ITEM 502.90010018 - CLEAN AND FILL CRACKS AND JOINTS IN PORTLAND CEMENT CONCRETE (PCC) PAVEMENT, ASTM D 6690 TYPE IV

DESCRIPTION. Clean and fill the following cracks and joints that are 1/4 - 1 inch wide at the locations indicated in the contract documents:

- New transverse contraction joints within full depth repairs.
- Existing transverse and longitudinal joints outside new full depth repairs.
- Existing cracks.

Do not clean and fill:

- Transverse and longitudinal joints that define new full depth repair boundaries.
- New longitudinal joints within full depth repairs.

MATERIALS.

Highway Joint Sealants (ASTM D 6690 Type IV) .......................................................................................... 705-02
Backer Rods .................................................................................................................................................. ASTM D5249 (Type 1)

In addition to meeting the requirement of ASTM D5249 (Type 1), backer rods must have a diameter at least 25% wider than the location of the crack it is placed into.

The Department may perform supplementary sampling and testing of the sealant. Deliver sealant in the Manufacturer’s original sealed container legibly marked with the:

- Manufacturer’s name.
- Trade name of the sealant.
- Manufacturer’s batch or lot number.
- ASTM D 6690, Type IV.
- Minimum application temperature.
- Maximum (or Safe) heating temperature.

CONSTRUCTION DETAILS. If diamond grinding is included in the contract documents, prepare the joints and cracks, diamond grind the pavement, then clean and fill the joints and cracks.

Prepare New Transverse Contraction Joints Within Full Depth Repairs. Widen the joint to 1/4 – 3/8 inch for a depth of 1 inch if the first stage saw cut is less than ¼ inch wide. Use diamond blade saws equipped with cutting guides, blade guards, water cooling systems, dust controls, and cut depth control. Immediately wash the slurry from the pavement such that it does not re-enter the joint. Do not place backer rod in these joints.

Prepare Existing Transverse and Longitudinal Joints. Use a 1/8 – 1/4 inch wide, 1 5/8 inches deep saw cut to dislodge debris and existing sealant or filler from the joint without damaging the joint faces. Follow the saw cut with a compressed air blast to remove the dislodged debris to the bottom of the existing joint sealant reservoir or to a depth of 3 inches if there is no existing reservoir. Install a trap or other device on the compressed air equipment to prevent oil from contaminating the joint surfaces. Supplement the air blast with mechanical removal, such as a screwdriver, if it is not sufficient to remove the debris. Do not damage the joint faces. Immediately wash or sweep the dislodged debris from the pavement such that it does not re-enter the joint. Do not place backer rod in these joints.

Prepare Existing Cracks. Remove all debris from existing cracks as deep as possible using a compressed air blast supplemented with mechanical removal. Install a trap or other device on the compressed air
equipment to prevent oil from contaminating the crack surfaces. Immediately wash or sweep the dislodged debris from the pavement such that it does not re-enter the joint. Backer rod may be placed after cleaning provided it is at least 25% wider than the crack everywhere along the crack and is placed 2 inches beneath the pavement surface.

Cleaning. Clean the joints and cracks by abrasive blasting before filling. Do not allow any traffic on the pavement between cleaning and filling. Reclean if it rains between cleaning and filling.

Sealant Melting. Provide the Engineer a copy of the sealant Manufacturer’s recommendations for heating and application at least 24 business hours before filling. Follow those recommendations for heating and application. Unless stated otherwise, the recommended pouring temperature is 10°F below the Manufacturer's designated safe heating temperature, with an allowable variation of ±10°F. Heat the sealant in a melter constructed either:

- As a double boiler with the space between inner and outer shells filled with a heat-transfer medium.
- With internal tubes or coils carrying the sealant through a heated oil bath and into a heated double wall hopper.

Do not use direct heating. Use a melter capable of maintaining the pouring temperature that is equipped with:

- Positive temperature controls.
- Mechanical agitation or a re-circulation pump capable of providing homogeneous sealant.
- Separate thermometers indicating the temperatures of the heat transfer medium and the sealant in the hopper. Do not place any sealant if the thermometers are defective or missing.

Prior to any sealing, measure the sealant temperature at discharge from the applicator wand. The temperature must be equal to or above the Manufacturer's recommended minimum pouring temperature and equal to or below the Manufacturer's recommended safe heating temperature. Discharge sealant into a vessel and measure the sealant temperature in the presence of the Engineer or the Engineer’s representative. Provide 2 thermometers each having an 18 inches stem. Alternate methods to measure the sealant discharge temperature are subject to the Engineer’s approval.

Use a discharge hose equipped with a thermostatically controlled heating apparatus or sufficiently insulated to maintain the proper sealant pouring temperature.

Do not use sealant heated beyond the safe heating temperature. Sealant may be reheated or heated in excess of six hours if allowed by the Manufacturer's heating and application recommendations. In these cases, recharge the melter with fresh sealant amounting to at least 20% of the sealant volume remaining in the melter.

Filling. Fill within 8 hours of cleaning. Fill the joint or crack to within ¼ - ⅜ inch of the pavement surface. Fill when the:

- Air and surface temperatures are 40°F or warmer.
- Air temperature is above the dew point.
- Pavement surface and vertical joint/crack surfaces are dry.

Open to traffic after the sealant has cured to prevent tracking. A water mist may be used to accelerate curing. Do not blot with fine aggregate.
METHOD OF MEASUREMENT. The work will be measured for payment as the number of feet of joints/cracks satisfactorily filled.

BASIS OF PAYMENT. Include the cost of all labor, material, and equipment necessary to satisfactorily perform the work in the unit price bid for Clean and Fill Cracks and Joints in Portland Cement Concrete (PCC) Pavement, ASTM D 6690, Type IV.