

ITEM 04502.8015 M - LOAD TRANSFER DEVICES FOR CONCRETE PAVEMENT REPAIRS

DESCRIPTION

Furnish and install load transfer devices (LTD's) and pre-molded resilient joint filler at locations shown on the plans or where directed by the Engineer.

MATERIALS

Pre-molded Resilient Joint Filler. Use a one piece pre-molded resilient joint filler meeting the requirements of §705-07, with a thickness as specified in the contract plans.

Load Transfer Devices (LTDs). Each LTD consist of (1) a smooth, epoxy coated dowel bar coated with an approved bond breaker and (2) an expansion cap capable of providing 12 mm of expansion room. The LTDs must be supplied by a supplier appearing on the Approved List for §705-15, Transverse Joint Supports.

The dowels must conform to the configurations, dimensions, and spacings shown in the contract documents. The dowel, epoxy coating, and bond breaker must meet the requirements for dowel bars detailed in §705-15, Transverse Joint Supports. The "Tests" and "Basis of Acceptance" portions of §705-15 shall not apply. However, the Contractor must provide the Engineer (1) certification from the supplier that the dowel elements meet the "Tests" requirements of §705-15 and (2) certification from the rolling mill as to the type and grade of steel used.

Submit detailed shop drawings to the Director, Materials Bureau, for approval before work begins. The drawings must detail:

- the expansion cap,
- the name of the bond-breaker and the name and address of the manufacturer,
- the type of corrosion protection coating and the name and address of the manufacturer,
- the name and address of the corrosion protection coating applicator .

Anchoring Material and Dispensing Equipment. Use a pourable anchoring material appearing on the Approved List for §701-07, Anchoring Materials - Chemically Curing. The anchoring material must also

- be a two component structural epoxy,
- contain 100 % solids epoxy,
- be dispensed from side-by-side cartridges using either manually or pneumatically powered injection guns, and
- be dispensed through a static mixing nozzle such that the material is thoroughly and homogeneously mixed without any hand mixing.

Drills. Use a hydraulic, boom mounted, gang drill with a minimum of three independently powered and driven drills capable of drilling the required holes in approximately 30 seconds. Use tungsten carbide drill bits. The forward and reverse travel of the drills must be controlled by mechanically applied pressure. Mount the drill on a suitable piece of equipment such that it is quickly transported and positioned at each repair. The drill rig frame must rest atop the pavement when holes are being drilled. The drill may not rest on pneumatic tires during drilling. Hand-held drills are not permitted.

Grout Retention Disk. Use plastic grout retention disks, 3 mm thick, of sufficient diameter to prevent grout from entering the joint. The hole in the center of the disk must have the same diameter as the dowel bar.

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CONSTRUCTION DETAILS

Drilling Holes. Drill the existing pavement where depicted in the contract documents or where ordered by the Engineer. Drill holes such that

- the hole diameters are 3 mm (± 1 mm) larger than the dowel diameter,
- the hole depth is one half the dowel length (+25 mm/- 0 mm),
- when the dowels are grouted in place, the longitudinal axes of the exposed portion of the dowels are parallel to the pavement centerline, the pavement surface, and the centerline(s) of adjacent dowel(s), ± 3 mm, as measured at the saw cut face and the dowel end, and
- when the dowels are grouted in place, the longitudinal mid-point of each dowel is within 25 mm of the saw cut face

Repair any damage to the existing concrete that results from drilling as directed by the Engineer at no cost to the State. Replace worn bits if the hole diameter is within 2 mm of the dowel diameter.

Cleaning Holes. 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. The compressor must deliver air at a minimum pressure of 3.4 m³ per minute and develop a minimum nozzle pressure of 0.63 MPA. Insert the nozzle to the back of the hole to force out all dust and debris.

Dowel Installation. Place the anchoring material in the back of the hole using a nozzle or wand of sufficient length. Push the dowel bar into the hole while twisting at least one full revolution. Insert the dowel such that the anchoring material is evenly distributed around the bar. Use sufficient amounts of anchoring material such that it slightly extrudes out the hole as the bar is inserted. Place a grout retention disk over the bar and tight against the exposed concrete face such that the anchoring material remains in place.

Joint Filler Installation. At joints requiring pre-molded resilient joint filler, install the filler such that it covers the entire exposed concrete face (full width and from subbase to pavement surface). Fit the filler over the protruding dowel bars such that it fits snugly against the exposed concrete face. Holes cut or punched into the filler (that allow it to fit over the protruding dowels) must be as approximately the same size as the dowel diameter, but no larger than the diameter of the grout retention disks. Holes must be neat such that no ragged edges of joint filler result. After the joint filler is placed against the exposed face, place a second grout retention disk over the dowel and tightly against the joint filler.

Expansion Cap Installation. Place an expansion cap over the end of each dowel bar. Push the cap onto the dowel until the stop hits the dowel end. Do not tap the cap in place.

METHOD OF MEASUREMENT

This work shall be measured by the number of each dowel furnished and installed to the satisfaction of the Engineer.

BASIS OF PAYMENT

In the unit bid price, include the cost of all labor, materials, and equipment necessary to complete the work. Saw cutting concrete, concrete removal, subbase preparation, new concrete, and joint sealing will be paid for under separate items.