

**Construction Specification for  
Crack Repair**

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## **TS 3.90.01           SCOPE**

This specification covers the requirements for the repair of major and minor cracks in asphalt surfaces, the repair of minor cracks in concrete pavement and the repair of cracks in concrete base for composite pavements.

## **TS 3.90.02           REFERENCES**

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

### **City of Toronto Standard Specifications**

TS 310	Construction Specification for Hot Mixed, Hot Laid Asphaltic Concrete Paving
TS 3.45	Construction Specification for the Repair of Concrete Pavement and Base
TS 1150	Material Specification for Hot Mixed, Hot Laid Asphaltic Concrete

### **Ontario Provincial Standard Specifications**

OPSS 180	General Specification for the Management of Excess Materials
OPSS 341	Construction Specifications for Routing and Sealing Cracks in Hot Mix Asphalt Pavement
OPSS 1103	Material Specification for Emulsified Asphalt
OPSS 1212	Material Specification for Hot Poured Rubberized Asphalt Joint Sealing Compound

## **TS 3.90.03           DEFINITIONS**

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

**Major Crack** means any crack in the asphalt surface that exceeds 20 mm in width at any point.

**Minor Crack** means any crack in the asphalt surface that does not exceed 20 mm in width at any point.

## **TS 3.90.04           DESIGN AND SUBMISSION REQUIREMENTS**

Submission and design requirements shall be according to OPSS 1212 and TS 310.

## **TS 3.90.05           MATERIALS**

### **TS 3.90.05.01       Minor Cracks**

Materials for minor crack repair of asphalt and concrete pavement shall be according to OPSS 341 and OPSS 1212.

### **TS 3.90.05.02       Major Cracks**

#### **TS 3.90.05.02.01   *HL-8 (HS) Asphalt***

HL-8 (HS) asphalt shall be according to TS 1150.

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**TS 3.90.05.02.02      *SS-1 Emulsion***

SS-1 emulsion shall be according to OPSS 1103.

**TS 3.90.05.02.03      *Approved Stress Relief Tape***

Approved stress relief tape shall be as manufactured by W.R. Grace and Company (Construction Products Division, 294 Clemens Road West, Ajax, Ontario, L1S 3C6, 905-683-8561, Ext. 263) or approved equal. The tape shall be supplied in 300 mm widths.

**TS 3.90.05.02.04      *Approved Stress Relief Tape Primer***

Approved stress relief tape primer shall be as manufactured by W.R. Grace and Company, or approved equal.

**TS 3.90.06              **EQUIPMENT****

**TS 3.90.06.01          **Minor Cracks****

Equipment for minor crack repair of asphalt and concrete pavement shall be according to OPSS 341, except that for concrete pavement repairs the router shall be capable of cutting out the pavement in a single pass to a width of 20 mm and a depth of 40 mm.

**TS 3.90.06.02          **Major Cracks****

**TS 3.90.06.02.01      *Milling Machine***

The milling machine shall be a mechanical milling machine capable of following meandering cracks, keeping the centreline of the milling within  $\pm 8$  mm of the centre of the crack. The milling machine shall also be capable of milling widths varying from 150 to 300 mm, and of depths ranging from 75 to 125 mm, in concrete or asphalt as required. Such capability shall be demonstrated to the Contract Administrator prior to its use.

**TS 3.90.06.02.02      *Saw***

The saw shall be a mechanical saw capable of cutting to a depth of 125 mm with the ability to be water cooled for temperature and dust control.

**TS 3.90.07              **CONSTRUCTION****

**TS 3.90.07.01          **Minor Cracks****

Minor cracks in asphalt and concrete pavement shall be repaired according to OPSS 341.

For concrete pavement the crack shall be routed to a width of 20 mm and a depth of 40 mm. The crack shall be flushed out with pressurized water and abrasive blast cleaned prior to the use of the hot compressed air lance.

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### **TS 3.90.07.02 Major Cracks**

The width and depth of the crack repair may vary, and will be as specified in the Contract Documents. For composite pavements, the asphalt shall be removed to the surface of the concrete road base.

#### **TS 3.90.07.02.01 Removal of Asphalt**

Sawcuts shall be made so that the centreline of the crack falls on the centreline of the repair area and as nearly parallel to the crack as possible. The sawcut shall be to the full depth of the repair.

The area between the sawcuts shall be removed to the depth of the repair and the material disposed of, off the site, according to OPSS 180.

A milling machine may be used as a substitute for sawcutting and removing the asphalt. The Contractor shall mill the specified width of asphalt so that the centreline of the crack falls on the centreline of the repair area and as nearly parallel to the crack as possible. The asphalt shall be removed to the full depth of the repair. The milling materials shall be disposed of, off the site, according to OPSS 180. The repair area shall be blown clean to ensure the removal of all loose material.

When the asphalt has been removed to the surface of the concrete road base, additional repairs may be required. The Contract Administrator will inspect the concrete road base and instruct the Contractor to perform any required combination of full depth repair, partial depth repair or crack repair.

#### **TS 3.90.07.02.02 Concrete Base Repair**

Full and partial depth concrete repairs shall be according to TS 3.45 and shall be completed prior to any adjacent crack repair in the concrete base.

Where cold planing has been carried out, the planed surface shall be ground off to produce a flat smooth surface.

Concrete shall be dry prior to priming. Approved stress relief tape primer shall be applied to the pavement at a rate of 3 to 4 metres per litre. The primer shall be applied to each crack or joint in a strip so that when the stress relief tape is applied, there is 25 mm of primer showing on all sides. The Contractor shall allow the primer to dry (normally 30 minutes) prior to installation of the bituthene tape.

After the primer has dried, the Contractor shall remove the release paper from the bituthene tape and centre it over the joint or crack. The tape shall be placed in such a manner as to avoid entrapping any air. The tape shall then be pressed down by hand or rolled with a roller, to ensure even adhesion. Any air pocket over 6 mm in width shall be split and overlapped. Longitudinal joints shall overlap 150 mm in the direction of paving.

#### **TS 3.90.07.02.03 Asphalt Paving**

The bituthene tape or the crack surface shall be dry, prior to paving. All damaged tape shall be replaced prior to the application of tack coat.

The crack area and tape shall be coated with SS-1emulsion using a spray bar. HL-8 (HS) asphalt shall be placed, in equal lifts, to the full depth of the repair. Each lift shall not exceed 50 mm and shall be compacted to the density specified in TS 310. The final grade of the compacted mix shall coincide with that of the abutting pavement.

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**TS 3.90.08                      QUALITY ASSURANCE**

The Contract Administrator may require that samples of the materials, used for crack repairs, be taken for testing purposes.

**TS 3.90.09                      MEASUREMENT FOR PAYMENT**

- TS 3.90.09.01                  Repair of Minor Cracks in Asphalt  
Repair of Minor Cracks in Concrete Pavement  
Repair of Minor Cracks in Concrete Base  
Repair of Major Cracks in Asphalt**

Measurement for the above item(s) shall be in metres along the centreline of the repair.

**TS 3.90.10                      BASIS OF PAYMENT**

- TS 3.90.10.01                  Repair of Minor Cracks in Asphalt – Item  
Repair of Minor Cracks in Concrete Pavement – Item**

Payment at the Contract Price for the above tender item(s) shall be full compensation for all labour, Equipment and Material to do the work. Payment shall include routing, cleaning and sealing the crack, disposing of all loose material and dusting the sealant, as required.

**TS 3.90.10.02                  Repair of Minor Cracks in 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. Payment shall include sawcutting, milling, cleaning of the crack, priming and placing stress relief tape, the application of SS-1 emulsion, the paving of the repair area and disposing of all loose material.

**TS 3.90.10.03                  Repair of Major Cracks in Asphalt – Item**

Payment at the Contract Price for the above tender item shall be full compensation for all labour, Equipment, Material to do the work. Payment shall include sawcutting, milling, cleaning of the crack, the application of SS-1 emulsion, the paving of the repair area and disposing of all loose material.