

402-6 Joint and Crack Repair:**402-6.01 Description:**

The work shall consist of furnishing all materials and renovating longitudinal and transverse contraction control joints and routing and sealing random cracks in existing Portland Cement Concrete Pavement, as specified herein, detailed on the project plans and as directed by the Engineer.

402-6.02 Material Requirements:

Joint sealant shall conform to the requirements of Section 1011. Grout for filling wide joints shall be a low modulus moisture insensitive epoxy-resin grout of a viscosity suitable for flowing into the irregular cracked portion of the joint. The ratio of epoxy-resin: sand shall be between 1:7 and 1:10 or as specified by the epoxy manufacturer. Epoxy binder material shall conform to the requirements of ASTM C 881. Sand used in epoxy grout shall conform to the requirements of Subsection 1006-2.03 (B) except that the gradation shall be as follows:

Sieve Size Percent Passing

No. 8 100

No. 16 95 - 100

No. 50 10 - 40

No. 200 0 - 4.0

A rapid set Portland cement concrete pavement patching material may be substituted for epoxy grout as approved by the Engineer.

402-6.03 Construction Requirements:**(A) General:**

Joint and crack repairs shall be accomplished by first removing old sealant and joint inserts, then refacing and cleaning the joints and cracks followed by installation of a backer rod (if required) and installation of new sealant.

(B) Joint and Crack Preparation:

Cracks shall be sawed or routed to the dimensions shown on the plans. Inserts shall be removed from insert formed joints by sawing to provide a clean vertical face. The width and depth of the saw cuts shall be sufficient to insure complete removal of the insert and to provide a finished joint of the dimensions specified for the sealant material to be used. If the insert is not vertical, additional parallel saw cuts shall be provided as required to insure full removal of the inserts. Joints that are not insert formed shall be sawed to the widths and depths specified herein. Joints previously sawed and sealed will be inspected to assure the proper dimensions and shall be resawed to the proper widths and depths, when required. Joints shall be sawed as follows:

Initial Joint Width "W":

Inches

Sawed Width:

Inches

Sawed Depth "D":

Inches, (1)

$W \leq 1/2$ $1/2 D = 1 - 3/4$

$1/2 < W \leq 3/4$ $3/4 D = 2 - 1/8$

$3/4 < W \leq 1 - 1/2$ No Sawing Required $D = 2W + 3/4$

(1) "D" is distance from pavement surface to bottom of backer rod. Immediately after saw cutting a joint or routing a crack, old sealant shall be removed and the internal surfaces of the joint or crack shall be thoroughly cleaned by sandblasting. Sand for sandblasting shall be sharp and clean and shall be capable of passing a No. 10 sieve. The amount of compressed air and the nozzle pressure shall be such that the joints and cracks will be thoroughly cleaned and the edges will have etched surfaces.

(C) Dowel Placement:

Dowel bars shall be placed in transverse joints when the initial joint width is greater than 1-1/2 inches. Slots for dowel bar placement shall be made with two saw cuts perpendicular to the joint and 1-1/2 ± 1/8 inches apart. Saw cuts shall be one half the depth of the slab plus 1/2 inch. Concrete shall be removed between the saw cuts and smooth, epoxy coated dowels which are 1-1/4 inches in diameter and 18 inches long shall be inserted into the formed slot. Dowels shall be supported above the bottom of the slot so that epoxy grout can flow around the circumference of the dowel. Dowels shall be placed so that the dowel is embedded equal distance into the two slabs. Dowel bars shall conform to the requirements of AASHTO M 254 with Type B coating, except that the core material shall conform to the requirements of

ASTM A 615, Grade 40. Dowel bars shall be placed as shown on the plans, and shall be placed at approximately mid-depth of the existing slab. The bar shall be thoroughly and uniformly coated with a waterproof grease prior to placement into the slot then covered with an approved epoxy grout. A 1/2-inch thickness of preformed joint filler shall be placed next to one edge of the joint such that a one \pm 1/8-inch deep sealant reservoir can be formed at the top, as shown on the plans. The wide joint shall be filled with epoxy grout. On longitudinal joints where the joint opening exceeds 1-1/2 inches, the saw cuts for placement of tie bars perpendicular to the joint, shall be 7/8 inch apart so that a No. 5 deformed tie bar 24 inches long can be inserted into the slot. This 24-inch tie bar shall be placed at mid slab depth and equal distance into each slab, then covered with an approved epoxy grout. The bars shall be at 36-inch spacing. The wide joint shall also be filled with epoxy grout.

(D) Cleaning Prior to Sealing:

Prior to sealing, all foreign or loosened particles shall be removed from the joints to the full depth of the original sawed joints. The removal of all foreign or loosened particles shall be accomplished with compressed air or by other methods approved by the Engineer. Air compressors shall be capable of furnishing a sufficient amount of compressed air to clean the joints properly.

(E) Separating or Blocking Medium (Backer Rod):

Immediately following the cleaning of joints and prior to the application of sealant, a backer rod composed of an inert, compressible material shall be inserted along the lower portion of the joint groove at a uniform depth as shown on the project plans. The backer rod shall be compatible with the sealant in accordance with the manufacturer's recommendations. The product shall be clean, free of scale, foreign matter, oil or moisture and shall be non-absorbing. The Engineer shall be assured that the material proposed for use has been used successfully in similar installations. Backer rod sizes shall be as follows:

Joint Width:

Inches

Backer Rod Diameter:

Inches

1/2 5/8

3/4 1

1 1-1/4

1-1/4 1-1/2

1-1/2 2

(F) Installation of Sealant:

Sealant compound shall not be placed unless the joint is dry, clean and free of dust. The face of the joint shall be surface dry and the ambient and pavement temperatures shall both be at least 50 degrees F at the time of application of the sealant. Installation of the sealant shall be such that the in-place sealant shall be well bonded to the concrete and free of voids or entrapped air. The joints shall be sealed in a neat and workmanlike manner, so that upon completion of the work, the surface of the sealant material will be $1/4 \pm 1/8$ inch below the adjacent pavement surface. The contractor shall refill all joints before final acceptance. Any excess material on the surface of the pavement shall be removed and the pavement surface shall be left in a clean condition. Vehicular or heavy equipment traffic shall not be permitted on the pavement in the area of the joints during the curing period.

402-6.05 Method of Measurement:

Joint and crack repairs will be measured by the linear foot.

402-6.06 Basis of Payment:

The accepted quantities of joint and crack repairs, measured as provided above, will be paid for at the contract unit price per linear foot, which price shall be full compensation for the work, complete in place.

402-7 Edge Sealing:

402-7.01 Description:

The work shall consist of furnishing all materials and sawing or routing, and sealing the joints between the Port land Cement Concrete Pavement and the asphaltic concrete distress lane. This work shall be done after the completion of any specified pavement grinding and after any specified rehabilitation of the distress lane or outside shoulder. The work shall be accomplished in accordance with the details shown on the project plans and as specified herein.