

**Eastern Region Update - 2014**



**SEAUPG**  
Southeastern Asphalt User/Producer Group

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**Specification Changes - binders**



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**North Carolina**

- Decision was made to adopt the use of MSCR Recovery for modified grades only to replace Elastic Recovery test regionally by SEAUPG states.
  - No implementation date set.
- Have a Draft GTR specification. No pavement placed at this time. Still looking for pilot projects.
- Looking for ways to identify other additives (PPA, REOB, etc.), that are not currently allowed by our specifications.

**Specification Changes - binders**

**South Carolina**

- Asphalt Binder – Effective May 2014 Lettings:
  - MSCR added for PG 76-22 only (V grade @ 64° C)
- GTR terminal blended allowed for alternate PG 76-22 (ambient and cryogenic w/ -30 mesh, minimum of 7% GTR)
- PPA- permitted at maximum of 0.5%

**Specification Changes - binders**

**West Virginia**

- West Virginia does not currently have a specification for asphalt binder that requires the use of the MSCR test.
- WVa is still interested in moving to the MSCR test, but are still investigating .
- The state is running tests now and will make decisions on implementation before decisions on adopting MSCR.

**Specification Changes - binders**

**Virginia**

- Full adoption of MSCR in contracts beginning with December 2014 advertisements
- VDOT continuing to analyze the use of GTR, PPA, etc.

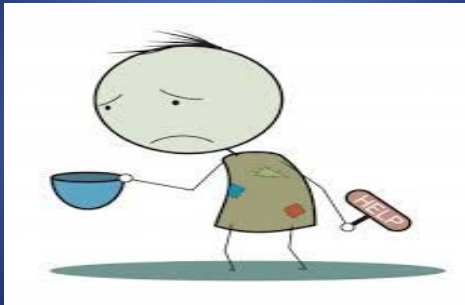
### Number of tons of HMA & WMA



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State	HMA (tons)	WMA (tons)
North Carolina	4.9 million <small>(from Jan. to Aug. 2014)</small>	430,500 <small>(from Jan. to Aug. 2014)</small>
South Carolina	~2 million (HMA & WMA)	
West Virginia	2.25 million (HMA & WMA)	
Virginia	~ 2.2 million (HMA & WMA) <small>(thru Aug. 2014)</small>	

### Funding



### Funding

#### North Carolina

- NC Legislature enacted a "Pavement Preservation Program".
  - A very specific legislation defining eligible and ineligible treatments, outsourcing targets through 2018 (directs NCDOT to increase use of paving industry), and reporting requirements.
- FY 2014-15:
  - Contract Resurfacing \$408 M
  - Pavement Preservation \$65 M
  - Bridge Program \$153 M

### Funding

#### South Carolina

- Same decline as in previous years, no gas tax increase since 1987.
- Roads continue to decline from good to worse.

### Funding

#### West Virginia

- Placing less tonnage.
- Started to do more preservation treatments including; micro-surfacing, chip seals and cape seals, and ultrathin overlays.

## Funding

### Virginia

- Virginia's General Assembly passed HB 2313 in 2013, increasing funds for transportation for first time since 1986.
- Expected to provide upwards of \$500M/yr for paving; however, those projections now appear closer to \$300-\$400 M.
- Commitment to pavements & bridges is still very high with leadership.

## Warm Mix – experience(s)



## Warm Mix – experience(s)

### North Carolina

- Specifications allow WMA at the Contractor's option.
- Tiered Approved WMA Technologies list
  - Limits use of technologies based on tonnage successfully placed in the state and by level of facility (state routes, US Highways, Interstates)
- NC has seen most of their Contractors choose to increase the mixing temperatures at which they produce WMA.
- NC has seen a steady DECREASE in the use of WMA technologies over the past 3 years.
  - Attributed mostly to the steady increase in the use of higher recycled binder (RAP & RAS) mixes.

## Warm Mix – experience(s)

### South Carolina

- On a major decline except for OGFC with WMA w/o fibers.
- Improves constructability at the plant and in the field, long term performance is still under review.

## Warm Mix – experience(s)

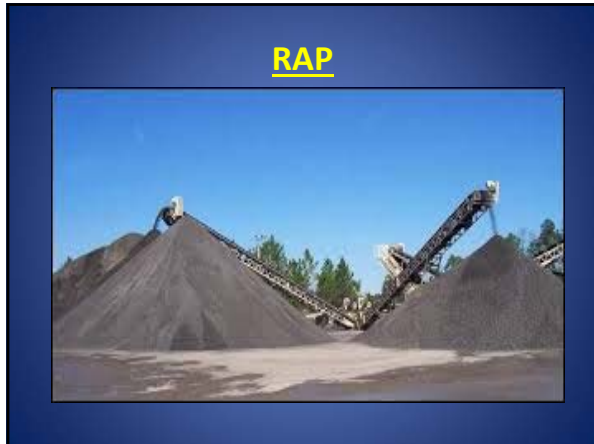
### West Virginia

- WVA has recently made an effort to remove the separation of HMA and WMA in our specifications.
  - It has been their experience that some producers are using some water foaming to reduce mixing temperatures
  - These reductions in temperature are not low enough to be considered warm mix.
- The foaming use in West Virginia is typically associated with long haul distances.

## Warm Mix – experience(s)

### Virginia

- Generally positive. Almost all hot mix is likely to use WMA technology – mostly foaming.
- VDOT does not track separately HMA vs. WMA.
- Used more frequently as a compaction add vs. "true" warm mix placed at lower temperatures.



**RAP**

**North Carolina**

- For ALL layers up to 20% RAP NO PG grade change required.
- For mixes using a design grade of PG 64 no grade change is required for 21-30% RAP.
- For mixes using a design grade of PG 70, grade change is required for 21-30% RAP: PG 70-22 >> PG64-22.
- For ALL layers, >30% RAP requires both fractionation of RAP and additional testing (blending charts) of the blended binder.
- RAP usage is capped at 50% for non-modified binder mixes. (RAP usage capped at 20% for dense-graded mixes using PG76-22.

**RAP**

**South Carolina**

- Base maximum of 35% binder replacement
- Intermediate up to 35% binder replacement
- Surface up to 30 % binder replacement
- No grade bumping requirements.

**RAP**

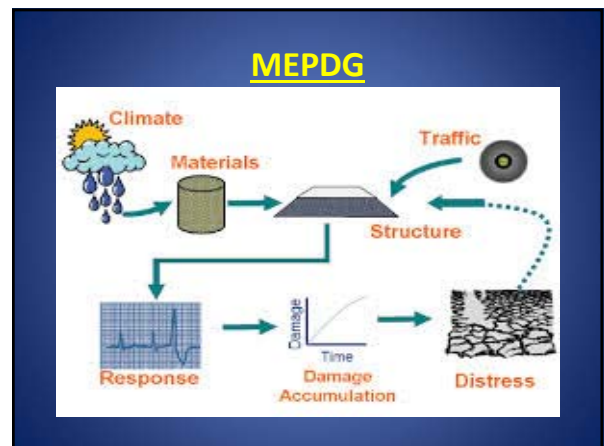
**West Virginia**

- Allow up to 15% RAP with no adjustment to the binder for all mixes.
- Up to 25% is allowed with a change in grade of binder.
- Anything above 25% requires blending charts.
- In the spring of 2014 allowed base mixes to use up to 25% RAP without a binder bump.
- Also allowed two projects to use 20% RAP on the surface course. Still evaluating the performance of these mixes.

**RAP**

**Virginia**

- Allows 35% for base and intermediate
- Allows 30% for surface
- No current requirements for binder-bumping; however, informally investigating the potential need to require softening of base binder.
- Interested in use of higher RAP; however, current research is not conclusive about long-term fatigue and durability at 40+%.



### MEPDG

#### North Carolina

- Using it on major projects.
- Continue to make updates as the software and input requirements change.
- NCDOT is using research findings and modifying failure criteria to get more reasonable results through local calibration projects.

### MEPDG

#### South Carolina

- Moving toward eventual use of MEPDG.
- Working on procurement of AMPT.
- Collecting data for research and going to continue with incoming mix designs for input values for MEPDG for SC.

### MEPDG

#### West Virginia

- Have not implemented MEPDG
- WVa is doing some mechanistic design, using PerRoad for flexible pavements

### MEPDG

#### Virginia

- Have developed a DRAFT Pavement-ME User Manual for use in Virginia.
- Have held training sessions for staff through 2014
- Required internal staff to perform shadow designs since Jan 2014,
- Currently focusing on establishing the performance targets as well as further refinement on local calibration (rutting and aggregate)

### Lowering costs / local street strategies



### Lowering costs / local street strategies

#### North Carolina

- Continue to look at expanded use of fog seals.
- Chip Seals using lightweight aggregate and modified-emulsions have been used for a number of years, and NC still seeing great benefits from them.
- Remains to be seen if mandated outsourcing will bring what NC hopes for: innovation and reduced costs.

**Lowering costs / local street strategies**

**South Carolina**

- Increased RAP contents, using finer mixtures with less coarse aggregate than in previous years.
  - However this may increase overall cost due to needing more asphalt binder.
- Considering using more natural sands with limitations.
- Continue using thin lifts 4.75mm, surface treatments, and microsurfacing to preserve if pavements are not too far gone and require more rehab!
- One county (Charleston) experimenting with porous pavement designs on low volume roads using a OGFC mixture.

**Lowering costs / local street strategies**

**West Virginia**

- Looking for pavements in good condition to perform preservation contracts on.
- WVa has started doing more competitive bidding of alternate treatments bidding a double course micro surface vs ultrathin asphalt overlay (70 psy, 75 blow sand mix)

**Lowering costs / local street strategies**

**Virginia**

- Increasing interest in use of 4.75mm mixes
- High interest in thin-lay possibilities from leadership.
- Considering recycling strategies –
  - Cold Central Plant Recycling
  - Cold In-Place Recycling
  - Full Depth Reclamation.

**Performance-related testing**



**Performance-related testing**

**North Carolina**

- APA rut testing is required for all surface mix types prior to approval of the mix design.
- TSR is required for all mix type prior to approval of the mix design and during production of the mix.
- Plans are to acquire AMPT and use in mix approval process for high-risk projects.

**Performance-related testing**

**South Carolina**

- SC is still using APA for rut testing.
- SC expects to have Hamburg soon, as well, to do comparison in the near future through ongoing research.
- Plans are to acquire AMPT and use in mix approval process for high-risk projects.

## Performance-related testing

### West Virginia

- No current performance-related testing for the design or construction of HMA mixes
- WVa is looking at implementation of performance specs for mix design.

## Performance-related testing

### Virginia

- Rut testing can be performed by VDOT as part of mix design approval
- TSR is required for all mix type prior to approval of the mix design
- Surface mixes required to pass permeability testing during mix design.
  - VDOT collecting field data on plant-run material in 2015.

## Tack & bond strength



## Tack & bond strength

### North Carolina

- NC continues to see very isolated problems with poor application of tack and subsequent de-bonding in those locations.
- Tack coat has been a point of emphasis in training for both Industry and Department personnel over the past 2-3 years.
- NC has used a setup similar to the NCAT de-bonding test in investigations in the past, but not as a routine production test.
- NC State University is currently performing research for NCDOT analyzing the bond properties of the tack products most widely used by NCDOT.
  - One product of this project would be a field test apparatus for evaluating potential bond strength of the tack placed just ahead of the paver (during actual laydown).

## Tack & bond strength

### South Carolina

- Considering a specification if construction practices are not improved.
- Lack of attention, especially at night, to tack coats not applied uniformly
- SC has procured a bond strength breaking head device, collecting info on current projects with conventional and low tracking tack-bond coats.

## Tack & bond strength

### West Virginia

- Tack coat placement is a hot topic for West Virginia at this time.
- WVa has issues with bond strength and have begun gathering data on cores from our higher level of service roadways.
- Testing the shear of cores along the interface of mats.
  - Finding that when we witness a poor tack coat in the field that the bond shear numbers are showing low strength as well. Glad to see that our test is showing us the expected correlation.

## Tack & bond strength

### Virginia

- Major point of concern & emphasis for Virginia going into 2015
- Program goal to review all areas through spring 2015:
  - Materials specifications
  - Handling & hauling
  - Construction practices
    - to include consideration of tack as a pay item & implementation of an end-result bond strength specification
- FHWA/Asphalt Institute workshop on December 5, 2014.

## Testing of surface treatments and thin-lays



## Testing of surface treatments and thin-lays

### North Carolina

- NCDOT specifications for Microsurfacing closely mirror ISSA guidelines.
- For Chip Seals, aggregates and emulsions are sampled under QC/QA programs that cover both suppliers.
  - (This will change NC outsources more and more of this work to begin sampling of aggregate and emulsions as close as possible to the final point of use).
- Thin Lifts fall under our Quality Management System for plant mix.
  - Continue to see increased use of S4.75 mix by field Divisions and expect that to increase even more as NC begins the legislatively-mandated Preservation Program.

## Testing of surface treatments and thin-lays

### South Carolina

- Microsurfacing – materials on QPL, accept on equipment of printouts
- Chip seals – materials on QPL, require calibration and checks for rates
- Thin lifts – QC tests at plant and checking pavement thickness during placement.

## Testing of surface treatments and thin-lays

### West Virginia

- Micro-surfacing accepted based on preliminary review of mix design, then application rate, ac and gradation.
- Chip seals accepted on application rates and gradation.
- Thin-lifts on mix design, then same as micro-surfacing.

## Testing of surface treatments and thin-lays

### Virginia

- Materials tested for aggregate quality and emulsion materials centrally.
- Field testing for application rates in the field by inspectors.
- SM4.75mm mixes tested in the lab for mix properties; however, no field density requirements for bulk cores as with conventional HMA.



Recycled pavement methods



Recycled pavement methods

North Carolina

- Full Depth Reclamation (FDR) is about the only one used on a regular basis at this time, and then only for those facilities that are good candidates.
- Cold Central-Plant Recycling (CCPR) is of interest to NC industry partners, but to date NC has only placed a small amount of tonnage on a temporary widening.

Recycled pavement methods

South Carolina

- SC widely uses Full Depth Reclamation (FDR)
  - with cement is widely used due to cost and due to soil conditions (mostly clay)
- No Cold-in-Place (CIR) or Hot-in-Place (HIR) yet.

Recycled pavement methods

West Virginia

- Have done some Full Depth Reclamation (FDR) and plan to start doing more.
- WVa is using Cold-in-Place Recycling (CIR) on a few projects now.
  - There were two projects contracted in 2013, three more in 2014, and plan to have at least three more for 2015.
- Will probably look more at Cold Central-Plant Recycling (CCPR) for future interstate jobs.

Recycled pavement methods

Virginia

- Since 2008:
  - FDR 11 Projects
  - CIR 4 Projects
    - 3 additional projects advertised, but not awarded (1 over estimate and 2 alternate designs not selected)
  - CCPR 2 Projects (one of which is underway)
- Currently developing CCPR, CIR, and FDR specifications for inclusion in permanent update of Road & Bridge specifications (target summer 2015)

Miscellaneous



## Miscellaneous

### South Carolina

- Need for more training - loss of experience in the field is very evident.
  - Becoming more difficult to find workers willing to work (learn trade) in hazardous conditions. Keep paving crews together (team effort) to obtain quality.
- Lane closure restrictions causing issues: increased amount of night work, increased safety concerns (visibility, etc.), issues with worker fatigue, and decreased mix quality of finished product.

## Miscellaneous

### West Virginia

- Very happy with PWL pilot projects going on right now.

## Miscellaneous

### Virginia

#### Back to basics with key attributes & construction practices:

- Mix quality
- Field density
- Tack & bond strength (to include scabbing problems)
- Rideability

## Contacts

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