

SECTION 13593

WEIGH IN MOTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Construct complete weigh in motion (WIM) site, including all labor and materials required for a complete and accepted installation.

1.2 RELATED SECTIONS

- A. Section 13553: ATMS Conduit
- B. Section 13554: Polymer Concrete Junction Box
- C. Section 13555: ATMS Cabinet

1.3 REFERENCES

- A. National Electric Code (NEC)

1.4 SUBMITTALS

- A. Materials:
 - 1. Submit samples of materials for approval when requested.
 - 2. Submit two copies of the following within fifteen days after receiving a Notice to Proceed:
 - a. List of equipment and materials (name of manufacturer, size, and identification number).
 - b. Manufacturers' warranties, guarantees, instruction sheets, installation details, and parts lists.

- B. Testing:
 - 1. Submit Local Field Operations Testing plan to Department for approval prior to testing. Do not perform any testing until the Department has approved the testing plans.
 - 2. Submit documentation of successful completion of Local Field Operations Test to the Department for approval prior to final acceptance.

1.5 ACCEPTANCE TESTING

- A. Conduct the following Local Field Operations Test. Satisfy submittal requirements.
- B. After all sensors, data processor, power, and cabling have been installed, verify the following:
 - 1. All installed hardware, cables, and connections operate correctly and that all functions are in accordance with the manufacturers' specifications.
 - 2. The power supply voltages and the functionality of any cabinet fans and heaters.
 - 3. The ability of the controller to properly process all of the relevant data from each sensor at the site.
- C. Conduct the test after all construction for the site has been completed and final road surface has been constructed. It is not necessary for the communications installation to be completed at the time of the test.
- D. Satisfy all additional testing requirements specific to the project.
- E. Site must be commissioned by the manufacturer prior to acceptance.

PART 2 PRODUCTS

2.1 GENERAL

- A. Use electrical components as listed and defined by the NEC.

2.2 GROUNDING SYSTEM

- A. Wire: copper wire of the size specified.
- B. Ground Wire: solid, bare, soft-drawn, copper wire as specified.
- C. Ground Rod: copper coated steel of the size specified.

2.3 PIEZO ELECTRIC SENSORS

- A. Piezo Electric Sensors as follows:
 - 1. Commercially-available “Brass Linguini”-style piezo electric sensor.
 - 2. Functional between -20 degrees F and 160 degrees F
 - 3. Functional in up to 95 percent humidity
 - 4. Manufacturer-specified operating life of three years, minimum.
- B. Manufacturer’s installation instructions will be provided by the Department.

2.4 CABINET

- A. Provide cabinet for housing processing unit, and any additional equipment, as indicated.
- B. Follow Section 13555, ATMS Cabinet.

PART 3 EXECUTION

3.1 PREPARATION

- A. Conform to the requirements of the NEC.
- B. Contact the Engineer thirty days prior to start of work, to schedule and attend a pre-installation meeting.

- C. Pick up Department-furnished materials at the following:
Utah Department of Transportation
Traffic Operations Center
2060 South 2760 West
Salt Lake City, UT 84104-4592
- D. Contact the Engineer seven calendar days before picking up Department-furnished materials.
- E. Install all Department-furnished materials following manufacturers' instructions.

3.2 ENVIRONMENTAL SENSORS

- A. Follow all manufacturer's installation instructions.
- B. Piezo Install:
 - 1. Cut straight slot, 3/4 inch x 3/4 inch, in one pass, perpendicular to and for the full width of the traffic lane.
 - 2. Drill 1/2 inch diameter 2 inch deep holes, at 45 degrees, at 3 ft spacing, along both sides of saw cut.
 - 3. Minimum of 6 inch between saw cut and concrete joints
 - 4. Clean and dry slot prior to placing piezo.
- C. Lead In Wires:
 - 1. Saw cut 1/2 inch wide x 3 1/4 inch to 6 inch deep slot for piezo lead in wires.
 - 2. Cover lead in wire with at least 3 inch of approved embedded sealant.
 - 3. Provide separate slots for each piezo lead in wire.
 - 4. Minimum of 6 inch between saw cut and concrete joints.
 - 5. Locate all lead ins down stream of piezo.
 - 6. Drill 1/2 inch hole at edge of roadway for cover on conduit.
 - 7. One 3/4 inch schedule 40 conduit for each lead in wire outside of roadway.
 - 8. Piezo lead in wire: Long enough to reach the data recorder prior to placing 500 ft maximum.
 - 9. Tag and number each lead in wire for identification.
- D. Refer to standard drawing SL 13 for loop detector details.

- E. Install all cabling between sensors and processing unit following all manufacturers' installation instructions.

3.3 CABINET AND PROCESSING UNIT

- A. Install ATMS cabinet as indicated.
- B. Refer to Section 13555, ATMS Cabinet.

END OF SECTION