

## **ITEM 18502.3301 M - DRILL AND ANCHOR LONGITUDINAL JOINT TIES FOR FULL-DEPTH PORTLAND CEMENT CONCRETE PAVEMENT REPAIRS**

**DESCRIPTION.** Drill holes and anchor longitudinal joint ties into concrete faces that will become longitudinal joints.

### **MATERIALS AND EQUIPMENT.**

**Longitudinal Joint Ties.** Use 1 piece drop in type longitudinal joint ties depicted in the M502 Standard Sheet, Longitudinal Joint Ties, except substitute 700 mm long ties for 900 mm long ties. Use an epoxy coating appearing on the Approved List for “Epoxy Coatings for Longitudinal Joint Ties” or “Epoxy Coatings for Steel Reinforcing Bars” that is applied by an applicator appearing on the Approved List for “Applicators for Steel Reinforcing Bars”. At least 7 days prior to drilling holes, provide the Engineer:

- Material certification from the rolling mill as to the type and grade of steel used.
- The brand of epoxy coating and the name and address of the Manufacturer.
- The name and address of the epoxy coating applicator.
- Material certification from the epoxy coating applicator that the bars have been coated, tested, and meet the requirements of §705-14, Longitudinal Joint Ties.

The Department may perform supplementary sampling and testing of the ties to ensure conformance with §705-14.

**Anchoring Material and Dispensing Equipment.** Use a pourable, 2 component, 100% solids structural epoxy meeting §701-07, Anchoring Materials - Chemically Curing, dispensed:

- From side-by-side cartridges by manual or pneumatically powered injection guns.
- Through a static nozzle that homogeneously mixes the material without any hand mixing.

**Drills.** Use hydraulic gang drills with a minimum of 2 independently powered and driven drills. Use tungsten carbide drill bits. Control the forward and reverse travel of the drills by mechanically applied pressure. Mount the drill on a suitable piece of equipment such that it is quickly transported and positioned. Rest and reference the drill rig frame on and to the pavement surface such that the drilled holes are cylindrical, perpendicular to the surface being drilled, and repeatable in terms of position and alignment on the surface being drilled.

When allowed by the Engineer, hand-held drills may be used if the drill rig discussed above can not be positioned without being in conflict with the contracts maintenance and protection of traffic plan.

### **CONSTRUCTION DETAILS.**

**Drilling Holes.** Drill holes such that:

- The end ties in a slab are placed 300 - 375 mm from the transverse joints.
- The ties between the end ties are placed 600 mm apart, maximum.
- 250 mm of tie is embedded in the existing concrete and 450 mm of tie protrudes from the drilled concrete face.
- The hole diameters are in accordance with the anchoring material Manufacturer’s written recommendations. Provide those recommendations to the Engineer before drilling any holes.

Extend the full depth repair boundaries as indicated in the contract documents if drilling cracks or damages the pavement to remain in place. Replace worn bits when necessary to ensure the proper hole diameter is drilled.

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Cleaning Holes. Follow the anchoring material Manufacturer's written recommendations for cleaning the holes. Provide those recommendations to the Engineer. As a minimum, clean the drilled holes with oil-free and moisture-free compressed air. The Engineer will check the compressed air stream purity with a clean white cloth. Use a compressor that delivers air at a minimum of 3.4 m<sup>3</sup> per minute and develops a minimum nozzle pressure of 0.63 MPa. Insert the nozzle to the back of the hole to force out all dust and debris.

Tie Installation. When using new cartridges of anchoring material, ensure that the initial material exiting the nozzle appears uniformly mixed. If it is not uniformly mixed, waste the material until uniformly mixed material extrudes. Place the anchoring material at the back of the hole using a nozzle of sufficient length. Push the tie into the hole while twisting such that the air pocket within the hole is heard to burst and the anchoring material is evenly distributed around the tie. Use sufficient amounts of anchoring material such that it slightly extrudes out the hole as the tie is inserted.

**METHOD OF MEASUREMENT.** The work will be measured for payment as the number of longitudinal joint ties satisfactorily anchored.

**BASIS OF PAYMENT.** Include the cost of all labor, material, and equipment necessary to satisfactorily perform the work in the unit price bid for Drill and Anchor Longitudinal Joint Ties for Full-Depth PCC Pavement Repairs. No additional payment will be made for extra work required to repair damage to the adjacent pavement that occurred during drilling.