

## SECTION 405 – CONCRETE SURFACE COURSE

THE FOLLOWING IS ADDED TO THIS SECTION:

### RETROFIT DOWEL BARS OR CRACK STITCHING

#### **Description.**

Retrofit dowel bars shall consist of installing dowel bars for load transfer at joints in existing Portland cement concrete pavement where shown on the plans or as directed.

Crack stitching shall consist of installing tie bars at cracks in existing Portland cement concrete pavement where shown on the plans or as directed.

#### **Materials.**

##### **A. Dowel bars.**

Dowel bars shall be plain round epoxy coated carbon steel bars, conforming to ASTM A617, grade 40. Dowel bars shall have tight fitting end caps at both ends made of nonmetallic material and designed so as to positively prevent entrance of grout or mortar into the expansion void. End caps shall have a maximum length of 2½", and shall allow a minimum of ¾" of movement.

##### **B. Tie bars.**

Tie bars used for crack stitching shall be epoxy coated deformed bars, conforming to Subsection 915.01.C.

##### **C. Epoxy coating.**

Epoxy coating for dowel bars and tie bars shall conform to AASHTO M284, except that the thickness of the cured coating shall be 10 +/- 2 mils.

##### **D. Quick setting patch material.**

Quick setting patch material shall conform to Subsection 518.02.A for Type 1A except that only broken stone, size No. 8 shall be added to increase yield.

##### **E. Miscellaneous.**

Caulking filler shall be silicone sealant. Joint filler shall be foam board or other approved joint filler that will prevent intrusion of concrete into the joint void space without restricting expansion of slabs.

Parting compound shall be a liquid membrane-forming compound that conforms to the requirements of AASHTO M148 (ASTM C309) Type ID or 2, Class A or B.

#### **Equipment.**

Equipment for cutting slots shall be either diamond blade saw or modified milling machine with carbide cutting teeth. Either type shall have a positive method of assuring the dowel bar slots are aligned parallel to the centerline within the maximum allowable tolerance. A vacuum system to remove saw slurry or milled concrete shall be provided. Machines that cause excessive spalling on the edges or cracking of the corners of the slots shall not be used.

The Contractor shall demonstrate on site for the Engineer's evaluation and approval, the method of cutting slots and placing the dowel or tie bar. The Contractor is advised that the rejection of any method shall not be the basis for additional compensation and/or contract time.

#### **Construction Requirements.**

##### **A. Retrofit dowel bars.**

The Contractor shall install dowel bars in the existing Portland cement concrete pavement as shown in the plans and in accordance with the following:

Diamond sawcut or carbide mill slots in the pavement placing the center of the dowel at mid-depth in the concrete slab. When using diamond blade saws, multiple cuts parallel to the centerline may be required to properly remove material from the slot.

To prevent damage to the existing pavement designated to remain, small demolition hammers with a mass less than 30 pounds shall be used to break loose the concrete.

All exposed surfaces and cracks in the slot shall be sand blasted and cleaned of saw slurry or milled concrete and parting compound prior to installation of the dowel.

Dowel bars shall be lightly coated with a parting compound, and placed on a bed of quick setting patch material. The dowel bars shall be placed to the depth shown in the plans, parallel to centerline, and parallel to

the pavement surface of the lower panel at the transverse joint, all to a tolerance of 1/4" over the 18 inch length of the dowel bar.

Dowel bar end caps at each end of each dowel shall be adjusted to provide a 3/4" long void for expansion. A minimum 15 inch length of dowel bar shall be exposed.

Immediately prior to placement of the dowel bar and preformed joint filler, the Contractor shall caulk the existing transverse joint at the bottom and the side of the slot as shown in the plans. The caulking shall be placed to provide a smooth level surface and tight fit for the joint filler material to the bottom of the slot. The transverse joint opening shall be caulked sufficiently to satisfy the above requirements and to prevent any of the grouting material from entering the joint opening at the bottom or sides of the slot.

Preformed joint filler shall be placed at the middle of the dowel to maintain the transverse joint as shown in the plans. 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 the edges during placement of the grout. If for any reason the filler material shifts during placement of the grout, the work shall be rejected and redone at the Contractor's expense.

**B. Crack Stitching.**

The Contractor shall install tie bars in the existing cement concrete pavement as shown in the plans and in accordance with the following:

Saw cut or carbide mill slots in the pavement as required placing the center of the dowel at mid-depth in the concrete slab. When using diamond saws, multiple parallel cuts may be required to properly remove material from the slot.

To prevent damage to the existing pavement designated to remain, small demolition hammers with a mass less than 30 pounds shall be used to break loose the concrete.

All exposed surfaces and cracks in the slot shall be sand blasted and cleaned of saw slurry or milled concrete prior to installation of the tie bar.

Tie bars shall be placed on a bed of quick setting patch material. The bars shall be placed to the depth shown in the plans, perpendicular to the crack, and parallel to the pavement surface of the lower panel at the crack, all to a tolerance of 1/4" over the length of the tie bar.

**Method of Measurement.**

Retrofit dowel bars will be measured by the number of dowel bars properly installed.

Crack stitching will be measured by the number of tie bars properly installed.

**Basis of Payment.**

Payment will be made under:

<i>Pay Item</i>	<i>Pay Unit</i>
RETROFIT DOWEL BARS	UNIT
CRACK STITCHING	UNIT

Any damage to the pavement due to the Contractor's operation shall be repaired at the Contractor's expense.