

2357 BITUMINOUS TACK COAT

2357.1 DESCRIPTION

This work consists of applying bituminous material (emulsion or cutback asphalt) on a bituminous or concrete pavement prior to paving a new lift of Plant Mixed Asphalt.

2357.2 MATERIALS

A Bituminous Material 3151

The bituminous material for tack coat will be limited to one of the following kinds of emulsified asphalt. Use of medium cure cutback asphalt (MC-250) is allowed during the early and late construction season when it is anticipated the air temperature may drop below 32 degrees Fahrenheit.

Allowable grades are as follows:

Emulsified Asphalt

AASHTO 208 Dilution of the emulsion to 7 parts emulsion to 3 parts water is only allowed by the supplier. **No field dilution is allowed.** The storage tank for diluted emulsion must have a recirculation system or agitator that will prevent settlement or separation of the material.

Emulsion	Minimum Residual Asphalt Content	
	Undiluted	Diluted (7:3)
CSS-1 or CSS-1h	57%	40%

Cutback Asphalt

Medium Cure Liquid Asphalt MC-250

Only Certified Sources are allowed for use. MnDOT's Certified Source List is located at the following link:
<http://www.dot.state.mn.us/products/index.html>.

2357.3 CONSTRUCTION REQUIREMENTS

A Restrictions

Conduct tack coat operations in a manner that offers the least inconvenience to traffic. Maintain movement in at least one direction at all times without pickup or tracking of the bituminous material.

Do not apply the tack coat when the road surface or weather conditions are unsuitable as determined by the Engineer. Limit the daily application of tack coat to approximately the area on which construction of the subsequent bituminous course can reasonably be expected to be completed that day.

B Equipment

Apply the bituminous material with a distributor meeting the requirements of 2360.3.B.2.d.

C Road Surface Preparations

Apply the bituminous tack coat material to a dry and clean roadway surface. All necessary repairs or reconditioning must have been completed as provided for in the Contract and approved by the Engineer.

Remove all foreign matter on the road surface before applying tack coat and dispose of as approved by the Engineer.

Before placing an abutting bituminous course, provide a uniform coating of liquid asphalt or emulsified asphalt to the contact surfaces of all fixed structures and at the edge of the in-place mixture in all courses at transverse joints and in the final wearing course at longitudinal joints.

D Application of Bituminous Tack Coat Material

Unless otherwise indicated in the Plans or provisions, apply the bituminous tack coat material within the application rates shown below in Table 2357-2, Tack Coat Application Rates, as based on pavement type or condition and type of bituminous material. **Dilution of asphalt emulsion in the field is not allowed.**

All tack must break, turn from brown to black, before paving the subsequent lift or course. Do not allow vehicles to drive on tack that has not broken.

Apply a uniform tack coat to the existing asphalt or concrete surface and to the surface of each course or lift constructed, except for the final course or lift. Tack each lift when placing multiple lifts in the same day. Uniform application will not have streaks (corn rows), bare spots, puddles, or other irregular patterns. The Engineer will compare the freshly sprayed emulsion to a brown sheet of construction paper or a black sheet of construction paper for broken tack to determine conformance with tack application uniformity.

Using a distance of 1,000 feet [300 meter] perform a yield check at the beginning of each project to verify the application rate is correct. The Engineer may require additional yield checks be performed if the application rate is questioned.

The Engineer may also require the Contractor to verify application is within 10% of the intended application rate by ASTM D 2995 test method A.

Surface Type	Application Rates -- gallons/square yard [liters/square meter]		
	Undiluted Emulsion	Diluted Emulsion (7:3) ¹	MC Cutback ²
New Asphalt	0.05 to 0.07 [0.23 to 0.32]	0.08 to 0.10 [0.36 to 0.45]	0.05 to 0.07 [0.23 to 0.32]
Old Asphalt ³ and PCC	0.08 to 0.10 [0.36 to 0.45]	0.13 – 0.15 [0.59 to 0.68]	0.09 to 0.11 [0.41 to 0.50]
Milled Asphalt and Milled PCC	0.07 to 0.11 [0.41 to 0.50]	0.10 – 0.13 [0.45 to 0.59]	0.09 to 0.11 [0.41 to 0.50]

- 1- As provided by the asphalt emulsion supplier (see 2357.2.A)
- 2- Use when approved by the Engineer
- 3- Older than 1 year

E Bituminous Temperature

The application temperature of the bituminous material will be:

CSS-1, CSS-1H 70 to 160° F (**21 to 71°C**)

MC-250 165 to 220° F (**74 to 104°C**)

F Bituminous Sampling

Sample asphalt emulsion from either the spigot or a nozzle on the distributor according to the schedule of materials control.

G Pedestrian Crossings

Spread sand on newly tacked surfaces at regularly utilized and open for public use pedestrian crossings.

H Acceptance of Tack Material

Assess a monetary deduction of 5% of the mix price for failures related to 3151 or workmanship/application, as determined by the Engineer. The basis of measurement for deficiencies related to material and workmanship/application is full width of the lane by station.

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2357.4 METHOD OF MEASUREMENT

Bituminous material used for tack coat will be measured by volume at 15°C (60° F).

2357.5 BASIS OF PAYMENT

Payment for the accepted quantity of asphalt emulsion and cutback shall be at the Contract price per unit of measure. The Department will include the cost of providing and applying sand at pedestrian crossings with other relevant contract items.

Payment for the tack coat will be made on the basis of the following schedule:

Item No.:	Item:	Unit:
2357.502	Bituminous Material for Tack Coat	gallon [liter]

If the contract does not contain Bituminous Material for Tack Coat, the Department will include the cost of providing and applying bituminous tack coat material with other relevant pay items.

2358 BITUMINOUS PRIME COAT

2358.1 DESCRIPTION

This work consists of treating a prepared base with bituminous material prior to placing a bituminous pavement.

2358.2 MATERIALS

A Medium Curing Liquid Asphalt

Provide Medium Curing Liquid Asphalt in accordance with 3151.2.B, —Medium Curing Liquid Asphalt,|| for MC-30 or MC-70.

2358.3 CONSTRUCTION REQUIREMENTS

A Restrictions

A.1 Base Moisture Content

Place bituminous prime coat on a prepared base when the base moisture content of the upper 3 in [80 mm] is less than 65 percent of optimum moisture content.

A.2 Traffic

If road is open to traffic, maintain traffic in at least one direction and only close a portion of the traveled way for construction, not to exceed 50 percent.

B Equipment

Use a distributor in accordance with 2360.3.B.2.d, —Distributor.||

C Application

Apply the bituminous prime coat at a continuous uniform spread rate of 0.1 gal per cu. yd to 0.3 gal per cu. yd [0.45 L per cu. m to 1.35 L per cu. m].

D Bituminous Temperature

Apply MC-30 bituminous prime coat at temperatures from 85 °F to 145 °F [29 °C to 63 °C]. Apply MC-70 bituminous prime coat at temperatures from 120 °F to 180 °F [49 °C to 82 °C].

2358.4 METHOD OF MEASUREMENT

The Engineer will measure bituminous material for prime coat by volume at 60 °F [15 °C].

2358.5 BASIS OF PAYMENT

The contract gallon [liter] price for *Bituminous Material for Prime Coat* includes the costs of providing and applying the material as required by the contract.

The Department will pay for bituminous prime coat on the basis of the following schedule.

Item No.:	Item:	Unit:
2358.501	Bituminous Material for Prime Coat	gallon [liter]