CONSTRUCTION SPECIFICATION FOR SEALING OR RESEALING OF JOINTS AND CRACKS IN CONCRETE PAVEMENT AND CONCRETE BASE

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369.01 SCOPE

This specification covers the requirements for sealing or resealing of joints and cracks up to 25 mm in width in concrete pavement and concrete base.

369.01.01 Specification Significance and Use

This specification is written as a municipal-oriented specification. Municipal-oriented specifications are developed to reflect the administration, testing, and payment policies, procedures, and practices of many municipalities in Ontario.

Use of this specification or any other specification shall be as specified in the Contract Documents.

369.01.02 Appendices Significance and Use

Appendices are not for use in provincial contracts as they are developed for municipal use, and then, only when invoked by the Owner.

Appendices are developed for the Owner's use only.

Inclusion of an appendix as part of the Contract Documents is solely at the discretion of the Owner. Appendices are not a mandatory part of this specification and only become part of the Contract Documents as the Owner invokes them.

Invoking a particular appendix does not obligate an Owner to use all available appendices. Only invoked appendices form part of the Contract Documents.

The decision to use any appendix is determined by an Owner after considering their contract requirements and their administrative, payment, and testing procedures, policies, and practices. Depending on these considerations, an Owner may not wish to invoke some or any of the available appendices.

369.02 REFERENCES

When the Contract Documents indicate that municipal-oriented specifications are to be used and there is a municipal-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.MUNI, unless use of a provincial-oriented specification is specified in the Contract Documents. When there is not a corresponding municipal-oriented specification, the references below shall be considered to be the OPSS listed, unless use of a provincial-oriented specification is specified in the Contract Documents.

This specification refers to the following standards, specifications, or publications:

Ontario Provincial Standard Specifications, Construction

OPSS 350 Concrete Pavement and Concrete Base
OPSS 929 Abrasive Blast Cleaning - Concrete Construction

Ontario Provincial Standard Specifications, Material

OPSS 1212 Hot Poured Rubberized Asphalt Joint Sealing Compound

ASTM International

D 2628-91(2016) Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements

369.03 DEFINITIONS

For the purpose of this specification, the following definitions shall apply:

Backer Rod means a compressible material inserted into the reservoir to achieve the required shape factor for the sealant and prevent loss of sealant.

Reservoir means a saw cut cavity of specific dimensions designed to receive the backer rod and sealant or seal.

Shape Factor means the ratio of width to depth of a field poured liquid sealant within the reservoir.

369.05 MATERIALS

369.05.01 Sealants

Hot poured rubberized asphalt joint sealing compound shall be according to OPSS 1212.
Silicone sealant shall be as specified in the Contract Documents.

369.05.02 Seals

Preformed compression seals shall meet the manufacturer's requirements according to ASTM D 2628.

369.05.03 Backer Rods

Backer rods shall be made of polyethylene foam, cross-linked polyethylene foam, or polyurethane foam.

369.06 EQUIPMENT

369.06.01 Saw Cutting Equipment

Saw cutting equipment shall be capable of following the path of random cracks to create a sealant reservoir to the dimensions specified in the Contract Documents, without causing spalling or damage to the adjacent concrete.

The saw shall be power driven and equipped with a diamond blade having a diameter of 200 mm or less.

369.06.02 Heating Kettle

When required, the heating kettle shall be designed and operated to ensure uniform heat and to agitate and prevent overheating of the sealant.

369.06.03 Hot Compressed Air Lance

The hot compressed air lance shall have an oil free discharge of air at a temperature greater than 1,000 °C and an air velocity greater than 1,000 m per second.

369.07 CONSTRUCTION

369.07.01 General

Joints and cracks identified in the Contract Documents and in the field by the Contract Administrator shall be filled with hot poured rubberized joint sealing compound. Preformed compression seals or silicone sealant shall be used when specified in the Contract Documents.

The maximum width of repair shall be 25 mm for both transverse and longitudinal cracks and joints. Cracks and joints exceeding the maximum repair width shall be repaired as directed by the Contract Administrator.

369.07.02 Operational Constraints

Grinding and milling operations shall be completed prior to sealant installation.

Sealant or seals shall not be placed until new concrete has cured for a minimum of 7 Days.

Cracks and joints shall be kept in a dry condition for a minimum period of 24 hours prior to sealant or seal installation.

Sealant shall not be placed when the ambient air and pavement surface temperatures are less than 5 °C. Seals shall be placed according to the manufacturer's recommendations.

369.07.03 Removal of Existing Sealant and Seals

All existing sealant and seals shall be removed without damaging the adjacent joint or crack faces.

369.07.04 Reservoir

Saw cutting equipment shall be used to create a reservoir with dimensions specified in the Contract Documents. Routers shall not be used for creating the reservoir.

The shape factor shall be 1H:1V for hot poured rubberized sealant and 2H:1V for silicone sealant.

When resealing cracks or joints, if the existing reservoir is determined by the Contract Administrator to be in an acceptable condition with minimal spalling and to have the proper dimensions, saw cutting shall not be required, but cleaning shall be required.

369.07.05 Cleaning

Immediately after the sawing operation, reservoirs shall be flushed with water in one direction to remove the slurry. Immediately prior to sealing operations, all joint and crack faces shall be abrasive blast cleaned according to OPSS 929. The reservoir shall then be blown clean and dried using a hot compressed air lance.

369.07.06 Backer Rod Installation

Backer rods shall have a minimum diameter of 25% greater than the reservoir width. They shall be installed immediately after cleaning and drying and before sealant installation. Backer rods shall be inserted uniformly to the required depth to achieve the required shape factor.

Backer rods shall be inserted using a double wheel steel roller and shall not be punctured or stretched during the installation process.

369.07.07 Sealant and Seal Installation

369.07.07.01 General

Prepared transverse joints and cracks shall be filled prior to longitudinal joints and cracks.

Sealant and seals shall be installed according to the manufacturer’s recommendations.

369.07.07.02 Hot Poured Rubberized Joint Sealing Compound

The sealant shall be placed by a manual pouring cone or hose and wand fitted with a proper sized tip from a low pressure pump connected to the heating kettle.

The tip of the cone or wand shall be placed to the top of the backer rod to ensure uniform application.

The reservoir shall be filled with sealant so that upon cooling, the sealant is recessed 3 to 6 mm below the adjacent pavement surface. If the initial placement of material subsides below the required recess depths, additional sealant shall be placed.

Sealant damaged by construction traffic or by the Contractor's operations shall be replaced.

Any spilled material or excess material in the joints or cracks shall be removed immediately and the pavement surface cleaned.

The quantity of material heated shall be placed to permit use on the same day. Excess heated material shall be disposed of and is not permitted to be used on subsequent days.

369.07.07.03 Compression Seal

After final cleaning of the reservoir, the lubricant adhesive shall be applied to the seal and the seal shall be installed according to the manufacturer's specifications. During installation, twisting, nicking, or other damage to the seal shall be avoided.

369.07.07.04 Silicone Sealant

Installation of silicone sealant shall be as specified in the Contract Documents and according to manufacturer's recommendations.

369.07.08 Management of Excess Material

Management of excess material shall be according to the Contract Documents.

369.08 QUALITY ASSURANCE

During the process of sealant or seal installation, upon request, the Contractor shall provide a sample of the seal or seal for testing to the Contract Administrator.

Sealant samples shall be stored in triple-tight epoxy-lined pails or suitable leak-proof plastic containers.

Seal samples shall be a minimum 1 m in length.

All samples shall be accompanied by a sample data sheet and any additional documents as specified in the Contract Documents. When not specified or not included on the sample data sheet, samples shall be delivered with a transmittal form identifying the following information:

a) Contract number.

b) Name of Contractor and a contact person's name and telephone numbers.

c) Contract Administrator's name and telephone numbers.

d) Quantity and type of sample. When a sample consists of more than one item, each item shall be individually identified.

e) Date sampled (i.e., yyyy-mm-dd).

f) Date shipped.

g) Sample location.

369.09 MEASUREMENT FOR PAYMENT

369.09.01 Actual Measurement

369.09.01.01 Resealing of Joints and Sealing or Resealing of Cracks in Concrete Pavement and Concrete Base

Measurement of resealing of joints and sealing or resealing of cracks in existing concrete pavement or concrete base shall be by length in metres measured along the centreline of the crack or joint.

369.09.02 Plan Quantity Measurement

When measurement is by Plan Quantity, such measurement shall be based on the units shown in the clause under Actual Measurement.

369.10 BASIS OF PAYMENT

369.10.01 Resealing of Joints and Sealing or Resealing of Cracks in Concrete Pavement and Concrete Base - Item

Payment at the Contract price for the above tender item shall be full compensation for all labour, Equipment, and Material to do the work.

Sealant or seals damaged by construction traffic or by the Contractor's operations shall be replaced at no extra cost to the Owner.

Removal of excess or spilled sealant shall be at no extra cost to the Owner.

Payment for the sealing of joints in new concrete pavement shall be paid according to OPSS 350.

Appendix 369-A, November 2018
FOR USE WHILE DESIGNING MUNICIPAL CONTRACTS

Note: This is a non-mandatory Commentary Appendix intended to provide information to a designer, during the design stage of a contract, on the use of the OPS specification in a municipal contract. This appendix does not form part of the standard specification. Actions and considerations discussed in this appendix are for information purposes only and do not supersede an Owner's design decisions and methodology.

Designer Action/Considerations

The specification is appropriate for use on cracks and joints up to 25 mm in width. For widths greater than 25 mm in width, the designer should consider alternative remedial treatments.

The designer should specify the following in the Contract Documents:

- Sealant reservoir dimensions. (369.06.01)

- Installation requirements for silicone sealant. (369.07.07.04)

The designer should determine if the following is required and, if so, specify it in the Contract Documents:

- Material requirements for silicone sealant. (369.05.01)

- Joint sealing using preformed compression seals or silicone sealant. (369.07.01)

The designer should estimate tender quantities for resealing of cracks and existing joints and sealing of cracks required under this item. The tender quantity should not include the sealing of joints in new concrete pavement.

A pavement condition survey is recommended to determine the extent of the joint and crack sealing or resealing required.

The designer should ensure that the General Conditions of Contract and the 100 Series General Specifications are included in the Contract Documents.

Related Ontario Provincial Standard Drawings

OPSD 508.020	Sealing or Resealing of Joints and Cracks in Concrete Pavement and Concrete Base
OPSD 552.010	Concrete Pavement, Joint Details