ITEM 04502.801801 M - FILLING JOINTS AND CRACKS IN PORTLAND CEMENT CONCRETE PAVEMENT

DESCRIPTION: This work shall consist of cleaning and filling new and existing portland cement concrete pavement joints and existing cracks at the locations shown in the plans or where directed by the Engineer.

MATERIAL REQUIREMENTS

Use a low modulus modified ASTM D3405 highway joint sealant from a supplier appearing on the approved list for Highway Joint Sealants (ASTM D3405). Low modulus sealants have cone penetrations between 90 - 150 while standard sealants have cone penetrations less than 90. The Department may perform supplementary sampling and testing. Deliver sealant in the manufacturer's original sealed container legibly marked with the:

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

CONSTRUCTION DETAILS

This specification is DisApproved

General: All pavement installation or repair items in the contract shall be completed prior to commencement of the joint and crack filling operation. The Contractor shall initially remove debris from the joints and cracks to be filled before diamond grinding the pavement surface. Following diamond grinding, the Contractor shall again clean joints and cracks and then fill joints and cracks.

New Joints: These joints are first stage saw cuts located within full depth pavement repairs. The initial widths are 3 to 6 mm and the depth is 1/3 the slab thickness for transverse joints and 1/4 the slab thickness for longitudinal joints. Further widen these joints with a 6 - 10 mm wide saw cut, 25 -30 mm deep to allow the sealant applicator to be inserted into the joint.

Existing Joints: These joints were constructed using a first stage saw cut and a second stage joint sealant reservoir saw cut. The second stage saw cut is typically 10 mm wide and 32 mm deep, but may vary depending on the number of times the joints have been sealed or filled.

Initial Joint and Crack Preparation and Cleaning: (Prior to Diamond Grinding) Remove all material and debris (including joint forming media from dowel bar retrofits and partial depth repairs) from new joints (defined above) and cracks wider than 6 mm to a depth of 75 mm without damaging concrete to remain in place. Remove all material and debris from existing joints (defined above) to the bottom of the joint sealant reservoir without damaging concrete to remain in place. Use a high pressure air blast to remove debris. If the air blast is insufficient, remove debris by mechanical means and re-apply the air blast. Install a trap or other device on the compressed air equipment to prevent moisture and oil from contaminating the joint\crack surfaces.

Final Joint and Crack Preparation and Cleaning: After diamond grinding and before filling, reapply the high pressure air blast to remove any remaining debris as discussed above. Air blast both vertical faces of the joint or crack. Place sealant within 6 hours of final cleaning or re-clean the joint\crack before placing the sealant. Do not fill if the joint or crack is wet or damp.

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Sealant Melting: Follow the sealant Manufacturer's recommendations for heating and application. Give those recommendations to the Engineer. Heat the sealant in a melter constructed either:

- As a double boiler with the space between inner and outer shells filled with 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 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 be defective or missing.

Prior to placing any sealant, 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 having a 460 mm stems. Alternate methods to measure the sealant discharge temperature are subject to the Engineer's approval.

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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 this case, recharge the melter with fresh sealant amounting to at least 20 % of the sealant volume remaining in the melter.

Filling: Fill the joint and cracks to within 5 mm - 13 mm of the pavement surface. Fill transverse joints and cracks across longitudinal joints. Fill when the:

- Air and surface temperatures are 5°C or warmer.
- Air temperature is above the dew point.
- Pavement surface and vertical joint\crack surfaces are dry.
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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 Engineer will compute the meters of joint\cracks filled.

BASIS OF PAYMENT. In the unit bid price, include the cost of all material, equipment, and labor necessary to complete the work.