

ITEM 18502.7401 M - RESEALING LONGITUDINAL JOINTS IN PORTLAND CEMENT
CONCRETE PAVEMENT

DESCRIPTION

This work shall consist of cleaning and sealing longitudinal joints in existing portland cement concrete pavements. Joints not having adequate reservoir width or depth shall be sawed to suitable dimensions in accordance with this specification.

MATERIAL REQUIREMENTS

Joint Sealant: Sealants shall meet the requirements of the following:

Silicone Joint Sealant: The sealant shall be a one part, low modulus silicone formulation that has dynamic movement capability of $\geq 50\%$ of the joint width. Primer shall be used in conjunction with the silicone sealant if required by the manufacturer. Each container shall be legibly marked with the following information:

Manufacturer's name
Trade name of the sealant
Manufacturer's lot or batch number

Highway Joint Sealant (ASTM D3405): The sealant shall meet the requirements of ASTM D3405. The sealant shall be delivered in the manufacturer's original sealed containers. 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

BASIS OF ACCEPTANCE

Joint sealants shall be accepted on the basis of the brand name labeled on the container and appearing on the current Approved List titled "Silicone Joint Sealants," or "Highway Joint Sealant (ASTM D3405)." The Department reserves the right to conduct supplementary sampling and testing.

Backer Rod Material: Backer rod material for Silicone Joint Sealant shall be closed cell polyethylene foam rod. Backer rod material for ASTM D3405 sealant shall be any backer rod from the Department's Approved List titled "Backer Rod For Hot Pour Joint Sealants."

Backer rod diameter shall be a minimum of 25% larger than the joint width, it shall: support the sealant at its proper depth, prevent the sealant from leaking around and underneath it, and allow the sealant to deform freely when the joint expands and contracts.

Bond Breaker Tape: Bond breaker tape shall be polyethylene adhesive tape or masking tape. The width of the tape may be equal to but not more than 3 mm narrower than the width of the joint.

CONSTRUCTION DETAILS

General: The Contractor shall seal longitudinal pavement joints with a sealant meeting the requirements of this specification. All joint sealants will require the use of a backer rod or bond breaking tape.

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Sealant thickness for silicone joint sealant shall not be less than 6 mm. Sealant thickness for ASTM D3405 joint sealant shall not be less than 19 mm. All sealants shall be recessed 3 mm to 6 mm from the top surface of the pavement. The minimum joint width for longitudinal joints shall be 8 mm. Figures 1 and 2 show typical longitudinal joints and required sealant dimensions.

The Contractor shall adjust his longitudinal joint sealing operations so that any sealing of transverse joints under other items will result in continuous transverse joint sealant across all longitudinal joints.

The Contractor may elect to use a different type joint sealant for the longitudinal joint than was selected for transverse joint sealing. Silicone sealant shall be adequately cured before a hot-poured type sealant is placed in contact with it.

All pavement repairs including the cleaning and sealing of cracks which border pavement joints to be sealed under this item shall be completed, as specified in the appropriate item(s), prior to commencement of the joint sealing operation.

Seasonal and Temperature Limitations: Joint sealant shall not be placed when pavement or ambient temperatures fall below 4_C or when the pavement is wet.

Initial Joint Preparation and Cleaning: Existing joint sealing material, asphalt, incompressibles and any other material present in the joint reservoir or adhering to the joint wall shall be removed by plow, saw, wire brush, high pressure air or other suitable tools approved by the Engineer to the bottom of the existing joint reservoir. The material and debris removed from the joint shall be removed from the pavement to prevent re-contamination of the joint. Removal of liquid joint sealant from the joint may require running a saw along each joint face to adequately remove all existing joint sealer.

Removal of existing joint sealers shall be scheduled so that no joints are open more than 10 days prior to sealing. After September 30, the Engineer may at his discretion further limit the amount of existing sealer to be removed to avoid open joints through the winter.

The Contractor shall be responsible for protecting traffic and property from hazard or damage during all joint cleaning operations. Materials and methods used for this purpose will be subject to the Approval of the Engineer.

Sawing of Joints: Longitudinal joints that do not have adequate width and depth as required by this specification shall be sawed to suitable dimensions in order that proper sealant dimension, sealant recess and backer rod placement (when required), can be achieved. The existing joint dimensions, amount of slab faulting and amount of pavement grinding will determine the amount of joint sawing required.

Immediately after sawing the joint, the resulting slurry shall be completely removed from the joint and the immediate area by flushing with a jet of water under pressure and by the use of other tools as necessary.

Final Joint Preparation and Cleaning: Immediately prior to the placement of the backup material and the sealant, both joint faces shall be thoroughly cleaned to the bottom of the new joint reservoir, by sandblasting. The operator of the sandblaster shall tip the nozzle of the equipment so that the blast material is directed against one wall at a time. The joint walls shall be thoroughly clean and indicate a uniform minor abrasion of the wall surface. All joints are to be sandblasted. The joints shall then be blown with a compressed air stream of sufficient power to remove any remaining blast sand, dirt and loose material. Suitable traps or devices shall be installed on the air equipment to prevent moisture and oil from contaminating the joint surfaces. Any joints not sealed the same day shall be recleaned and resandblasted prior to sealing.

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Sealing: The proper size and type of backup material shall be installed in a manner that will produce the sealant dimensions specified. The joints shall be thoroughly dry and clean at the time of sealing.

Sealant that becomes damaged, is not properly bonded to the concrete, or that is installed improperly shall be repaired. Damaged or deficient areas shall have the sealant removed, the surfaces properly cleaned, and new sealant installed to the satisfaction of the Engineer at the Contractor's expense.

Silicone Joint Sealant: The primer for silicone joint sealant, if required by the manufacturer of the material, shall be applied to the joint faces in a thin film by brush or spray equipment. The primer shall completely wet the surfaces to be sealed and shall dry tack free prior to installation of the backer rod.

Sealant shall be pumped directly from plastic pails or drums by compressed air powered extrusion pumps designed for moisture curing silicone sealants. Teflon seals and packing and teflon lined hoses are recommended to prevent moisture permeation. Sealant application nozzles should be designed so that sealant is applied within the confines of the joint slot. The sealant shall be applied so that it is held below the surface of the slab and completely fills the width of the joint. Immediately after the sealant is applied, it shall be tooled to form a concave surface, provide firm contact with the joint faces and to form the required recess below the slab surface.

Traffic may be allowed over the sealed areas as soon as the Engineer determines that the sealant has cured sufficiently to prevent tracking. If rocking or vertical deflection due to vertical loads is expected the sealant shall be allowed to cure for 2 hours or more, as ordered by the Engineer.

Hot Poured Joint Sealant ASTM D3405: A copy of the manufacturer's recommendations pertaining to the heating and application of the sealant shall be submitted to the Engineer prior to the commencement of work; and these recommendations shall be adhered to and followed by the Contractor, with such exceptions as this specification may require.

The joint sealant shall be heated in a melter constructed either as a double boiler, with the space between inner and outer shells filled with oil or other 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. Positive temperature control, mechanical agitation and recirculation pumps shall be used. The unit shall be provided with separate thermometers to indicate the temperature of the heat transfer medium and the joint sealant material in the hopper. Before any joint sealing shall commence, the Engineer shall inspect the joint sealing apparatus to ascertain the presence of and the working condition of the thermometers. Under no circumstances will the Engineer permit any joint sealing if the thermometers are found to be defective or missing. The Contractor shall provide the Engineer with two (457 mm stem) thermometers, having a temperature range sufficient to meet the requirements of this specification.

The discharge hose shall be equipped with a controlled heating apparatus or shall be insulated sufficiently to maintain the proper sealant temperature.

The recommended pouring temperature shall be 5_C below the manufacturer's designated safe heating temperature, with an allowable variation of $\pm 5_C$. Sealant material that has exceeded the safe heating temperature, been heated at the pouring temperature in excess of 6 hours, or been reheated shall not be used.

Care shall be taken not to overfill the joint reservoir. Any excess material shall be removed from the pavement surface, as ordered by the Engineer. Traffic shall not be allowed on the material until it has cured in order to prevent tracking.

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METHOD OF MEASUREMENT

This work shall be measured by the number of linear meters of joints sealed.

BASIS OF PAYMENT

The unit price bid per linear meter shall include the cost of furnishing all labor, equipment, and materials necessary to complete the work as specified or as directed by the Engineer.

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FIGURE 1
SEALANT WITH BACKER ROD

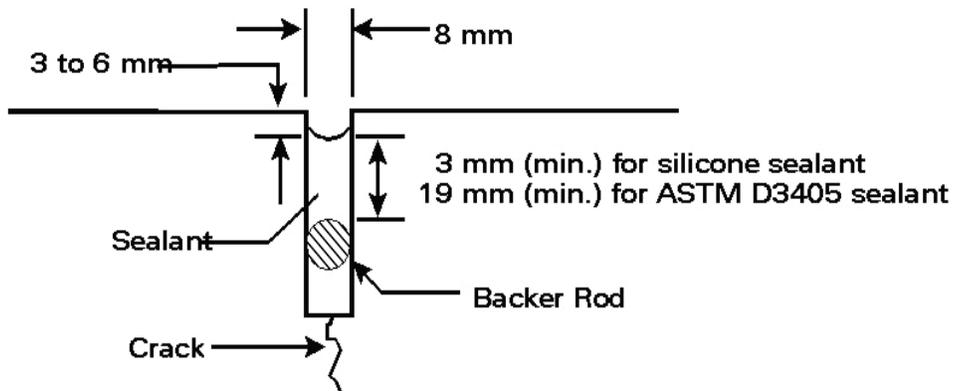


FIGURE 2
SEALANTS WITH BOND BREAKER TAPE

