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Workshop

November 17-18, 2022

Jointly sponsored By VAA, VTRC and VDOT



Mix Design Approval

Clyde Landreth
Salem District Materials



Family of Mixes

- One family of Job Mixes for each type of mix produced
- Virgin, RAP, High RAP
- Aggregates from same source/quarry
- Aggregates of same size

General Guidelines for all Mixes

- Job Mix must be submitted in MITS/PLAID and paperwork submitted to District Materials prior to production
- For Part B, may change aggregate percentage by no more than 5%. Greater than 5% change requires a new Job Mix
- Job Mix approval may be rescinded for multiple volumetric failures, failing roadway density, change in aggregate blend
- If A and D mixes are identical, rescinding approval for one may apply to both mixes
- Aggregate properties required at Design, Beginning of Production, and at 50,000 tons production

SuperPave

Superpave Mixes – New Design

- Aggregate properties for all aggregates, including RAP
- Aggregate gradations for all aggregate sizes, including RAP
- 3 Trial blends of aggregates
- Varying AC at design AC, +/- 0.5%, and +1.0% AC
- 3 pills for each %AC
- Rice (Gmm), average of 2 tests, for each %AC
- Target VTM cannot exceed 4.0% in design for A and D mixes; 3.5% for E mixes; 2.5% for BM mixes
- F/A of 1.3 allowed in design, but will be monitored closely

Superpave Mixes – New Design

- PinePave, or similar data, including graphs and varying AC required as paper submittal
- Furnace Correction Factor shall be based on 4 samples
- RAP requires 4 burns for RAP Calibration factor
- Report of True Grade of virgin binder required
- Permeability testing is required for all surface mixes
- TSR, including paperwork, required before the end of Lot 1
- Limited Production will be lifted when mix consistently passes in the Lab, and Field Density passes

Superpave Mixes – Part B

- Part B must be submitted in MITS/PLAID by the end of Lot 1
- Changes to gradation and/or AC will only be allowed once per calendar year
- Part B may be applied to both A & D mixes if they are identical, with agreement between Producer & VDOT

Superpave Mixes – Roll-over for next year

- All roll-over mixes will start with Part A for the new year
- Failing or inconsistent lab results, failing lots, failing field density may prevent approval for roll-over
- VDOT District Materials will determine which mixes may be rolled over
- Mixes for roll-over must be cloned and submitted in MITS/PLAID for the new year as a new mix
- Roll-over mixes will be assigned a new Job Mix Number

Superpave Mixes – Roll-over for next year

- Aggregate properties shall be submitted for roll-over approval
- Furnace Calibrations must be submitted for roll-over approval
- New Field Correction Factor must be calculated based on new aggregate properties
- Rice test (GMM) must be run at design AC and submitted
- Verification pills at design AC are recommended

SMA

SMA – New Design

- Aggregate properties for all aggregates, including RAP
- Aggregate gradations for all aggregate sizes, including RAP
- 3 Trial blends of aggregates
- VCAdrc for each aggregate blend
- Varying AC at design AC, +/- 0.5% AC
- 3 pills for each %AC
- Rice (Gmm), average of 2 tests, for each %AC
- Target VTM cannot exceed 3.0% in design
- Draindown calculations shall be submitted

SMA – New Design

- PinePave, or similar data, including graphs and varying AC required as paper submittal
- Furnace Correction Factor shall be based on 4 samples
- RAP requires 4 burns for RAP Calibration factor
- Report of True Grade of virgin binder required
- TSR, including paperwork, required before the end of Lot 1
- Limited Production will be lifted when Trial Section passes

SMA – Part B

- Part B must be submitted in MITS/PLAID by the end of Lot 1
- Changes to gradation and/or AC will only be allowed once per calendar year

SMA – Roll-over for next year

- All roll-over mixes will start with Part A for the new year
- Failing or inconsistent lab results, failing lots, failing VCA; failing field density may prevent approval for roll-over
- VDOT District Materials will determine which mixes may be rolled over
- Mixes for roll-over must be cloned and submitted in MITS/PLAID for the new year as a new mix

SMA – Roll-over for next year

- Aggregate properties shall be submitted for roll-over approval
- Furnace Calibrations must be submitted for roll-over approval
- New Field Correction Factor must be calculated based on new aggregate properties
- Rice test (GMM) must be run at design AC and submitted
- Set of 3 verification pills at design AC is recommended
- VCAdrc is required each year
- New Job Mix Number will be assigned

Balanced Mix Design

BMD – New Design

- Aggregate properties for all aggregates, including RAP
- Aggregate gradations for all aggregate sizes, including RAP
- 3 Trial blends of aggregates
- Varying AC at design AC, +/- 0.5% AC
- 3 pills for each %AC
- Rice (Gmm) for each %AC – average of 2 tests
- Target VTM cannot exceed 4.5% in design

BMD – New Design

- PinePave, or similar data, including graphs and varying AC required as paper submittal
- Furnace Correction Factor shall be based on 4 samples
- RAP requires 4 burns for RAP Calibration factor
- Report of True Grade of virgin binder required
- Aggregate properties and Furnace Calibrations required at design
- Permeability test results are required

BMD – New Design

- Performance test results shall be submitted
 - ❖ IDT-CT: -0.5% AC; Optimum AC; +0.5% AC; LTA @ Optimum AC
 - ❖ Cantabro: -0.5% AC; Optimum AC
 - ❖ APA: Optimum AC; +0.5% AC
 - ❖ IDT-HT: Optimum AC; +0.5% AC
- Raw data for IDT-CT, APA, and IDT-HT shall be submitted
- TSR, including paperwork, required before the end of Lot 1
- Limited Production will be lifted when Lab results and Field density passes

BMD – Part B

- Part B may be submitted in MITS/PLAID at any time during the year
- Changes to gradation and/or AC will only be allowed once per calendar year
- Part B may be applied to both A & D mixes, if identical, and requested by producer

BMD – Roll-over for next year

- All roll-over mixes will start with Part A for the new year
- Failing or inconsistent lab results (including performance test results), failing lots, failing field density may prevent approval for roll-over
- VDOT District Materials will determine which mixes may be rolled over
- Mixes for roll-over must be cloned and submitted in MITS/PLAID for the new year as a new mix

BMD – Roll-over for next year

- Aggregate properties shall be submitted for roll-over approval
- Furnace Calibrations must be submitted for roll-over approval
- New Field Correction Factor must be calculated based on new aggregate properties
- Rice test (GMM) must be run at design AC and submitted
- Set of 3 verification pills at design AC recommended
- New Job Mix Number will be assigned

BMD – Roll-over for next year

- Performance testing shall be submitted each year
 - ❖ IDT-CT: -0.5% AC; Optimum AC; +0.5% AC; LTA @ Optimum AC
 - ❖ Cantabro: -0.5% AC; Optimum AC
 - ❖ APA: Optimum AC; +0.5% AC
 - ❖ IDT-HT: Optimum AC; +0.5% AC

QUESTIONS??