

Special Specification 3005

Spray Applied Underseal Membrane



1. DESCRIPTION

- 1.1. **Underseal Membrane.** Furnish a smooth and homogeneous spray-applied underseal membrane polymer-modified emulsion (EBL) in accordance with Section 300.2.4., "Emulsified Asphalt." The membrane must be applied by a spray-paver and covered immediately with a compacted mixture of aggregate, asphalt binder, and additives mixed hot in a mixing plant.

2. EQUIPMENT

- 2.1. **Spray Paver.** Furnish a spray paver in accordance with Item 320, "Equipment for Asphalt Concrete Pavement."
- 2.2. **Membrane Storage Tank and Distribution System.** Equip the spray paver with an insulated storage tank and distribution system in accordance with Item 320.

3. CONSTRUCTION METHODS

- 3.1. **Surface Preparation.** Remove existing raised pavement markers. Repair any damage incurred by removal as directed. Remove dirt, dust, or other harmful material before sealing. When shown on the plans, remove vegetation and blade pavement edges.
- 3.2. **Membrane Placement.** Uniformly apply the membrane at an application rate between 0.10 – 0.22 gal. per square yard for bonding, and 0.22 – 0.40 gal. per square yard for sealing. The Engineer may adjust the application rate, taking into consideration the existing pavement surface conditions. Spray the membrane using a metered mechanical pressure spray bar at a temperature of 140°F–180°F. Monitor the membrane application rate and adjust the rate when directed. Verify that the spray bar can apply the membrane at a uniform rate across the entire paving width. Do not let the wheels or other parts of the paving machine contact the freshly applied membrane. Apply a uniform membrane coat to all contact surfaces and all joints as shown on the plans. Do not dilute the membrane at the terminal, in the field, or at any other location before use. Prevent splattering of the membrane when placed adjacent to curb, gutter, and other structures.
- 3.3. **Quality Control.** Stop application if it is not uniform due to streaking, ridging, pooling, or flowing off the roadway surface. Verify equipment condition, operating procedures, application temperature, and material properties. Determine and correct the cause of non-uniform application.

The Engineer may perform independent tests to confirm contractor compliance and may require testing differences or failing results to be resolved before resuming production.

The Engineer may stop the application and require construction of test strips at the Contractor's expense if any of the following occurs:

- non-uniformity of application continues after corrective action;
- in three consecutive shots, application rate differs by more than 0.02 gal. per square yard from the rate directed; or
- any shot differs by more than 0.04 gal. per square yard from the rate directed.

The Engineer will approve the test strip location. The Engineer may require additional test strips until surface treatment application meets specification requirements.

- 3.4. **Membrane Sampling.** The Engineer will obtain a 1-qt. sample of the polymer-modified emulsion, for each lot of mixture produced, in accordance with [Tex-500-C](#), Part III. The Engineer will notify the Contractor when the sampling will occur and will witness the collection of the sample. Obtain the sample at approximately the same time the mixture random sample is obtained. Label the can with the corresponding lot and subplot numbers, producer name, producer facility, grade, District, date sampled, and project information, including highway and CSJ number. The Engineer will retain these samples for 2 mo.

At least once per project, the Engineer will collect split samples of the polymer-modified emulsion. The Engineer will submit one split sample to the Materials and Tests Division to verify compliance with Item 300, and will retain the other split sample for 2 mo. The Engineer may test as often as necessary to ensure the residual of the emulsion is greater than or equal to the specification requirement in Item 300, Asphalts, Oils, and Emulsions.”

4. MEASUREMENT

Unless otherwise noted on the plans, underseal membrane material will be measured by one of the following methods:

- 4.1. **Volume.** Underseal membrane material will be measured at the applied temperature by strapping the tank before and after road application and determining the net volume in gallons from the distributor’s calibrated strap stick. The Engineer will witness all strapping operations for volume determination.

The Engineer may allow the use of a metering device to determine asphalt volume used and application rate if the device is accurate within 1.5% of the strapped volume.

- 4.2. **Weight.** Underseal membrane material will be measured in tons using certified scales meeting the requirements of Item 320, unless otherwise approved. The transporting truck must have a seal attached to the driving device and other openings. The Engineer may require random checking on public scales, at the Contractor’s expense, to verify weight accuracy.

Upon completion or temporary suspension, any remaining membrane material will be weighed by a certified public weigher or measured by volume in a calibrated tank, and the quantity converted to tons at the measured temperature. The quantity to be measured will be the number of tons received, minus the number of tons remaining after all directed work is complete, and minus the amount used for other Items.

5. 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 bid price for “Membrane Underseal.” These prices are full compensation for all materials, equipment, labor, tools, and incidentals necessary to complete the work.