

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-1HT, 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 Subarticle 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 contractor, 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:

Material Type	Undiluted Application Rate gal/yd ²	Application Temperature °F
Emulsified Asphalt	0.08 - 0.12	Cationic 130-170 Anionic 150-180 Non-Ionic 150-180
PG Asphalt Binder	0.05 - 0.07	275-375

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 material 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;**
- NTSS-1HM emulsified asphalt;
- **NTQS-1HL emulsified asphalt;**
- Pavon™;
- Crafcro™ 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.

REQUIRED PROPERTIES FROM THE TESTING OF Pavon™			
Parameter	Test Method	Value	
Residue % By Distillation	ALDOT 415	60 % Min.	-
Viscosity, SF @ 77 °F, sec.	AASHTO T 59	20 SF Min.	100 SF Max.
Sieve Test, %	AASHTO T 59	-	0.1 % Max.
Particle Charge	AASHTO T 59	Positive	

REQUIRED PROPERTIES FROM THE TESTING OF DISTILLATION RESIDUE FROM Pavon™			
Parameter	Test Method	Value	
Penetration, 100 g, 5 secs. @ 77 °F	AASHTO T 49	60 mm Min.	130 mm Max.
Ductility, cms., @ 39.2 °F	AASHTO T-51	40 cms Min.	-
Elastic Recovery @ 50 °F, %	AASHTO T-301	50 % Min.	-

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		
Parameter	Test Method	Value
Cone Penetration, 77 °F	ASTM D5329	60-100
Flow, 140 °F	ASTM D5329	5 mm-Maximum
Resilience, 77 °F	ASTM D5329	30 %-Minimum
Ductility, 77 °F	AASHTO T51	30 cm-Minimum
Ductility, 39.2 °F	AASHTO T51	30 cm-Minimum
Softening Point	AASHTO T53	170 °F Minimum

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.

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

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