

ITEM 645.4600--25 – LANE INDICATOR DISPLAY

1. DESCRIPTION:

1.01 This work shall consist of furnishing and installing front access lane indicator display equipment at locations specified on the plans and as directed by the engineer.

1.02 The equipment shall include:

- Lane indicator enclosure display unit.
- Controllers and power supply unit(s)
- Display unit attachment hardware including all necessary conduit.
- All required cabling.
- System software as per manufacturer specifications
- Modem at each end of fiber optic cable, in installations that use fiber.

2. MATERIALS:

2.01 General Requirements

The lane indicator shall be a [REDACTED]



or approved equal.

The lane indicator displays dimensions shall not exceed [REDACTED]

2.02 Functional Requirements

- A. The communications link between DMS controller and lane controller [REDACTED].
- B. Software shall be supplied with full documentation, including CD-ROM containing all material contained in the printed documentation.

2.03 Sign and Face Enclosure

- A. The lane indicator housing, structural framing, face covering, and mounting members shall be designed to withstand a wind velocity of [REDACTED] a [REDACTED] and shall otherwise comply with the NYSDOT Design Specifications For Overhead Sign Structures Carrying Variable Message Signs - October, 1998 and AASHTO's Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. The DMS housing must also withstand a front face ice load of [REDACTED]
- B. The sign enclosure shall meet the environmental and weather tight requirements of the [REDACTED]

ITEM 645.4600--25 – LANE INDICATOR DISPLAY

2.04 Electrical Protection, Documentation, Warranty

- A. The sign assembly, cabinet and structure shall be electrically bonded to assure proper grounding of all components.
- B. The Contractor shall provide four (4) sets of the maintenance manual for the LED lane indicator sign furnished. Also four (4) complete sets of schematics of the electronics for the LED display and all boards shall be furnished.

WARRANTY: All of the mechanical and electronic equipment specified to make the system operational and functional shall be warranted for a period of two (2) years. The warranties shall be issued to the New York State Thruway Authority by the respective manufacturer and/or system fabricator. The warranties shall cover the repair or replacement of the component or device. Replacements shall be new units. The Authority will be responsible for removing and re-installing the component or device after the Contractors initial warranty period. The warranties shall be effective from the date of final acceptance.

The Contractor shall comply with Subsection 104-08 of the Standard Specifications for the initial warranty period.

Nothing contained in these Special Specifications shall relieve the Contractor of the implied warranty that the equipment, system, and service provided are both first quality, fit, and merchantable for the uses intended as indicated herein.

Two media converters shall be supplied under this item. Signs that communicate by [REDACTED] over fiber optic cable shall have a [REDACTED]. The one to be installed in the sign control cabinet shall be a [REDACTED] and the one to be installed in the control facility a [REDACTED] to be located as ordered by the Engineer.

2.05 Quality Assurance Provisions

- A. Two (2) types of tests shall be required for each unit of equipment furnished: Design Approval Test and System Acceptance Test. Each of these tests is described in the following sections.
- B. The Contractor shall be responsible for developing detailed test procedures for each type of equipment and for conducting the specified tests to verify satisfactory operation of the equipment. The test procedures shall be submitted to the Engineer for approval prior to the tests. Only approved test procedures shall be used during the tests.
- C. The results of each test shall be compared with the requirements specified herein. Failure to conform to the requirements of any test shall be counted as a defect, and equipment shall be subject to rejection by the Engineer.
- D. Rejected equipment may be offered again for retest provided all non-compliant items have been corrected and retested by the Contractor and evidence thereof submitted to the Engineer.
- E. Final inspection and acceptance of equipment shall be made after installation at the locations specified on the Plans unless otherwise specified herein.

2.06 **Design Approval Test**

- A. Design approval tests shall be conducted by the Contractor on one or more sample equipment of each type, as approved by the Engineer, to determine if the design of the equipment meets the requirements of this specification. The tests shall be conducted in accordance with the approved test procedures. Tests shall be conducted between - [REDACTED]
- B. In the case of standard product line equipment, the Engineer may waive the design approval tests if the manufacturer's written specifications (functional and environmental) are equal to or better than those specified herein and he so states in writing or if the Contractor provides certification by an independent testing laboratory that these design approval tests have been previously satisfactorily completed. The design approval test shall cover the following at a minimum
- C. **Temperature** - All functional operations of the equipment shall be successfully performed under the following conditions and in the order specified below:
1. The equipment shall be stabilized at [REDACTED]. After stabilization at this temperature, the equipment shall be operated without degradation for 2 hours.
 2. The equipment shall be stabilized at [REDACTED]. After stabilization, the equipment shall be operated without degradation for 2 hours.
- D. **Relative Humidity** - All equipment shall meet its performance requirements when subjected to temperature and relative humidity of [REDACTED]. The equipment shall be maintained at the above condition for 48 hours. At the conclusion of the soak, within 30 minutes the equipment shall meet all of its operation requirements.
- E. **Power Variation** - The equipment shall meet all of the specified performance requirements when the input voltage is plus or minus [REDACTED] from the nominal value of [REDACTED]. The equipment shall be operated at the extreme limits for at least 15 minutes during which it shall meet all of its operation requirements.
- F. **Vibration** - The equipment shall show no degradation of mechanical structure, soldered components, plug-in components or satisfactory operation in accordance with the manufacturer's specification after being subjected to the following vibration test:
1. The equipment shall be secured to the (shaker) head of suitable electro-mechanical shaker in the vertical, lateral and longitudinal planes respectively. The object of the test is to vibrate the equipment in each of the three mutually perpendicular axes, in accordance with the following parameters:

[REDACTED]
 2. If the equipment fails the design approval test, the design fault shall be corrected and the entire design approval test shall be repeated. All deliverable equipment shall be

ITEM 645.4600--25 – LANE INDICATOR DISPLAY

modified, without additional cost to the Authority, to include design changes required to pass the design approval tests.

2.7 Final Acceptance Test

- A. Following satisfactory completion of the stand-alone field test, a final acceptance test shall be conducted.
- B. The final acceptance test shall, as a minimum, exercise all functional operations of the equipment as an integrated system. The test shall demonstrate all remotely controlled features and all local controlled features specified herein. The test shall continue for a period of 30 days.
- C. In the event of a failure of any supplied equipment, the test shall be suspended until the problems have been corrected, and then the test shall be resumed from the beginning.

3. CONSTRUCTION DETAILS:

- 3.02 The sign shall not be mounted over the road or on the roadside unless all power and communication lines have been brought to the site and are ready for connection to the sign.

4. METHOD OF MEASUREMENT:

- 4.01 Work under this item will be measured for payment by each of the lane indicator sign assemblies furnished and installed.

5. BASIS OF PAYMENT:

- 5.01 This work shall be paid for at the contract unit price for each dynamic message sign assembly installed and accepted. Payment is to be made as follows: sixty percent (60%) of the bid price of each item will be paid upon installation and forty percent (40%) will be paid upon satisfactory completion of acceptance, less any liquidated damages, as described in Sections 2.06 and 2.7 of this specification. This price shall include the lane indicator signs in their entirety including all auxiliary equipment, software, design and installation of mounting to the support structure and all electronics and appurtenances relative to the signs.