

## **ITEM 18502.4602 M - SEALING LONGITUDINAL AND TRANSVERSE JOINTS IN OVERLAYED APPROACH SLABS**

### **DESCRIPTION**

This work shall consist of cleaning and sealing transverse and longitudinal joints in overlayed approach slabs and concrete pavement slabs adjacent to structures.

### **MATERIALS**

**A. Joint Sealant.** Sealant shall meet the requirements of the following:

Silicone Joint Sealant. Sealant shall be a one part, low modulus silicone formulation that has dynamic movement capability of  $\pm 50\%$  of joint width. Primer shall be used in conjunction with the silicone sealant if required by the manufacturer. Applications for approval of Silicone Joint Sealant shall be submitted to the Materials Bureau by the manufacturer accompanied by all pertinent sealer information. Upon approval by the Materials Bureau, the name of the product will be placed on an "Approved List" of Silicone Joint Sealants. The product may then be accepted on the basis of the brand name labeled on the container and appearing on the current Approved List.

Federal Specification SS-S-195B, Sealing Compound, Elastomeric Polymer Type, Cold Applied, Concrete Paving Joints. The sealant shall be accepted on the basis of the manufacturer's certification that it conforms to the requirements of SS-S-195B. Instructions for mixing, application, required equipment, temperature limitations, and curing, shall be supplied by the manufacturer to the contractor, and to the Engineer at least one week prior to actual installation. Sealants that require primers for increased adhesion shall use the primers recommended by the manufacturer.

**B. Backer Rod Material.** Backer rod material for Silicone Joint Sealant shall be closed cell polyethylene foam rod. Backer rod diameter shall be such that when the material is placed in the joint reservoir, 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.

**C. Bond Breaker Tape.** Bond breaker tape shall be polyethylene adhesive tape or masking tape.

### **CONSTRUCTION DETAILS**

**A. General.** Longitudinal and transverse joints for overlayed approach slabs will be constructed to the proper dimensions as shown on the plans; payment for such work shall be included in the price bid for the overlay. All joints that are not constructed to the proper dimensions shall be sawed to the dimensions shown in Figure 1 or Figure 2 of this specification; no additional payment will be made for this work.

**B. Seasonal and Temperature Limitations.** Joint sealants shall not be placed when pavement or ambient temperatures fall below 5EC.

**C. Joint Preparation and Cleaning.** Existing joint sealing material, asphalt, incompressibles and all other

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material present in the joint reservoir or adhering to the joint wall shall be removed by plow, router, wire brush, high pressure air or other suitable tools approved by the Engineer.

Joints that do not have adequate depth or width as dimensioned in Figures 1 or 2 shall be sawcut to the required dimensions in order that proper sealant dimension, sealant recess, and backer rod placement (when required), can be achieved. Immediately after sawing the joint, the resulting slurry or dust shall be completely removed from the joint and the pavement by flushing with a stream of water in the case of wet sawing, or blowing with oil-free air in the case of dry sawing.

After the joint has been prepared as specified above, both joint faces shall be thoroughly cleaned by sand blasting. The operator of the sandblaster shall tip the nozzle of his 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.

Immediately prior to the placement of the backup material and the sealant, the joints shall be blown with an 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. The Contractor shall maintain these devices and see that they are functioning properly.

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

- D. Sealing.** The proper size and type of backer rod or bond breaker tape shall be installed in a manner that will produce the sealant dimensions specified. The joints must be thoroughly dry and clean at the time of sealing.

Federal Specification SS-S-195B. The components of the sealant material shall be thoroughly mixed and blended together in accordance with the manufacturer's instructions. The sealant shall be installed in strict accordance with the manufacturer's instructions and to the dimensions required by this specification. If a primer is recommended by the compound formulator, the primer shall be applied according to the manufacturer's instructions.

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.

Immediately after the sealant is applied, it shall be tooled to provide firm contact with the joint faces and to form the required recess below the slab surface.

Sealant that becomes damaged 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.

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**METHOD OF MEASUREMENT**

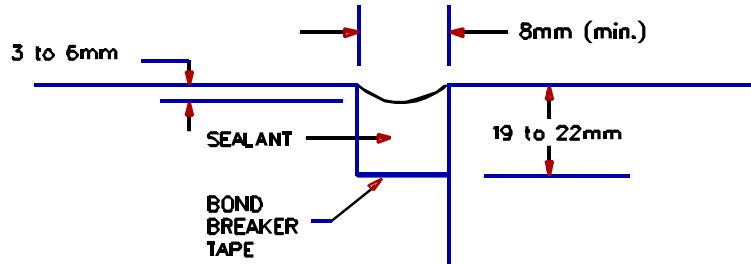
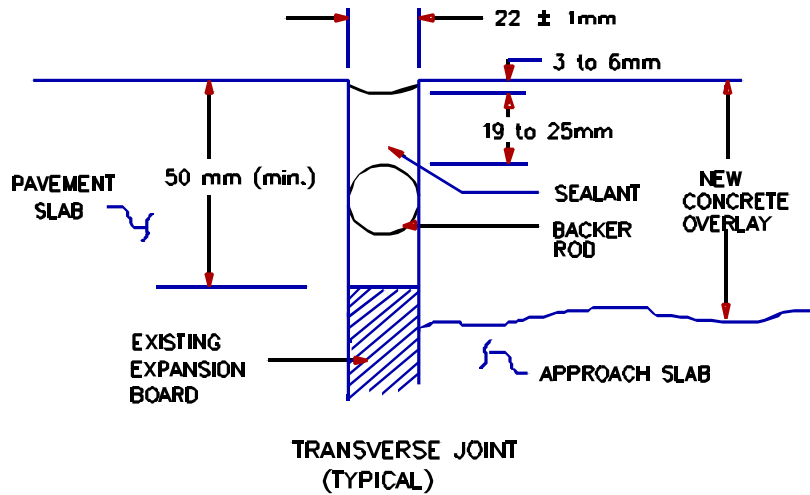
This work shall be measured by the number of meters of joint sealed. No deduction will be made where joints cross.

**BASIS OF PAYMENT**

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

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**FIGURE 1  
FEDERAL SPECIFICATION SS-S-195B SEALANT  
FOR TRANSVERSE AND LONGITUDINAL JOINTS**

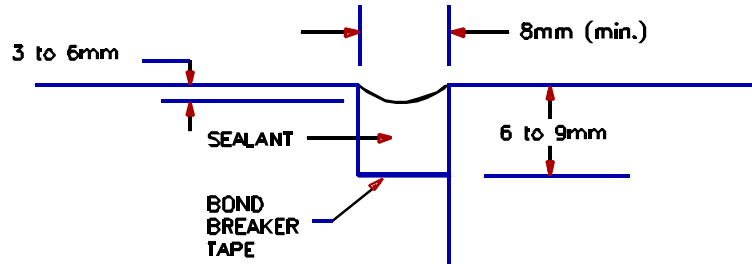
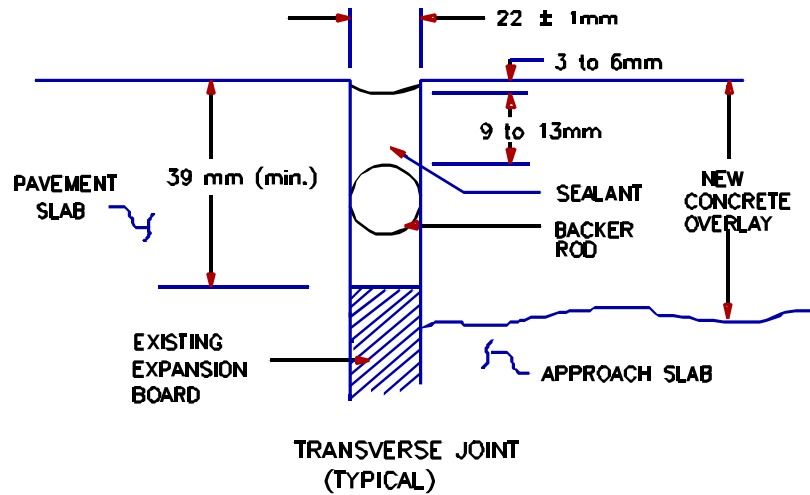


**NOTE:** Existing longitudinal joints to be filled that are not included in approach slab reconstruction may exhibit different reservoir configuration. The joint width shall be a minimum of 8mm and sealant depth shall be a minimum of 19mm. Tape is used for shallow depth reservoirs, backer rod for deep reservoirs.

**LONGITUDINAL JOINT  
(TYPICAL)**

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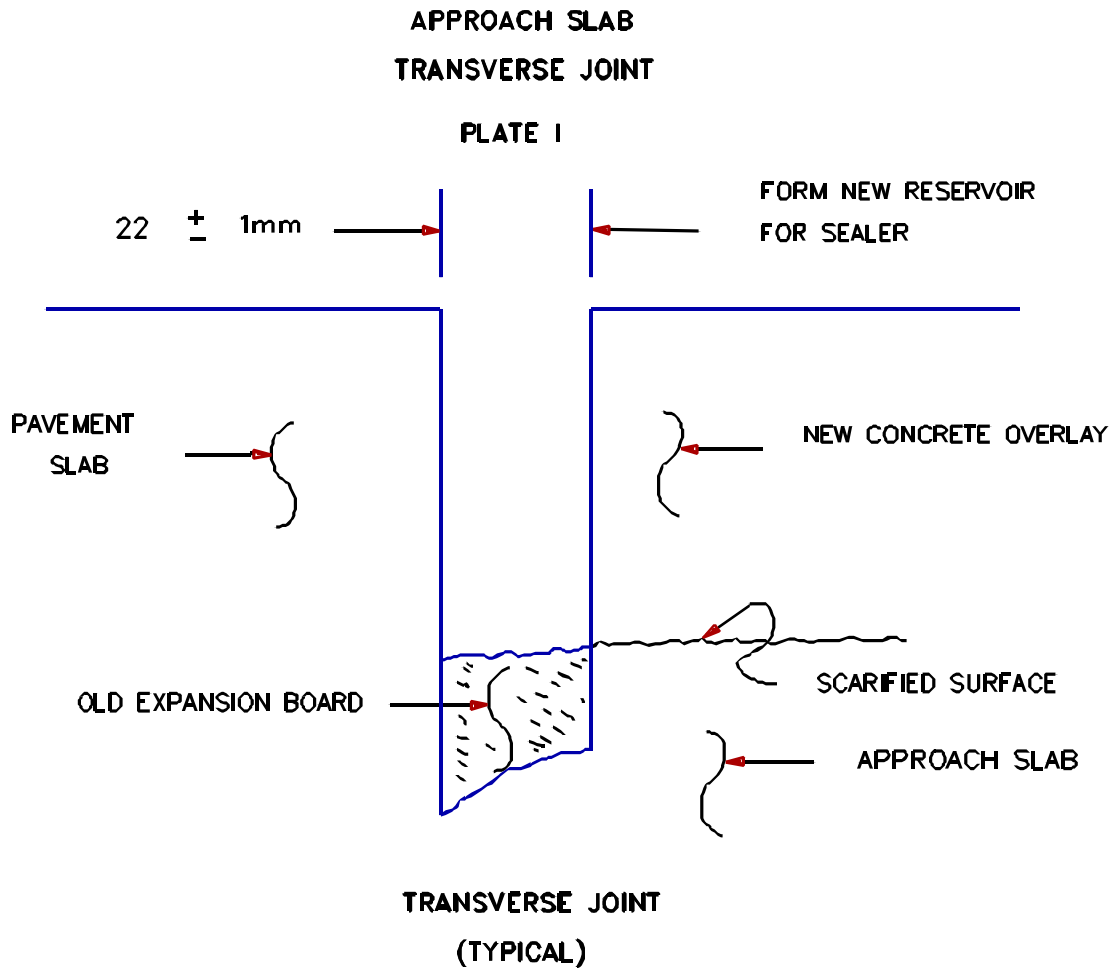
**FIGURE 2  
SILICONE JOINT SEALANT  
FOR TRANSVERSE AND LONGITUDINAL JOINTS**



**NOTE:** Existing longitudinal joints to be filled that are not included in approach slab reconstruction may exhibit different reservoir configuration. The joint width shall be a minimum of 8mm and sealant depth shall be a minimum of 9mm. Tape is used for shallow depth reservoirs, backer rod for deep reservoirs.

**LONGITUDINAL JOINT  
(TYPICAL)**

**ITEM 18502.4602 M - SEALING LONGITUDINAL AND TRANSVERSE JOINTS IN OVERLAYED APPROACH SLABS**

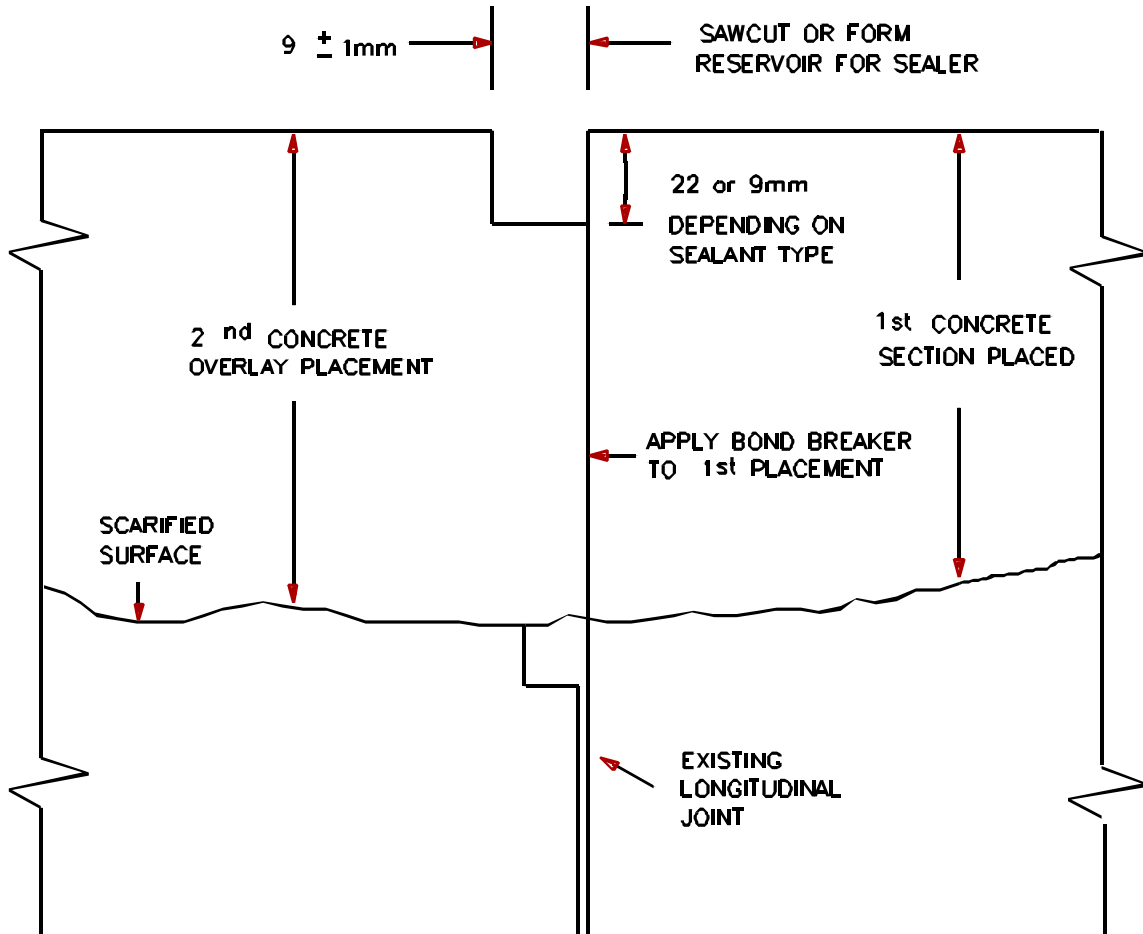


**NOTE:** The joint reservoir shown above is to be 22mm wide. The sealant type used will determine the minimum depth of the joint sealant reservoir (See Figures 1 and 2). Existing joint conditions and depth of the new overlay may require sawing in addition to forming in order to achieve the required joint reservoir dimensions. The same joint reservoir dimensions are required if the transverse joint is a contraction joint.

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**ALTERNATE METHOD 1**

**PLATE II**

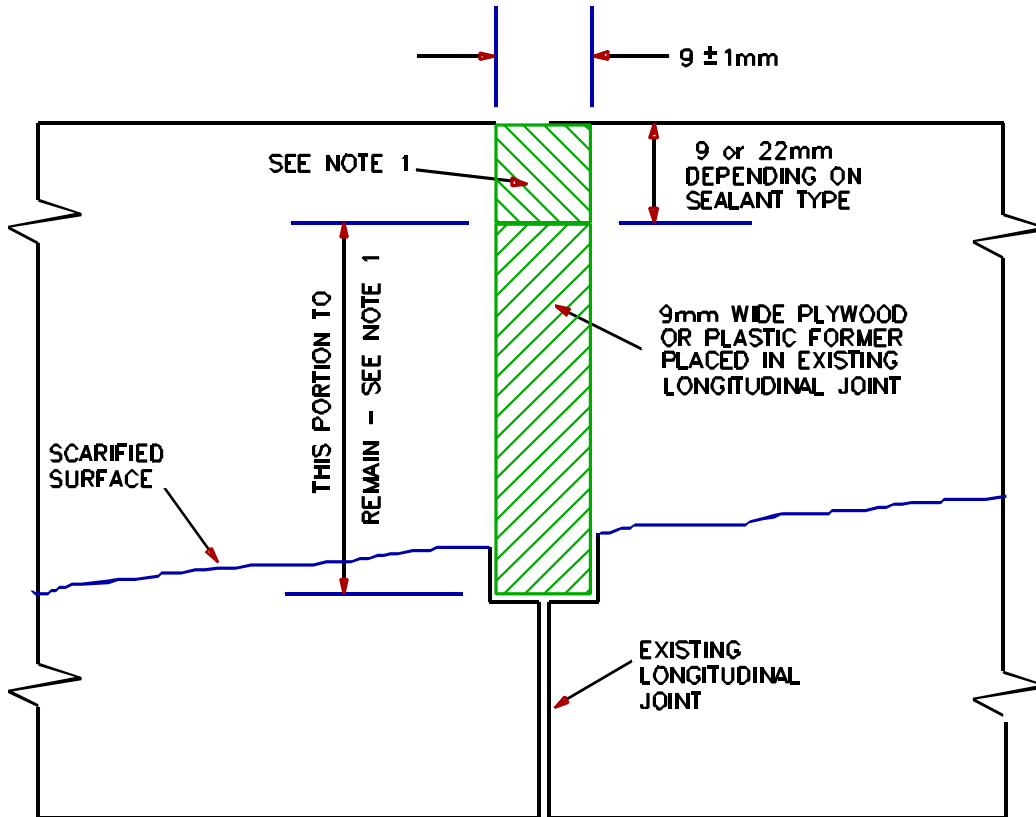


**SECTION AT APPROACH SLAB  
LONGITUDINAL JOINT**

**NOTE:** Form the first concrete overlay placement over the existing longitudinal joint.

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**ALTERNATE METHOD 2  
PLATE III**



**SECTION AT APPROACH SLAB  
LONGITUDINAL JOINT**

**NOTE 1:** The top portion of the former shall be removed, after the overlay has cured, to provide the sealer reservoir. The lower portion shall remain in place. The contractor is advised to use a two-part former to facilitate removal of the top portion.

**NOTE 2:** Clean existing longitudinal joint to allow the former to be placed into it.

**ITEM 18502.701002 M - RESEALING TRANSVERSE JOINTS IN PORTLAND CEMENT  
CONCRETE PAVEMENT, 19 m PAVEMENT SLABS - SILICONE  
SEALANT**

**ITEM 18502.702002 M - RESEALING TRANSVERSE JOINTS IN PORTLAND CEMENT  
CONCRETE PAVEMENT, 6 m PAVEMENT SLABS - SILICONE  
SEALANT**

**DESCRIPTION**

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

**MATERIALS REQUIREMENT**

**Silicone Joint Sealant:** The sealant shall be a one part, low modulus silicone formulation that has dynamic movement capability of  $\pm 50\%$  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

**Backer Rod Material:** Backer rod material shall be closed cell polyethylene foam rod.

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.

**BASIS OF ACCEPTANCE**

Silicone 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." The Department reserves the right to conduct supplementary sampling and testing.

**CONSTRUCTION DETAILS**

**General:** The Contractor shall seal transverse pavement joints in accordance with the requirements of this specification. Minimum required reservoir and sealant dimensions are contained in Table I. Transverse joints that measure less than the minimum widths or have inadequate reservoir depths shall be sawed to a suitable width and depth.

All pavement repairs including the cleaning and sealing of cracks which border pavement joints must be completed prior to the joint sealing operation.

**Seasonal and Temperature Limitations:** Joint sealant shall not be placed when pavement or ambient

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CONCRETE PAVEMENT, 19 m PAVEMENT SLABS - SILICONE  
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CONCRETE PAVEMENT, 6 m PAVEMENT SLABS - SILICONE  
SEALANT**

temperatures fall below 4EC 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:** Any transverse joint that does not exhibit adequate depth or width as shown on Table I shall be sawed to suitable dimensions in order that proper sealant dimension, sealant recess, and backer rod placement can be achieved. If the joint is faulted the Contractor shall determine joint reservoir depth and width by taking measurements from the top edge of the dropped slab. The sawing shall produce vertical and parallel joint faces. The existing joint dimensions, amount of slab faulting, amount of pavement grinding and time of year joints are sealed, 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 backer rod and 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.

**Sealing:** The proper diameter and type of backer rod 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.

Primer, 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

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CONCRETE PAVEMENT, 19 m PAVEMENT SLABS - SILICONE  
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CONCRETE PAVEMENT, 6 m PAVEMENT SLABS - SILICONE  
SEALANT**

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 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.

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.

**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.

**TABLE I  
JOINT AND SEALANT DIMENSIONS**

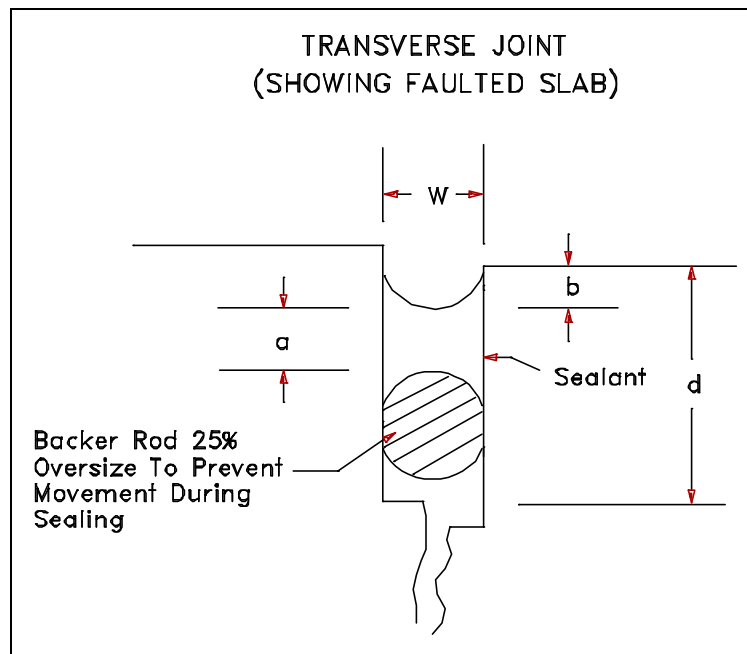
**ITEM 18502.701002 M - RESEALING TRANSVERSE JOINTS IN PORTLAND CEMENT CONCRETE PAVEMENT, 19 m PAVEMENT SLABS - SILICONE SEALANT**

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Joint Width W (mm)	(Minimum) d (mm)	a (mm)	b (mm)
10*	29	6-10	6-10
13	32	6-10	6-10
16**	35	6-10	6-10
19	41	9-13	6-10
22	45	9-13	9-13
25	50	9-13	9-13
25+	50+	13-16	9-13

\* Minimum width for 6m slabs

\*\* Minimum width for 19m slabs



**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  $\pm 50\%$  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 temperance

**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

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

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.

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 4EC 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.

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CONCRETE PAVEMENT**

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.

**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.

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CONCRETE PAVEMENT**

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 5EC below the manufacturer's designated safe heating temperature, with an allowable variation of  $\pm 5$ EC. 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.

**METHOD OF MEASUREMENT**

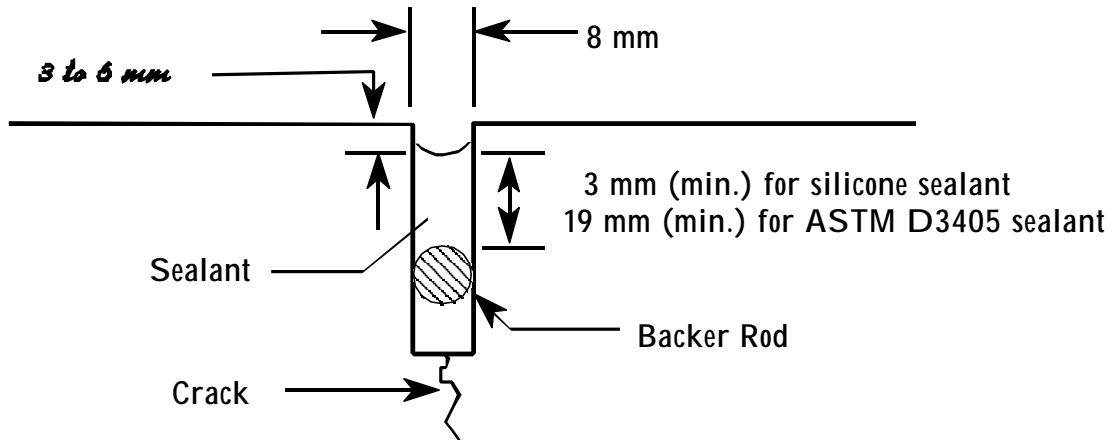
This work shall be measured by the number of linear meters of joints sealed.

**BASIS OF PAYMENT**

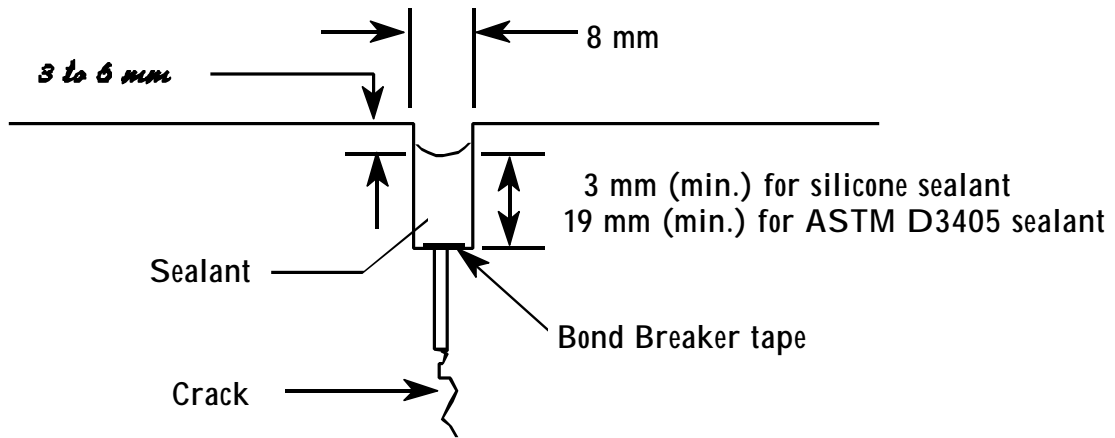
The unit price bid per linear meter shall include the cost of furnishing all labor, equipment, and materials necessary to complete the work as specified or as directed by the Engineer.

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CONCRETE PAVEMENT**

**FIGURE 1  
SEALANT WITH BACKER ROD**



**FIGURE 2  
SEALANTS WITH BOND BREAKER TAPE**



## **ITEM 18502.7601 M - SEALING CRACKS IN PCC PAVEMENT - SILICONE SEALANT**

### **DESCRIPTION**

This work shall consist of sawing, cleaning and sealing cracks in portland cement concrete pavement at locations shown on the plans or where directed by the Engineer.

### **MATERIALS REQUIREMENTS**

**Silicone Joint Sealant:** The sealant shall be a one part, low modulus silicone formulation that has dynamic movement capability of  $\pm 50\%$  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

**Backer Rod Material:** Backer rod material shall be closed cell polyethylene foam rod. Backer rod diameter shall be a minimum of 25% larger than the crack 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.

### **BASIS OF ACCEPTANCE**

Silicone 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." The Department reserves the right to conduct supplementary sampling and testing.

### **CONSTRUCTION DETAILS**

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

The Contractor shall furnish all equipment necessary for sawing, cleaning, and sealing the pavement cracks. All equipment shall be approved by the Engineer before its use.

Sealing will generally be limited to opened cracks at least 3 mm wide at locations shown on the plans or where directed by the Engineer. Cracks with varying widths, portions of which are 3 mm wide or over, should be sealed along their entire length.

Sealant thickness shall not be less than 6 mm. All sealant shall be recessed 6 mm to 9 mm from the top surface of the pavement.

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

## **ITEM 18502.7601 M - SEALING CRACKS IN PCC PAVEMENT - SILICONE SEALANT**

**Crack Preparation:** All cracks less than 13 mm wide shall be sawn in areas shown on the contract plans or where directed by the Engineer. Cracks 13 mm and wider shall have a saw run through them to ensure that the crack has a full 13 mm width to a depth of 38 mm to 50 mm.

Sawing shall be accomplished with crack sawing equipment which shall produce vertical sides with a minimum of edge spalling. Other types of equipment, such as vertical spindle type routers, may be approved by the Engineer if satisfactory results are obtained as determined by the Engineer. For cracks less than 13 mm wide, the sawed recess shall have the approximate dimensions of 13 mm wide by 13 mm to 16 mm deep. If the crack is faulted, the Contractor shall determine recess depth by taking measurements from the top edge of the dropped portion of the slab.

All cracks shall be thoroughly cleaned of all dust, dirt, foreign material, incompressibles or any other extraneous materials by high pressure air, plow, saw, wire brush, sandblasting, or other suitable method or tool approved by the Engineer. The material and debris removed from the crack shall be removed from the pavement to prevent recontamination of the crack.

Immediately prior to sealing and after the crack has been prepared as specified above, both crack faces shall be thoroughly cleaned by sandblasting to the full sawcut depth, or to a depth of 13 to 50 mm on cracks 13 mm and wider. All cracks to be sealed are to be sandblasted. The operator of the sandblaster shall tip the nozzle of the equipment so that the blast material is directed against one crack face at a time. The crack face shall appear thoroughly clean and indicate a uniform minor abrasion. The cracks 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 compressed air equipment to prevent moisture and oil from contaminating the crack surfaces. 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 all crack cleaning operations. Materials and methods used for this purpose will be subject to the approval of the Engineer.

**Sealing:** Primer, if required by the manufacturer of the sealant, shall be applied to the crack faces in a thin film by brush or spray equipment. The primer shall completely wet the surfaces to be sealed and, if a backer rod is required, the primer shall dry tack free before the backer rod is installed. The cracks shall be thoroughly dry and clean at the time of sealing.

For cracks 13 mm and wider, a backer rod of the proper size and type shall be installed at a depth such that the sealant will have a shape factor of 2 (width):1 (depth).

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 crack. The sealant shall be applied so that it is held below the surface of the slab and completely fills the width of the crack. Immediately after the sealant is applied, it shall be tooled to form a concave surface, to provide firm contact with the joint faces, and to form the required recess below the slab surface.

**ITEM 18502.7601 M - SEALING CRACKS IN PCC PAVEMENT - SILICONE SEALANT**

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 deflection due to vertical loads is expected, the sealant shall be allowed to cure for two hours or more, as ordered by the Engineer.

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.

**METHOD OF MEASUREMENT**

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