

Item 04402.017901M Reflective Crack Relief HMA Interlayer

The requirements of Section 402 - Hot Mix Asphalt (HMA) Pavement shall apply except as modified below.

DESCRIPTION

This work shall consist of developing Reflective Crack Relief HMA Interlayer material using the Superpave Mix Design procedure detailed in Materials Method 5.16, "Superpave Hot Mix Asphalt Mixture Design and Mixture Verification Procedures," except as modified below. Reflective Crack Relief Interlayer is a mixture of Performance Graded Binder (PG Binder), mineral aggregate and mineral filler, if required. The Reflective Crack Relief HMA Interlayer shall be placed in one lift in conformance with lines, grades, and typical cross sections shown on the plans, or established by the Engineer. This is a performance-based specification in which the Contractor is responsible for compacting the pavement within a specified density range. Written instructions for determining pavement density are available from the Regional Materials Engineer or the Director, Materials Bureau. All necessary pavement repairs, crack sealing, joint sealing, pavement marking removal, tack coats, utility grade adjustments, and milling of rebates will be paid under appropriate items.

MATERIALS

The materials and composition for Reflective Crack Relief Interlayer mixtures shall meet the requirements specified in §401-2 and §402-2, except as noted herein.

Delete §401-2.01, Hot Mix Asphalt Designs, and replaced with the following:

"Produce Reflective Crack Relief HMA Interlayer mixture in accordance with the procedures outlined in this specifications and NYSDOT's Material Method 5.16, Superpave Hot Mix Asphalt Mixture Design and Mixture Verification Procedures except as modified below:

Formulate and submit to the Regional Materials Engineer (RME), a Reflective Crack Relief HMA Interlayer mixture design that satisfies the design criteria outlined in this specification. The minimum PG Binder content shall not be less than 7.0%. When the submitted HMA design is assigned verification status, the design must be verified during production as outlined in MM 5.16. Notify the RME at least 24 hours prior to the start of verification status production. When producing under Verification Status, make necessary adjustments to control the process. Mixtures produced under Verification Status, as outlined in MM 5.16, may be allowed for use on State projects."

Table 1 - Design Control Points

Standard Sieves (mm)	Percent Passing Criteria	
	Maximum	Minimum
9.5		100
4.75	100	80

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2.36	85	60
1.18	70	40
0.600	55	25
0.300	35	15
0.150	20	8
0.075	14	6

Table 2 - Mixture Additional Aggregate Criteria

Sand Equivalent, % minimum
45

Table 3 - Design Number of Gyration

Compactive Effort	N_{design}
Number of Gyration	50

Table 4 - Volumetric Design Criteria

% VMA, minimum
16

Table 5 - Mixture Performance Criteria

Test	Performance Criteria
Hveem Stability ¹ (AASHTO T-246) @ 60°C, 100mm molds, 50 gyrations	18.0 min.
Flexural Beam Fatigue ² (AASHTO TP-8), 2000 Microstrain, 10 Hz, 3.0_1.0% air voids ³ , 10°C	100,000 cycles, minimum for an average of 2 samples

Note 1: The Reflective Crack Relief bituminous mixture for Hveem Stability testing should be aged 2 hours at compaction temperature in accordance with AASHTO PP2-99 Section 7.1.

Note 2: The Reflective Crack Relief bituminous mixture for beam testing should be aged 3 hours at 135°C and 1 hour at compaction temperature in accordance with AASHTO PP2-99 Section 7.2 (mechanical property testing), prior to compacting the beams.

Note 3: The void requirement for the *Flexural Beam Fatigue* test specimens differs from the gyratory samples. The 3.0_1.0% air voids represents the in-place construction density.

Table 6 - Production Gradation Tolerances

Sieve Size	9.5	4.75	2.36	1.18	0.600	0.300	0.150	0.075
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(mm)								
Tolerance	± 4	± 3	± 3	± 3	± 2	± 2	± 2	± 1

Table 7 - PG Binder Content Production Tolerance

PG Binder Content
± 0.3% from the JMF

If a test value for 0.075 mm sieve, or any sieve larger than 1.18 mm varies from target value by more than 1.5 times the production tolerance given in Table 6 - Production Gradation Tolerances, the Regional Materials Engineer will evaluate the material represented by that test to determine acceptability. If the average absolute difference of [Test Value - Target Value] for any sieve exceeds the production tolerance for a lot, the Regional Material Engineer will evaluate the material to determine acceptability. If for any reason a change in gradation or materials occurs, prepare a separate job mix formula and Reflective Crack Relief HMA Interlayer mixture design to fit each change in material or gradation. Changes in Performance Graded Binder content can be made by the Regional Director or his representative providing the resultant mixture has properties within the specified mechanical and volumetric properties.

§ 401-2.04, Performance Graded Binder, applies except as modified below:

“Use a Performance Graded Binder in the production of this mixture that meets the requirements of AASHTO MP-1 with a PG high temperature of 64°C or higher and a PG low temperature of – 28°C or lower as required to meet the Hveem Stability and Flexural Beam Fatigue mix requirements. The asphalt binder must also meet the following requirements:

Test	Requirement
Elastic Recovery, AASHTO T301-95 100 mm elongation and cut immediately at 25_C	60% minimum
Separation Test, ASTM D5976 Sec 6.1	6_C difference max after 48 hours.

Delete the last sentence of § 402-2.01, General.

CONSTRUCTION DETAILS

The Construction Details of §401-3 and §402-3 shall apply except as modified below:

Delete § 402-3.04, Rollers, and replaced with the following:

“Use rollers which appear on the New York State’s Approved List and used according to the requirements of § 402-3.07, Compaction. The rollers must be in good mechanical condition, free from excessive backlash, and capable of operating at speeds slow enough to avoid displacement of the mixture. The number and weight of rollers must be sufficient to satisfactorily compact the

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mixture while it is still in a workable condition. Excessive crushing of aggregate will not be permitted.”

Delete the first paragraph under §402 - 3.06, Spreading and Finishing, and replace with the following:

"Apply tack coat on the contact surface with an undiluted emulsion at a rate of 0.09 to 0.18 liters per square meter in accordance with §407-3 prior to placing the Reflective Crack Relief HMA Interlayer mixture. Paving over a tack coat should not commence until the emulsion has broken (goes from brown to black)."

METHOD OF MEASUREMENT

Reflective Crack Relief HMA Interlayer will be measured as the number of square meters of surface area that have been acceptably completed.

BASIS OF PAYMENT

The provisions of § 402-5, Basis of Payment, shall apply.

All necessary pavement repairs, crack sealing, joint sealing, pavement marking removal, tack coats, utility grade adjustments, and milling of rebates will be paid under appropriate items.

Payment will be made under:

ITEM NO.	ITEM	PAY UNIT
04402.017901 M	Reflective Crack Relief HMA Interlayer	Square Meter