

SECTION 452—SEALING AND RESEALING CONCRETE PAVEMENT JOINTS

452.1 DESCRIPTION.

452.11 Sealing of concrete pavement joints shall consist of cleaning, priming if necessary, and sealing joints as described herein, at the locations shown in the contract.

Resealing of concrete pavement joints shall consist of removing the existing joint sealant, sawing, cleaning, priming if necessary, and sealing joints as described herein, at the locations shown in the contract.

Only joints between adjacent Portland cement concrete surfaces shall be sealed in accordance with this section. All joints between PCCP and bituminous pavement shall be sealed in accordance with Section 411, Hot-Poured Crack Sealant, unless otherwise designated in the plans.

452.2 MATERIALS.

452.21 Sealant. The joint sealant material shall be a one-part silicone formulation sealant in conformance with Table 452-A, Sealant Physical Requirements. The compound shall be compatible with the surface to which it is applied.

The Contractor shall have a qualified manufacturer's representative on the project for at least the first day of joint preparation and cleaning and for at least the first day of sealant application to ensure that the joints are properly prepared and that the sealant is being placed in accordance with proper procedures.

The primer, if required, shall be compatible with the sealant and shall be approved in writing by the manufacturer.

452.211 Certification. The Contractor shall furnish certified test results for all of the requirements of Table 452-A except ozone and ultraviolet light resistance and movement capability, on each lot furnished to the project.

For ozone and ultraviolet light resistance and movement capability, the manufacturer shall certify that the joint sealant will meet the requirements of Table 452-A and furnish typical test results for each.

The Contractor shall provide this documentation to the Project Manager, at least 10 working days before installation of any sealant. The certification shall show use of primer where applicable.

Table 452-A
SEALANT PHYSICAL REQUIREMENTS

Characteristic and Tests	Value
Tensile Stress, 150% Elongation, 7-day cure @ 25 °C ± 2 °C (77 °F ± 3 °F) & 45–55% R.H. (ASTM D 412, Die C), kPa (psi)	517– (75–)
Flow (MIL Standard 8802), mm (in.)	8 (0.3–)
Extrusion rate @ 23 °C ± 2 °C (73 °F ± 3 °F) MIL Standard 8802, grams/min.	75–250
Specific Gravity, (ASTM D 792, Method A)	1.01–1.515
Durometer Hardness, Shore A, Cured 7 days @ 23 °C ± 2 °C (73 °F ± 3 °F) & 45–55% R.H. (ASTM D 2240) Tested @ 23 °C ± 2 °C (73 °F ± 3 °F)	10–25
Shelf Life from Date of Shipment	6 months +
Elongation, 7 days cure @ 23 °C ± 2 °C (73 °F ± 3 °F) & 45–55% R.H. ASTM D-412, Die C	500% +
Ozone and U.V. Resistance	Note 1
Movement Capability & Adhesion	Note 2

1. ASTM C 793-75; the sealant shall show no chalking, cracking or bonding loss after 250 hours

2. The sealant shall show no adhesive or cohesive failure after 10 cycles of +50% and –50% of joint width with the rate of extension or compression being no greater than 3 mm (1/8 in.) per hour.

The concrete block specimens shall be prepared in accordance with ASTM C 719 except that a sawed face shall be used for bond surface testing. Seal 50 mm (2 in.) of block leaving 12.0 mm (1/2 in.) on each end of specimen unsealed. The depth of sealant shall be 9 mm (3/8 in.) and the width 12.0 mm (1/2 in.).

Sealant shall be cured seven days in air and then seven days in water, maintaining a constant temperature of 25 °C ± 2 °C (77 °F ± 4 °F) throughout the curing period.

452.22 Bondbreaker. The bondbreaker shall be a round closed cell, nonabsorbent material compatible with and used successfully with the sealant material. The bond-breaker shall be at least 3 mm (1/8 in.) larger in diameter than the width of the joint being sealed. No adverse reaction shall occur between the bondbreaker and sealant or primer, if primer is required.

452.3 CONSTRUCTION REQUIREMENTS.

452.31 General. Only equipment that will not cause spalling or otherwise damage the pavement surface shall be used.

All damage to the concrete pavement caused by the Contractor's operations shall be repaired as directed by the Project Manager, at the Contractor's expense.

All repairs to the concrete surface(s) shall be accomplished, as directed by the Project Manager, prior to initiating sealing operations.

The Contractor shall dispose of old sealant materials in accordance with Section 107, Legal Relations, Environmental Requirements, and Responsibility to the Public.

452.32 Weather and Temperature Limitations. Joint sealing or resealing shall be performed only when the ambient and pavement temperature are 4 °C (40 °F) or higher, but in all cases the temperature of the pavement shall be above the dew point.

The pavement shall be surface dry and sealant shall not be placed unless the weather conditions are dry. Joint faces shall be dry, and frost free at the time of application.

452.33 Resealing Operations. The Contractor shall saw the transverse and longitudinal joints to the width, depth, and configuration shown in the contract.

452.34 Joint Preparation. Routers for preparation of random cracks shall be capable of following closely the path of the crack and of widening the top of the crack to the required section without spalling or otherwise damaging the concrete.

Joint cleaning shall be accomplished initially by sandblasting and then by using clean compressed air.

At the time of placement of the bondbreaker and sealant, the joint and adjacent pavement for a width of at least 25 mm (1 in.) on each side of the joint shall be clean and free of all the previous sealant as well as other deleterious material, leaving a clean, dry, newly exposed concrete surface.

Air compressors shall provide at least 690 kPa (100 psi) of pressure at the outlet nozzle of the cleaning wand. Work shall be stopped when and if it is found that there is oil or moisture in the compressed air. Work shall not resume until suitable adjustments are made.

452.35 Sealant Application. A copy of the manufacturer's recommendations pertaining to the application of the sealant shall be submitted to the Project Manager for approval before beginning the work. The sealant material shall be applied into the joint, using equipment and techniques recommended by the joint sealant manufacturer, unless otherwise specified herein and as approved by the Project Manager.

The bondbreaker shall be placed in such a manner that the proper depth of the sealant material is maintained.

The surface of the finished joint seal shall be concave and shall be 6 mm \pm 3 mm (1/4 in. \pm 1/8 in.) below the surface of the concrete pavement.

If the Contractor shows an inconsistency in filling the joints to the required dimensions, the Contractor shall cease the operations, as directed by the Project Manager, and shall take corrective actions to comply with the required criteria in a consistent manner.

Sealant not placed in accordance with these requirements shall be removed and replaced at the Contractor's expense.

452.4 METHOD OF MEASUREMENT.

452.41 Sealing of concrete pavement joints will be measured by the meter (linear ft). Resealing of concrete pavement joints will be measured by the meter (linear ft).

452.5 BASIS OF PAYMENT.

452.51 Sealing and resealing concrete pavement joints will be paid for at the contract unit price per meter (linear ft).

Payment will be made under:

Pay Item	Pay Unit
Sealing Concrete Pavement Joints	Meter (Linear Foot)
Resealing Concrete Pavement Joints	Meter (Linear Foot)