

SECTION 13591

TRAFFIC MONITORING DETECTOR LOOP

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Furnish, install, and test detector loop and detector cable.
- B. Connect detector loop to control cabinet and provide complete functioning detection capability for loops.

1.2 RELATED SECTIONS

- A. Section 02892: Traffic Signal
- B. Section 13551: General ATMS Requirements
- C. Section 13553: ATMS Conduit
- D. Section 13554: Polymer Concrete Junction Box
- E. Section 13555: ATMS Cabinet

1.3 REFERENCES

- A. International Municipal Signal Association (IMSA)
- B. National Electric Code (NEC)

1.4 SUBMITTALS

- A. Certified test report of detector lead-in cable compliance as specified. IMSA 50-2.
- B. Samples of materials for approval when requested.
- C. Provide the following submittals as described in Section 13551:
 - 1. Contractor Furnished Material and Equipment Lists
 - 2. Manufacturer's Equipment Documentation

PART 2 PRODUCTS

2.1 MATERIALS

- A. Follow Section 02892.

PART 3 EXECUTION

3.1 PREPARATION

- A. The number of loops and the number of lanes varies based on location shown in plans.

3.2 SAW CUT

- A. Maximize the area and width of any pavement sections that are created by the saw cuts.
- B. Do not saw cut across a transverse joint in the traveled way.
- C. Saw cut is allowed across a transverse joint in a shoulder slab. To maximize the pavement slabs created, position the cut approximately halfway along the joint.
- D. Maximum allowable distance between saw-cut and transverse joints, or between adjacent saw cuts: 1½ ft.
- E. Loop Spacing: 21½ ft. between leading edges.
Maximum tolerance: 1 inch.
- F. Do not install loops in cracked or spalled pavement.
- G. Avoid water in active traffic during installation.
- H. Shape: Refer to SL series Standard Drawings.

3.3 LOOP WIRE AND LEAD IN CABLE INSTALLATION

- A. Section 02892.
- B. Loops: 4 turns per loop, placed counter clockwise, center all loops in lane.

- C. Use blunt wood sticks to push wire into saw cut. Do not use metal tools.
- D. Tag each loop within the junction box at the termination of the loop wire and within the cabinet at the termination of the detector loop cable (DLC).
- E. Immediately upon installation:
 - 1. Seal loop wire ends with waterproof coating, coil neatly, place in a junction box or a sealed plastic bag, and bury.
 - 2. Install a plywood shield above all buried wire ends.
 - 3. Do not allow loop wire ends be left exposed to the weather.
- F. Install Loop Sealant
 - 1. Fill and encapsulate loop wires and home runs a minimum depth of 1 5/8 inches from the pavement surface.
 - 2. Install embedding loop sealant in saw cuts \pm 1/4 inch from the top of the pavement after curing is complete.
 - 3. Allow sealant adequate time to cure under ambient environmental conditions before lane is re-opened to traffic, or cover loop sealant with sand or cement dust to minimize tire tracking.
 - 4. Refer to manufacturer's specifications regarding expansion of sealant during curing period.
- G. Install detector lead-in cable to from loop wire to cabinet. Refer to Section 13555. Connect cable to input file in cabinet to make loop detection fully functional at cabinet controller location.
- H. Maximum detector lead in cable length allowed: 660 ft.
- I. Pavement Exit
 - 1. Drill 2-inch diameter hole at 45-degree angle at pavement edge.
 - 2. Install conduit originating from splicing junction box to the pavement edge. Extend conduit 3 inches into drilled hole.
 - 3. After loop wires are installed, seal conduit, fill the hole within 1 1/2 inches of road surface with silica sand.
 - 4. Seal remaining hole in the road surface with loop sealant.
- J. Conduit Connection to Junction Box
 - 1. Conduit to be sealed with waterproof bushings. Refer to Section 13553.
 - 2. Fill voids resulting from entrance of conduit into junction box with hydraulic cement grout. Refer to Section 13554.
 - 3. Field locate junction box to avoid drainage areas and steep slopes.
- K. Splicing in junction box
 - 1. No splices allowed between the loop wire and controller cabinet.

2. The only splice allowed is the transition from the loop wire to the detector lead-in cable.
 3. Carry the shield over the splice.
 4. Splice detector lead-in cable to loop wire in junction box with approved splice encapsulation kit.
- L. All work done in accordance with the National Electric Code (NEC).

3.4 TESTING AND ACCEPTANCE

- A. Perform a Detector Loop Inductance & Resistance Test as described in Section 02892. Obtain UDOT's newest version of the Detector Loop Inductance & Resistance Test form from the UDOT Web site. Refer to <http://www.udot.utah.gov/index.php/m=c/tid=719>. Submit Detector Loop Inductance & Resistance Test to the Engineer for acceptance.
- B. Perform the Local Field Operations Test after all Traffic Monitoring Detector Loop elements, equipment and hardware, power supply, and connecting cabling have been installed.
1. Perform testing after all construction for the site has been completed and the final road surface has been constructed.
 - a. It is not necessary for the communications installation to be completed at the time testing.
 - b. It is not necessary that all stations be locally tested concurrently.

END OF SECTION