

**STATE OF OHIO
DEPARTMENT OF TRANSPORTATION**

**SUPPLEMENTAL SPECIFICATION 819
DOWEL BAR RETROFIT**

June 6, 2000

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819.01 Description. This work shall consist of sawing slots across transverse cracks, cleaning the slot, injecting caulking filler, placing a dowel in the slot, filling the slot with a patching material, and establishing a joint by saw cut.

819.02 Materials.

The sealant (caulking filler) shall be 705.02.

Curing material shall be 705.07, Type 2.

Dowel bars shall be 709.13 or S.S. 970

Dowel bar chairs shall be epoxy coated as per 709.14 or made of non-metallic material.

Patching material shall be one of the following prepackaged materials: Burke Fast Patch 928, Five Star Highway Patch, CTS Rapid Set DOT Repair Mix, or Fosroc Patchroc10-60

Aggregate shall meet the fine aggregate soundness requirements of 703.02.

Gradation shall be per the patching material manufacturer's recommendation however 100% of the aggregate shall pass the ½-inch (12.5 mm) sieve and a minimum of 85 percent, by weight, shall pass the 3/8-inch (9.5 mm) sieve.

819.03 Equipment. Equipment used to create slots shall be a power driven gang type assembly, consisting of diamond blade saws, capable of sawing a minimum of three slots at one time to the dimensions described in this specification, without damage to the surrounding pavement.

Jack hammers used to break loose the concrete shall have a weight of less than 30 pounds (13.6 kg).

Abrasive blast equipment shall be capable of removing the saw slurry or other foreign material from the exposed surfaces leaving a clean, newly exposed concrete surface free

of spalls, laitance, and all contaminants detrimental to achieving an adequate bond. Water blasting with abrasives in the water shall be 10,000 psi (690 bar) or less

819.04 Construction. Cracks to be retrofit will be located and marked by the Engineer.

Two and one-half inch (65 mm) wide slots shall be cut into the pavement to a depth which places the center of the dowel at mid-depth in the concrete slab. The slots shall be parallel to the centerline of the pavement. Multiple saw cuts parallel to the centerline may be required to properly remove material from the slot and to provide a level surface for the feet of the dowel bar chairs. Three slots, on one foot centers (0.3 m), will be cut in each wheel path, as shown in plan details.

Once the concrete has been removed from the slots, traffic shall not be permitted across the crack until all six retrofit dowel bars are in place, cured and completed. The tires of construction vehicles shall not be allowed to travel on slots where concrete has been removed.

The edge of the slots will be cleaned by approved blast methods to produce a rough surface. The Contractor will insure any blasting operation used will not damage the surrounding pavement. Operations without reasonably available engineering controls that limit fugitive dust are not acceptable. The Contractor shall be aware of and follow all state, regional, and local government agency requirements regarding control of dust generated by the blasting operations.

Cracks at the bottom or at the sides of the slot will be caulked with an approved silicone sealant in order to prevent any grout from entering the crack.

A ½ inch (13 mm) thick foam core board or expansion board material, approved by the Engineer, will be used as a filler material to maintain the crack, as shown in the plan details. The filler material shall fit tight around the dowel and to the bottom and edges of the slot. The filler material shall be capable of remaining in a vertical position and tight to all edges during placement of the patching material. When in place, the board will extend from the bottom of the slot to no more than 1-1/2 inches (38 mm) from the surface of the pavement. If for any reason the filler material shifts during placement of the patching material, the work shall be rejected and redone at the Contractor's expense.

The dowel bar chair shall hold the bar firmly centered in the slot. The dowel bar chairs shall be approved by the Engineer prior to use. Any chair design that may allow movement of the bar during the placement of grout will be rejected by the Engineer.

Dowel bars shall be 1-½ inches (38 mm) in diameter and 18 inches (460 mm) long. The foam core board or expansion board material will be placed and centered on the dowel. The dowel bars shall be coated with a thin layer of oil or other bond-breaking material just prior to installation in the slot. Dowels shall have an expansion cap placed on each end

prior to installation. The expansion caps shall be tight fitting and made of non-metallic material which will allow ¼ inch (6 mm) movement at each end of the dowel.

Two chairs will be used to firmly hold the dowel bar in the slot during placement of the patching material. The chairs will be a nominal 2-½ inch (65 mm) wide and center the dowel bar across the crack. The bar will vary no more than 1/4 inch (6 mm) from parallel to the pavement surface and the centerline of the pavement. Just prior to placement of the patching material, one or more passes of an air blast will be used to provide a dust-free, clean slot to insure an adequate bond of the patching material.

The patching material will be mixed, placed, and cured in accordance with the manufacturer's recommendations. The patching material shall be consolidated by using a vibrator as approved by the Engineer. The patching material will be placed in the slot and finished to produce a smooth, even surface. A 1-1/2 inch (38 mm) deep by 1/4 inch (6 mm) wide saw cut, using a hand pushed single blade saw, will be made to re-establish the crack. The saw cut shall be performed within four hours of placing the patching material.

Any damage to the pavement due to the Contractor's operation shall be repaired by the Contractor at no cost to the Department.

The patching material shall be allowed to cure for a minimum of four hours before placing any vehicle loads on the repair, or as directed by the Engineer.

819.05 Method of Measurement. Retrofit dowel bars will be measured as the actual number, furnished, complete, in place, and accepted.

819.0 Basis of Payment. Contract unit price and payment shall be full compensation for furnishing and placing all materials including but not limited to sawing and cleaning the slots, furnishing and installing dowel chairs, dowels, bond breaker material, dowel bar end caps, sealant/caulking material, filler material, patching material, and furnishing and operating tools and equipment. Payment for accepted quantities will be made at the contract price for:

Item	Unit	Description
819	Each	Retrofit dowel bars