

**ITEM 680.5840--25 - PREFORMED INDUCTANCE LOOP DETECTOR (RETROFIT) INSTALLATION**

**1. DESCRIPTION:**

- 1.01 Under this work the Contractor shall furnish and install a “Never-Fail Loop Detector, Model F”, or approved equal, preformed inductance loop detector of the shape, size and location in accordance with the Plans and this special specification. These Loop Detectors are available from Never-Fail Loop System Inc., 7911 NE 33<sup>rd</sup> Drive, #160, Portland, Oregon, 97211, [REDACTED]

**2. MATERIALS:**

- 2.01 The specific components used in construction of new preformed loop detectors shall meet the following requirements:
- A. Only 3/8 inch trade size schedule 80 polypropylene conduit having a maximum outside diameter of 1 1/16 inch shall be used for the loop portion of the detector.
  - B. Only 3/8 inch trade size rated Nylon-polypropylene flex hose shall be used to connect the loop to either the conduit, first pullbox or equipment cabinet.
  - C. The detector wire shall be 16-gauge TFFN or THHN stranded, single conductor wire with PVC insulation and nylon exterior jacket. Loops shall have 5 turns of wire or as shown on Plans.
  - D. The filler/sealant used within the loop conduit shall be an asphalt-rubber type.

**3. CONSTRUCTION DETAILS:**

- 3.01 Each loop shall be constructed at the factory to the dimensions and configuration as shown on the plans. The loop wire and lead-in cable shall be constructed from a continuous length of wire.
- 3.02 The wire ends shall be protected at their ends to prevent moisture and non-compressibles from reaching encased wires. Such materials shall be UL approved shrink tube of acceptable size. Silicone or similar sealing compounds should be used to achieve moisture protection.
- 3.03 The preformed inductance loop detector shall be composed of detector wire encased in a polypropylene conduit internally filled and sealed to prevent the vibration of wires within the conduit. The sealing material shall allow the wire to move transversely over long-time periods to help relieve thermal and pavement shift stress that may be placed on the system. The sealant shall adhere to both the wire and the conduit.
- 3.04 The preformed inductance loop detector conduit and fittings shall be constructed as to allow a minimum variation of  $\pm 1\%$ . The internal construction of the fittings and joints shall allow no water to penetrate into the conduit or to reach any part of the wire insulation. Conduit fittings shall be made fast with glue approved by the manufacturer of the preformed loop.
- 3.05 The loop lead-in wires (home run) extending from the loop portion of the detector to the connection point shall be twisted together at a rate of three turns per foot. The lead-in wire shall be routed through a flexible Nylon-polypropylene flex hose from the preformed loop to rigid conduit. The flex hose shall be filled with the same filler/sealer used in the preformed loop.
- 3.06 The conduit, fittings and sealant shall protect the twisted pair wire in the same manner against water intrusion and mechanical damage as the conduit encasing the wires of the loop portion of the detector.

**ITEM 680.5840--25 - PREFORMED INDUCTANCE LOOP DETECTOR (RETROFIT) INSTALLATION**

**3. CONSTRUCTION DETAILS:** (cont'd)

- 3.07 Prior to placing concrete the preformed loop shall be placed in the proper location and depth as shown on the Plans or A.O.B.E. The loops shall be connected to the rigid conduit and the twisted wire pair is to be pulled through to the pullbox.
- 3.08 Wire splices shall only be permitted within the pullbox or equipment cabinet. Splices shall be made in accordance with Subsection 680-3.26.
- 3.09 The resistance of the installed loop shall be tested before the concrete is placed and after the splice is made between the loop wires (twisted pair) and shielded lead-in. Resistance to ground shall be tested in accordance with the Insulation Resistance Test in Subsection 680-3.32, except as noted in this specification. This test shall be repeated 24 hours or more after the concrete is placed for the pavement.

**4. METHOD OF MEASUREMENT:**

- 4.01 The work will be measured by the number of preformed inductance loop detectors furnished, assembled and installed in accordance with the Plans or as ordered by the Engineer.

**5. BASIS OF PAYMENT:**

- 5.01 The requirements of Subsection 680-5.01 – General, shall apply. The unit price bid for each installation shall include all materials, equipment, labor and supplies required to complete the installation as detailed in this specification. The unit price shall include the loop detector portion and the home-run portion of the detector extending from the loop detector portion to the point of termination.