# hot-mix asphalt – PRIME COAT (BMPR)

Effective: February 19, 2013 Revised: June 1, 2014

Revise Note 1 of Article 406.02 of the Standard Specifications to read:

“Note 1. The bituminous material used for prime coat shall be one of the types listed in the following table.

When emulsified asphalts are used, any dilution with water shall be performed by the emulsion producer. The emulsified asphalt shall be thoroughly agitated within 24 hours of application and show no separation of water and emulsion.

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| --- | --- |
| Application | Bituminous Material Types |
| Prime Coat on Brick, Concrete, or HMA Bases | SS-1, SS-1h, SS-1hP, SS-1vh, RS-1, RS-2, CSS-1, CSS-1h, CSS-1hP, CRS-1, CRS-2, HFE-90, RC-70 |
| Prime Coat on Aggregate Bases | MC-30, PEP” |

Add the following to Article 406.03 of the Standard Specifications:

 “(i) Vacuum Sweeper………………………1101.19

(j) Spray Paver………………………………………………….1102.06”

Revise Article 406.05(b) of the Standard Specifications to read:

 “(b) Prime Coat. The bituminous material shall be prepared according to Article 403.05 and applied according to Article 403.10. The use of RC-70 shall be limited to air temperatures less than 60 ⁰F (15 ⁰C).”

 (1) Brick, Concrete or HMA Bases. The base shall be cleaned of all dust, debris and any substance that will prevent the prime coat from adhering to the base. Cleaning shall be accomplished by sweeping to remove all large particles and air blasting to remove dust. As an alternate to air blasting, a vacuum sweeper may be used to accomplish the dust removal. The base shall be free of standing water at the time of application. The prime coat shall be applied uniformly and at a rate that will provide a residual asphalt rate on the prepared surface as specified in the following table.

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| --- | --- |
| Type of Surface to be Primed | Residual Asphalt Rate lb/sq ft (kg/sq m) |
| Milled HMA, Aged Non-Milled HMA, Milled Concrete, Non-Milled Concrete & Tined Concrete | 0.05 (0.244) |
| Fog Coat between HMA Lifts, IL-4.75 & Brick | 0.025 (0.122) |

The bituminous material for the prime coat shall be placed one lane at a time. Unless a spray paver meeting the requirements specified herein is used, the primed lane shall remain closed until the prime coat is fully cured and does not pick up under traffic. When placing prime coat through an intersection where it is not possible to keep the lane closed, the prime coat may be covered immediately following its application with fine aggregate mechanically spread at a uniform rate of 2 to 4 lb/sq yd (1 to 2 kg/sq m).

(2) Aggregate Bases. The prime coat shall be applied uniformly and at a rate that will provide a residual asphalt rate on the prepared surface of 0.25 lb/sq ft ± 0.01 (1.21 kg/sq m ± 0.05).

The prime coat shall be permitted to cure until the penetration has been approved by the Engineer, but at no time shall the curing period be less than 24 hours for MC-30 or four hours for PEP. Pools of prime occurring in the depressions shall be broomed or squeegeed over the surrounding surface the same day the prime coat is applied.

The base shall be primed 1/2 width at a time. The prime coat on the second half/width shall not be applied until the prime coat on the first half/width has cured so that it will not pick up under traffic.

The residual asphalt binder rate will be verified a minimum of once per type of surface to be primed as specified herein for which at least 2,000 tons of HMA will be placed. The test will be according to the “Determination of Residual Asphalt in Prime and Tack Coat Materials” test procedure.

Prime coat shall be fully cured prior to placement of HMA to prevent pickup by haul trucks or paving equipment. If pickup occurs, paving shall cease in order to provide additional cure time, and all areas where the pickup occurred shall be repaired.

If after five days loss of prime coat is evident prior to covering with HMA, additional prime coat shall be placed as determined by the Engineer at no additional cost to the Department.”

Revise the last sentence of the first paragraph of 406.13(b) of the Standard Specifications to read:

 “Water added to emulsified asphalt as allowed in Article 406.02 will not be included in the quantities measured for payment.”

Revise the second paragraph of Article 406.13(b) of the Standard Specifications to read:

 “Aggregate for covering prime coat will not be measured for payment.”

Revise the first paragraph of Article 406.14 of the Standard Specifications to read:

 “Prime Coat will be paid for at the contract unit price per pound (kilogram) of residual asphalt applied for BITUMINOUS MATERIALS (PRIME COAT), or POLYMERIZED BITUMINOUS MATERIALS (PRIME COAT)”.

Revise Article 407.02(a) of the Standard Specifications to read.

 “(a) Packaged Rapid Hardening Mortar of Concrete……………………………………1018”

Delete Article 407.02(b) of the Standard Specifications.

Delete Article 407.02 Note 1. of the Standard Specifications.

Revise Article 407.06(b) of the Standard Specifications to read:

 “(b) A bituminous prime coat shall be applied between each lift of HMA according to Article 406.05(b).”

Delete the second paragraph in Article 407.12 of the Standard Specifications.

Revise the first paragraph of Article 408.04 of the Standard Specifications to read.

 **“408.04 Method of Measurement.** Bituminous priming material will be measured for payment according to article 406.13.”

Revise Article 408.05 of the Standard Specifications to read.

 **“408.05 Basis of Payment.** This work will paid for at the contract unit price per pound (kilogram) of residual asphalt applied for BITUMINOUS MATERIALS (PRIMECOAT) or POLYMERIZED BITUMINOUS MATERIALS (PRIMECOAT) and at the contract unit price per ton (metric ton) for INCIDENTAL HOT-MIX ASPHALT SURFACING.”

Revise Article 1032.02 of the Standard Specifications to read:

**“1032.02 Measurement.** Asphalt binders, emulsified asphalts, rapid curing liquid asphalt, medium curing liquid asphalts, slow curing liquid asphalts, asphalt fillers, and road oils will be measured by weight.

A weight ticket for each truck load shall be furnished to the inspector. The truck shall be weighed at a location approved by the Engineer. The ticket shall show the weight of the empty truck (the truck being weighed each time before it is loaded), the weight of the loaded truck, and the net weight of the bituminous material.

When an emulsion or cutback is used for prime coat, the percentage of asphalt residue of the actual certified product shall be shown on the producer’s bill of lading or attached certificate of analysis. If the producer adds extra water to an emulsion at the request of the purchaser, the amount of water shall also be shown on the bill of lading.

Payment will not be made for bituminous materials in excess of 105 percent of the amount specified by the Engineer.”

Add the following to the table in article 1032.04 of the Standard Specifications:

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| --- | --- | --- |
| “SS-1vh  | 160 - 180 | 70 – 80 |
| RS-1, CRS-1 | 75 - 130 | 25 - 55 |
| RS-2, CRS-2 | 110 – 160 | 45 – 70” |

Add the following to Article 1032.06 of the Standard Specifications:

 “(g) Non Tracking Emulsified Asphalt SS-1vh:

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| --- |
| Requirements for SS-1vh |
| Test | SPEC | AASHTO Test Method |
| Saybolt Viscosity @ 25C, SFS | 20-200 | T 72 |
| Storage Stability, 24hr., % | 1 max. | T 59 |
| Residue by Evaporation, % | 50 min. | T 59 |
| Sieve Test, % | 0.3 max. | T 59 |
| Tests on Residue from Evaporation |
| Penetration @25°C, 100g., 5 sec., dmm | 20 max. | T 49 |
| Softening Point, °C  | 65 min. | T 53 |
| Solubility, % | 97.5 min. | T 44 |
| Orig. DSR @ 82°C, kPa | 1.00 min. | T 315” |

Revise the last table of Article 1032.06 to read:

|  |  |
| --- | --- |
| “Grade | Use |
| SS-1, SS-1h, RS-1, RS-2, CSS-1, CRS-1, CRS-2, CSS-1h, HFE-90, SS-1hP, CSS-1hP, SS-1vh | Prime or fog seal |
| PEP | Bituminous surface treatment prime |
| RS-2, HFE-90, HFE-150, HFE- 300, CRSP, HFP, CRS-2, HFRS-2 | Bituminous surface treatment |
| CSS-1h Latex Modified | Microsurfacing” |

Add the following to Article 1101 of the Standard Specifications:

“1101.19 Vacuum Sweeper. The vacuum sweeper shall have a minimum sweeping path of 52 inches (1.3 meters) and a minimum blower rating of 20,000 cubic feet per minute (566 cubic meters per minutes).”

Add the following to Article 1102 of the Standard Specifications:

“1102.06 Spray Paver. The spreading and finishing machine shall be capable of spraying a rapid setting emulsion tack coat, paving a layer of hot mix asphalt (HMA), and providing a smooth HMA mat in one pass. The HMA shall be spread over the tack coat in less than five seconds after the application of the tack coat during normal paving speeds. No wheel or other part of the paving machine shall come into contact with the tack coat before the HMA is applied. In addition to meeting the requirements of Article 1102.03, the spray paver shall also meet the requirements of 1102.05 for the tank, heating system, pump, thermometer, tachometer or synchronizer, and calibration. The spray bar shall be equipped with properly sized and spaced nozzles to apply a uniform application of tack coat at the specified rate for the full width of the mat being placed.