



New Contracting Process (Design-Build), New Material (CCPRM), New Specifications, What could go wrong???

No problems, just challenges!

- Three new specifications for cold central plant recycled material (CCPRM) and full depth reclamation (FDR).
- Two specifications for CCPRM; one for production and one for placement (July 16, 2015).
- One specification for FDR (July 16 2015).
- First CCPRM Test Sections placed in late September 2017.

- Production (October 27, 2017)
- Sampling CCPRM for Gradation
 - CCPRM handling procedures until "pills" are fabricated for indirect tensile strength (ITS) testing, AASHTO T 283 Section 11
 - Time limit between sampling and ITS specimen fabrication
 - Moisture content determination
 - ITS Test Specimen Fabrication, Compaction Method and Size
 - ITS Test Specimen Curing, Temperature and Time
 - Gradation
 - Asphalt Content Determination

Production & Placement (January 10, 2018)

- Use Of Marshall Apparatus solely for manufacture of ITS specimens
- Moisture content of CCPRM before placement of next layer
- Temperature for CCPRM Placement
- Minimum ITS values for Acceptance
- CCPRM Compaction Requirements

What Specification Says:

- For acceptance of Mix Design, ITS has to be equal to or greater than 45 psi
- Paragraph V. 5.:
Dry Indirect Tensile Strength - When foamed asphalt is used as the recycling agent, acceptance for Dry Indirect Tensile Strength will be based on results of samples taken in a stratified random manner at a frequency of at least one per day or one per 1,000 tons per mix per day if more than 1,000 tons are produced daily. **The job-mix target Dry Indirect Tensile Strength shall not be less than 98.0%.**

What Specification Says (continued):

• Paragraph V. 5. (continued):

The Contractor shall immediately cease production and notify VDOT's Project Manager when results fall below 98.0% of the approved job-mix target. The Contractor shall make any necessary corrective actions to the mix and provide verification to VDOT's Project Manager that it conforms to the approved job-mix formula. Should the results fall below the minimum specified in Table 4, the material represented by the failing results shall be removed and replaced at no cost. With approval of VDOT's Project Manager, subsequent paving operations can resume.

- Mix Design had an ITS Dry value of 62 psi (>>45 psi)
- Average ITS values for acceptance based on three specimens
- Variability of test specimen values

What we agreed to:

- More than three specimens can be made at the time of production sampling, and can be tested after the specified 72 hour cure.
- ITS for Acceptance
 - VDOT accepted "Target" ITS value of 50 psi
 - ITS values less than 50 psi but greater than 45 psi trigger a review of production/mix design processes/attributes
 - If ITS values fall below 45 psi, production stops until ITS values exceed 45 psi

Specification says:

Paragraph V. 2.:

Rolling shall be performed until the material reaches a density of 98% of the maximum theoretical density from the mix design as measured via a nuclear density gauge using direct transmission.

Specification says (continued):

Paragraph VI. 1.:

The average of the subplot density measurements will be compared to the target nuclear density established by the approved job mix design to determine the acceptability of the lot. Once the average density of the lot has been determined, the Contractor will not be permitted to provide additional compaction to raise the average. If two consecutive sublots produce density results less than 98 percent of the maximum theoretical density, the Contractor shall immediately notify VDOT's Project Manager and institute corrective action to bring lot density to at least 98% of the maximum theoretical density. By the end of the day's operations, the Contractor shall furnish the test data developed during the day's recycling to VDOT's Project Manager. The Contractor shall verify the results every lot by performing a field proctor (AASHTO T180, Method D). The field proctor shall be at least 98% of the maximum theoretical density from the approved mix design.

What we agreed to:

- The use of one point field proctors (AASHTO T 180, Method D: Modified Proctor, 6" mold) to check that material being produced is in accordance with mix design and to set "density" for that day/sub-lot. One point field proctor has to be within + or - 5 pcf of mix design maximum density.
- Accepted roller pattern established by Test Strip constructed
- Accepted up to two additional passes by roller if initial field densities low.

What we agreed to:

To use the following table as a standardized disposition for average lot densities that do not conform to the requirement of 98% of the maximum theoretical density.

- Temperature Requirement for Production and Placement. Minimum production and placement temperature still 50° F.

- Stockpiling: Specification did not address stockpiling of material for later use. Applied the Missouri Principal - "Show Me"

Thank you

Questions?