

Eastern Region Update - 2011



Merrill Zwanka, P.E.
South Carolina DOT
Savannah, Georgia

Changes/Updates to Specifications

- South Carolina**
- RAP Mixes - changed to percent aged binder instead of percent RAP
 - WMA – Jan 2012 revision –
 - Allows LASA in WMA where allowed normally in HMA
 - Requires field ITS testing prior to production with foaming plants
 - Allows more mix types to use WMA
 - Liquid Anti-stripping additives (LASA)
 - Dosage changed from 0.5% to 0.7%
 - Field ITS now every 30 days (was every 5 days)

Survey of SEAUPG states

- Eastern Region**
- North Carolina
 - South Carolina
 - Virginia
 - West Virginia



Changes/Updates to Specifications

Virginia

Recently developed a specification for porous friction courses using crumb rubber for use in a research study evaluating quiet pavement technology where asphalt rubber mix is part of the study.

Changes/Updates to Specifications

North Carolina

- Oct. 2011 Letting (new 2012 Spec. Book) will have provisions allowing usage of Post-Consumer Asphalt Shingles
- Use of IRI will begin in 2012
- MTV usage will be expanded to *"...all surface mix regardless of binder grade placed on Interstate and US routes that have four or more lanes and median divided"*
- GTR is on the radar - looking for pilot project(s) for 2012
- Changed Binder Pay Items to: "Asphalt Binder for Plant Mix" & "Polymer Modified Asphalt Binder for Plant Mix." This was done to remove specific grade pay items.

Changes/Updates to Specifications

West Virginia

Given the decrease in Superpave Gyration levels from 2010 changes and the resulting increase in VMA and AC contents - no longer requiring arbitrary addition of 0.5% AC for bottom lift in perpetual sections.

Number of tons of HMA, Chips Seals, etc. placed in the last year

North Carolina

- HMA tons placed is about 4.5 million tons (as of Aug 2011).
- As of Sept. 30th force account AST was 31,575,132 sq. yds. (2,820 centerline miles; many Divisions plan to run 2 or 3 more weeks. Therefore will surpass highest production year and place 3,000 centerline miles.)
- Also, several Divisions have let chip seal contracts this year. In the past, State forces have done most all of the AST preservation work, so the square yards placed in these contracts are in addition to what will be the highest AST production year to date.

Number of tons of HMA, Chips Seals, etc. placed in the last year

Virginia

In 2011, will have placed in excess of 2,000,000 tons of HMAC.

West Virginia

HMAM – 2,030,000 Tons
Chip Seal – 20,000 Tons

Number of tons of HMA, Chips Seals, etc. placed in the last year

South Carolina

Item	Quantity (2011)	
HMA Base Courses	184,029	TON
HMA Intermediate Courses	371,164	TON
HMA Surface Courses	2,145,515	TON
Total HMA	2,700,708	TON
Preventative Maint. Surface Treatment	1,401,932	SY
Single Treatment	3,282,054	SY
Double Treatment	171,265	SY
Triple Treatment	342,559	SY
Total Treatment	3,795,878	SY
Open-Graded Friction Course	86,529	TON
Micro Surfacing Surface Course	631,878	SY
Micro Surfacing Leveling Course	789	TON
WMA Surface Courses	65,547	TON

Affect funding shortages have had on HMA tonnage

North Carolina

- As shown previously, HMA placement will top out at about 6.5 million tons. (Total for 2010 ~7.5 million tons).
- Stimulus work sustained things through most of 2010 and early 2011.
- However, the approved state budget of 2011 included additional funding that will add \$90-100 million per year for the next 3 years.

South Carolina

- HMA tonnage down from 9.3M tons to 2.7M tons (2010)
- Surface Treatment down from 11M SY to 3.8M SY
- PMTLSC – Up from 460,000 to 1,400,000 SY

Number of tons of HMA, Chips Seals, etc. placed in the last year

South Carolina

Item	Quantity (Reported in 2010)	
HMA Base Courses	184,029	TON
HMA Intermediate Courses	371,164	TON
HMA Surface Courses	2,145,515	TON
Total HMA	2,700,708 (9,300,000)	TON
Preventative Maint. Surface Treatment	1,401,932 (600,000)	SY
Single Treatment	3,282,054	SY
Double Treatment	171,265	SY
Triple Treatment	342,559	SY
Total Treatment	3,795,878 (11,000,000)	SY
Open-Graded Friction Course	86,529	TON
Micro Surfacing Surface Course	631,878 (870,000)	SY
Micro Surfacing Leveling Course	789	TON
WMA Surface Courses	65,547 (106,000)	TON

Affect funding shortages have had on HMA tonnage

Virginia

In 2011, there were no real impacts due to a recent bond package passed by legislation, is expected to hold steady for 2012 as well.

West Virginia

A combination of materials cost increases and funding shortages have led moving to lower cost options. See maintenance/preservation question reply coming up...

Experiences with WMA

North Carolina

- Continue the use of WMA in NCDOT. As of Aug 31, 2011, WMA tons placed in 2011 = ~ 752,000 tons.
- Double-Barrel Green, Gencor, and Evotharm 3G continue as the most widely used technologies - with many others having been used
- Remain concerned about WMA's compatibility with Shingles
- Currently limit by specification the use of WMA to US routes and lower. But, continue to actively seek Interstate pilot projects. For more info see: <http://www.ncdot.org/doh/operations/materials/pdf/wma.pdf>

Experiences with WMA

West Virginia

- Only experience has been with the water-injection system because many contractors have added this system to their plants.
- This past year, a total of 15 plants that routinely produce for WVDOH projects had water injection capabilities
- Have placed approximately 225,000 tons statewide, although there has still been concern to start using it in some areas.
- No major problems so far, some mixes such as sand mixes have been unable to be placed at the lower temps, but the foaming process still served as a compaction aid.
- Other issues as typical with traditional HMA.

Experiences with WMA

South Carolina

- WMA Specification – revised for January 2012 lettings
- Starting to do some mid-higher volume primary routes
- Planning to give contractors an option in lieu of requiring WMA – choose between WMA or HMA based on what is best for them.
- QPL with foaming and terminally blended additives (currently only 3G Evotharm)

Is state moving towards or implementing the MEPDG with RAP?

North Carolina Yes. The vast majority (>95%) of the mix placed in NC contains RAP, therefore, the local calibration research that has been done with NC State University included recycled mixes.

South Carolina Not specifically. At the moment the MEPDG is not being used for pavement design. Even if used, would not know RAP source at time of pavement design. May assume RAP for most mixes during design.

Experiences with WMA

Virginia

- WMA has been a permissive spec for 3 years and is commonly used now in all of the highway systems
- Not a separate pay item, thus do not track WMA qty, but est. 40% or more of the mixes used incorporate WM technology
- A growing concern is related to the use of RAP with WMA. Due to lower plant temperatures, there is some uncertainty as to whether the RAP liquid AC is actually being extracted from RAP and properly blended with the virgin AC to achieve the specified grade of binder (commonly PG70-22).
- The laboratory test to determine binder grade does not necessarily reflect what is happening in the field/plant.

Is state moving towards or implementing the MEPDG with RAP?

Virginia In the process of implementing MEPDG and are targeting 2013 for implementation.

West Virginia

- In the very early stages of implementing MEPDG.
- Have started using the FWD on a more widespread project level basis to try to document subgrade and layer values better.
- Want to work on developing more lab data to supplement FWD values. Been using PerRoad for almost four years to supplement the perpetual sections designed originally by Darwin '93. So this would represent initial mechanistic pavement designs.

Methods state has implemented to lower cost for maintenance, preservation or reducing pavement costs

- North Carolina**
- Have been emphasizing all the methods recommended by the NCPP - found that 3 to 5 years planning and execution of that plan has improved the pavement condition ratings and lowered maintenance/patching costs.
 - Preservation efforts include chip seals, slurry seals, Microsurfacing, crack sealing, fog seals, rejuvenator seals, thin asphalt overlays, and diamond grinding.

Methods state has implemented to lower cost for maintenance, preservation or reducing pavement costs

- West Virginia**
- Increased funding for low level ADT roads by \$5 million.
 - Have also been purchasing chip seal equipment for all districts so they have dedicated - leading to an even more increased emphasis on the use of chip seals and have now used a fog seal.
 - Purchased two pavers for state forces to perform isolated repairs on low volume roads
 - Used In-place recycling

Methods state has implemented to lower cost for maintenance, preservation or reducing pavement costs

- South Carolina**
- Using some thin lift applications:
 - Preventive Maintenance Thin Lift Seal Course (PMTLSC) – now allows LASA – placed ¾" loose behind screed
 - Thin lift HMA screenings mix (4.75mm)
 - Micro Surfacing Type II @ (20-22#/SY)
 - Surface Treatment w/ Lightweight aggregate and CRS-2P
 - Allowing more RAP without grade bumps

Do you have a performance related test for mixtures to use in the design or construction of HMA mixtures?

- North Carolina**
- As of 2006, NC has required that all Surface Mixes be tested using APA.
 - Will receive AMPT as part of Pooled Fund. May lead them to require certain MEPDG tests based on traffic level and/or mix type.

- South Carolina**
- No Hamberg in SC - have the capability with switching APA, but too much hassle to change wheels back and forth on one machine.
 - APA criteria on high volume mixtures only (64 degrees, 8000 cycles).

Methods state has implemented to lower cost for maintenance, preservation or reducing pavement costs

- Virginia**
- Increased the maximum limit of RAP to 30% in surface mixes 2 years ago.
 - Currently looking at and changing maintenance of traffic practices that are perceived to hinder paving operations.

Do you have a performance related test for mixtures to use in the design or construction of HMA mixtures?

Virginia For design - use APT. No real performance test is performed during construction.

- West Virginia**
- Not at this time.

How are you sampling/testing/accepting micros/chips/thin lifts. Etc.?

North Carolina

- Sampling aggregates at last point of stockpiling prior to mix production.
- Sampling emulsions at terminal under QC/QA Program and at project site.

How are you sampling/testing/accepting micros/chips/thin lifts. Etc.?

West Virginia

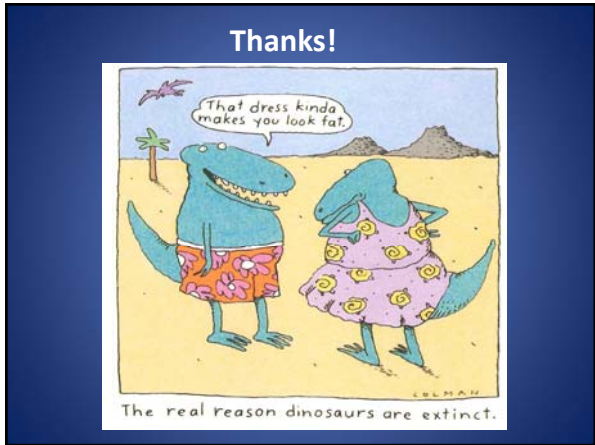
Sample/test thin lift HMA mixes the same way as all HMA mixes, except have started using control strips to develop density correction factors for nuclear gauge readings based on the values obtained from cores. This is currently being executed on all high volume (multi-lane road) projects.

Most chip seal work this past year was all handled by DOH forces. Did one contract fog seal job to help seal and rejuvenate an aged pavement prior to opening it to traffic.

How are you sampling/testing/accepting micros/chips/thin lifts. Etc.?

South Carolina

- Obtaining samples of the raw materials, (aggregate and emulsions), checking application rates in the field
- Placing PMTLSC ¾" loose on road – paid by the SY



How are you sampling/testing/accepting micros/chips/thin lifts. Etc.?

Virginia

- Sampling mixes for volumetrics, gradation, AC for thin lifts.
- Using min roller passes in the field, no density tests.
- Chip seals and micro is aggregate and emulsions are tested in lab.