

502.01

Section 502. HMA CRACK TREATMENT

502.01. Description. This work consists of treating cracks in Hot Mix Asphalt (HMA) surfaces using either a saw or rout and seal process or an overband process.

502.02. Materials. Provide materials in accordance with the following:

Hot Poured Joint Sealant.....	<u>914</u>
Asphalt Binder	<u>904</u>
Polyester Fibers.....	<u>904</u>

A. **Saw or Rout and Seal.** Provide hot-poured joint sealant that meets the requirements of subsection 914.04 for sealing sawn or routed cracks.

B. **Overband.** Provide overband material as specified in subsection 502.02.B.1 or subsection 502.02.B.2.

1. **Overband (Alternate 1).** Provide a field-blended liquid mixture with the following characteristics and proportions:

- a. Performance graded asphalt binder PG 64-22 south of M-46 and PG 58-28 north of M-46;
- b. Asphalt rubber product selected from the Qualified Product List, 5 percent by weight; and
- c. Polyester fibers, 5 percent by weight.

If using field mixed material, add the polyester fibers to the polymer modified asphalt cement and mix in the kettle. Do not allow field mix material to exceed 400 °F.

2. **Overband (Alternate 2).** Provide an asphalt rubber product selected from the Qualified Product List. Do not allow prepackaged material to exceed 400 °F.

502.03. Construction.

A. **Equipment.** Provide equipment, in accordance with section 107 and this subsection, capable of meeting the requirements of this subsection.

1. **Compressed Air System.** Provide and use a compressed air system that produces a continuous, high-volume, high-pressure stream of clean, dry air to prepare cracks. Equip the air compressor with a moisture separator to remove oil and water from the air supply. Provide a compressor capable of producing at least 100 psi at a continuous air flow of 150 cfm.

2. **Melter Applicator.** Provide a melter applicator consisting of a boiler kettle equipped with pressure pump, hose, and applicator wand. Equip the unit with the following:
 - a. Shutoff control on the applicator hose;
 - b. Mechanical full-sweep agitator in the kettle to provide continuous blending;
 - c. Thermometers to monitor the material temperature and the heating oil temperature; and
 - d. Thermostatic controls that allow the operator to regulate material temperature up to 425 °F.
 3. **Application Wand.** Apply the material using either a wand followed by a V-shaped or U-shaped squeegee or a round application head with a concave underside.
- B. Pre-Production Meeting.** Before beginning work, conduct an on-site pre-production meeting with the Engineer to discuss the following:
1. Contractor's detailed work schedule,
 2. Traffic control plan,
 3. Required project documentation,
 4. Inspection of the condition of equipment,
 5. The Contractor's Quality Control (QC) Plan, and
 6. The Contractor's designated Authorized Representative.
- C. Crack Preparation.** Clean and dry cracks using compressed air and other tools to remove loose dirt, vegetation, and deleterious material. Clean cracks no more than 10 minutes before filling.
- D. Crack Treatment Methods.**
1. **Saw or Rout and Seal.** Treat visible working cracks no greater than 1¼ inches wide in the pavement surface using the saw or rout and seal process. Treat working cracks in shoulders unless otherwise required. The Department defines working cracks as cracks that experience considerable horizontal or vertical movement, at least ⅛ inch, as a result of temperature change or traffic loading.

Create a reservoir by sawing or routing along the crack. Create the reservoir to a volume of at least 7.5 cubic inches per foot of crack and with a 1:1 width to depth ratio. Ensure the finished reservoir walls are vertical and the reservoir bottom is flat. Place sealant flush or no greater than ⅛ inch below the pavement surface.
 2. **Overband.** The Contractor may treat non-working cracks with material placed in an overband configuration. The Department defines non-working cracks as cracks that experience relatively little

502.03

horizontal or vertical movement, less than $\frac{1}{8}$ inch, as a result of temperature change or traffic loading.

Apply overband material to clean, dry cracks. Apply overband 4 inches wide and from $\frac{1}{8}$ inch to $\frac{3}{16}$ inch thick.

The Contractor may increase the maximum application width to 6 inches for coverage of multiple cracks, with Engineer's prior written approval.

Place temporary pavement markings before opening the road to traffic if overband material obliterates existing pavement markings.

Apply overband as follows unless otherwise required:

- a. **Stand Alone Overband Crack Fill.** If no other surface treatment is required on the pavement, fill visible cracks in the road less than $1\frac{1}{4}$ inch wide.
- b. **Micro-Surfacing Preparation.** If preparing the pavement for a micro-surface overlay, fill visible cracks in the road less than $1\frac{1}{4}$ inch wide.
- c. **Chip Seal Preparation.** If preparing the pavement surface for a single or double chip seal, fill cracks greater than $\frac{1}{8}$ inch wide or 3 feet long. Seal cracks with varying widths and portions at least $\frac{1}{8}$ inch wide, along the entire length.
- d. **Paver Placed Surface Seal.** If preparing the pavement for a paver placed surface seal, fill cracks with widths from $\frac{1}{4}$ inch to $1\frac{1}{4}$ inch.
- e. **HMA Ultra-Thin Overlay.** If preparing the pavement for an HMA ultra-thin overlay, fill visible cracks less than $1\frac{1}{4}$ inch wide.

E. **Weather Limitations.** Place material at air temperatures from 45 °F to 85 °F. Do not place material if moisture is present in the crack.

F. **Cure Time and Repair.** Allow the material to cool before opening the road to traffic. Apply de-tackifying solution, if required, to protect the uncured crack treatment material from tracking. Do not use blotting materials, including sand, aggregate, sawdust, or paper. Repair treated pavement areas, damaged by traffic at no additional cost to the Department.

G. **Quality Control (QC).** Provide and follow a QC plan for production and construction processes. Provide the Engineer a copy of the QC plan for review and approval, prior to the pre-production meeting. Maintain QC measures until the Engineer accepts the work.

Comply with the approved QC plan throughout the project and allow the Engineer access to work in progress for assurance review and testing. If the Engineer identifies a condition causing unsatisfactory crack treatment, immediately stop production and correct the work at no additional cost to the Department.

Ensure the QC plan addresses at least the following:

1. A detailed description explaining how field crews will determine working and non-working cracks. Separately detail projects with multiple pavement sections.
2. The sealant material and equipment used to heat, handle, and apply sealant material in accordance with the manufacturer's specifications. Provide the material manufacturer's specifications to the Engineer upon request.
3. Reservoir configuration for the saw or rout and seal operation.
4. Procedures for crack cleaning.
5. Replacement criteria for cutting tools.
6. Controls implemented to ensure flying dust and debris is not directed toward adjacent traveled lanes, pedestrians, parked vehicles, or buildings.
7. An action plan for adjusting crack sealing operations to address actual environmental conditions if adverse environmental conditions occur.
8. Proposed procedure for monitoring the work to ensure acceptance requirements are met.

H. **Acceptance.** Upon completion of work, schedule an inspection with the Engineer. The Engineer will note deficiencies, including areas exhibiting adhesion failure, cohesion failure, missed cracks, or other factors the Engineer determines unacceptable. Correct work the Engineer identifies as unacceptable. Notify the Engineer upon completion of required corrective work.

502.04. Measurement and Payment.

Pay Item	Pay Unit
Overband Crack Fill, Roadbed	Roadbed Mile
Overband Crack Fill, Ramp	Roadbed Mile
HMA Crack Treatment, Roadbed	Roadbed Mile
HMA Crack Treatment, Ramp	Roadbed Mile

A. **Overband Crack Fill.** The Engineer will measure **Overband Crack Fill, Roadbed** along the roadway centerline. This measurement includes traffic lanes, paved shoulders, auxiliary lanes, and ramps to the

502.04

2-foot gore point. For divided highways, the Engineer will measure the roadway separately in each direction.

The Engineer will measure **Overband Crack Fill, Ramp** along the ramp centerline beginning at the 2-foot gore point.

The unit prices for **Overband Crack Fill**, of the type required, include the cost of preparing and filling cracks using the overband method, providing the required documentation, corrective work, and temporary traffic markings.

B. HMA Crack Treatment. The Engineer will measure **HMA Crack Treatment, Roadbed** along the roadway centerline. This measurement includes traffic lanes, paved shoulders, auxiliary lanes, and ramps to the 2-foot gore point. For divided highways, the Engineer will measure the roadway separately in each direction.

The unit price for **HMA Crack Treatment, Roadbed** includes the cost of preparing, filling, and sealing the cracks, including treating working cracks with the saw or rout and seal method, and treating non-working cracks with the overband method.

The Engineer will measure **HMA Crack Treatment, Ramp** along the ramp centerline beginning at the 2-foot gore point.

The unit price for **HMA Crack Treatment, Ramp** includes the cost of preparing, filling, and sealing the cracks, including treating working cracks with the saw or rout and seal method, and treating non-working cracks with the overband method.