

SECTION 11 - CRACK FILLING AND CRACK SEALING - (EPWS)

1.0 DESCRIPTION

The work shall consist of either filling or sealing of existing cracks in asphalt pavement including asphalt-covered bridge decks, as directed by the Engineer, with an approved rubberized, joint sealing compound. In general, the work shall be carried out between June 1 and September 30 unless otherwise directed by the Engineer.

2.0 REFERENCES

All reference standards shall be current issue or latest revision at the first date of tender advertisement. This specification refers to the following standards, specifications or publications:

- ASTM D 3405, Specification for Joint Sealers, Hot-Poured, for Concrete and Asphalt Pavements
- Division 1 Section 3, Subsection 6, Agreement
- Division 1 Section 4 Subsection 25, General Provisions
- DOT&PW Traffic Control Manual
- Federal Specification SS-S-164

3.0 SUBMISSIONS AND DESIGN REQUIREMENTS

A copy of the Manufacturer's product specification compliance, for each lot of joint sealing compound to be used in this contract shall be provided to the Engineer prior to the commencement of work.

4.0 MATERIALS

4.1 Sealing Compound. The joint sealing compound shall be a hot-poured, rubberized, asphalt compound certified by the Manufacturer to conform to the requirements of ASTM D 3405 and Federal Specification SS-S-164.

Approved sealing compounds are:

- Hydrotech Hot Poured 6165
- Bakor 590-13A
- W.R. Meadows A N0164R
- Crafcro Overflex M.S.
- Bemac Beram 195

4.2 Dusting Material. The material used to dust the sealed crack shall be ordinary Portland cement or agricultural limestone.

5.0 CONSTRUCTION METHODS

5.1 Equipment. The Contractor shall supply all tools, machinery and equipment required in the execution of

all phases of the work.

5.1.1 Routing and Cutting Equipment. The routing and cutting equipment shall be of a type which can expeditiously cut and form joints to the sizes specified. The equipment shall be sufficiently flexible and portable to follow random cracking in the pavement. The equipment shall have cutter tools which are capable of cutting grooves 40 mm wide by 10 mm deep leaving the sides of the joint absolutely clean, smooth and ready for sealing.

5.1.2 Melter. A portable melting kettle shall be provided having rubber tires and equipped with an effective, mechanically operated agitator. The kettle shall be of the double boiler, indirect heating type, using a flash point oil (315°C minimum) as a heat transfer medium. The kettle shall be equipped with thermometric controls which automatically control the product temperature and the heat transfer oil.

5.1.3 Compressor. The compressor shall be 75 C.F.M. capacity, or more, to ensure an adequate supply of air to effectively clean the joints.

5.1.4 Hot Compressed Air Equipment. A hot compressed air lance shall be used to clean, dry and pre-heat cracks prior to applying sealant. The air lance shall consist of a compressor propane system providing a high temperature, high velocity blast of air. (See 5.2.1).

Equipment shall be safety approved.

5.2 Crack Filling Procedure. All random and longitudinal cracks greater than 3 mm wide shall be cleaned and filled.

5.2.1 Cleaning the Cracks. A hot compressed air lance shall be coursed along the pavement crack at a slow walk to blow out debris and to heat and dry the crack. All debris shall be removed from the pavement surface immediately. The crack shall be heated until the asphalt concrete turns black. The H.C.A. lance shall be supplied by a 45 kg. L.P. propane bottle and a 75 C.F.M. Compressor.

5.2.2 Melting of the Compound. Care shall be exercised in stripping and removing the joint sealing compound from the original Manufacturer's packages to ensure that no foreign material enters the melting unit. The material shall be melted only in equipment fully meeting the requirements of these specifications. Constant mechanical agitation shall be employed to ensure maximum heating and pouring temperatures as

established by the Manufacturer. Overheated, burned or under heated material shall not be used and shall be removed from the site at the Contractor's expense.

5.2.3 Placing Compound. All uncut cracks shall be carefully inspected prior to sealing to ensure that they are thoroughly dry, clean and free from dust and debris. The liquid sealing compound shall be poured within two minutes after the H.C.A. lance has coursed the uncut crack and while it is still hot. Immediately after the crack has been filled it shall be struck off flush with the adjacent pavement surface with a squeegee or other approved device. Particular care shall be taken to ensure that material is not spilled or poured over the adjacent pavement.

5.2.4 Dusting. As the sealing compound begins to cool, the surface of the compound shall be sprinkled with ordinary Portland cement or agricultural lime sufficient to cover the surface.

5.2.5 Crack Sealing Procedure - Routing Cracks. All random and transverse cracks that are less than 20 mm in width but greater than 3 mm in width shall be routed out to a width of no more than 20 mm. The depth of routing shall be no more than 20 mm.

5.2.6 Cleaning the Cracks - Routing. A hot compressed air lance shall be coursed along the pavement crack at a slow walk to blow out debris and to heat and dry the crack. All debris shall be removed from the pavement surface immediately. The crack or rout shall be heated until the asphalt concrete turns black. The H.C.A. lance will be supplied by a 45 kg L.P. propane bottle and a 75 C.F.M. compressor.

5.2.7 Melting of the Compound - Routing. Care shall be exercised in stripping and removing the joint sealing compound from the original Manufacturer's packages to ensure that no foreign material enters the melting unit. The material shall be melted only in equipment fully meeting the requirements of these specifications. Constant mechanical agitation shall be employed to ensure maximum heating and pouring temperatures as established by the Manufacturer. Overheated, burned or under heated material may not be used and shall be removed from the site at the Contractor's expense.

5.2.8 Placing Compound - Routing.. All cracks shall be carefully inspected prior to sealing to ensure that they are thoroughly dry, clean and free from dust and debris. The liquid sealing compound shall be poured within two minutes after the H.C.A. lance has coursed the crack and while it is still hot. The surface of the sealing material shall be flush with the adjacent pavement surface on completion. Particular care shall be taken to ensure that the material is not spilled or

poured over the adjacent pavement.

5.2.9 Dusting - Routing. As the sealing compound begins to cool the surface of the compound shall be sprinkled with ordinary Portland cement or agricultural lime sufficient to cover the surface.

5.2.10 Daily Output - Routing. All cracks routed shall be sealed on the same day as routed. The Contractor shall have the capability of routing and sealing a minimum of 2500 m/full day.

6.0 QUALITY CONTROL / QUALITY ASSURANCE

A sample of the sealing compound may be tested and approved by the Department or its representative before the actual work is started in the field. Samples may also be taken from each lot of material delivered to the site.

7.0 METHOD OF MEASUREMENT

Measurement for payment for Crack Filling or Crack Sealing shall be based on the accepted filled or sealed cracks measured in metres using a metering wheel following line generally representing the length of the crack. Measurement shall be carried out by Department personnel.

8.0 BASIS OF PAYMENT

Crack Filling/Crack Sealing will be paid for at the contract unit price per metre, accepted in place, which price shall be full compensation for the supply of all labour, equipment, material and incidentals necessary to complete the work, including the control and accommodation of traffic in accordance with the DOT&PW "Traffic Control Manual".

9.0 WARRANTY

Upon completion of the Crack Filling and Crack Sealing and visual acceptance of the work in accordance with these specifications, a one year maintenance period will begin. During this period any failure in the Crack Filling and Crack Sealing including but not limited to areas of debonding or complete loss of the sealant shall be repaired or reconstructed at the Contractor's expense to the satisfaction of the Engineer. All material, haul, traffic control and related work required for repair or reconstruction of unacceptable areas shall be paid by the Contractor.

9.1 Final Acceptance. The Department or its representative, and the Contractor will meet and inspect the crack filling and crack sealing one year after the completion of the work. All areas that have failed shall

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be repaired at the Contractor's expense at no cost to the Department. If the Contractor and the Department do not agree on what areas are failed, the Department's decision shall be final.

The final acceptance of the original Crack Filling and Crack Sealing by the Department shall relieve the Contractor from all maintenance responsibility with respect to the original Crack Filling and Crack Sealing, however, the Contractor shall be held responsible to maintain repaired areas for a period of 12 months after repairs are made.

9.2 Liability. During the period of construction and the one year maintenance period the Contractor shall be responsible for processing any and all claims for property damage and/or bodily injury caused by the failure of the Crack Filling and Crack Sealing including, but not limited to, motor vehicle or pedestrians. The Contractor shall be responsible for the payment of all property damage and bodily injury claims and agrees to save and hold harmless the Department from all such claims as set out in Division 1 Section 4 Subsection 25

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of these specifications. Claims not handled by the Contractor or his representative efficiently or expediently will be settled by the Department and the costs recovered from the Contractor.

9.3 Security Deposit. Notwithstanding anything to the contrary, as stated in Division 1 Section 3 Subsection 6 of these specifications, the security deposit for this contract will be held and retained by the Minister until the maintenance period has expired. The security deposit will be held to ensure that sufficient funds will be available to the Department in the event of non-performance by the Contractor. The Contractor is responsible for all costs including the materials and haul and for the repair of all failures and damages resulting from negligence or faulty workmanship by the Contractor that adversely affects the integrity of the Crack Filling and Crack Sealing which occurs, and is evident prior to, the expiration of the one year maintenance period. The amount of security deposit shall be approximately 20% of the estimated value of the tender.