

State Discussion Topics – 2003

1. What is the status of Superpave implementation for both binder and mixtures?

WYDOT has fully implemented the PG binder specifications. The WYDOT specifications for aggregate used in HMA meet or exceed Superpave requirements. There are several projects each year that specify Superpave volumetric criteria where there are high levels of truck traffic and where preliminary mix designs indicate that the Superpave criteria can be met. Marshall mix designs are specified for the majority of mixes. It may be impossible or very expensive to meet VMA criteria (using the present gyrations levels) with many of our aggregate sources, although there has been acceptable performance with these aggregates using Marshall designs.

2. What are the primary PG binder grades being used? Does your state use any SHRP plus tests and the reason for their use? Do you have any plans to implement AASHTO MP1a?

The primary binder grades are 58-28, 64-28, 70-28, and some 64-22.

58-28 is used where truck volumes are low and in lower lifts. 64-28 is the most commonly used binder for upper lifts on most roadways and 70-28 is specified on routes with high truck volumes. 64-22 is used for thin overlays where cracking is likely to reflect and for small maintenance type projects. A minimum elastic recovery is specified for grades that exceed the rule of 90. Since we have several suppliers that can produce a 64-28 without modification, we recently began specifying an unmodified 64-28 where polymer modification is not warranted.

3. There has been much recent discussion on the affects of acid modification of binders. Is your state concerned with the issue of chemical modification? Does your state have any specifications to address chemical modification of PG binders?

Yes, we are adding a section to our binder specification indicating that chemicals containing phosphorus will not be used for modification. We plan on checking phosphorus content of binders using X-Ray diffraction.

4. There has been a concern that Superpave mixtures may be over compacted, resulting in low binder contents and reduced durability and fatigue life. Is your state doing any testing, other than gyratory compaction, to determine if the mixture has adequate binder? Has your state taken any action or modified the Superpave procedures to insure adequate binder in the mixture?

WYDOT specifies a binder film thickness based on aggregate surface area. We continue to use Marshall mix designs with aggregate sources that will have low asphalt contents with Superpave designs, if there has been acceptable performance from Marshall mixes. WYDOT also pays for asphalt as a separate bid item.

5. What procedures does your state use to specify aggregate durability for HMA (sodium sulfate, magnesium sulfate, freeze thaw, or other)? Have you done any research with Micro Deval and do you have any plans to replace your present specifications with Micro Deval?

Specify criteria for LAR and magnesium sulfate soundness. WYDOT is in the process of clearing up the wording in our specification by specifying a limit for both coarse and fine aggregate separately. We have been performing comparison testing of mag sulfate and Micro Deval. We plan on moving to Micro Deval for aggregate durability testing if we can establish limits based on comparison testing and performance history. Micro Deval appears to be more repeatable than sulfate soundness tests and can be performed quickly enough, to be used for quality control by aggregate producers.

6. Does your state routinely specify Stone Mastic Asphalt (SMA) mixtures? Approximately how many tons of SMA is placed each year? Do you use AASHTO MP2 and PP41 for specifications and design or what significant modification to these have you made? Do you have any construction quality issues and how are SMA mixture performing?

Wyoming constructed an experimental SMA section in 1994 and has not done any other projects. The SMA section has performed very well on I-80, but no better than normal dense

graded mixtures. It was cost prohibitive to find aggregates and dust fillers that met SMA specifications and design criteria.

7. Has the performance of longitudinal joints been an issue? What type of joint is required or generally constructed by contractors? Do you require any QC or QA procedures such as density or permeability at the joint?

Yes, primarily when the joint was placed in a wheel track. Now requiring that no joints, including those in lower lifts, will fall in the wheel tracks. Most often require a tapered joint when the edge will be open to traffic, but do require some vertical joints. We have no QC or QA procedures for joint density or permeability but plan on evaluating the need for a specification.

8. Do you regularly see paver related segregation (linear streaks either at or just below the mat surface) and do you have a specification to address it? Do feel temperature segregation is a problem and do you have a specification to address it?

Not regularly, but we have seen paver related segregation. We do not have a specification to address segregation other than requiring the contractor to make corrections to equipment. A percent with-in-limits density specification and an IRI based ride specification help limit continued segregation. Often when a contractor is achieving variable density results we feel that temperature segregation may be the cause. We have no immediate plans to address temperature segregation. Also, minor surface segregation may not be a big issue in Wyoming since we place either open graded friction course or a chip seal on nearly all pavements.

9. Are there any recent or pending rule changes by your state EPA that may impact specifications or changes to products? Has there been any recent legislation that will impact the refining or HMA paving industries?

No changes that we are aware of.

10. What is the single most concerning issue with the quality of HMA in your state?

Selecting and maintaining the “correct” optimum asphalt content continues to be a concern. We question whether the volumetrics alone, with either Superpave or Marshall, are the proper predictor of long term performance, especially when considering durability and fatigue.