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**T E N N E S S E E**

November 29, 2021  
(Rev. 4-11-22)  
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January 1, 2021

**SPECIAL PROVISION**

**REGARDING**

**CRACK ATTENUATING MIXTURE**

**Description**

This work shall consist of the construction of an intermediate crack attenuating base course prepared in a hot bituminous mixing plant and shall include the furnishing of all labor, materials, and equipment necessary to perform the work. The Crack Attenuating Mixture (CAM) shall be placed directly on the existing Portland Cement Concrete (PCC) or asphalt concrete (AC) pavements. The CAM interlayer shall be covered with a surface course mixture as shown on the Contract Plans.

**Materials**

Provide materials as specified in:

Mineral Aggregate.....	<b>903.06</b>
Mineral Filler .....	<b>903.16</b>
Asphalt Cement, Grade PG 70-22, 76-22, 82-22.....	<b>904.01</b>

Other materials not specified (such as but not limited to fibers, ground tire rubber, chemical admixtures) may be utilized to meet the mixture testing criteria with the Department’s approval. The Department reserves the right to review a historical documentation and a quality control plan for how any new additive is introduced into the mixture and may refuse the use of any additive at the Department’s discretion.

**Composition of Mixtures**

Develop a bituminous mixture composed of aggregate, mineral filler, asphalt cement, and any required other material. Aggregate fractions shall be sized, uniformly graded, and combined in such proportions so that the resulting mixtures will meet the grading and physical properties of the approved Job Mix Formula (JMF). The asphalt content shall be a minimum of 7.0%.

**A. Gradation**

The requested aggregate gradation shown on the JMF shall be within the design range of Table 307CAM-1.

**Table 307CAM-1: Design Range of Gradation**

<u>Sieve Size</u>	<u>Total Percent Passing, by Weight</u>
3/4 inch	100
3/8 inch	75-100
No. 4	Contractor's JMF Design
No. 8	Contractor's JMF Design
No. 30	Contractor's JMF Design
No. 100	Contractor's JMF Design
No. 200	Contractor's JMF Design

**B. Job Mix Formula (JMF)**

Produce a JMF meeting **407.03.C** except as modified in the following:

1. **407.03.C.1.e** does not apply.
2. **407.03.C.1.i** is replaced with: Indicate the type, manufacturer, and percentage per weight of aggregate of any additional material utilized.
3. **407.03.C.1.l** does not apply.
4. **407.03.C.1.m** does not apply.
5. **407.03.C.1.n** does not apply.
6. **407.03.C.3** does not apply.
7. **407.03.D.2.h** does not apply, except as noted below.

In addition to the applicable portion of **407.03.C**, present laboratory data showing the mixture meets the testing criteria in Table 307CAM-2. Mixture specimens tested in accordance with ASTM D8225 and AASHTO T324 shall be aged as loose mix for 4 hours in a forced draft oven at 135°C. Mixture specimens tested in accordance with AASHTO T324 shall be tested at a temperature of 50°C.

**Table 307CAM-2: Design Testing Criteria**

Minimum CT Index per IDEAL CT (ASTM D8225)	Minimum Peak Load per IDEAL CT (ASTM D8225), kN	Minimum Passes to 12.5 mm Rutting Depth per Hamburg Wheel Tracking Test (AASHTO T324)	Minimum Passes to Stripping Inflection Point per Hamburg Wheel Tracking Test (AASHTO T324)	Maximum Asphalt Draindown Loss % (AASHTO T305)
350	8.0	20,000	15,000	0.3%

**C. Contractor’s Quality Control**

During production of the mixture, provide material that conforms to the approved JMF. Perform testing on mixtures to confirm conformance to the acceptable criteria and the JMF. At a minimum the Department shall require the following minimum testing:

**1. Start Up Testing**

Within the first 500 tons of mixture produced, sample the mixture from loaded trucks and confirm the requirements of Table 307CAM-3 are met. If the requirements are not met, cease production, and make adjustments to the operation to bring the mixture within compliance. No mixture is to be placed on the project until satisfactory results are obtained.

**Table 307CAM-3: Start Up Testing Requirements**

<b><u>Property</u></b>	<b><u>Specification Limit</u></b>
Asphalt Content	± 0.30% from JMF value
Gradation (3/8 inch sieve and larger)	± 6.50% from JMF value
Gradation (No. 4 sieve)	± 4.62% from JMF value
Gradation (No.8 and No. 30)	± 3.80% from JMF value
Gradation (No.100 and No. 200)	± 1.80% from JMF value
Maximum Theoretical Specific Gravity (Gmm)	± 0.025 from JMF value
Asphalt Draindown Loss	0.3% maximum

**2. Production Testing**

Confirm compliance of the mixture to the JMF for asphalt cement content and gradation meeting **407.03.D.2.h.2.**

**D. Quality Control Plan**

Provide and follow a Quality Control Plan meeting **407.03.D.3.**

**Equipment**

Produce the mixture in an asphalt plant meeting **407.04**. Provide equipment that meets the requirements of **407.05 – 407.08**.

**Construction Requirements**

The mixture shall meet all requirements stated in **407.09 - 407.14** and **407.16 - 407.18**.

**Compaction**

Use a system of compaction for the roadway pavement that has previously produced the required pavement densities.

The number and type of rollers is unspecified.

**Method of Measurement**

The Department will measure the mixture in accordance with **407.19**.

For bidding purposes, use an asphalt cement content of 7%. The price adjustment under SP109B shall be made based on the 7% asphalt content and assumed to be a PG70-22 graded asphalt cement.

**Basis of Payment**

The Department will pay for accepted quantities at the contract prices, complete in place, as follows:

Item	Description	Unit
307-02.09	Asphalt Concrete Mix (PG70-22) Grading CAM	Ton

**Acceptance of the mixture**

The Department will accept the mixture meeting requirements of **407.20** with the exception for mix density testing and adjustments as follows:

**1. Density**

The Department will conduct density testing in accordance with **407.20.B.5** for mixtures with a lift thickness > 1” and shall meet the requirements of Table 307CAM-4.

**Table 307CAM-4: Density Requirements**

<b><u>Mix Type</u></b>	<b><u>% of Maximum Theoretical Density (Lot Average)</u></b>	<b><u>No Single Test Less Than, % (Sub Lot)</u></b>
CAM Lift thickness > 1”	93.0%	91.0%
CAM Lift thickness ≤ 1”	Not Required	Not Required

**2. Adjustments**

The Department will pay no additional compensation made under **407.20.C.1** for exceeding 7% asphalt cement content, increasing the grade of the asphalt above PG70-22, or for the addition of any additives needed to meet the required testing criteria.