

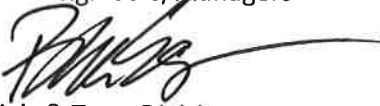


**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
MATERIALS & TESTS DIVISION**

6601 CENTENNIAL BLVD, NASHVILLE, TN 37243-0360

MEMORANDUM

TO: Hot Mix Asphalt Contractors
Regional Operations Engineers
District Operations Engineers/Managers

FROM: Brian Egan, PE 
Director, Materials & Tests Division

DATE: 3/31/2017

SUBJECT: Programmatic Changes Effecting Hot Mix Asphalt Plants

There have been two changes to the Department's Standard Operating Procedures (SOP) which will potentially impact hot mix plant operators. These changes will be fully **effective June 1, 2017** and include determining gradation for acceptance testing of asphalt base mixes (A, AS, ACLR, Asphalt TPB) and verifications of tack coat material.

Gradation Testing for Base Mixes

The January 2017 revision to SOP 1-1 added the option of obtaining a combined RAP and aggregate belt sample to determine the gradation of base mixes. The November 2016 revision of SOP 1-1 had required extraction only. The practice prior to these revisions of only sampling the virgin aggregate was no longer giving the Department the best measure of the gradation (which is a pay factor) of our base mixes. So, the changes have been made to capture a more accurate value of the true gradation.

Under the new SOP both the combined belt cut and extraction are allowed. To accommodate belt sampling of the RAP, it may be necessary for the plant to install a stand or ladder to allow for access to the RAP belt. If the contractor cannot or will not sample from both the aggregate and RAP belts then extraction will be required.

Field Verification Testing for Tack Coats

The March 2017 revision to SOP 3-2 now requires verification sieve (per AASHTO T59 section 13) and residue by evaporation per (AASHTO T59 section 7) of asphalt emulsion tack materials shall be tested at the contractor's lab if both of the following conditions are met:

- The material is older than one week from the date it left the terminal
- The material has been stored in a tanker or distributor

As asphalt emulsions are a time sensitive material, testing at the contractor's lab will allow for more accurate and timely decisions to be made than if the samples were to be shipped to Nashville. To accommodate this testing, the following equipment will be necessary:

- Four 1000 ml capacity beakers (glass or metal) or other container with similar capacity
- Four glass rods with flame-polished ends, approximately 6 mm by 180 mm (1/4" by 7")
- Wire mesh screen: such as window screen or similar mesh
- Stackable 3" diameter sieve set consisting of
 - No. 20 Sieve
 - Pan
- Desiccator
- Ovens and scales per TDOT Standard Specification 106.06 as already required for a Type B lab

Attachments

CC:

Brian Egan

Heather Hall

Matthew Chandler

Brad Baskette

Tony Renfro

Kevin Isenberg

Mitch Blankenship

Part Two: Acceptance Samples and Tests

Type of Construction	Material	Test	Sampled By	Frequency	Location or Time of Sampling	Remarks
Bituminous Plant Mix Pavements	Plant Mix Asphalt Grading B, BM, BM2, C, CW, D, E, CS, TLD, & TL	Asphalt Content AASHTO T-164, Method E-II by extraction, or AASHTO T-308 by ignition oven	Project Inspector	1 test for every 1000 tons randomly	Completed mix in truck or on roadway	AASHTO T-164 Method E-II will be performed by pouring the extracted asphalt and solvent through nested No. 16 and No. 200 mesh sieves. AASHTO T 164 Method A may be used for modified asphalt or when problems are encountered filtering according to Method E-II. May not be required on production days of less than 100 tons. Ignition oven may be utilized to determine AC content and gradation.
		Aggregate Gradation AASHTO T-30 and AASHTO T-11				
		Air Voids & Volumetric Properties (T166, T209, T269)	Project Inspector or Materials and Tests	During Test Strip Construction or Mix Verification	Completed mix in truck or on roadway	
	LOI (Surface Mix only)	Project Inspector	One sample per day for Surface Mix only	Completed mix in truck	If daily sample fails, take 3 cores per lot placed that day to determine LOI. Penalty for failure to meet.	
	Plant Mix Asphalt Grading A, A-S, A-CRL, & Asphalt Treated Permeable Base	Aggregate Gradation AASHTO T-30 and AASHTO T-11	Project Inspector	1 test for every 1000 tons randomly	<p>Combined RAP and aggregate belt samples</p> <p>OR</p> <p>Sample completed mix in truck or on roadway. See remarks for test method info regarding this option.</p>	<p>If testing completed mix, perform extraction using AASHTO T-164 method E-II utilizing nested sieves (No. 16 and No. 200)</p> <p>AASHTO T 164 Method A may be used for modified asphalt or when problems are encountered filtering according to Method E-II.</p> <p>May not be required on production days of less than 100 tons. Ignition oven may be utilized to determine gradation.</p>
Bituminous Plant Mix Pavements for Small Quantities	Bituminous Mixture	Visual Inspection	Project Inspector	Occasionally. Delivery ticket must accompany each load & contain weight of mix.	Placement site	Not to exceed 1000 tons of each type mix per project. Supplier to furnish certification showing type of mix and compliance with TDOT specifications. TDOT reserves right to perform any testing deemed necessary. Mix shall be formulated from a previously approved Job Mix Formula.
Bituminous Surface: Surface Treatment, Microsurfacing, Slurry Sealing, and related similar processes	Aggregate	Gradation & Washing	Project Inspector or Materials & Tests	One each 500 tons for each size aggregate.	At source or at project prior to incorporating into work.	Inspection required before material use.
		Fractured face count	Project Inspector or Materials & Tests	Minimum of 1 per project	At project prior to incorporating into work	Plus No. 4 (4.75mm) sieve material, gravel mixes only.
		Loss on Ignition (LOI)	Project Inspector or Materials & Tests	Minimum of 1 per week	From stockpiled materials. If blended aggregate, then after blending.	Accept/deduct in accordance with 407 20 C 3, pgf 6
		Glassy particles by weight	Project Inspector or Materials & Tests	Minimum of 1 per project	At project prior to incorporating into work	Plus No. 4 (4.75mm) sieve material, slag mixes only.
	Acceptance from Producer's Supplier's List (Verification Sampling Required)					
	Emulsions	Acceptance by Certification in accordance with SOP 3-2. (Verification Sampling Required)				Each shipment must be accompanied by a notarized materials certification report. DT0293E. See attached Verification/Check Samples & Tests section.
Treated Permeable Base	Asphalt Treated Permeable Base or Portland Cement Treated Permeable Base	Thickness	Contractor to obtain specimen at locations identified by Project Inspector	One core per unit or fraction of unit. A unit is equal to a paver mat width 1,000 ft in length.	Prior to being overlaid	When thickness of core from a unit is deficient more than 1/4" and not more than 1" from Plan thickness, take 2 additional cores at intervals of not less than 300' within the unit. Use the averaged of the three cores to

Figure 1: Excerpt from SOP 1-1 showing changes to Asphalt Base Mix Gradation Testing

The TDOT will have the right to visit each approved supplier to review quality control activities and records, to obtain random check samples, or to inspect production.

Contract Sampling

TDOT will sample and conduct weekly verification testing of contract samples.

Verification testing for emulsions that are more than a week old (as measured from the date of departure from the terminal) will be tested at the contractor's laboratory by the TDOT plant technician, except if the material is stored in a storage tank by the contractor. Verification testing at the contractor's plant will only consist of the AASHTO T-59 Sieve Test and the AASHTO T-59 Residue by Evaporation. The test procedures listed in the appendix may be used for quality control only.

Emulsions that are less than a week old or that have been stored by the contractor in a storage tank will be sent to the Headquarters Laboratory for testing. Samples at the headquarters laboratory may be tested for any of the specified requirement listed in the Specification 904.03 or the product specification for QPL items at the Department's discretion.

If a contract sample is found to be out of compliance, the certification for the load will be deemed no longer valid and the rejected from further use.

Shipment- All shipments from the supplier must be accompanied with a completed Form DT-0293Emulsion.

One tanker load may be split between multiple small projects; the projects and estimates shall be declared on the DT-0293Emulsion -Multiple Project form. Quantities used on each project shall be verified by weight tickets prior to and after use on each project.

Figure 2: Excerpt from SOP 3-2: showing changes to verification testing of asphalt emulsion tack coat materials