

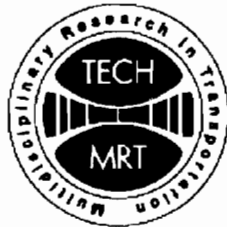
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Draft Updated Specifications for Seal Coats and Surface Treatments Including New Acceptance Criteria

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**Project Title: Develop a Testing and Evaluation Protocol to Assess
Seal Coat Binder-Aggregate Compatibility**



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ITEM 316

SURFACE TREATMENTS

316.1. Description. Construct a surface treatment consisting of 1 or more applications of a single layer of asphalt material covered with a single layer of aggregate.

316.2. Materials. Furnish materials of the type and grade shown on the plans in accordance with the following:

- Item 300, “Asphalts, Oils, and Emulsions”
- Item 302, “Aggregates for Surface Treatments.”

The aggregate and binder used in a surface treatment must be compatible with each other to the extent specified in the plans. This compatibility is applicable to the following situations:

- Compatibility between the aggregate and its precoating binder
- Compatibility between the surface treatment aggregate (precoated or non-precoated) and the surface treatment binder

The compatibility of aggregate and binder in each of the above scenarios can be evaluated using the following standard test procedures.

- Tex-XXX-X: Compatibility Test and Evaluation Protocol for Aggregate and Precoating Hot Asphalt Binder
- Tex-YYY-Y: Performance-Based Compatibility Test and Evaluation Protocol for Aggregates and Binders used in Seal Coats and Surface Treatments

For final surfaces, unless otherwise shown on the plans, furnish aggregate with a surface aggregate classification of “B” or better.

316.3. Equipment.

A. Distributor. Furnish a distributor that will apply the asphalt material uniformly at the specified rate or as directed.

1. Transverse Variance Rate. When a transverse variance rate is shown on the plans, ensure that the nozzles outside the wheel paths will output a predetermined percentage more of asphalt material by volume than the nozzles over the wheel paths.

2. Calibration.

a. Transverse Distribution. Furnish a distributor test report, no more than 1 yr. old, documenting that the variation in output for individual nozzles of the same size does not exceed 10% when tested at the greatest shot width in accordance with Tex-922-K, Part III.

Include the following documentation on the test report:

- the serial number of the distributor,
- a method that identifies the actual nozzle set used in the test, and
- the fan width of the nozzle set at a 12-in. bar height.

When a transverse variance rate is required, perform the test using the type and grade of asphalt material to be used on the project. The Engineer may verify the transverse rate and distribution at any time. If verification does not meet the requirements, correct deficiencies and furnish a new test report.

b. Tank Volume. Furnish a volumetric calibration and strap stick for the distributor tank in accordance with Tex-922-K,

Part I.

Calibrate the distributor within the previous 5 yr. of the date first used on the project. The Engineer may verify calibration accuracy in accordance with Tex-922-K, Part II.

3. Computerized Distributor. When paying for asphalt material by weight, the Engineer may allow use of the computerized distributor display to verify application rates. Verify application rate accuracy at a frequency acceptable to the Engineer.

B. Aggregate Spreader. Use a continuous-feed, self-propelled spreader to apply aggregate uniformly at the specified rate or as directed.

C. Rollers. Unless otherwise shown on the plans, furnish light pneumatic tire rollers in accordance with Item 210, "Rolling."

D. Broom. Furnish rotary, self-propelled brooms.

E. Asphalt Storage and Handling Equipment. When the plans or the Engineer allows storage tanks, furnish a thermometer in each tank to indicate the asphalt temperature continuously.

Keep equipment clean and free of leaks. Keep asphalt material free of contamination.

F. Aggregate Haul Trucks. Unless otherwise authorized, use trucks of uniform capacity to deliver the aggregate. Provide documentation showing measurements and calculation in cubic yards. Clearly mark the calibrated level. Truck size may be limited when shown on the plans.

G. Digital Measuring Instrument. Furnish a vehicle with a calibrated digital-measuring instrument accurate to ± 6 ft. per mile.

316.4. Construction.

A. General. Asphalt application season will be as shown on the plans. Asphalt and aggregate rates shown on the plans are for estimating purposes only. The Engineer will adjust the rates for the existing conditions.

B. Temporary Aggregate Stockpiles. The Engineer will approve the location of temporary aggregate stockpiles on the right of way before delivery. Place stockpiles in a manner that will not:

- obstruct traffic or sight distance,
- interfere with the access from abutting property, or
- interfere with roadway drainage.

Locate stockpiles a minimum of 30 ft. from roadway when possible. Sign and barricade as shown on the plans.

C. Aggregate Furnished by the Department. When shown on the plans, the Department will furnish aggregate to the Contractor without cost. Stockpile locations are shown on the plans.

D. Adverse Weather Conditions. Do not place surface treatments when, in the Engineer's opinion, general weather conditions are unsuitable. Meet the requirements for air and surface temperature shown below.

1. Standard Temperature Limitations. Apply surface treatment when air temperature is above 50°F and rising. Do not apply surface treatment when air temperature is 60°F and falling. In all cases, do not apply surface treatment when surface temperature is below 60°F.

2. Polymer-Modified Asphalt Cement Temperature Limitations.

When using materials described in Section 300.2.B, "Polymer Modified Asphalt Cement," apply surface treatment when air temperature is above 70°F and rising. Do not apply surface treatment when air temperature is 80°F and falling. In all cases, do not apply surface treatment when surface temperature is below 70°F.

3. Asphalt Material Designed for Winter Use. When winter asphalt application is allowed, the Engineer will approve the air and surface temperature for asphalt material application. Apply surface treatment at air and surface temperatures as directed.

E. 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.

F. Rock Land and Shot.

1. Definitions.

- A "rock land" is the area covered at the aggregate rate directed with 1 truckload of aggregate.
- A "shot" is the area covered by 1 distributor load of asphalt material.

2. Setting Lengths. Calculate the lengths of both rock land and shot. Adjust shot length to be an even multiple of the rock land. Verify that the distributor has enough asphalt material

to complete the entire shot length. Mark shot length before applying asphalt. When directed, mark length of each rock land to verify the aggregate rate.

G. Asphalt Placement.

1. General. The maximum shot width is the width of the current transverse distribution test required under Section 316.3.A.2, "Transverse Distribution," or the width of the aggregate spreader box, whichever is less. Adjust the shot width so operations do not encroach on traffic or interfere with the traffic control plan, as directed. Use paper or other approved material at the beginning and end of each shot to construct a straight transverse joint and to prevent overlapping of the asphalt. Unless otherwise approved, match longitudinal joints with the lane lines. The Engineer may require a string line if necessary to keep joints straight with no overlapping. Use sufficient pressure to flare the nozzles fully. Select an application temperature, as approved, in accordance with Item 300, "Asphalts, Oils, and Emulsions." Uniformly apply the asphalt material at the rate directed, within 15°F of the approved temperature, and not above the maximum allowable temperature.

2. Limitations. Do not apply asphalt to the roadway until:

- traffic control methods and devices are in place as shown on the plans or as directed,
- the loaded aggregate spreader is in position and ready to begin,
- haul trucks are loaded with enough aggregate to cover the shot area, and
- haul trucks are in place behind the spreader box.

3. Nonuniform Application. Stop application if it is not uniform due to streaking, ridging, puddling, or flowing off the roadway surface. Verify equipment condition, operating procedures, application temperature, and material properties. Determine and correct the cause of nonuniform application. If the cause is high or low emulsion viscosity, replace emulsion with material that corrects the problem.

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

- nonuniformity of application continues after corrective action;
- on 3 consecutive shots, application rate differs by more than 0.03 gal. per square yard from the rate directed; or
- any shot differs by more than 0.05 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.

H. Aggregate Placement. As soon as possible, apply aggregate uniformly at the rate directed without causing the rock to roll over.

I. Rolling. Start rolling operation on each shot as soon as aggregate is applied. Use sufficient rollers to cover the entire mat width in 1 pass, i.e., 1 direction. Roll in a staggered pattern. Unless otherwise shown on the plans, make a minimum of:

- 5 passes or
- 3 passes when the asphalt material is an emulsion.

If rollers are unable to keep up with the spreader box, stop application until rollers have caught up, or furnish additional rollers. Keep roller tires asphalt-free.

J. Patching. Before rolling, repair spots where coverage is incomplete. Repair can be made by hand spotting or other approved method. When necessary, apply additional asphalt material to embed aggregate.

K. Brooming. After rolling, sweep as soon as aggregate has sufficiently bonded to remove excess.

L. Final Acceptance. Maintain surface treatment until the Engineer accepts the work. Repair any surface failures. Before final project acceptance, remove all temporary stockpiles and restore the area to the original contour and grade.

316.5. Measurement.

A. Asphalt Material. Unless otherwise shown on the plans, asphalt material will be measured by one of the following methods:

1. Volume. Asphalt 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 quantity to be measured for payment will be the number of gallons used, as directed, in the accepted surface treatment.

2. Weight. Asphalt material will be measured in tons using certified scales meeting the requirements of Item 520, "Weighing and Measuring Equipment," unless otherwise approved. The transporting truck must have a seal attached to the draining device and other openings. The Engineer may require random checking on public scales at the Contractor's expense to verify weight accuracy. Upon work completion or temporary suspension, any remaining asphalt material will be weighed by a certified public weigher, or measured by volume in a calibrated distributor or 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.

B. Aggregate. Aggregate will be measured by the cubic yard in the trucks as applied on the road. The Engineer may require loaded aggregate to be struck off for accurate measurement.

C. Loading, Hauling, and Distributing Aggregate. When the Department furnishes the aggregate, the loading, hauling, and distributing will be measured by the cubic yard in the trucks as applied on the road.

316.6. 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 prices bid for “Asphalt,” “Aggregate,” and “Loading, Hauling, and Distributing Aggregate” of the types–grades specified. These prices are full compensation for surface preparation; furnishing, preparing, hauling, and placing materials; removing existing pavement markers and excess aggregate; rolling; cleaning up stockpiles; and equipment, labor, tools, and incidentals.