASPHALT AND RECYCLED ASPHALT SHINGLES IN SUPERPAVE MIXTURES)
    • Tier 1 Blending Charts
Future Specification Changes

• Cold Milling HMA

• Deletes section 501.03 A.1 of the spec book and replaces with new equipment requirements for cold-milling machines

• Adds additional language to section 501.03 (preparation of existing pavement) C.5 which limits horizontal gouge to 1" and adds mean texture depth requirement

• Adds requirement for a Cold-Milling Quality Control (QC) Plan and Cold-Milling Operations Plan
Cold Milling QC Plan

• The schedule for replacing the cutting teeth.
• The daily preventive maintenance schedule and checklist.
• Proposed use of automatic grade controls.
• The surface testing schedule for smoothness.
• The process for filling distressed areas.
• The schedule for testing macrotexture of the milled surface.
• Corrective procedures if the milled surface does not meet the minimum macrotexture specification.
• Corrective procedures if the milled surface does not meet the minimum transverse or longitudinal surface finish when measured with a 10 foot straightedge.
• The methods for Longitudinal control guidance (painted string line or measure offs).
Cold Milling Operations Plan

• The number, types and sizes of mill machines to be used.
• The width and location of each mill machine pass.
• The number and types of brooms and or vacuum trucks to be used and their locations with respect to the mill machine.
• The proposed method for mill machine and wedging around existing structures such as manholes, valve boxes, and inlets.
• The longitudinal and transverse typical sections for tie-ins at the end of the day.
• If requested by the Engineer, a plan sheet showing the milling passes.
Cold Milling HMA
Acceptance of HMA on Local Agency Projects:

- Move Towards Volumetric Testing
- Air Voids? VMA? Other?
- Doesn’t Necessarily Mean SuperPave
- Warranties
Future Specification Changes

• 50 Year Pavement Design
• Continue on Peer Review Items
• 2020 Standard Specifications for Construction
  • Co-chairs Selected
  • Kick-off Meeting Held
QUESTIONS?
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