SECTION 22
INDEX

SURFACE SEALING TREATMENT

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1.0 Description. This work shall consist of furnishing and applying a surface sealing treatment to the existing roadway as shown on the plans. The surface treatment shall contain a mixture of cationic asphalt emulsion, latex polymer, fine aggregate, water, and other additives as needed.

2.0 Material Requirements.

2.1 Bituminous Material. The bituminous material shall be an asphalt emulsion in accordance with the following table. The bituminous material shall show no separation after mixing. The emulsion shall be sampled in accordance with AASHTO T 40.

Asphalt Emulsion (CSS)			
	Min.	**Max.**	**Test Method**
Viscosity, Saybolt Furol at 25C, s	15	100	AASHTO T 72
Particle charge test	Positive*		AASHTO T 59
Residue, %	60	--	AASHTO T 59
Test on Residue from Distillation	**Min.**	**Max.**	**Test Method**
Penetration, 25 C, 100 g, 5 s,	30	100	AASHTO T 49

*If the particle charge test is inconclusive, material having a maximum pH value of 6.7 will be acceptable.

2.2 Mineral Aggregate. Fine aggregates materials shall be in accordance with Section 1002.3 of the Standard Specifications; except as modified herein:

2.2.1 Noncarbonated Aggregate Requirement. The aggregate blend shall contain a minimum of 50 percent non-carbonate aggregate. The aggregate blend shall have an acid insoluble residue (AIR), MoDOT Test Method TM 76, of at least 85 percent insoluble residue.

2.2.2 Absorption Requirement. The absorption of the fine aggregate shall have a maximum absorption limit of 2.0 percent tested in accordance with AASHTO T84, Specific Gravity and Absorption of Fine Aggregate.

2.2.3 Aggregate sources not meeting the absorption limits and quality requirements of Sec 1002.3 shall be in accordance with the following lightweight aggregate requirements tested on the parent material:

Property	**Percent Maximum Limit**
Absorption, AASHTO T 85, percent, max	n/a
Micro-Deval, AASHTO TP 58, percent, max	20
Los Angeles Abrasion for Lightweight Aggregate, MoDOT Test Method TM 78, percent, max	50

2.2.4 Aggregate Gradation Requirement. The aggregate blend shall have a 100 % of the material passing the No. 8 (2.36 mm) sieve. For spraying applications, the following gradation shall be used:

Sieve	Percent Passing
No. 8 (2.36 mm)	100
No. 16 (1.18 mm)	95-100
No. 30 (600 µm)	85-100
No. 50 (300 µm)	40-70
No. 100 (150 µm)	30-60
No. 200 (75 µm)	25-65

2.3 Water. Water shall be potable and free of harmful soluble salts.

2.4 Required Additives. A minimum of 3% latex polymer by weight of wet mixture is required in the surface sealant treatment. Any other material added to the mixture or to any of the component materials shall be listed in the job mix formula with the product certifications.

2.5 Mix Design. The mix design that lists the specific materials to be used on the project shall be submitted to the engineer at least 30 days before the surface sealant treatment work commences. The mixture shall contain a minimum of 25% aggregate by weight of wet mixture (50 % by weight after water is removed) and shall meet the following requirements:

	Min.	Max.	Test Method
Maximum Wet-Track Abrasion Loss (6 day soak), grams per square meter.	--	80 gr/m^2	TB 100 (ISSA) Modified
Asphalt Content by Ignition Method, percent	30%	--	AASHTO T-308-08[c]

3.0 Construction Requirements. The surface sealing mixture may be mixed and applied through mobile distribution equipment as described herein.

3.1 Mixing Equipment. All materials shall be thoroughly mixed as to produce a homogenous surface treatment. Individual volume or weight controls for proportioning each material in the mix shall be provided. Materials shall be added by a calibrated controlled device capable of monitoring the amount of material used at the time.

3.2 Distribution Equipment. The Distributor shall be equipped with a full sweep agitation system, a pumping system designed to handle fine aggregate mixes, and sufficient power to operate the full spray system and the agitation system at the same time. The Distribution equipment shall be equipped with a monitoring system that ensures the even distribution of material and measures the application rate of the mix.

3.3 Storage Tanks. If the mix is being delivered from a central mixing plant then a job site storage tank shall have the minimum capacity of the entire transport load. The storage tank shall have an internal full sweep mixing system having a mixing capability of providing a homogenous mix representing the mix design at any given location within the tank.

3.4 Environmental Protection. The contractor shall comply with all federal, state and local laws and regulations controlling pollution of the environment.

3.5 Weather Limitations. Bituminous material shall not be placed on any wet surface or when the ambient temperature or the temperature of the pavement on which it is to be placed is below 60° F. Temperatures shall be obtained in accordance with MoDOT Test Method TM 20.

3.6 Surface Preparation. The surface shall be thoroughly cleaned immediately prior to placing the surface treatment.

3.7 Protection of Other Surfaces. All curbs, manhole covers, and ADA facilities shall be protected from the spray or laydown of the bituminous mixture during placement.

3.8 Dilution. The bituminous material shall not be diluted in the field with water or other additives except as approved by the manufacturer.

3.9 Placement. Placement of the mix shall be performed in two passes with a minimum coverage of 0.125 gal/yd² per pass and the minimum total coverage of 0.25 gal/yd² Contractor shall provide a mat ensuring total coverage free of voids and pit holes.

3.10 Opening to Traffic. After the sealant application, the roadway shall remain closed until the surface is tack-.free and capable of being open to traffic without tracking.

3.11 Basis of Acceptance.

3.11.1 Quality Control. Two samples shall be collected during production on a project. One sample shall be retained for the engineer for verification. The contractor shall test the other sample and verify the mix design in accordance with Section 2.5 of this specification and submit the test results to the engineer.

3.11.2 Field Performance. The finished surface sealant treatment shall be evaluated by the engineer based on the following criteria. Any of the following shall be considered unacceptable material.

a) The presence of loose aggregate or synthetic materials that may cause damage to traveling vehicles.

b) A final surface with insufficient coverage or delamination.

4.0 Method of Measurement. Final measurement of the surface treatment will not be made except for authorized changes during construction, or where appreciable errors are found in the contract quantity. Where required, measurement of the surface treatment, complete in place, will be made to the nearest square yard. The revision or correction will be computed and added to or deducted from the contract quantity.

5.0 Basis of Payment. The accepted quantity of surface treatment, in place, will be paid for at the contract unit (square yard) price. No separate payment will be made for any additional construction methods or processes. Manufacturer shall report the unit weight (Ibs/gallon) of the surface sealing material on the bill of lading.

END OF SECTION