Section 2544. Cleaning and Filling Cracks for HMA Surfaces

2544.01 DESCRIPTION.

A. Clean and fill cracks in an existing pavement or paved shoulder. Fill large cracks and spalled areas with HMA. Fill smaller cracks with filler material.

B. This type of work is intended primarily for existing pavements that are not to be resurfaced. If additional work is to be required, it will be defined elsewhere in the contract documents.

2544.02 MATERIALS.

A. General.

1. Use an HMA mixture meeting the requirements of Section 2303 for a 3/4 inch, 1/2 inch or 3/8 inch (19 mm, 12.5 mm or 9.5 mm) mixture size, or a similar mixture from a commercial source subject to approval of the Engineer. A high performance bituminous cold premix mixture may be used with the Engineer's approval. The Engineer's approval of the use of a premix will be based on the availability of the specified hot mixture when this work is being done and the length of haul.

2. For tack-coat material, use SS-1, SS-1H, CSS-1, CSS-1H, and MC-70 meeting requirements of Section 4138 or 4140. Do not mix CSS and SS grades. Prior to October 1, use emulsion as the tack-coat bitumen. For Fall work after that date, a cutback asphalt may be used.

3. For filler material, use emulsified asphalt meeting the following requirements for CRS-2P or CRS-2 and of the quality to also be used for seal coat construction.

4. For blotting material, use a sand meeting requirements of Section 4124 or 4125, or a similar sand approved by the Engineer.

B. Polymer-Modified Cationic Rapid Set Asphalt Emulsion, CRS-2P.
Use a rapid set emulsion that has elastic properties.

C. Cationic Rapid Set Asphalt Emulsion, CRS-2.
Use a material having the properties of rapid set emulsion.

D. Requirements.
Use CRS-2P and CRS-2 emulsions complying with Section 4140.

2544.03 CONSTRUCTION.

A. Equipment.
Includes the following:

1. Water cleaning equipment capable of delivering water with a pressure of 2,000 psi (13.8 MPa) from a nozzle to the crack being cleaned.

2. Compressed air capable of providing moisture free and oil free air to blow sand and other foreign material from a crack.

3. Air chisel or hand tools to remove loose and spalled material adjacent to cracks.

4. Heating kettle or pressure distributor for applying filler material through a hand-operated wand or nozzle.

B. Cleaning and Filling.

1. General.

a. Clean with either a high-pressure air or with water equipment, except do not use water blasting equipment when the temperature is below 32°F (0°C). In all cases, ensure vegetation is removed from the cracks. Cleaning methods other than those specified in this specification may be necessary to remove vegetation. Obtain the Engineer's approval for other cleaning methods.

b. When specifically required by the plans, place a soil sterilant, such as Spike or an approved equal, in the crack prior to placing the filler material.

c. For filling cracks, use a hand-operated wand or pouring pot, either of which is capable of placing the filler material into the crack and filling to the adjacent surface. Use a nozzle or spout small enough to place the filler material into the crack without soiling the adjacent surface.

d. Immediately after placement of the filler, use a narrow, 2 inch (50 mm) or less, V-shaped, rubber-edged squeegee to tightly squeegee all cracks filled with emulsion. Take proper measures (for example a sand dam or an application of blotter material, in conjunction with the squeegee operation) to hold the filler in place, preventing run-out at pavement or shoulder edges and low areas.

2. Cracks Wider than 1 Inch (25 mm).

a. Clean the cracks of loose and spalled material, old crack filler when deemed necessary by the Engineer, sand, and other foreign debris using high-pressure water. Continue cleaning until essentially all debris and loose materials have been removed to a depth of 3 inches (75 mm) within the crack opening.

b. Blow the cleaned cracks free of water.

c. Lightly tack the crack surfaces with tack-coat material as a hand operation.

d. Fill the cracks with the hot mix specified. Rod and tamp into place and level with the adjacent surface. Ensure the mixture is warm and pliable when placed. Place this mixture prior to filling cracks with emulsion. Place a thin application of emulsion over the hot mix and tightly squeegee.

3. Cracks 1/4 Inch to 1 Inch (5 mm to 25 mm) in Width.

a. Clean with air pressure or high-pressure water sufficient to remove old crack filler, sand, and other foreign debris when the Engineer requires. Clean to a depth of at least 1 inch (25 mm). Clean down

to sound material, but a depth greater than 3 inches (75 mm) will not be required.

b. Fill cracks with emulsion filler material. Use a hand-operated wand capable of placing the filler material into the crack and filling it to the adjacent surface. Use a nozzle attached to the wand small enough to place filler material into the crack without soiling the adjacent surface.

4. Cracks Less than 1/4 Inch (5 mm) in Width.
Clean sufficiently to remove sand and other foreign debris, and, when deemed necessary by the Engineer, old crack filler. Fill cracks with emulsion filler material.

5. Map-cracked Areas.
Cover with emulsion filler material using a suitable hand-operated squeegee. Apply as a thin, smooth application. Promptly blot the filler material with a light application of blotter material.

C. Limitations.

1. On projects where a fog seal or other surface treatment is to be done in conjunction with this work, complete the crack filling first. Except when this work is in preparation for a seal coat or slurry seal, do not perform crack filling on pavements from May 15 to September 30. Crack filling on paved shoulders will be allowed during this time.

2. When filling cracks with emulsion, allow sufficient time for the emulsion to flow to the bottom of the crack and to fill it completely full. In filling, a second pass may be necessary before leaving the work zone.

3. One additional filling, or refilling, will be necessary where the filler has settled into the crack opening. The Engineer will identify these areas.

4. The cleaned cracks need not be filled the same day they are cleaned. However, at the time of filling, ensure cracks are free of standing water as determined by visual examination. Recleaning may be necessary if the openings become contaminated before being filled. The work may be done as a single, coordinated operation.

5. Conduct the work on only one lane of the pavement at a time, and according to the traffic control plan. Use of a pilot car may be required.

6. Allow traffic to use the pavement during this construction. Conduct all operations so as to provide a minimum of inconvenience to traffic.

7. Apply Articles 1107.08, 1107.09, and 1108.03.

2544.04 METHOD OF MEASUREMENT.
Measurement for maintenance cleaning and filling cracks, satisfactorily completed, will be as follows:

A. Cleaning and Filling Cracks.

1. Cleaning and Filling Cracks (Pavement Maintenance).

a. Miles (kilometers), calculated to the nearest 0.1 mile (0.1 km), of main line pavement on which cracks were cleaned and filled. Calculations will be based on the center line distance of main line, two-lane pavement, corrected for main line pavement of more than two lanes, including climbing lanes.

b. At intersections, rest areas, and interchanges designated for cleaning and filling, the additional areas of widened pavement, ramps, storage lanes, turning lanes, paved medians, and parking in rest areas will not be separately measured for pavement.

c. Between limits for which cleaning and filling is intended for either pavement or shoulders, no deductions will be made for bridges, intersections, or other interruptions where cracks are not to be cleaned and filled.

2. Cleaning and Filling Cracks (Shoulder Maintenance).

a. Miles (kilometers), calculated to the nearest 0.1 mile (0.1 km), of paved shoulders on which cracks were cleaned and filled. Calculations will be based on the center line distance of the adjacent main line pavement, a single measurement for shoulders on both sides of the pavement.

b. At intersections, rest areas, and interchanges designated to be cleaned and filled, the additional areas of paved shoulders on ramps, gores, and turning lanes will not be measured separately for payment.

B. Hot Mix Asphalt for Crack Filling.
Weight (mass) of hot mixture used for filling cracks larger than 1 inch (25 mm). Mixture not used in the work will be deducted, based on actual scaled weights (mass) or estimates.

C. Filler Material (Maintenance).

1. Computed according to Article 2307.04, B. The total quantity will include the material placed in cracks and used to cover map-cracked areas.

2. Blotting material and tack-coat material will not be measured separately for payment.

2544.05 BASIS OF PAYMENT.

A. Payment for cleaning and filling cracks will be the contract unit price as follows:

1. Cleaning and Filling Cracks (Pavement Maintenance) or Cleaning and Filling Cracks (Shoulder Maintenance).
Per mile (kilometer) for pavement or shoulders on which the cracks were cleaned and filled.

2. **Hot Mix Asphalt for Crack Filling.**
   Per ton (megagram) for HMA used in filling cracks over 1 inch (25 mm).

3. **Filler Material (Maintenance).**
   Per gallon (liter).

B. Payments are full compensation for:

- Cleaning the cracks,
- Furnishing and placing the HMA,
- Filler material,
- All blotting material and tack-coat material that is necessary, and
- Furnishing all equipment and labor.