

Special Specification 6366

Installation of Wrong Way Driver System Equipment



1. DESCRIPTION

Transport, install, and test Department furnished thermal imaging sensors, LED wrong way signs, wrong way driver radar detectors, confirmation cameras, enclosures, cabinets with control and interface equipment, pedestal pole assemblies, and solar panel power supply system (when solar power is required).

2. MATERIALS

Provide all materials not supplied by the Department necessary for the installation of the Wrong Way Driver System Equipment. All materials provided by the Contractor must be new. Include a task in the project schedule for delivery of Department furnished materials and provide a minimum of 7 days' notice to the Department for pick-up of Department furnished materials. Unless otherwise shown on the plans, Wrong Way Driver System Equipment will be stored by the Department for pick up at the location shown on the plans.

Ensure that all materials and construction methods necessary to complete the installation conform to the requirements of this Item, the plans and the pertinent requirements of the following Items:

- Item 618, "Conduit,"
- Item 620, "Electrical Conductors,"
- Item 644, "Small Roadside Sign Supports and Assemblies,"
- Item 656, "Foundations for Traffic Control Devices," and
- Item 687 "Pedestal Pole Assemblies."

3. CONSTRUCTION

3.1. **Installation.** Before installation of any equipment, perform a site survey of the proposed locations to determine the optimal location of the poles and the optimal position of the thermal imaging sensor, radar unit, confirmation cameras, cabinets and equipment, and solar panels when required, to achieve proper operation based on the manufacturer's recommendations. When the equipment is provided with radios, test all wireless links to assure they provide optimal communication between transmitters and receivers. Adjust locations as approved by the Engineer if necessary.

Install equipment in accordance with this Item and the lines, grades, details and dimensions as shown on the plans or as directed. Maintain safe construction practices. Ensure the mechanical execution of work complies with NEC, Article 110.12., and Department standards. Equipment must be installed in a neat and workmanlike manner.

Ensure that the wrong way driver detection system is made operational with the Department's Traffic Management Center (TMC) system in accordance with this specification and as shown on the plans.

Provide all mounting hardware and cabling necessary to install and make operational all equipment. Provide only new and corrosion resistant materials. Consider all mounting hardware and cables as subsidiary to this item with no direct payment.

Adjustments and/or addition of sign attachment hardware, mounting components and hardware for the Wrong Way driver equipment, support brackets, and appurtenances, may be necessary for compatibility with specified positioning recommended by the manufacturer, as shown on the plans, or as directed. All adjustments and/or additional materials will not be paid for directly but will be subsidiary to this Item.

Prevent damage to all equipment provided by the Department. Replace any portion of the equipment that is damaged or lost during transportation or installation. Do not use any materials furnished by the Department on any other work which is not part of this contract. Materials not used which were furnished by the Department must be returned undamaged to the location from which the materials were obtained upon completion of the work. Any unused or removed material deemed salvageable by the Engineer will remain the property of the Department and must be delivered to a designated site. Unsalvageable materials are the responsibility of the Contractor. Dispose unsalvageable materials in accordance with federal, state, and local regulations.

The Contractor must have the manufacturer's representative on site to assist with the installation of all equipment before any work begins.

Once installation is complete, contractor will coordinate with the equipment manufacturer to ensure the Wrong Way driver thermal imaging sensor and equipment are properly positioned and the Wrong Way driver detection zones are accurate. Ensure that all equipment is functioning properly and communicating with the manufacturer's equipment software. Testing will begin once proper system functionality is proven.

Stockpile all materials designated for reuse or to be retained by the Department within the project limits or at a designated location as directed.

- 3.2. **Contractor Experience Requirements.** The Contractor or subcontractor must meet the following experience requirements:
- 3.2.1. **Minimum Experience.** Two years of continuous existence offering services in the installation of Wrong Way Driver equipment. Experience must include equipment setup, testing, and troubleshooting.
- 3.2.2. **Completed Projects.** Two completed projects where personnel installed, tested, and integrated Wrong Way Driver field equipment. The detectors and radios must have been installed outdoors and permanently mounted. The completed installations must have been in continuous satisfactory operation for a minimum of 1 year.
- 3.2.3. **Equipment Experience.** One completed project in which the personnel worked in cooperation with technical representatives of the equipment supplier to perform installation, integration, or acceptance testing of the work.

Provide necessary documentation of contractor or subcontractor qualifications pursuant to contract award.

- 3.3. **Testing.** Testing of the installed equipment locations is for the purpose of relieving the Contractor of maintenance of the equipment. The Contractor will be relieved of the responsibility for maintenance of the equipment in accordance with Item 7, "Legal Relations and Responsibilities," after all testing is successfully completed.

After all equipment locations have been installed, the Department and the contractor will conduct approved continuity, stand alone, and system tests on the installed field equipment with central, remote, and laptop equipment.

Ensure that the following tests are performed on equipment and systems unless otherwise shown on the plans, or as directed. The Department may witness all tests.

- 3.3.1. **Performance Test.** Conduct a Performance Test during nighttime for each unit after installation.

Once the equipment has been installed and activated, the exit ramp will be closed to traffic. A test vehicle will then be driven the wrong way down the ramp a minimum of ten times. Once ten successful detections and notifications are received at the Department's TMC, the equipment will be accepted as fully tested and ready for operation. To be accepted, the last five successful tests must be consecutive.

- 3.3.2 **Final Acceptance Test.** A final acceptance test will be conducted to demonstrate all control, monitor, and communication requirements for 90 days. The Engineer will furnish a letter acknowledging the final acceptance testing commencement date stating the first day of the final acceptance test.
- 3.3.3. **Consequences of Test Failure.** If a defect within the system is detected during the Final Acceptance Test, document and correct the source of failure. Once corrective measures are taken, monitor the point of failure until a consecutive 30 day period free of defects is achieved.
- If a defect within the system is detected after 60 days of the Final Acceptance Test, document and correct the source of failure. Once corrective measures are taken, extend the Final Acceptance Test until a consecutive 30 day period free of defects is achieved.
- Assume responsibility only for test failures directly related to the work in accordance with this Item. Upon completion of successful final acceptance testing, document the acceptance date and project identification information and provide 2 copies to the Engineer.
- 3.4. **Technical Assistance.** Ensure that a manufacturer's technical representative is available on site to assist the Contractor's technical personnel at each installation site with the equipment installation and communication system configuration and during testing of the equipment.

4. MEASUREMENT

This item will be measured as each Wrong Way Driver System Equipment installed with poles and pole bases at the detector site and at the warning pole site and made operational in accordance with this specification and as shown on the plans.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Install Wrong Way Driver System Equipment". This price is full compensation for transportation and installation of material furnished by the State; for installing control cables between the detector site and the warning pole site; for installing solar panel power supply system when required; for installing radios when required; for furnishing and installing any required mounting hardware, connectors, conduit, cables, enclosures, and radar shields; for configuring the equipment; storing the equipment when required; testing the equipment; replacement/repair of damaged components; disposal of unsalvageable material, and for all manipulations, labor, tools, working drawings, equipment and incidentals.

New drill shaft foundations will be paid under Item 416, "Drilled Shaft Foundations."