SECTION 32 13 74

JOINT SEALING IN CONCRETE PAVEMENT NON-JET-FUEL-RESISTANT

PART 1 GENERAL

1.1 REFERENCES

The publication listed below forms a part of this specification to the extent referenced. The publication is referred to in the text by the basic designations only. Unless specifically noted, the current edition of the reference shall be used.

SS-S-1401C Sealants, Joint, Non-Jet-Fuel-Resistant, Hot-Applied, for Portland Cement and Asphalt Concrete Pavements

1.2 SUBMITTALS

Prior to the use of materials, certified copies of the test reports of all tests required shall be submitted and approved. Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the materials, printed copies of these recommendations shall be furnished prior to use on the project. Installation of the material shall not be allowed until the recommendations are received.

1.3 EQUIPMENT

Machines, tools, and equipment used in the performance of the work required by this section will be approved by the Contracting Officer before the work is started and shall be maintained in satisfactory condition.

1.3.1 Joint-Cleaning Equipment

1.3.1.1 Sandblasting Equipment

Sandblasting equipment shall include an air compressor, hose, venturi-type nozzles of sufficient capacity to furnish air at a rate of not less than 150 cfm and to maintain a line pressure of not less than 90 psi at the nozzle while in use. The compressor shall be equipped with traps that maintain the compressed air free of oil and water. Provid sand blasting hood with fresh air and chilled air in summer. Air shall be filtered and monitored for human consumption.

1.3.1.2 Concrete Saw

A self-propelled power saw shall be provided for cutting joints to the specified widths and depths and for removing filler embedded in the joints or adhering to the joint faces.

1.3.2 Sealing Equipment

1.3.2.1 Hot-Poured Sealant Equipment

Unit applicators used for heating and installing hot-poured sealing materials shall be mobile and shall be equipped with a double-boiler agitator-type kettle with an oil medium in the outer space for heat transfer, a direct-connected pressure-type extruding device with nozzle or nozzles shaped for insertion in the joints to be filled, positive temperature devices for controlling the temperature of oil and sealant, and a recording-type thermometer for indicating the temperature of the sealant. Applicator unit shall be so designed that the sealant circulates through the delivery hose and returns to the inner kettle when not sealing joints. The heating kettle shall be equipped with at least one fully charged fire extinguisher of the proper type.

1.4 SAMPLING AND TESTING

Joint sealants shall be tested for conformance with the referenced applicable material specification. Contracting Officer shall be notified in writing of the proposed sources of joint sealants at least ten days prior to the date the materials will be required at the project site. Testing shall have been performed in an approved independent laboratory and certified copies of the test reports shall be submitted and approved. If the use of a primer is recommended for the proposed sealing system, the laboratory test for bond shall be conducted using the primer in accordance with the manufacturer’s instructions. Conformance with the requirements of the laboratory tests specified will not constitute final acceptance of the sealing material. Final acceptance will be based on performance of the in-place sealant. The contractor shall furnish samples of materials, in sufficient quantity to be tested, upon request.

1.5 DELIVERY AND STORAGE

Materials delivered to the site shall be inspected for damage, unloaded and stored with a minimum of handling. Materials shall be handled in such a manner as to insure no damage to the joint sealant materials. Storage facilities shall be provided by the contractor at the job site for maintaining materials at temperatures recommended by the manufacturer.1.6

1.6 MEASUREMENT

Work shall be measured by linear feet of work completed.

PART 2 PRODUCTS

2.1 SEALANTS

Sealants shall conform to Fed. Spec. SS-S-1401.

2.2 PRIMERS

The use of primers when recommended by the manufacturer of the proposed sealant is authorized in accordance with the manufacturer’s instructions.

2.3 SEPARATING AND BLOCKING MEDIUM

The separating and blocking material used to seal off the lower portion of the joint shall be a readily compressible, non-shrinkable rope either plastic or rubber not reactive with the sealant. The separating and blocking medium shall not soften or melt at pouring temperature of the sealant.

PART 3 EXECUTION

3.1 PREPARATION OF JOINTS

Immediately before installation of the sealant, the joints shall be thoroughly cleaned until all laitance, curing compound, filler, and protrusions of hardened concrete are removed from the sides and upper edges of the joint space to be sealed.

3.1.1 Sawing

A power-driven concrete saw shall be used to saw through sawed and filler-type joints to loosen and remove material until the joint groove is clear and open to the full specified width and depth. Loosened material shall be blown from the joint.

3.1.2 Sandblast Cleaning

After sawing, the exposed concrete joint faces and the pavement surfaces extending 1/2 inch from the edges of joints shall be sandblasted until the surfaces are free of dust, dirt, curing

compound, filler, and any other material that might prevent bonding of the sealant to the concrete. After cleaning and immediately prior to filling, the joints shall be blown out with compressed air and left completely free of sand and water.

3.1.3 Separating and Blocking Media

Top portion of the joint shall be sealed with sealant to the depth indicated. When sawed joints are used, the lower portion of the groove shall be plugged or sealed off to prevent entrance of the sealant.

3.1.4 Installing Tape

Where inserts or filler materials used contain bitumen, a separating medium shall be inserted to prevent contact with cold-applied sealants unless the contractor certifies compatibility and assumes responsibility of replacing sealants that are not compatible. Separating medium shall be a nonreactive adhesive-backed tape shall be inserted on the top surface of the insert. Tape shall be 1/8 inch wider than the nominal width of the joint, and shall be securely bonded so it will not float up into the new sealant.

3.1.5 Rate of Progress

The stages of joint preparation, which include sandblasting of the joint faces, air pressure cleaning of joint, and placement of separating or blocking media, shall be limited to only that lineal footage of joint that can be sealed during the same workday.

3.2 PREPARATION OF SEALANT

3.2.1 Hot-Poured

Hot-poured sealing materials shall not be heated in excess of the same heating temperature recommended by the manufacturer as shown on sealant containers. Sealant that has been overheated or subjected to heating for over 3 hours or that has remained in the applicator at the end of the day’s operation shall be wasted at the contractor’s expense.

3.3 INSTALLATION OF SEALANTS

3.3.1 Time of Application

Joints shall be sealed immediately following the concrete-curing period or as soon thereafter as weather conditions permit. Concrete walls of the joint shall be surface dry, and the atmospheric and pavement temperatures shall be above 50 degrees F

at the time of application of the sealant. Open joints that cannot be sealed under the conditions specified herein shall be provided with an approved temporary seal to prevent infiltration of foreign particles. Wet joints shall be dried prior to installing sealants.

3.3.2 Sealing Joints

No joint sealant shall be installed until the cleaned joints have been inspected and approved. The joints shall be filled from the bottom up to within 1/4 inch of the pavement surface, plus or/minus 1/8 inch, using equipment specified in Paragraph 1.3, EQUIPMENT for the type of sealing material to be installed. Excess or spilled sealant shall be removed from the pavement and discarded. Traffic shall not be permitted over newly sealed pavement until authorized by the Contracting Officer. In no case shall sealant be installed using the gravity method and pouring pots. When a primer is supplied by the manufacturer, it shall be applied evenly to the joint faces in accordance with the manufacturer’s recommendations. When cold-applied sealant is used, proportioning of the equipment shall be checked at the beginning of each day’s operation and every 4 hours, to determine that the preset volume output for each component is being maintained. Material used for these checks may be returned to the proper component reservoir. Joints shall be checked frequently to insure that the newly installed sealant is cured to a tack-free condition within 3 hours.

3.4 INSPECTIONS

3.4.1 Joint Inspection

Joints shall be inspected during cleaning to correct improper equipment and cleaning techniques that damage the concrete. Cleaned joints will be approved prior to installing joint sealant.

3.4.2 Sealing Operations

Application equipment shall be inspected to assure conformance to temperature requirements, proper proportioning and mixing (if two-component type sealant), and installation. Evidences of improper installation shall be cause to suspend operations until causes of deficiencies are determined and corrected.

3.4.3 Sealant Inspection

Sealant shall be inspected for proper rate of cure and set, bonding to concrete surfaces of joint walls, cohesive separation within the sealant, reversion to liquid, and entrapped air and voids. Sealants exhibiting any deficiencies will be rejected.

Sealants may be rejected at any time prior to final acceptance of the project. Sealant which is rejected shall be removed from the joint, wasted, and replaced at no additional cost to the government.

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