

## 504 – DOWEL BAR RETROFIT-REPAIR NEW PCCP

### SECTION 504

#### DOWEL BAR RETROFIT-REPAIR NEW PCCP

##### 504.1 DESCRIPTION

Cut slots normal to the transverse cracks and place epoxy-coated steel dowel bars to repair the newly constructed Portland Cement Concrete Pavement (PCCP) that is damaged. See Standard Drawing RD723, latest version.

##### 504.2 MATERIALS

**a. Epoxy-Coated Dowel Bars.** Provide epoxy-coated steel dowel bars that comply with **DIVISION 1600**. Provide a tight fitting nonmetallic expansion cap on one end of the dowel bars. The Engineer must approve the expansion cap before it is used.

Provide epoxy-coated or nonmetallic chair devices to support and hold the dowel bars. The Engineer must approve the chair devices before they are used.

**b. Bondbreaker for Dowel Bars.** Provide a bondbreaker that complies with **DIVISION 1700**.

**c. Caulking Filler.** Provide a silicone sealant caulking filler intended for filling cracks in PCCP. The Engineer must approve the caulking filler before it is used.

**d. Board Filler.** Provide a closed-cell foam core board filler (the width of the joint thick) faced with poster board material on each side. The Engineer must approve the board filler before it is used.

**e. Grout.** Provide a product that complies with **DIVISION 1700** and is prequalified as “very rapid hardening” when extended. The grout may be extended as the manufacturer recommends. The extender aggregate must be of size to allow complete distribution and consolidation around the bar. For practical purposes the maximum aggregate size should be no more than 1/2 the size of the distance between the dowel bar and the adjacent concrete pavement. All extender aggregate used on contracts must be from a source that has a current Official Quality approval status for Mixed Aggregate per **DIVISION 1100**.

**f. Liquid Membrane-Forming Compound.** Provide a liquid membrane-forming compound that complies with **DIVISION 1400**.

##### 504.3 CONSTRUCTION REQUIREMENTS

Cut slots for the dowel bars into the PCCP as needed to repair the damaged PCCP. Use a gang saw capable of simultaneously cutting all the slots at one location (one wheel path). A single or dual blade saw may be used provided the production rate for sawing equals or exceeds 15 slots per hour. Hand saws are prohibited. Make the slots large enough to provide the minimum clearances shown in the Contract Documents. If necessary, make multiple parallel saw cuts to remove the existing concrete from the slot.

If jackhammers are used to break the concrete loose, do not use jackhammers larger than the nominal 15 pound class.

Sandblast and clean all surfaces of the slot. Sandblast and clean all cracks in the slot. Remove all broken concrete and debris from the project.

Fill the transverse crack in the bottom and sides of the slot with caulking filler. Prevent the caulking filler from contacting the surfaces outside the crack.

Before the dowel bar is placed in the slot, cut a piece of the board filler material to fit tightly around the dowel bar and against the bottom and sides of the slot. Place the board filler material vertically above the transverse crack in the bottom of the slot and prevent it from being displaced in the slot. Keep the board filler material in this position during placement of the grout.

Use chair devices to position and hold the dowel bars parallel ( $\pm 1/8$  inch) to the pavement centerline and the pavement surface, and at the depth shown in the Contract Documents. Coat the dowel bars with an approved bondbreaker before the grout is placed.

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Place and consolidate the grout as recommended by the manufacturer. Cure the surface of the grouted slots with a liquid membrane-forming compound.

The extended grout must obtain a minimum of 2000 psi compressive strength before the roadway can be opened to traffic, but no sooner than 2 hours. Provide data that accounts for actual temperatures work is being performed.

Saw the transverse joint through the patched areas within 24 hours of the placement of the grout. Saw and seal the joint as shown in the Contract Documents.

### **504.4 MEASUREMENT AND PAYMENT**

This work is subsidiary to bid items in **DIVISIONS 501** and **502**.