

ROAD COMMISSION OF
KALAMAZOO COUNTY

SPECIAL PROVISION
FOR
FOG SEAL, SPECIAL

RCKC

1 of 4

07/25/24

a. Description. This work consists of applying a fog seal to construction joints after Hot Mix Asphalt (HMA) paving

b. Materials. Provide materials per subsection 904.03 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction with the following alternative:

1. Asphalt Emulsion. Cationic Quick Setting Emulsified Asphalt (CQSEA) shall meet the requirements of Table 1.

Table 1: Cationic Quick Setting Emulsified Asphalt (CQSEA)

	Requirements
	CQSEA
Viscosity, Saybolt Furol, AASHTO T 59/ASTM D 7496:	
At 25 °C, sec	20-100
Storage Stability Test, AASHTO T 59/ASTM D 6930, 24 hr, % Difference, max	1
Particle Charge Test, AASHTO T 59/ASTM D 7402 ^(a)	Positive
Sieve Test, AASHTO T 59/ASTM D 6933, % max (Distilled Water)	0.10
Residue, min	60
Tests on Distillation Residue:	
Penetration, 25 °C, 100 g, 5 sec, dmm, AASHTO T 49/ASTM D 5	40-90
Ductility, 25 °C, 5 cm/min, cm, min, AASHTO T 51/ASTM D 113	40
Solubility in Trichloroethylene, % min, AASHTO T 44/ASTM D 2042	97.5
Ash Content, % max, ASTM D 128	2
a. If Particle Charge Test is inconclusive, material having a maximum pH of 6.7 is acceptable.	

Dilute asphalt emulsion, at a maximum of one-part asphalt emulsion to one-part water, at the emulsion plant.

c. Equipment. Use equipment that is safe, environmentally acceptable, and capable of producing a quality product.

1. Pressure Distributor. Ensure the pressure distributor has the following characteristics:
 - A. Has a ground speed computer-controlled device interconnected with the asphalt emulsion pump such that the specified application rate is supplied at any speed;
 - B. Is capable of maintaining the asphalt emulsion at the specified temperature;

C. Has spray bar nozzles capable of producing a uniform fan spray and with instantaneous shutoff control, with no dripping;

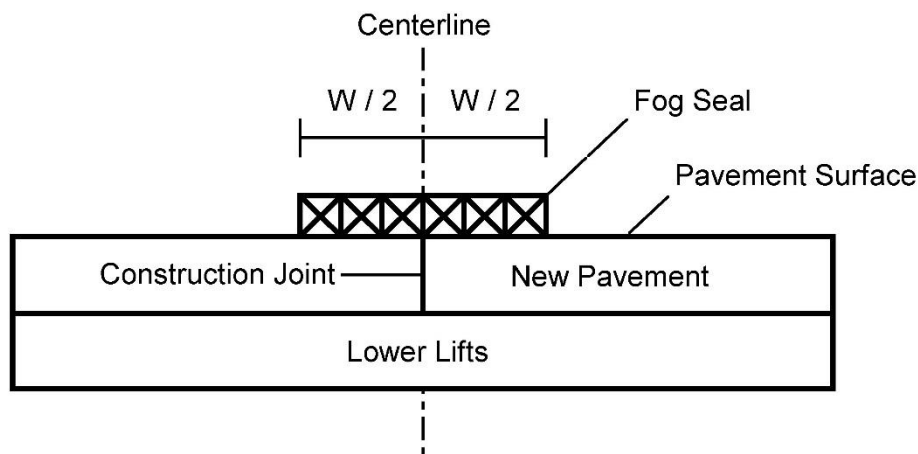
D. Can maintain the specified application rate within ± 0.015 gallons per square yard (gal/syd) for each load.

2. Miscellaneous. Provide a power broom and all necessary hand tools, thermometers, etc. Ensure distributors and power brooms come equipped with at least one visible approved flashing, rotating, or oscillating amber light.

d. Pre-Application On-Site Meeting. A pre-application meeting between the Engineer and Contractor will be held before beginning work. This meeting may be held in conjunction with the HMA pre-production meeting for the project. The agenda for this meeting will include a review of the following:

1. Work schedule;
2. Traffic control plan;
3. Equipment calibration and adjustments;
4. Condition of materials and equipment; and
5. Quality control plan (job mix formula (JMF), Yield Check Methods, etc.).

e. Construction. The center of the fog seal application width shall be within 2 inches of the HMA construction joint. The application shall be made in a single pass placed at a width of 18 inches centered on the construction joint (9 inches on each side of the joint). If the fog seal application coverage is more than 6 inches from the specified placement width (12 inches on each side of the joint), placement of the fog seal will stop, and remedial action shall be taken subject to the Engineer's approval.



Apply the fog seal within 48 hours of completing the HMA paving, but not on the same day as the HMA paving.

Apply the fog seal only when the pavement and air temperature is 55 degrees Fahrenheit (F) or above. Do not apply the fog seal if there is threatening weather and temperatures are forecast to be below 32 degrees F within 24 hours from the application time.

Use pressure sufficient to apply emulsion at a uniform rate without splattering or drilling from the spray bar. Adjust nozzle angle and spray bar height to ensure correct spray pattern.

Apply fog seal at a rate of 0.07 to 0.15 gallons of diluted material per square yard of pavement treated. Ensure the fog seal application results in uniform emulsion coverage sufficient to flow into and seal the pavement pores, small cracks, and voids. The asphalt emulsion application rate, as determined by a yield check, must not exceed a tolerance of ± 0.015 gal/syd from the established JMF application rate.

If a condition is identified that causes an unsatisfactory fog seal, stop all production work and perform corrective action immediately at no additional cost to the contract. If there are adverse environmental conditions, provide the Engineer with an action plan demonstrating how the fog seal operation will be adjusted for the actual environmental conditions.

Allow the Engineer access to all work in progress for quality assurance review and testing.

f. Quality Control. Establish, maintain, and follow an effective quality control system in accordance with current Department procedures. The quality control system must detail plans, procedures, and organization necessary to furnish and apply a fog seal that complies with the contract. Follow the quality control system until work is accepted.

Establish, maintain, and follow a Contractor Quality Control (CQC) plan sufficient to ensure that the treatment complies with the contract. The CQC plan must cover all fog seal operations. Submit a copy of the plan to the Engineer, at the pre-construction meeting, for approval. Follow the approved plan throughout the project.

Include the following information, at a minimum, in the CQC plan:

1. Materials used on the project;
2. Sampling and testing methods used to determine compliance with material specifications;
3. Equipment used on the project;
4. Calibration method used to determine compliance with the application rates;
5. Procedures for pavement preparation;
6. Controls implemented by the Contractor to ensure that the fog seal material is cured or set up satisfactorily before opening to traffic;
7. Procedures implemented by the Contractor for monitoring initial acceptance requirements.

g. Documentation. Provide the Engineer a daily report including the following information:

1. Control section, project number, county, route, Engineer;
2. Date, air temperature, pavement temperature, humidity;
3. Asphalt emulsion temperature;
4. Beginning and ending stations;
5. JMF: application and dilution rates (asphalt emulsion);
6. Yield checks on asphalt emulsion and/or machine calibration verifications;
7. Length, width, total square yards; and
8. Contractor's signature.

Provide asphalt emulsion documentation in accordance with current Department acceptance procedures.

h. Measurement and Payment. The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

Pay Item	Pay Unit
Fog Seal, Special	Square Yard

Fog Seal, Special includes placement of the asphalt emulsion including surface preparation, stationing, and documentation as shown on the plans and as directed by this Special Provision.