ITEM - BITUMINOUS FOG SEAL COAT

DESCRIPTION

1.1 This item shall consist of providing and applying a bituminous fog seal coat.

MATERIALS

2.1 BITUMINOUS EMULSION CONCENTRATE. The emulsion concentrate, in the undiluted state, shall have the following properties:

Saybolt furol viscosity: 77□F (25□C) ..... 20-100 seconds
Residue by distribution or by evaporation: ..... 57 percent, minimum
Sieve test: ..... 0.2 percent, maximum
pH, cationic: ..... 2 to 6.5

The emulsion concentrate, when diluted in the proportion of one part of concentrate to one part of hot water, by volume and ready to apply, shall have the following properties:

Saybolt furol viscosity: 77□F (25□C), ... 10-50 seconds
Residue from Distillation, or Evaporation: ..... 28 to 42 percent, minimum
Sieve test: ..... 0.1 percent, maximum
Pumping stability test: ..... pass
Hot water temperature at or above 100 degrees

Tests on Residue from Distillation, or Evaporation:

Viscosity ast 275□F (135□C) ASTM D-4402 ..... 1750 cts max.
Solubility in 1,1,1 trichloroethylene ASTM D-2042 ..... 97.5% min.
Penetration ASTM D-5 ..... 50 dmm max.
Asphaltenes ASTM D-2007 ..... 15% min.
Saturates ASTM D-2007 ..... 15% max.
Polar Compounds ASTM D-2007 ..... 25% min.
Aromatics ASTM D-2007 ..... 15% min.

(1) pH may be used in lieu of the particle charge test which is sometimes inconclusive in slow setting, bituminous emulsions.

(2) Pumping stability is tested by pumping 1 pint, (475 ml) of GSB-88 diluted 1 part concentrate to 1 part water, at 77□F (25□C), through a 1/4-inch gear pump operating 1750 rpm for 10 minutes with no significant separation or coagulation.

The bituminous base residue shall contain not less than 20 percent Gilsonite, and will not contain any tall oil pitch. It shall be compatible with asphalt concrete and have a 5-year, minimum, proven performance record under recommended application conditions.

Fog seal material shall be GSB-88 Emulsified Sealcoat Concentrate as manufactured by Asphalt Systems, Inc., of Salt Lake City, Utah (1-801-972-2757).

Contractor shall be manufacturer authorized and approved as an applicator of GSB-88 Emulsion Sealcoat, using manufacturer approved installation equipment. The Contractor shall be versed in proper shipping, storage, handling, dilution, and application processes for GSB-88.

The Contractor shall furnish manufacturer's certification that the material is the type, grade, and quality specified for each load of bituminous material delivered. The certification shall show the shipment number, refinery, consignee, destination, contract number, and date of shipment. Contractor shall submit samples of diluted, ready-to-apply bituminous material as requested by owner.

2.2 SAND. The sand material shall be a dry, clean, dust-free slag or sand with a Mohs hardness of 6-8. The material shall be angular and black in color.

The sanding material shall be copper slag or similar angular, black abrasive, and shall meet the following gradation analysis per ASTM D 451:

Sieve Size	% Retained by Weight
No. 16	0-1
No. 20	0-1
No. 30	5-20
No. 40	40-65
No. 50	20-40
No. 60	0-5
No. 100	0-3
Pan	0-0.2

CONSTRUCTION METHODS

3.1 MIXING. The fog seal material shall be obtained by blending the bituminous concentrate material and water. Mix one part heated water into one part bituminous emulsion concentrate by volume.

3.2 WORK SITE PROTECTION. Place barricades around the paved perimeter of each area prior to starting work.

3.3 PAVEMENT PREPARATION. Sweep accessible pavement surfaces prior to applying the fog seal with a power broom, or where airborne particulate matter is a concern contractor shall sweep with a vacuum assisted fully enclosed power sweeper. The Contractor shall clean areas not accessible to the vacuum with hand brooms as needed.

Pavement joints shall be presealed with 0.10 gallons per square yard, approximately 18-inches wide, using no sand before full fog seal is applied.

3.4 EQUIPMENT. The emulsion may be applied with manufacturer-approved standard bituminous distributors. The equipment shall be in good working order and contain no contaminants or diluents in the tank. Spreader bar tips must be clean, free of burrs, and of a consistent size to maintain an even distribution of the fog seal material. Any type of tip or pressure source is suitable that will maintain a predetermined flow rate and constant pressure during the application process. Equipment shall maintain a constant flow through the nozzles during the application process regardless of the speed of the truck. Test the equipment under pressure for leaks and to ensure it is in good working order before use.

The distributor truck shall be equipped with a 12-foot (3.6 m), minimum, spreader bar with individual nozzle control. It shall be capable of specific application rates in the range of 0.05 to 0.25 gallons per square yard (0.15 to 0.80 liters per square meter). These rates shall be computer-controlled rather than mechanical. It shall have an easily accessible thermometer that

constantly monitors the temperature of the seal coat. For confined spaces a mini distributor with a 7 foot spray bar, and 22 spray nozzles may be utilized.

In the event there is a temperature problem a distributor truck will be provided that is equipped to effectively heat and mix the material to the required temperature prior to application. Heating and mixing will be done in accordance with the manufacturer's recommendations. Care shall be taken not to over heat or over mix material.

The distributor shall be equipped to hand spray as needed the seal coat around edges, curbs, gutters and other surfaces that require protection from overspray.

3.5 STORAGE AND HANDLING INSTRUCTIONS. GSB-88 may be stored and handled like any standard asphalt emulsion. Vertical storage tanks are recommended. The storage tank should be equipped with a slow revolution mechanical agitator. Hot water heating coils, or electrical coils, or electrical heaters are required in colder climates to prevent the emulsion from freezing. Positive displacement gear pumps should be used to transfer and apply GSB-88 materials. Storage and handling temperatures are 100□F (38□C) to 160□ (71□C) but under no circumstances will the material be heated to temperatures above 180□ F (82□C). GSB-88 should be protected from freezing, or whenever outside temperature drops below 40□F (4□C) for prolonged time periods.

3.6 WEATHER LIMITATIONS. The emulsion shall not be applied to wet pavement surfaces, during rainy or damp weather, or when rain is anticipated within eight hours after application is completed. Care shall be taken when applying the emulsion on extremely windy days to prevent drift onto adjacent surfaces or vehicles.

3.7 APPLICATION. The fog seal material shall be applied using equipment as described in section 3.4 and in accordance with the manufacturer's recommendations. Apply the emulsion only when the existing surface is clean and dry. Apply dilute bituminous emulsion at the target rate of 0.13 gallons per square yard, but not less than 0.10 nor more than 0.18 gallons per square yard.

3.8 SANDING. The sanding shall be done immediately after application of the fog seal. The speed of the distributor shall be such that the sanding material shall be applied before the fog seal begins to break. Apply sand at the rate of 0.50 to 0.75 pounds per square yard.

Sanding shall be accomplished using a drop-type or broadcast sander mounted on the rear of the distributor, and apply sand evenly across the full width of the spray bar. The sanding will be done in such a manner as to prevent driving on the freshly applied fog seal. The sander must have adjustable controls to regulate sand volume and area of distribution and ensure full coverage of the fog sealed areas. Push-type hand sanders will be allowed for use around lights, signs, and other obstructions.

Contractor shall schedule this work so the fog seal application and the sanding operation work as a cohesive unit with the sanding from the rear of the fog seal distributor. Sanding will be done in a manner so as to prevent excess sand from broadcast onto adjacent pavement prior to the fog seal being applied.

METHOD OF MEASUREMENT

4.1 BITUMINOUS FOG SEAL COAT. The quantity of fog seal coat to be paid for will be the number of square yards applied and accepted. Water added to bituminous concentrate will not be measured for payment.

BASIS OF PAYMENT

5.1 BITUMINOUS FOG SEAL COAT. Payment will be made at the contract unit price per square yard. This price will include preparation of the pavement surface, the bituminous emulsion concentrate, and sand. This price will be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

END OF ITEM