October 4, 2019

REVISION OF SECTION 412

CROSS STITCHING

1. **NOTICE**

This is a standard special provision that revises or modifies CDOT’s *Standard Specifications for Road and Bridge Construction*. It has gone through a formal review and approval process and has been issued by CDOT’s Project Development Branch with formal instructions regarding its use on CDOT construction projects. It is to be used as written without change. Do not use modified versions of this special provision on CDOT construction projects, and do not use this special provision on CDOT projects in a manner other than that specified in the instructions unless such use is first approved by the Standards and Specifications Unit of the Project Development Branch. The instructions for use on CDOT construction projects appear below.

Other agencies that use the *Standard Specifications for Road and Bridge Construction* to administer construction projects may use this special provision as appropriate and at their own risk.

**Instructions for use on CDOT construction projects:**

Use this standard special provision on projects with cross stitching of longitudinal cracks and joints in concrete pavement.

Section 412 of the Standard Specifications is hereby revised for this project to include the following:

**412.25 Cross Stitching.** This work consists of cross stitching longitudinal cracks and joints by directionally drilling holes in concrete pavement, injecting grout, and inserting deformed steel reinforcing bars in accordance with these specifications and the details shown on the plans. Cross stitching shall not be used for fixing defective work on new construction or for thin concrete overlays (8 inches or less).

**412.26 Materials.** Materials for cross stitching shall be #6 or #8 deformed steel reinforcing bars, grade 60, epoxy coated, with length as specified on the plans.

Epoxy or cementitious grout shall be on the Department’s Approved Products List. The epoxy shall be either an epoxy or polyester resin. The epoxy or cementitious grout shall be submitted to the Engineer for approval at least five working days in advance of the commencement of cross stitching work.

**412.27 Placement.** Directionally drilled holes shall be 1.000 to 1.125 inches diameter for #6 bars and 1.125 to 1.375 inches diameter for #8 bars, and drilled at an angle from the horizontal designated on the plans. Holes shall be started at a distance shown on the plans on a line perpendicular to the crack/joint, and shall extend through the crack/joint. Drilled holes shall be spaced on 20 inch centers and shall alternate from side to side along the full length of the crack/joint. Holes shall not be drilled within 24 inches of an existing transverse joint. Holes shall not extend through the bottom of the slab.

Drilled holes shall be blown free of drill dust, dirt, and moisture with oil and moisture-free compressed air immediately before placing the grout.

Holes shall be filled with epoxy/grout by injecting from the bottom of the hole. The Contractor shall insert the tie bar and remove excess epoxy/grout and finish flush with the pavement surface.

Pavement may be opened to traffic when the epoxy/grout is dry to the touch.

**412.28 Equipment.** The drill for boring the cross stitch holes shall be selected to minimize damage to the concrete surface. The drill shall be capable of low-impact operation in order to minimize spalling damage and prevent bottom breakout of the concrete pavement. The drill shall be skid or frame mounted. Hand held drilling will not be allowed.

The first ten holes shall be visually inspected to determine if the bottom of the slab has broken out, and measured for length of minimum embedment. Installation of the tie bars and epoxy shall not occur until the Contractor’s drilling method has been inspected and approved. After the Contractor’s method has been approved, the Contractor may proceed with cross stitching so long as the method and equipment remain the same. Drill bit changes do not require re-inspection. If the Contractor’s method or equipment changes, the first ten holes made with the new method shall be visually inspected to determine if the bottom of the slab has broken out, and measured for length of minimum embedment.

**412.29 Basis of Payment.** Cross stitching will be measured for payment by the number of cross stitches placed.

Payment will be made under:

**Pay Item Pay Unit**

Cross Stitching Each

The accepted quantity of drilled holes, filled with epoxy/grout and reinforcing bars will be paid for at the contract unit price per each hole drilled. Payment for deformed bars, grout, labor, materials, equipment, tools and incidentals necessary for completion of the work will not be measured and paid for separately, but shall be included in the work.