ALABAMA DEPARTMENT OF TRANSPORTATION

DATE: January 15, 2020 Special Provision No. 18-0801

EFFECTIVE DATE: April 1, 2020

SUBJECT: Open Graded Friction Course with Warm Mix Additive.

Alabama Standard Specifications, 2018 Edition, SECTION 410 and SECTION 420 shall be revised as follows:

SECTION 410
ASPHALT PAVEMENTS

410.02 Materials.

(c) Anti-Stripping Agents.

Subarticle 410.02(c) shall be replaced by the following.

All warm mix asphalt mixtures, 327E mixes, and 420 mixes shall include an anti-stripping agent. The warm mix additive supplier may certify that an anti-stripping agent is an integral part of the warm mix additive.

All hot mix asphalt mixtures except 327E and 420 shall be tested during design to determine if an anti-stripping agent is needed. During design and production, all other mixes shall have a tensile strength ratio (TSR) of at least 0.80 when tested in accordance with AASHTO T 283 as modified by ALDOT-361. If any TSR value falls below the minimum specified above, plant operations shall cease until corrective measures are taken. However, if any visual stripping occurs in the design or field production, an anti-stripping agent shall be required if deemed necessary by the Engineer. Should it become necessary for the Contractor to include an anti-strip agent in the mix due to the occurrence of visual stripping during field production of the mix after the design tests indicated that the same mix met the above listed TSR requirement, such work will be paid for as Extra Work as defined by Article 104.03. Additional payment for the anti-strip agent will not be made in cases where the same mix has been previously used in field production and visual stripping occurred.

1. Amines.

For amine-based materials, the amount of anti-stripping agent, when required, shall be 0.25 to 1.0 % by weight {mass} of the liquid asphalt binder content for liquid agents and 0.5 to 2.0 % by weight {mass} of the total aggregate for powdered agents. Liquid anti-stripping agent shall be added to the liquid asphalt binder within ±10% of the specified rate, either at the refinery or the Contractor's mixing plant, using approved on-line blending equipment.

2. Hydrated Lime.

For hydrated lime materials the amount of anti-stripping agent, when required, shall be 0.5 to 2.0 % by weight {mass} of the total aggregate for powdered agents. Hydrated lime materials shall meet the requirements as given in Section 805.

3. OrganoSilanes.

For organosilane based materials the amount of anti-stripping agent, when required, shall be 0.05 to 0.1 % by weight {mass} of the liquid asphalt binder content for liquid agents. Liquid anti-stripping agent shall be added to the liquid asphalt binder by approved on-line blending equipment either at the refinery or the Contractor's mixing plant within ±10% of the specified rate.

4. Silicone

Silicone may be used in liquid asphalt binder, not to exceed 2 ounces per 5000 gallons {3 ml per 1000 L}. Except when producing Warm Mix Asphalt, other additives shall not be added

to the liquid asphalt binder unless expressly authorized in writing by the Materials and Tests Engineer.

5. Warm Mix Asphalt Additives

Approved Warm Mix Asphalt Additives from ALDOT list II-27 May be used in liquid Asphalt Binder as an anti-striping agent when used as directed by the Manufacturer.

The use of any unauthorized additive will be cause for rejection of the mixture.

(d) Composition of Mixtures.

4. Approval of Job Mix Formula by Materials and Tests Engineer.

The third paragraph of Item 410.02(d)4 shall be replaced by the following.

The approved job mix formula for each mixture shall be in effect for a maximum of two years from the approval date on the job mix formula or until the Materials and Tests Engineer withdraws approval by written order.

(e) Recycled Asphalt Plant Mix (RAP) and Reclaimed Asphalt Shingles (RAS).

2. Allowable Usage of RAP and RAS.

Item 410.02(e)2 shall be replaced by the following.

2. Allowable Usage of RAP and RAS.

The Contractor shall have the option to use RAP and RAS in accordance with the requirements given in the following table unless shown otherwise on the plans:

ALLOWABLE USE OF RAP AND RAS Maximum Allowable Percent of RAP and RAS by mass of Total Aggregate Content		
Type of Mix	Maximum RAP Content #	Maximum RAP and RAS Content **
327, Plant Mix Bituminous Base	25 %	RAS Not Allowed
327-E, Permeable Asphalt Treated Base	RAP Not Allowed	RAS Not Allowed
420, Open Graded Friction Course	RAP Not Allowed	RAS Not Allowed
423, Stone Matrix Asphalt 424, Superpave (Maximum Aggregate Size ½", ¾", 1", 1 ½")	Surface Layers: 20 % with no more than 15 % containing chert *; All Other Layers: 35 %	Surface Layers: 20 % *; All Other Layers: 35 %
424, Superpave (Maximum Aggregate Size 3/8")	Surface Layers: 20% All Other Layers: 35%	RAS Not Allowed***
* This limitation applies even if the surface layer is to be covered by an Open Graded Friction Course (Section 420). If the aggregate is chert gravel with a bulk specific gravity that is less than 2.550, a maximum of 15 % of the RAP will be allowed. RAP containing chert gravel shall be crushed so that 100 % of the RAP passes the 1/2 inch {12.5 mm} sieve. Additional RAP that does not contain chert gravel may be added to the mixture through a separate feeder. ** RAS shall be limited to 3% by mass of the total aggregate content for surface layers and 5 % by mass of the total aggregate content for all other layers. *** For projects where the ADT is less than 100 or the surface to be paved is non-trafficked, RAS may be allowed at the contents given for the other 424 Superpave maximum aggregate sizes.		

(f) Liquid Asphalt Binder Draindown.

1. Fiber Stabilizer.

Item 410.02(f)1 shall be replaced by the following.

1. Fiber Stabilizer.

A fiber stabilizer is required for some mix types (Section 420, 423, etc). For section 420 mixes the warm mix additive Evotherm 3G may be used in lieu of fibers. A fiber stabilizer may be used on other mix types where asphalt binder cement draindown is a problem. Where RAS is included in the job mix formula, fiber stabilizer shall not be required provided the draindown requirements of 0.30% or less are met when tested at 325°F {163°C} and 350°F {176°C} in accordance with AASHTO T305.

When fiber or Evotherm 3G is used, the dosage rate shall produce a maximum liquid asphalt binder cement draindown of 0.30 % or less when tested at 325°F {163°C} and 350°F {176°C} in accordance with AASHTO T305. When fiber is used, the sampling and testing frequency for all mixes for both Contractor and Department testing during production shall be one test for each 5000 tons {metric tons} or portion thereof. The fiber shall be listed on List II-23, Fibers for use in Hot Mix Asphalt (from the Materials, Sources, and Devices with Special Acceptance Requirements (MSDSAR) manual). If pelletized fibers are used, the fiber within the pellet shall be listed on List II-23. All fibers listed on List II-23 shall meet the requirements of either Item 2, 3, or 4 of this Subarticle.

SECTION 420
POLYMER MODIFIED OPEN GRADED FRICTION COURSE

420.02 Materials.

(a) Aggregates.

Subarticle 420.02(a) shall be replaced with the following.

(a) Aggregates.

The aggregate shall be limited to 100% crushed aggregates of the following: granite, quarried quartzite, slag, sandstone or manufactured lightweight aggregate, all of which shall be from approved sources and meet the appropriate requirements of Sections 801 and 802. However, if additional dust (- 200 {- 75 μm} material) is needed, mineral filler (meeting the requirements of Section 805) or agricultural limestone may be used. If agricultural limestone is used, it shall meet the requirements of ASTM C 602, Standard Specification for Agricultural Liming Materials, for Class E agricultural limestone, so that a minimum of 80.0 % of the material will pass the No. 8 {2.35 mm} sieve and 25.0 % will pass the No. 60 {0.250 mm} sieve. In addition, a minimum of 5.0 % will pass the No. 200 {75 μm} sieve. No more than 10.0 % agricultural limestone shall be used.

The aggregate shall be combined into a total blend that will produce an acceptable job mix within the gradation limits shown in the following table. The blend shall be made from at least two stockpiles of different gradations. At least 10% of the blend shall be taken from each stockpile.

AGGREGATE GRADATION FOR OPEN GRADED FRICTION COURSE	
Sieve (Square Mesh Type)	Percent Passing By Weight {Mass}
3/4 inch {19.0 mm}	100
1/2 inch {12.5 mm}	85 - 100
3/8 inch {9.5 mm}	55 – 65
No. 4 {4.75 mm}	10 - 25
No. 8 {2.36 mm}	5 - 10
No. 200 {75 μm}	2 - 4

As stated in Article 410.02 no RAP or RAS is Allowed

(b) Liquid Asphalt Binder.

Subarticle 420.02(b) shall be replaced with the following.

(b) Liquid Asphalt Binder.

The liquid binder shall be a polymer modified PG 76-22 meeting the requirements of Section 804. The proportion of liquid asphalt binder to total sample by weight {mass} shall be 6.0 % to 9.0 %. The exact proportion shall be fixed by the job mix formula.

Additives or modifiers shall be used to prevent stripping of liquid asphalt binder. These additives or modifiers shall be furnished and used at no additional cost to the State.

(d) Liquid Asphalt Binder Draindown.

Subarticle 420.02(d) shall be replaced with the following.

(d) Liquid Asphalt Binder Draindown.

A fiber stabilizer or Evotherm 3G meeting the requirements given in Section 410 shall be incorporated into the mix to produce a maximum liquid asphalt binder cement draindown of 0.30 % or less when tested at 325°F {163°C} and 350°F {176°C} in accordance with AASHTO T305. The fiber shall be blended into the mix in accordance with the requirements given in Section 410.