ALABAMA DEPARTMENT OF TRANSPORTATION

DATE: August 14, 2017

Special Provision No. 12-0599(2)

EFFECTIVE DATE: September 1, 2017.

SUBJECT: Asphalt Materials

Alabama Standard Specifications, 2012 Edition, shall be revised by replacing SECTION 405, and SECTION 407 with the following:

SECTION 405
TACK COAT

405.01 Description.

The work under this Section shall cover the furnishing and placing of a bituminous tack coat on an existing surface which is to be covered by a bituminous plant mix material in accordance with these specifications and in reasonably close conformity with the lines shown on the plans or directed by the Engineer.

The work shall include cleaning the existing surface prior to application of the tack coat.

The area of treatment and the rate of application of a tack coat shall be based on the plans and specifications after evaluating the actual surface condition on which the plant mix overlay is to be placed.

405.02 Materials.

Bituminous material for tack coat shall be Emulsified Asphalt or one of the Performance Graded (PG) Asphalt Binders shown in Article 804.07. The cationic grades CRS-1h, CRS-2, CRS-2h, CMS-1hp, CSS-1, CSS-1h, CQS-1h, CQS-1hp, CRS-2p, CRS-2l, CBC-1HHT, or CNTT-1hs; or the anionic grade NTSS-1HM; or the non-ionic grade NTQS-1HL shall be used. Emulsified Asphalts shall not be diluted prior to application.

Unless shown otherwise on the plans, the contractor shall have the option of using any of the allowable bituminous materials, subject to other limitations of these specifications. In making the selection of materials, the Contractor shall take into consideration seasonal, weather, temperature, and other placement conditions, while keeping in mind that SS stands for slow setting, RS stands for rapid setting, and QS stands for quick setting (QS is the faster setting or breaking emulsion). Low temperatures and humid or damp conditions will retard the breaking or setting of all emulsions. The mixing of a cationic and an anionic emulsion will result in failure of emulsion materials.

All materials shall meet the requirements of Section 804.

405.03 Construction Requirements.

(a) EQUIPMENT.

In general it shall be the Contractor's responsibility to select the proper size and amount of equipment to provide the desired results. Equipment furnished shall meet the requirements of Subarticle 401.03(a).

(b) SEASONAL, NIGHTTIME, WEATHER, AND TEMPERATURE LIMITATIONS.

1. SEASONAL LIMITATIONS FOR THE PLACEMENT OF TACK.

Grades CSS-1 and CSS-1h Emulsified Asphalts shall not be placed between the dates of October 1 and May 1 in North Alabama and between the dates of November 1 and April 1 in South Alabama regardless of weather conditions. For the purpose of identification, South Alabama shall be referred to for projects lying partly or wholly in the area of the State lying south of latitude 33°N, with North Alabama encompassing the remaining portion of the State. These seasonal limitations shall not apply to...
the placement of other bituminous materials for tack allowed by Article 405.02. The tack may be placed if allowed by the Engineer when the pavement temperature is 40°F and rising.

2. NIGHTTIME LIMITATIONS FOR THE PLACEMENT OF TACK.
   Grade CSS-1 and CSS-1h Emulsified Asphalts shall not be used for tack during nighttime paving operations.

3. WEATHER LIMITATIONS FOR THE PLACEMENT OF TACK.
   Tack material shall not be applied on a wet surface or when in the Engineer's opinion weather conditions are not suitable. NTSS-1HM may become slippery when wet.

4. TEMPERATURE LIMITATIONS FOR THE PLACEMENT OF TACK.
   Temperature limitations for the placement of tack coat material shall be the same as specified in Subarticule 410.03(b) for plant mixed pavements. NTSS-1HM material shall not be used for cold applied asphalt pavement.

(c) PREPARATION OF EXISTING SURFACE.
   Loose material, dust, dirt, and all foreign matter shall be removed from the surface to be treated. All existing surfaces (new pavement, milled pavement, old pavement, or concrete) shall be clean and dry prior to the tack coat application. Cleaning operations can be achieved either through mechanical brooming, by flushing with water, vacuuming, blowing off debris using high-pressure air or other methods as determined by the contactor, unless otherwise shown on the plans. The existing surface shall be approved by the Engineer before application of the tack material.

(d) APPLICATION.
   Tack coat material application rate shall meet the requirements given in the table below:

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Undiluted Application Rate (gal/yd²)</th>
<th>Application Temperature (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emulsified Asphalt</td>
<td>0.08 - 0.12</td>
<td>Cationic 130-170</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anionic 150-180</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Ionic 150-180</td>
</tr>
<tr>
<td>PG Asphalt Binder</td>
<td>0.05 - 0.07</td>
<td>275-375</td>
</tr>
</tbody>
</table>

   Tack coat shall be applied uniformly to the pavement surface to obtain full coverage. Tack coat applications that are streaky or striped in appearance will not be allowed and shall be reapplied.

An asphalt distributor shall be provided for use on all accessible areas; inaccessible areas such as around manholes, etc. may be coated by other methods, approved by the Engineer.

When applying tack coat, it shall be applied to all contact surfaces of curbs, gutters and manholes. Tack shall also be applied to all adjacent pavement edges except the pavement edges where joint sealant is required. Adjacent surfaces, such as gutters and the like, that are not to be in contact with the mix shall be adequately protected from the spray by means of heavy paper securely fastened in place or by other satisfactory means. Any such surface soiled by tack coat material shall be cleaned and restored to its previous condition without additional compensation.

(e) CURING
   Tack coat materials shall be fully cured before application of the overlying asphalt pavement layer is placed. Emulsified asphalt materials are considered as cured when the emulsion color has completely turned black. The NTSS-1HM asphalt emulsion shall be covered as soon as practical.

   Tack coat shall be spread only far enough in advance to permit the construction to progress consistently, uniformly, and continuously after the curing period and shall not be applied so far in advance that the viscous quality will be reduced by traffic prior to construction thereon. Tack coat that loses its viscous quality before being covered shall be renewed and any which has been damaged shall be replaced without extra compensation.

405.04 Method of Measurement.
   The amount of bituminous material used as directed for tack coat will be measured in gallons {liters}, as specified in Article 109.02.
405.05 Basis of Payment.

(a) UNIT PRICE COVERAGE.

The amount of bituminous material used as directed for tack coat, measured as noted above, will be paid for at the contract unit price bid per gallon {liter} which shall be full compensation for furnishing the bituminous material, hauling, heating, application, curing, and maintaining and for all equipment, tools, labor, and incidentals necessary to complete the work.

(b) PAYMENT WILL BE MADE UNDER ITEM NO.:
   405-A Tack Coat - per gallon {liter}

SECTION 407
JOINT SEALANT FOR HMA PAVEMENT

407.01 Description.

This Section shall cover the sealing of longitudinal joints in hot mix asphalt pavements by the spraying or rolling of joint sealant on the vertical face of the joint ahead of the asphalt spreader. Joint sealant application shall be a separate construction operation from the tack coat application.

Joint sealant shall not be applied to the joints between HMA pavement and paved shoulders unless shown otherwise on the plans. Joint sealant shall not be applied to the joints between HMA pavement and curbs unless shown otherwise on the plans.

407.02 Materials.

A sample of the sealant will be taken by the Engineer and tested in accordance with the requirements established by the Department for sampling and testing Bituminous Surface Treatments given in Section 401.

The Contractor shall have the option of using the following materials for the joint sealant:
- PG 64-22 performance graded asphalt binder;
- PG 67-22 performance graded asphalt binder;
- CRS-1H emulsified asphalt;
- CMS-1HP emulsified asphalt;
- CQS-1HP emulsified asphalt;
- CBC-1HT emulsified asphalt;
- NTQS-1HL emulsified asphalt;
- Pavon™;
- Crafco™ Pavement Joint Adhesive Part No. 34524.

PG 64-22 shall meet the material requirements given in Table 2 of Section 804.

PG 67-22 shall meet the material requirements given in Table 3 of Section 804.

NTQS-1HL, NTSS-1HM, CQS-1HP, CMS-1HP, CBC-1HT, and CRS-1H shall meet the requirements given in Table 5 of Section 804.

CQS-1HP shall be a cationic emulsion blended with a minimum of 1.2 % polymer meeting the requirements given in Article 811.03 and the requirements given in the following tables. Pavon™ is a proprietary product that shall also meet the requirements given in the following tables.

<table>
<thead>
<tr>
<th>REQUIRED PROPERTIES FROM THE TESTING OF Pavon™</th>
<th>Test Method</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residue % By Distillation</td>
<td>ALDOT 415</td>
<td>60 % Min.</td>
</tr>
<tr>
<td>Viscosity, SF @ 77 °F, sec.</td>
<td>AASHTO T 59</td>
<td>20 SF Min.</td>
</tr>
<tr>
<td>Sieve Test, %</td>
<td>AASHTO T 59</td>
<td>-</td>
</tr>
<tr>
<td>Particle Charge</td>
<td>AASHTO T 59</td>
<td>Positive</td>
</tr>
</tbody>
</table>
REQUIRED PROPERTIES FROM THE TESTING OF DISTILLATION RESIDUE FROM Pavon™

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Method</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penetration, 100 g, 5 secs. @ 77 °F</td>
<td>AASHTO T 49</td>
<td>60 mm Min.</td>
</tr>
<tr>
<td>Ductility, cms., @ 39.2 °F</td>
<td>AASHTO T-51</td>
<td>40 cms Min.</td>
</tr>
<tr>
<td>Elastic Recovery @ 50 °F, %</td>
<td>AASHTO T-301</td>
<td>50 % Min.</td>
</tr>
</tbody>
</table>

Crafco™ Pavement Joint Adhesive Part No. 34524 is a proprietary product that shall meet the requirements given in the following table.

REQUIRED PROPERTIES FROM THE TESTING OF Crafco™ PAVEMENT JOINT ADHESIVE PART NO. 34524

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Method</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cone Penetration, 77 °F</td>
<td>ASTM D5329</td>
<td>60-100</td>
</tr>
<tr>
<td>Flow, 140 °F</td>
<td>ASTM D5329</td>
<td>5 mm-Maximum</td>
</tr>
<tr>
<td>Resilience, 77 °F</td>
<td>ASTM D5329</td>
<td>30 %-Minimum</td>
</tr>
<tr>
<td>Ductility, 77 °F</td>
<td>AASHTO T51</td>
<td>30 cm-Minimum</td>
</tr>
<tr>
<td>Ductility, 39.2 °F</td>
<td>AASHTO T51</td>
<td>30 cm-Minimum</td>
</tr>
<tr>
<td>Softening Point</td>
<td>AASHTO T53</td>
<td>170 °F Minimum</td>
</tr>
</tbody>
</table>

407.03 Construction Requirements.

Unless shown otherwise on the plans, joint sealant shall only be applied to the joints in the wearing layers of Section 424 (Superpave) and Section 423 (Stone Matrix Asphalt) mixes and to the joints in the surface layers between existing HMA pavement and new HMA pavement. Joint sealant shall not be applied to the joints between HMA pavement and paved shoulders unless shown otherwise on the plans. Joint sealant shall not be applied to the joints between HMA pavement and curbs unless shown otherwise on the plans.

As a separate application from the tack coat, the sealant shall be applied by being sprayed or rolled on the face of the vertical joint of the previously placed asphalt layer ahead of the asphalt spreader to seal the joint between the previously placed layer and the newly placed layer.

Joint sealant shall be placed at the rates and temperatures given in the following table.

<table>
<thead>
<tr>
<th>Joint Sealant</th>
<th>Application Rate</th>
<th>Application Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG 64-22</td>
<td>24 gallons per mile per inch of lift with a +/-10 % tolerance</td>
<td>212 °F to 230 °F</td>
</tr>
<tr>
<td>PG 67-22</td>
<td>24 gallons per mile per inch of lift with a +/-10 % tolerance</td>
<td>275 °F to 350 °F</td>
</tr>
<tr>
<td>CRS-1h CMS-1HP NTQS-1HL</td>
<td>40 gallons per mile per inch of lift with a +/-10 % tolerance</td>
<td>120 °F to 170 °F</td>
</tr>
<tr>
<td>CBC-1HT NTSS-1HM</td>
<td>40 gallons per mile per inch of lift with a +/-10 % tolerance</td>
<td>165 °F to 170 °F</td>
</tr>
<tr>
<td>CQS-1hp Pavon™</td>
<td>40 gallons per mile per inch of lift with a +/-10 % tolerance</td>
<td>Ambient Temperature</td>
</tr>
<tr>
<td>Crafco™ Pavement Joint Adhesive Part No. 34524</td>
<td>70 gallons per mile per inch of lift with a +/- 10 % tolerance</td>
<td>380 °F ± 20 °</td>
</tr>
</tbody>
</table>

The Engineer will limit the length of placement ahead of the asphalt spreader (usually no more than 1000 feet) to reduce the possibility of damage to the sealant. The Engineer will also require the placement of CBC-1HT emulsified asphalt, CQS-1HP emulsified asphalt, NTSS1HM emulsified asphalt, NTQS-1HL emulsified asphalt, and Pavon™ far enough ahead of the asphalt spreader to allow the curing of the sealant.
407.04 Method of Measurement.
   The application of joint sealant will be measured by the mile for each joint.

407.05 Basis of Payment.
   (a) UNIT PRICE COVERAGE.
       Joint sealant will be paid for at the contract unit price per mile for each joint which shall be full compensation for furnishing the joint sealant material, applying the sealant and for all equipment, tools, labor, and incidentals necessary to complete the work.
   
    (b) PAYMENT WILL BE MADE UNDER ITEM NO.:
        407-B Joint Sealant for Hot Mix Asphalt Pavement - per mile