



TEXAS TECH UNIVERSITY

Multidisciplinary Research in Transportation

Draft Updated Specification for Surface Treatments Constructed over Base Courses

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Sanjaya Senadheera and M. Vignarajah

**Performed in Cooperation with the Texas Department of Transportation
And the Federal Highway Administration**

Center for Multidisciplinary Research in Transportation

Texas Tech University

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By

Sanjaya Senadheera, Ph.D. and M. Vignarajah

Department of Civil Engineering
Texas Tech University

Center for Multidisciplinary Research in Transportation (TechMRT)
Research Report Number: 0-5169
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on Base Courses

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Disclaimers

The contents of this report reflect the views of the author, who is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the Federal Highway Administration (FHWA) or the Texas Department of Transportation (TxDOT). This report does not constitute a standard, specification, or regulation.

This report is not intended for construction, bidding, or permit purposes.

ITEM 310

PRIME COAT

310.1. Description. Prepare and treat existing or newly constructed flexible or stabilized base surface with a bituminous material. Apply blotter material as required to allow traffic during construction.

310.2. Materials.

A. Bituminous. Use material of the type and grade shown on the plans in accordance with Item 300, "Asphalts, Oils, and Emulsions."

B. Blotter. Unless otherwise shown on the plans or approved, use either base course sweepings obtained from cleaning the base, native sand or grade 5 rock as blotter materials.

310.3. Equipment. Provide applicable equipment in accordance with Article 316.3, "Equipment."

310.4. Construction.

A. General. Apply the prime coat binder mixture when the air temperature is 60°F and above, or above 50°F and rising. Measure the air temperature in the shade away from artificial heat. The Engineer will determine when weather conditions are suitable for application.

The prime coat binder must be applied at the appropriate base moisture content. An appropriate rule of thumb would be two percentage points below the optimum moisture content for the base. The approval of the Engineer is required before the prime coat binder is applied.

Do not permit traffic, hauling, or placement of subsequent courses over freshly constructed prime coats. In situations where traffic has to be allowed, a blotting material must be applied and the Engineer's approval must be obtained before traffic is allowed on the blotted prime coat. When traffic is allowed on the prime coated base, drainage paths must be allowed to prevent waterlogging of the base. Maintain the primed surface until placement of subsequent courses or acceptance of the work.

B. Surface Preparation. Prepare the surface by sweeping or other approved methods. When directed, before applying bituminous material, if the finished base surface is too dry, lightly sprinkle the surface with water to control dust and ensure absorption.

C. Application.

1. Bituminous. The Engineer will select the application temperature within the limits recommended in Item 300, "Asphalts, Oils, and Emulsions." Apply material within 15°F of the selected temperature.

Distribute the material smoothly and evenly at the rate selected by the Engineer. When directed, roll the freshly applied prime coat with a pneumatic-tire roller to ensure penetration.

2. Blotter. Spread blotter material before allowing traffic to use a primed surface. When "Prime Coat and Blotter" is shown on the plans as a bid item, apply blotter material to primed surface at the rate shown in the plans or as directed. When "Prime Coat" is shown on the plans as a bid item, apply blotter to spot locations or as directed to accommodate traffic movement through the work area. Remove blotter material before placing the surface as directed by the Engineer. Dispose of blotter material according to applicable state and federal requirements.

310.5. Measurement. This Item will be measured by the gallon of bituminous material placed and accepted.

310.6. Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Prime Coat" or "Prime Coat and Blotter" of the type and grade of bituminous material specified. This price is full compensation for cleaning and sprinkling the area to be primed; materials, including blotter material; and rolling, equipment, labor, tools, and incidentals.

If MC or RC asphalt is used the surface treatment shall not be applied until the prime has cured a minimum of 7 days unless otherwise authorized by the engineer.

ITEM 314

EMULSIFIED ASPHALT TREATMENT

314.1. Description. Apply an emulsified asphalt and water mixture as a base or subgrade treatment; for erosion control, including dust prevention; or as a prime coat.

314.2. Materials. Furnish materials in accordance with the following:

- Item 204, “Sprinkling”
- Item 300, “Asphalts, Oils, and Emulsions.”

Use emulsified asphalt of the type and grade shown on the plans. In the case of emulsified asphalt used a prime coating binder, it must be diluted appropriately as directed by the engineer to ensure sufficient penetration into the base layer. Use a quantity of emulsified asphalt in the mixture, expressed as a percent of total volume, in accordance with the percentage shown on the plans or as directed.

314.3. Equipment. Provide a self-propelled sprinkler in accordance with Article 204.3, “Equipment.” Provide calibration documentation for the tank used for distribution.

314.4. Construction. Agitate the water and emulsified asphalt to produce a uniform blend. Evenly distribute at the rate selected by the Engineer to locations shown on the plans or as directed. The prime coat binder must be applied at the appropriate base moisture content. An appropriate rule of thumb would be two percentage points below the optimum moisture content for the base. The approval of the Engineer is required before the prime coat binder is applied.

A. Surface Preparation. Prepare the surface by sweeping or other approved methods. When directed, before applying bituminous material, if the finished base surface is too dry, lightly sprinkle the surface with water to control dust and ensure absorption.

BA. Base or Subgrade Treatment. Treat the base or subgrade to the depth and width shown on the plans or as directed.

Regulate the percentage of emulsified asphalt in the mixture and distribute successive applications to achieve the specified rate.

Maintain the proper moisture content of the treated material. Mix the treated material, then shape and compact as required by the specification for the course. Finish the course to the line, grade, and typical section shown on the plans. While curing the course, maintain the surface with light applications of the emulsified asphalt mixture, as directed.

CB. Erosion Control. Apply the mixture as shown on the plans or as directed.

DC. Prime Coat. Regulate the percentage of emulsified asphalt in the mixture and distribute successive applications to achieve the specified rate.

314.5. Measurement. The treatment will be measured by the gallon of emulsified asphalt used in the emulsified asphalt and water mixture.

314.6. Payment. The work performed and materials furnished in accordance with this Item and measured as provided under “Measurement” will be paid for at the unit price bid for “Emulsified Asphalt (Base or Subgrade Treatment),” “Emulsified Asphalt (Erosion Control),” or “Emulsified Asphalt (Prime Coat),” of the type and grade specified. This price is full compensation for materials, including emulsified asphalt and water, and for equipment, labor, tools, and incidentals.