

ITEM 18403.7602 M - CLEANING AND SEALING CRACKS IN HOT MIX ASPHALT  
PAVEMENT, ASTM D3405

DESCRIPTION

This work shall consist of cleaning and sealing with ASTM D3405 cracks and joints in pavements and shoulders which are either overlaid with or full depth hot mix asphalt. In this specification, the word "crack" shall also mean "joint."

MATERIALS

**Crack Sealant.** The sealant shall meet the requirements of ASTM D3405; Joint Sealants, Hot-Poured for Concrete and Asphalt Pavements. The sealant shall be delivered in the manufacturer's original sealed containers. The material will be accepted on the basis that the name of the Primary Source (Manufacturer) and trade name appears on the current Approved List. Each container shall be legibly marked with the following information:

- Manufacturer's name
- Trade name of the sealant
- Manufacturer's lot or batch number
- Pouring temperature
- Safe heating temperature

Prior to the commencement of work the Contractor shall provide the Engineer with a copy of the manufacturer's recommendations pertaining to heating and application.

CONSTRUCTION DETAILS

**General.** All pavement repairs called for on the plans which border a pavement crack to be sealed shall be completed, as specified in the appropriate item(s), prior to commencement of work under this item.

The Contractor shall furnish all equipment necessary for cleaning and sealing the pavement cracks. All equipment shall meet the description and/or performance requirements described herein and be approved by the Engineer before its use.

Only well defined, single cracks shall be sealed. Sealing shall be limited to cracks not less than 3 mm wide nor more than 25 mm wide, at locations shown on the plans or where directed by the Engineer. Cracks with varying widths, portions of which are 3 mm or greater, shall be sealed along their entire length. Where secondary cracking exists, seal only the primary (widest) crack. Do not seal the secondary cracks. The Engineer's determination of which cracks to be cleaned and sealed will be the final basis for the work being performed.

Pavement markings shall not be covered and/or obliterated with crack sealant. No more than 25% of the pavement marking width shall be obliterated or the marking shall be replaced at the Contractor's expense.

**Crack Preparation.** All cracks shall be thoroughly cleaned of dust, dirt, foreign material, sand and any other extraneous materials by high pressure air or a hot air lance. The cracks shall be cleaned to a

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minimum depth of 13 mm. Suitable traps or devices shall be installed on the compressed air equipment to prevent moisture and oil from contaminating the crack surfaces. The Contractor shall maintain these devices and see that they are functioning properly. When using a hot air lance, care shall be taken so as not to burn, scorch or ignite the adjoining pavement. The material and debris shall be blown from the crack and pavement to prevent recontamination of the crack.

The crack sides shall be clean and dry immediately prior to sealing. The Contractor shall reclean cracks that are not clean and dry. Any cracks not sealed the same day shall be recleaned prior to sealing.

The Contractor shall be responsible for protecting traffic and property from hazard or damage during the crack cleaning operation.

**Sealant Melting.** The sealant shall be heated in a melter constructed either as a double boiler with the space between inner and outer shells filled with heat transfer medium, or with internal tubes or coils carrying the sealant through a heated oil bath and into a heated double wall hopper. Direct heating shall not be used. The melter shall be capable of maintaining the pouring temperature. The melter shall be equipped with positive temperature controls, and with mechanical agitation or a re-circulation pump capable of assuring a homogeneous blend of the sealant. The melter shall have separate thermometers to indicate the temperature of the heat transfer medium and the sealant material in the hopper. Before any crack sealing shall commence, the Engineer shall inspect the melter to ascertain the presence and working condition of the thermometers. Under no circumstances will the Engineer permit any crack sealing if thermometers are found to be defective or missing.

Prior to any crack sealing the temperature of the sealant shall be measured as it is discharged from the applicator wand. The temperature shall be at least equal to or above the manufacturer's recommended minimum pouring temperature and equal to or below the manufacturer's recommended safe heating temperature. For this purpose, the Contractor shall provide a 20 liter bucket and two (460 mm stem) thermometers. The two thermometers are for cross referencing and to provide a backup should one be lost or damaged. The Contractor shall discharge sealant into the 20 liter bucket and the Engineer shall immediately measure the temperature of the sealant. The Contractor may submit an alternate method for measuring the discharge temperature for approval by the Engineer.

The discharge hose shall be equipped with a thermostatically controlled heating apparatus or shall be insulated sufficiently to maintain the proper sealant pouring temperature. The application wand shall be returned to the machine if it is not thermostatically heat controlled, and the material recirculated as necessary to maintain the proper sealant pouring temperature between individual crack sealing operations.

Sealant material heated beyond the safe heating temperature shall not be used. Sealant material may be reheated or heated in excess of six hours providing the manufacturer's recommendations pertaining to heating and application allow it. If this is done, the melter shall be recharged with fresh material amounting to at least twenty percent of the volume of material remaining in the melter.

**Sealing.** The sealer shall be placed when ambient air temperature is at or above 5°C.

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Cracks shall be sealed by placing the applicator wand in or directly over the crack recess and carefully discharging the sealant to just fill the crack. The sealant shall be struck-off flush with the pavement surface using a squeegee or sealing shoe pressed firmly against the pavement. Only a narrow, thin "film" of material shall be permitted on the pavement surface. To create an effective seal the "film" shall be a minimum of 25 mm and no greater than 50 mm wide, and 1 mm thick. Sealant in excess of the specified thin "film" amount shall be removed from the pavement surface and disposed of at the Contractor's expense.

Traffic shall not be allowed on the sealer until it has cooled sufficiently and will not track. A low pressure, light spray of water may be used to accelerate cooling of the sealant. Blotting with fine aggregate will not be allowed.

The cooled sealant shall produce a water tight seal and be approximately flush with the pavement surface. Sealant not bonded to both sides of the crack shall be removed. The crack shall be recleaned and resealed in accordance with this specification, at the Contractor's expense. Sealant that becomes damaged from traffic or from the removal of over applied amounts shall be repaired. Damaged areas shall be cleaned with high pressure air and then have additional sealant applied to meet the specified thin film amount, at the Contractor's expense. Deficient areas where crack sealant has sunk into the crack more than 10 mm below the pavement surface shall be cleaned with high pressure air and additional sealant applied to meet the specified thin film amount, at the unit price bid. Cleaning of damaged or deficient areas shall not require removal of the sealant from a crack that has been sealed.

**METHOD OF MEASUREMENT**

This work shall be measured by the number of liters of sealant, corrected to 15°C, used to complete the work. No payment will be made for waste material.

**BASIS OF PAYMENT**

The unit price bid per liter shall include the cost of furnishing all labor, equipment and materials to complete the work.