

**AMENDMENTS TO OPSS 920 (MAY 94) –  
CONSTRUCTION SPECIFICATION FOR DECK JOINT ASSEMBLIES, JOINT  
FILLERS, JOINT SEALS AND JOINT SEALING COMPOUNDS – STRUCTURES <sup>1</sup>**

**OPSS 920** Table of Contents is amended by the addition of 920.08.03 Extended Maintenance Period and Certification.

The term Deck Joint Assemblies is amended to Expansion Joint Assemblies.

Unless otherwise noted in the Special Specifications, there shall be no use of waterstops in the contract and all references to waterstops in this specification shall be ignored.

**OPSS 920.05.05 is superseded by:**

**920.05.05 Expansion Joint Assemblies**

The expansion joints shall be Type ‘A’, ‘B’ or ‘C’ joints as classified in the MTO Designated Sources. For Type ‘C’ joints, only joints with removable “bolt on” bottom retainer bars will be acceptable. Should a joint type other than Type ‘C’ be proposed and accepted by the Commissioner, the Contractor shall modify the expansion joint details accordingly to the approval of the Commissioner. The expansion joints shall be manufactured by a company on the MTO Designated Sources of Materials list and shall be installed in accordance with OPSS 920 and the following provisions:

- (a) The Contractor shall determine dimensions and profile in the field before preparing shop drawings. Shop drawings shall be submitted to the Commissioner for review. Such shop drawings shall indicate clearly the intended locations and details of the splicing of joint hardware. The Contractor shall also submit the name and details of the anchors and bolts so be used.

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**1. All references to OPS specifications that have been amended (as noted in LIST T1) are superseded by references to the replacement City of Toronto specifications (as given in LIST T1).**

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- (b) All welding shall be undertaken by a company certified in Division 1 or Division 2 of CSA W47, "Certification of Companies for Fusion Welding of Steel Structures". All welders shall submit their welding certification at the outset of the work. All welds shall be painted with two (2) coats of a zinc rich paint approved by the Commissioner.
  - (c) Anchorage shall be located within 75 mm of all splices and free ends on both the nosing angles and the armouring angles.
  - (d) The permanent strip seal shall be continuous, in first class condition and without any field or shop splices throughout the full length of the joint.
  - (e) All work shall be to the requirements of the expansion joint manufacturer, who must approve all shop drawings and field installation procedures. Before the final payment, a written certification from the joint manufacturer must be submitted to the Commissioner to confirm that all expansion joints are watertight and installed to the satisfaction of the manufacturer.
  - (f) The Contractor shall extend and amend the twenty-four (24) months guaranteed maintenance period as noted in Clause 28 of the General Conditions of the Contract, Schedule C, to a total of sixty (60) months guaranteed maintenance period. The Contractor shall provide a written guarantee to this effect to the Commissioner before the final payment.

**OPSS 920.05.06** is deleted and replaced with:

Concrete in which the expansion joint assemblies are embedded shall conform to TS 1350 and OPSS 904 and shall be 35 MPa at 7 days.

The concrete mix shall meet or exceed the following properties:

- Silica fume content – 8-9 ½ % by mass
- Type 10 S.F. cement – 385 kg/m<sup>3</sup>
- Aggregate – 12 mm trap rock
- Slump – 50 mm without superplasticizer
- Slump – 125 to 175 mm with superplasticizer
- Minimum strength at 7 days – 35 MPa
- Air content – 7% ± 1%

Admixtures containing calcium chloride shall not be permitted. Slag shall not be permitted as a supplementary cementing material.

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The Contractor is responsible for monitoring on site temperature, wind velocity and relative humidity. Silica fume concrete shall not be placed when the surface evaporation rate exceeds 0.5 kg (m<sup>2</sup>-hr). Figure D1 in Appendix D of CSA A23.1-94 shall be used to determine evaporation rates.

**OPSS 920.07.02.03** When the expansion joint assembly is to be installed prior to asphalt paving, the first eleven (11) paragraphs are deleted.

**OPSS 920.07.02.03** The eighteenth (18) paragraph is deleted and replaced by the following:

The clamping system shall be loosened between 2 hours and 6 hours after the concrete placement.

**OPSS 920.07.02.03** The last paragraph is deleted and replaced by the following:

After installation of the expansion joint assemblies, the Contractor shall rout a 12 mm wide groove, 40 mm deep in the asphalt adjacent to each steel armouring angle. The grooves shall be cleaned, dried and sealed with hot poured rubberized joint sealing compound in conformance with TS 914.

**OPSS 920.07.02.03** is amended as follows:

The third last paragraph is deleted and replaced by the following:

After the concrete in the expansion joint end dams has been moist cured for a period of seven days, all deleterious material shall be removed from the temporary clamping system bolt holes; bolt holes and bleeder holes shall be drilled to depth of 20 mm and all holes shall be air blast cleaned prior to epoxy injection.

Following epoxy injection, the exposed surfaces of the expansion joint end dams and angles shall be cleaned of all excess epoxy. All temporary clamping system bolt holes, bolt holes and bleeder holes shall be topped up with the epoxy to become flush with the expansion joint angles.

**OPSS 920.07.02.03** is amended by the addition of the following:

The Contractor shall place 5 mm thick plywood over the expansion joint during placing and rolling of surface course asphalt. The plywood shall be removed before the final stage of rolling to achieve the same level of expansion joint dam and asphalt.

The first passes of the rolling of the asphalt adjacent to the expansion joint angles shall be done in a direction parallel to the longitudinal axis of the expansion joint.

**OPSS 920.07.02.04** is amended by the addition of the following:

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The joint seal shall be installed in a single unit, without any field or shop splices.

**OPSS 920.07.03.01** is amended by deleting the second paragraph and replacing it as follows:

Before installation of a new expansion joint assembly and new reinforcing steel, the existing reinforcing steel and structural steel against which new concrete will be placed shall be abrasive blast cleaned in conformance with TS 929.07.05.

**OPSS 920.07** is amended by the addition of the following subsection:

**920.07.02.05 Epoxy Injection**

Epoxy shall not be injected into the injection hose system until concrete in the expansion joint dams has been cured for seven days as per TS 904. Epoxy shall be pressure injected in accordance with the manufacturer's specifications.

**OPSS 920.08** is amended with the addition of the following subsection:

**920.08.03 Extended Maintenance Period and Certification**

The Contractor shall extend and amend the 24 months guaranteed maintenance period for the expansion joints, as noted in Clause 28 of the General Conditions of the Contract, Schedule 'C', to a total of sixty (60) months guaranteed maintenance period. The Contractor shall provide a written guarantee to this effect to the Commissioner before final payment. A written certificate shall also be provided to the Commissioner before final payment, from the joint manufacturer certifying that joint installation and water testing have been completed to the manufacturer's requirements.

**OPSS 920.07.06** is amended by the addition of the following subsection:

**920.07.06.02 Sounding**

Following epoxy injection, the Commissioner shall sound both the nosing angles and the armouring angles.

All hollow and debonded areas under the expansion joint angles shall be repaired by the Contractor by drilling the bleeder holes in the vicinity of the deficiency to a depth of 20 mm and adding an approved self levelling epoxy until there is no longer any settlement of the epoxy.

The bleeder holes shall then be topped up with the epoxy to be flush with the expansion joint angles. The exposed surface of the expansion joint angles and dams shall be wiped clean.

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OPSS 920.10.01 is superseded by the following subsections:

**920.10.01 Measurement for Payment**

**920.10.01.01 Expansion Joint Assemblies**

Measurement for this item shall be the projected horizontal length in metres (to the nearest .1 m) measured on site by the Commissioner along the centre line of the extreme ends of the main joint angles.

**920.10.01.02 Concrete in Dams**

Measurement for this item shall be per cubic metre of concrete acceptably placed. The volume shall be calculated from the cross-sectional dimensions shown in the drawings projected along the length measured for the Expansion Joint Assemblies item.

**OPSS 920.10.02 Basis of Payment**

**920.10.02.01 Expansion Joint Assemblies - Item**

Payment at the contract price for the above tender item shall be full compensation for all labour, equipment and materials to do the work. Included in this work is the supply and installation of all drainage tubes deemed necessary by the Commissioner as well as the epoxy injection of the expansion joint.

Payment shall be made on the following basis:

- 75% of the unit price bid for the supply and installation of the expansion joint assembly
- 10% of the unit price bid for the supply and installation of the expansion joint seal
- 10% of the unit price bid for the epoxy injection of the expansion joint assembly including any remedial work deemed necessary by the Commissioner following sounding
- 5% of the unit price bid upon receipt of the extended maintenance guarantee

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### **920.10.02.02 Concrete in Dam - Item**

Payment at the contract price for the above tender item shall be full compensation for all labour, equipment and materials to do the work. This includes the placement of the concrete which extends beyond the limits of the main joint angles to limit of the concrete pour.

Payment shall be made on the following basis:

- 75% of the unit price bid for the supply and placement of the concrete, as well as to supply all necessary formwork and falsework
- 5% for finishing of the concrete to the requirements of the specifications
- 20% for curing of the concrete to the requirements of the specifications

No separate payment shall be made for abrasive blast cleaning of concrete surface.