

## **Sealing Existing Concrete Pavement Joints and Cracks**

### **417.1 DESCRIPTION**

This section describes the requirements for removing existing joint sealant and sawing, cleaning, and sealing existing concrete pavement joints and random concrete cracks.

### **417.2 MATERIALS**

Provide materials in accordance with the following:

<b>Material</b>	<b>Subsection</b>
Backer Rod	807.7
Joint Materials	807

### **417.3 EQUIPMENT**

Provide, if applicable to the work specified, the following:

1. A plow, ripping tooth, wire brush, saw, or other equipment for removing existing sealant from joints and cracks;
2. Power-driven saws with diamond blades;
3. High pressure water blaster to clean sawed joints and random cracks;
4. A power-operated pressure system for silicone joint sealing;
5. Automatic installation machine for preformed elastomeric compression sealant;
6. Air compressor in accordance with Subsection 403.3.3, Cleaning/Drying; and
7. Melting machine in accordance with Subsection 403.3.4, Sealing.

## **417.4 CONSTRUCTION**

### **417.4.1 General**

Seal joints and cracks when air and pavement temperatures are at least 40 °F [5 °C], unless the sealant manufacturer requires a higher temperature, and the weather and pavement are dry. Do not place silicone sealant if the engineer determines a risk of impending rain.

Remove all existing sealant from sealed joints.

Do not use equipment that causes spalling of concrete pavement surface beyond the limits of the proposed joint widths. Repair damage to the pavement (such as spalling, cracking, breaking, or overcutting) caused by the work operations at no additional cost to the department.

Do not allow traffic on freshly sealed joints for 24 hours, unless otherwise approved by the engineer.

### **417.4.2 Sawing**

#### **417.4.2.1 General**

For joints between concrete pavement and plant mix pavement, completely remove the plant mix pavement from the concrete face during sawing. Remove raveled edges in the plant mix pavement with the saw cut.

#### **417.4.2.2 Silicone Sealant**

Saw transverse joints, longitudinal joints, expansion joints, and random cracks to the widths and depths specified. If the engineer determines that the existing joint can be cleaned satisfactorily without sawing, eliminate sawing and use the existing joint width.

For joints between concrete pavement and plant mix pavement, saw the plant mix pavement adjacent to the concrete pavement to a width of 2 in [12 mm] and a depth of : in [19 mm].

#### **417.4.2.3 Preformed Elastomeric Compression Sealant**

Saw when the concrete temperature is from 40 °F to 80 °F [4 °C to 27 °C].

To accommodate the designed sealant size, ensure that the final joint width and depth are in accordance with the sealant manufacturer's recommendations.

#### **417.4.2.4 Hot-Poured Elastic Sealant**

Saw cracks to at least  $\frac{1}{8}$  in [3 mm] larger than the initial width and to a depth of three times the final width.

For joints between concrete pavement and plant mix pavement, saw the plant mix pavement adjacent to the concrete pavement to a width of 2 in [12 mm] and a depth of 12 in [38 mm].

#### **417.4.3 Cleaning**

Thoroughly clean each sawed joint or random crack and the adjacent pavement surface immediately after sawing with a water wash not exceeding 3000 psi [20 685 kPa]. Remove cement dust and debris. After the initial cleaning, do not use more water to clean or prepare for sealing.

Immediately before placing joint sealant, sandblast and clean the sawed joints and random cracks with oil-free compressed air. Ensure that the joints and cracks are free of dirt, dust, moisture, or other foreign material that may prevent bonding of the joint sealant. The engineer will inspect and approve prepared sawed joints and random cracks before allowing joint sealing.

Space the final cleaning far enough behind the joint sawing to avoid contaminating cleaned joints and cracks with residual water from sawing. On uphill grades, prevent residual water from flowing into previously cleaned and sealed joints and random cracks. Reclean joints and cracks contaminated by sawing.

#### **417.4.4 Sealing Joints and Cracks**

##### **417.4.4.1 Silicone Sealant**

Place backer rod in the joints and random cracks as specified. Maintain the backer rods' placement during sealant application. Place the rods to maintain the specified depth of sealant for all joints and cracks. To maintain the proper

depth of sealant at transverse and longitudinal joint intersections, cut one rod and butt against the intersecting rod, or notch the rods and overlap; maintain the cut rod's placement before and during sealing.

Configure and place the backer rods to retain the silicone reservoir when using self-leveling silicone. If the silicone is not retained, modify the rod placement or use a non-sag product.

Use a masking tape bond breaker between the sealant and the joint filler on type E expansion joints.

When using non-sag silicone sealant, apply and tool the sealant in accordance with the manufacturer's recommendations. Ensure the presence at the site of the manufacturer's technical representative during the initial sealing.

Relative to the surface of the adjacent concrete pavement, place the sealant to obtain a finished sealant surface  $2 \text{ in} \pm \frac{1}{16} \text{ in}$  [ $13 \text{ mm} \pm 2 \text{ mm}$ ] deep. Remove and replace sealant outside allowed tolerances at no additional cost to the department.

#### **417.4.4.2 Preformed Elastomeric Compression Sealant**

Submit sealant design computations indicating that the proposed material will be in compression over the temperature range from  $-40 \text{ }^\circ\text{F}$  to  $120 \text{ }^\circ\text{F}$  [ $-40 \text{ }^\circ\text{C}$  to  $49 \text{ }^\circ\text{C}$ ] along with the sealant manufacturer's recommendations for joint or random crack width and depth. Perform work in accordance with the manufacturer's recommendations, including weather limitations, concrete temperature, width and depth of saw cuts, joint intersection, and installation depth.

At least 21 calendar days before starting sealing, submit the lubricant and a 10-foot [3 m] sample of the sealant to the engineer.

Use a single full-width-and-full-depth piece of material for each joint or crack, unless otherwise approved by the engineer. When using more than one piece in a joint, fasten abutting ends securely, and hold them accurately to shape by stapling or other approved methods.

Provide the seal at least  $\frac{11}{16} \text{ in}$  [17.5 mm] wide. Machine-place the seal and do not stretch during installation.

#### **417.4.4.3 Hot-Poured Elastic Sealant**

Seal flush with the existing pavement surface. Apply sealant to the joint or crack from the bottom up with an applicator that allows observation of the sealant flow at the applicator nozzle. Remove overflow sealant from the adjacent concrete surface. Do not use squeegees or wands with a cup.

When sealing cracks, use backer rod c in [3 mm] larger than the sawed crack. Place backer rod to the bottom of the sawcut. Recess the sealant below the pavement surface 3 in [6 mm].

The engineer will accept hot-poured sealant in accordance with Subsection 403.4.7, Crack Seal Acceptance, except that units will be in LF (linear feet). The linear-foot units will also apply to Subsection 403.4.5, Lot Sizes, Sampling, and Testing.

#### **417.5 MEASUREMENT and PAYMENT**

##### **417.5.1 General**

The engineer will measure Sealing Cracks (Conc Pvmt) and Sealing Joints (Conc Pvmt) by the foot [meter] of each random crack or joint sealed.

The department will pay as follows:

##### **417.5.2 Determination of Pay Factor and Pay Adjustment**

The engineer will determine the pay factor and pay adjustment for hot-poured elastic sealant in accordance with Subsection 403.5.2, Determination of Pay Factor and Pay Adjustment.

<b>Pay Item</b>	<b>Pay Unit</b>	<b>Measure to the Nearest</b>	<b>Pay to the Nearest</b>
Sealing Cracks (Conc Pvmt)	FT [m]	0.1 ft [0.05 m]	FT [m]
Sealing Joints (Conc Pvmt)	FT [m]	0.1 ft [0.05 m]	FT [m]