

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



U.S. Department
of Transportation
Federal Highway
Administration



- 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



Longitudinal Joint 12SP501Y

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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